

B.4. Mass flows transported from one compartment to another in both directions

B.4.1. Comparison of calculated values of PCB-28 mass flows transported from the atmosphere to soil

Dry deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to soil: dry deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.56.

Monthly values of PCB-28 mass flows transported from the atmosphere to soil: dry deposition calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.88 a and b, respectively.

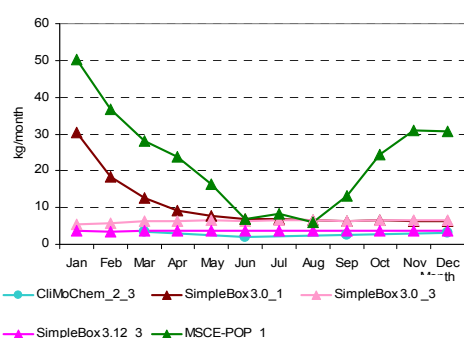


Fig. B.88a. PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

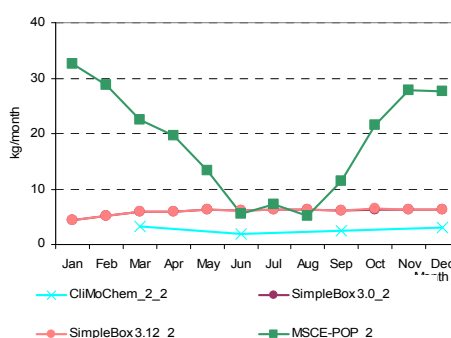


Fig. B.88b. PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to soil: dry deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.57.

Monthly values of PCB-28 mass flows transported from the atmosphere to soil: dry deposition calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.89a and b, respectively.

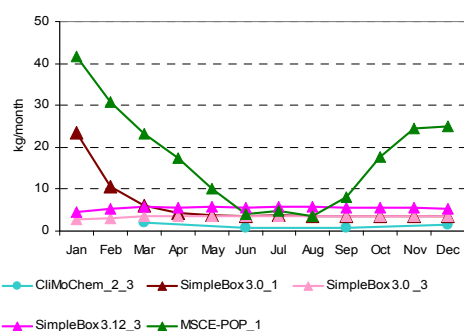


Fig. B.89a. PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions

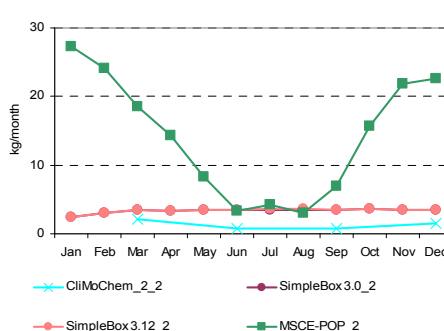


Fig. B.89b. PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

Table B.56. Calculation results: PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|---------------|---|------------------------------|-------------------------------|---------------|--------------|---------------|--|------------------------------|-------------------------------|---------------|--------------|--------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 30.56 | 50.30 | | 5.39 | 3.73 | 22.50 | 22.23 | Jan | | 4.43 | 4.43 | 32.50 | 13.79 | 16.21 |
| Feb | 18.50 | 36.70 | | 5.75 | 3.48 | 16.11 | 15.24 | Feb | | 5.23 | 5.23 | 28.80 | 13.09 | 13.61 |
| Mar | 12.70 | 28.20 | | 6.37 | 3.73 | 12.75 | 10.97 | Mar | | 5.93 | 5.93 | 22.50 | 11.45 | 9.57 |
| Seas_1 | 61.76 | 115.20 | 10.04 | 17.51 | 10.94 | 43.09 | 45.63 | Seas_1 | 9.49 | 15.59 | 15.60 | 83.80 | 31.12 | 35.24 |
| Apr | 9.09 | 23.90 | | 6.28 | 3.60 | 10.72 | 9.07 | Apr | | 5.91 | 5.91 | 19.70 | 10.51 | 7.96 |
| May | 7.89 | 16.30 | | 6.56 | 3.73 | 8.62 | 5.41 | May | | 6.20 | 6.21 | 13.40 | 8.60 | 4.15 |
| Jun | 6.96 | 6.75 | | 6.38 | 3.60 | 5.93 | 1.57 | Jun | | 6.06 | 6.07 | 5.55 | 5.89 | 0.30 |
| Seas_2 | 23.94 | 46.95 | 6.15 | 19.22 | 10.94 | 21.44 | 15.86 | Seas_2 | 5.81 | 18.17 | 18.19 | 38.65 | 20.20 | 13.61 |
| Jul | 6.88 | 8.46 | | 6.62 | 3.73 | 6.42 | 1.97 | Jul | | 6.30 | 6.32 | 7.26 | 6.63 | 0.55 |
| Aug | 6.73 | 6.02 | | 6.65 | 3.73 | 5.78 | 1.41 | Aug | | 6.33 | 6.35 | 5.18 | 5.95 | 0.67 |
| Sep | 6.44 | 13.10 | | 6.45 | 3.60 | 7.40 | 4.03 | Sep | | 6.15 | 6.17 | 11.40 | 7.91 | 3.02 |
| Seas_3 | 20.04 | 27.58 | 7.83 | 19.72 | 11.06 | 17.25 | 7.87 | Seas_3 | 7.46 | 18.79 | 18.83 | 23.84 | 17.23 | 6.93 |
| Oct | 6.62 | 24.50 | | 6.68 | 3.73 | 10.38 | 9.51 | Oct | | 6.38 | 6.40 | 21.60 | 11.46 | 8.78 |
| Nov | 6.40 | 31.10 | | 6.48 | 3.60 | 11.89 | 12.87 | Nov | | 6.19 | 6.21 | 27.80 | 13.40 | 12.47 |
| Dec | 6.40 | 30.60 | | 6.49 | 3.60 | 11.77 | 12.62 | Dec | | 6.21 | 6.23 | 27.60 | 13.35 | 12.34 |
| Seas_4 | 19.42 | 86.20 | 9.44 | 19.64 | 10.94 | 29.13 | 32.25 | Seas_4 | 9.24 | 18.78 | 18.84 | 77.00 | 30.96 | 31.02 |
| Annual | 125.17 | 275.93 | 33.45 | 76.09 | 43.86 | 110.90 | 98.92 | Annual | 31.99 | 71.33 | 71.47 | 223.29 | 99.52 | 84.58 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.57. Calculation results: PCB-28 mass flows transported from the atmosphere to soil: dry deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | <i>σ</i> | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | <i>σ</i> |
|---------------|---|---------------|---|------------------|-------------------|--------------|--------------|---------------|--|------------------|-------------------|---------------|--------------|--------------|
| | SimpleBox 3.0_1a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3a | SimpleBox 3.12_3a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2a | SimpleBox 3.12_2a | MSCE-POP_2 | | |
| Jan | 23.55 | 41.70 | | 2.75 | 4.52 | 18.13 | 18.32 | Jan | | 2.46 | 2.46 | 27.30 | 10.74 | 14.34 |
| Feb | 10.58 | 30.70 | | 3.13 | 5.25 | 12.41 | 12.59 | Feb | | 3.02 | 3.02 | 24.10 | 10.05 | 12.17 |
| Mar | 6.08 | 23.30 | | 3.50 | 5.82 | 9.67 | 9.16 | Mar | | 3.40 | 3.41 | 18.60 | 8.47 | 8.77 |
| Seas_1 | 40.21 | 95.70 | 6.31 | 9.38 | 15.59 | 33.4 | 37.3 | Seas_1 | 6.15 | 8.88 | 8.90 | 70.00 | 23.5 | 31.0 |
| Apr | 4.27 | 17.50 | | 3.44 | 5.66 | 7.72 | 6.59 | Apr | | 3.36 | 3.37 | 14.30 | 7.01 | 6.31 |
| May | 3.90 | 10.10 | | 3.58 | 5.83 | 5.85 | 3.00 | May | | 3.50 | 3.52 | 8.22 | 5.08 | 2.72 |
| Jun | 3.61 | 4.05 | | 3.47 | 5.61 | 4.19 | 0.98 | Jun | | 3.40 | 3.43 | 3.31 | 3.38 | 0.06 |
| Seas_2 | 11.78 | 31.65 | 2.48 | 10.49 | 17.11 | 14.7 | 10.8 | Seas_2 | 2.45 | 10.26 | 10.32 | 25.83 | 12.2 | 9.8 |
| Jul | 3.68 | 4.92 | | 3.60 | 5.77 | 4.49 | 1.04 | Jul | | 3.53 | 3.56 | 4.20 | 3.76 | 0.38 |
| Aug | 3.66 | 3.47 | | 3.61 | 5.73 | 4.12 | 1.08 | Aug | | 3.54 | 3.57 | 2.98 | 3.36 | 0.33 |
| Sep | 3.53 | 8.11 | | 3.50 | 5.51 | 5.16 | 2.18 | Sep | | 3.43 | 3.47 | 7.00 | 4.63 | 2.05 |
| Seas_3 | 10.87 | 16.50 | 2.16 | 10.70 | 17.01 | 11.4 | 6.0 | Seas_3 | 2.13 | 10.50 | 10.60 | 14.18 | 9.4 | 5.1 |
| Oct | 3.64 | 17.70 | | 3.62 | 5.66 | 7.66 | 6.76 | Oct | | 3.55 | 3.60 | 15.70 | 7.62 | 7.00 |
| Nov | 3.52 | 24.40 | | 3.51 | 5.45 | 9.22 | 10.16 | Nov | | 3.44 | 3.49 | 21.90 | 9.61 | 10.64 |
| Dec | 3.52 | 24.90 | | 3.51 | 5.42 | 9.34 | 10.41 | Dec | | 3.45 | 3.50 | 22.60 | 9.85 | 11.04 |
| Seas_4 | 10.68 | 67.00 | 4.67 | 10.64 | 16.54 | 21.9 | 25.6 | Seas_4 | 4.64 | 10.44 | 10.58 | 60.20 | 21.5 | 26.0 |
| Annual | 73.54 | 210.85 | 15.61 | 41.21 | 66.25 | 81.49 | 75.82 | Annual | 15.37 | 40.08 | 40.39 | 170.21 | 66.51 | 70.12 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.58.

Table B.58. The percentage difference between calculation results on PCB-28 mass flows transported from the atmosphere to soil: dry deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_2 | CliMoChem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0_3 | SimpleBox 3.12_3 | MSCE-POP_1 | MSCE-POP_2 |
|--------|---------------|---------------|-----------------|-----------------|------------------|-----------------|------------------|------------|------------|
| Jan | | | -23.0% | -44.5% | -44.5% | -48.9% | 21.4% | -17.1% | -16.0% |
| Feb | | | -42.8% | -42.3% | -42.2% | -45.5% | 50.6% | -16.3% | -16.3% |
| Mar | | | -52.1% | -42.6% | -42.5% | -45.1% | 56.1% | -17.4% | -17.3% |
| Seas_1 | -35.2% | -37.1% | -34.9% | -43.0% | -43.0% | -46.4% | 42.5% | -16.9% | -16.5% |
| Apr | | | -53.0% | -43.2% | -43.0% | -45.3% | 57.1% | -26.8% | -27.4% |
| May | | | -50.6% | -43.6% | -43.3% | -45.5% | 56.6% | -38.0% | -38.7% |
| Jun | | | -48.1% | -43.8% | -43.6% | -45.6% | 55.7% | -40.0% | -40.4% |
| Seas_2 | -57.9% | -59.7% | -50.8% | -43.5% | -43.3% | -45.4% | 56.5% | -32.6% | -33.2% |
| Jul | | | -46.5% | -44.0% | -43.7% | -45.7% | 54.8% | -41.8% | -42.1% |
| Aug | | | -45.6% | -44.1% | -43.7% | -45.7% | 53.8% | -42.4% | -42.5% |
| Sep | | | -45.2% | -44.2% | -43.8% | -45.8% | 52.9% | -38.1% | -38.6% |
| Seas_3 | -71.5% | -72.5% | -45.8% | -44.1% | -43.7% | -45.7% | 53.9% | -40.2% | -40.5% |
| Oct | | | -45.0% | -44.3% | -43.8% | -45.8% | 52.1% | -27.8% | -27.3% |
| Nov | | | -44.9% | -44.4% | -43.8% | -45.8% | 51.2% | -21.5% | -21.2% |
| Dec | | | -45.0% | -44.5% | -43.9% | -45.9% | 50.5% | -18.6% | -18.1% |
| Seas_4 | -49.7% | -50.5% | -45.0% | -44.4% | -43.8% | -45.8% | 51.3% | -22.3% | -21.8% |
| Annual | -52.0% | -53.3% | -41.2% | -43.8% | -43.5% | -45.8% | 51.0% | -23.6% | -23.8% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations; CliMoChem_2_3 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period; MSCE-POP_1 – MSCE-POP results calculated on the basis of initial concentrations given as input data; MSCE-POP_2 – MSCE-POP results calculated on the basis of zero initial concentrations; SimpleBox 3.0_1 – SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data; SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations; SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

Wet deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to soil: wet deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.59.

Monthly values of PCB-28 mass flows transported from the atmosphere to soil: wet deposition calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.90 a and b, respectively.

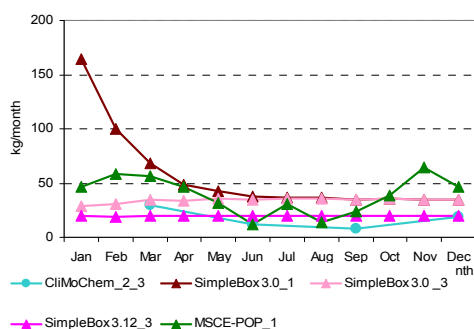


Fig. B.90a. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

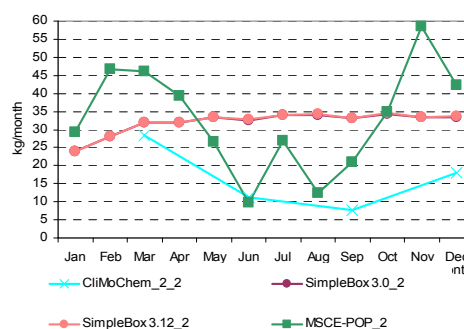


Fig. B.90b. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to soil: wet deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.60.

Monthly values of PCB-28 mass flows transported from the atmosphere to soil: wet deposition calculated by all participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.91 a and b, respectively. Seasonal variations of low values of wet deposition flows calculated by the participating models on the basis of “own or alternative” data set are also shown in Figs. B.91c and B.91d in more detail.

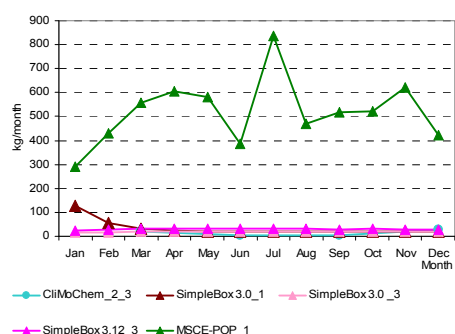


Fig. B.91a. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

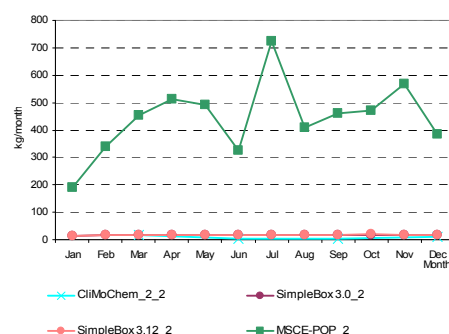


Fig. B.91b. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions (all models)

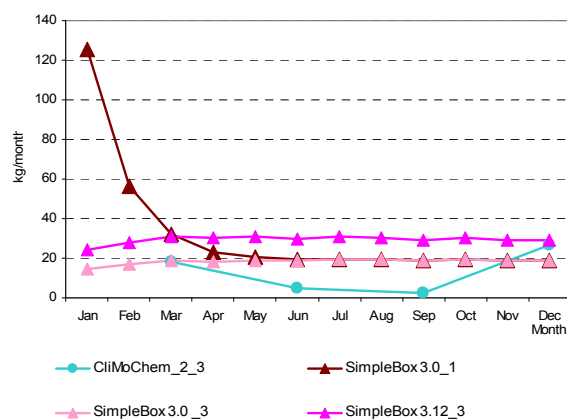


Fig. B.91c. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (low values)

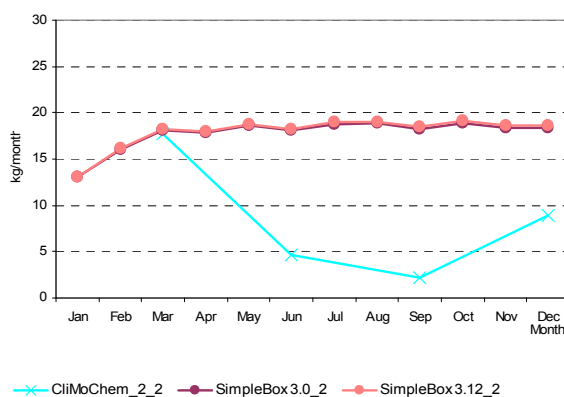


Fig. B.91d. PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions (low values)

Table B.59. Calculation results: PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by models on the basis of “reference” data set” and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | m | σ | Month | Results obtained on the basis of zero initial concentrations | | | | m | σ |
|---------------|---|---------------|---|------------------------------|-------------------------------|---------------|---------------|---------------|--|---------------|------------------------------|-------------------------------|---------------|--------------|
| | SimpleBox 3.0_1 ^f | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 ^f | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | MSCE-POP_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | | |
| Jan | 164.73 | 46.10 | | 29.05 | 20.07 | 64.99 | 67.36 | Jan | | 29.20 | 23.87 | 23.87 | 25.65 | 3.08 |
| Feb | 99.70 | 58.90 | | 30.98 | 18.78 | 52.09 | 35.91 | Feb | | 46.80 | 28.19 | 28.19 | 34.39 | 10.74 |
| Mar | 68.44 | 56.50 | | 34.33 | 20.07 | 44.83 | 21.73 | Mar | | 46.10 | 31.94 | 31.96 | 36.67 | 8.17 |
| Seas_1 | 332.87 | 161.50 | 90.14 | 94.36 | 58.92 | 147.56 | 110.13 | Seas_1 | 85.25 | 122.10 | 84.00 | 84.03 | 93.84 | 18.85 |
| Apr | 48.97 | 46.70 | | 33.84 | 19.42 | 37.23 | 13.61 | Apr | | 39.20 | 31.83 | 31.86 | 34.30 | 4.25 |
| May | 42.50 | 31.80 | | 35.32 | 20.07 | 32.42 | 9.36 | May | | 26.60 | 33.41 | 33.46 | 31.16 | 3.95 |
| Jun | 37.52 | 11.70 | | 34.40 | 19.42 | 25.76 | 12.26 | Jun | | 9.66 | 32.65 | 32.70 | 25.00 | 13.29 |
| Seas_2 | 128.99 | 90.20 | 35.89 | 103.56 | 58.92 | 83.51 | 36.70 | Seas_2 | 33.88 | 75.46 | 97.89 | 98.02 | 76.31 | 30.21 |
| Jul | 37.05 | 31.10 | | 35.70 | 20.07 | 30.98 | 7.71 | Jul | | 27.00 | 33.96 | 34.03 | 31.66 | 4.04 |
| Aug | 36.24 | 14.30 | | 35.81 | 20.07 | 26.61 | 11.13 | Aug | | 12.30 | 34.13 | 34.21 | 26.88 | 12.63 |
| Sep | 34.71 | 24.00 | | 34.75 | 19.42 | 28.22 | 7.75 | Sep | | 21.10 | 33.16 | 33.25 | 29.17 | 6.99 |
| Seas_3 | 108.01 | 69.40 | 24.59 | 106.26 | 59.56 | 73.56 | 34.88 | Seas_3 | 23.43 | 60.40 | 101.24 | 101.48 | 71.64 | 37.50 |
| Oct | 35.69 | 38.90 | | 35.99 | 20.07 | 32.66 | 8.52 | Oct | | 34.90 | 34.37 | 34.48 | 34.59 | 0.28 |
| Nov | 34.46 | 64.50 | | 34.89 | 19.42 | 38.32 | 18.88 | Nov | | 58.50 | 33.36 | 33.48 | 41.78 | 14.48 |
| Dec | 34.51 | 46.40 | | 34.95 | 19.42 | 33.82 | 11.06 | Dec | | 42.20 | 33.45 | 33.58 | 36.41 | 5.02 |
| Seas_4 | 104.66 | 149.80 | 55.68 | 105.82 | 58.92 | 94.98 | 38.93 | Seas_4 | 54.50 | 135.60 | 101.18 | 101.54 | 98.20 | 33.31 |
| Annual | 674.53 | 470.90 | 206.29 | 410.01 | 236.31 | 399.61 | 190.27 | Annual | 197.06 | 393.56 | 384.31 | 385.07 | 340.00 | 95.39 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.60. Calculation results: PCB-28 mass flows transported from the atmosphere to soil: wet deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|----------------|---|------------------------------|-------------------------------|---------------|---------------|---------------|--|------------------------------|-------------------------------|----------------|----------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 125.51 | 291.00 | | 14.68 | 24.09 | 113.82 | 128.34 | Jan | | 13.11 | 13.11 | 189.00 | 71.74 | 101.55 |
| Feb | 56.38 | 429.00 | | 16.68 | 27.98 | 132.51 | 198.36 | Feb | | 16.09 | 16.11 | 338.00 | 123.40 | 185.85 |
| Mar | 32.39 | 558.00 | | 18.62 | 30.99 | 160.00 | 265.40 | Mar | | 18.14 | 18.18 | 453.00 | 163.11 | 251.06 |
| Seas_1 | 214.29 | 1278.00 | 54.77 | 49.99 | 83.06 | 336.0 | 530.8 | Seas_1 | 53.34 | 47.33 | 47.40 | 980.00 | 282.0 | 465.3 |
| Apr | 22.75 | 606.00 | | 18.31 | 30.18 | 169.31 | 291.17 | Apr | | 17.89 | 17.96 | 511.00 | 182.29 | 284.67 |
| May | 20.78 | 581.00 | | 19.05 | 31.09 | 162.98 | 278.73 | May | | 18.65 | 18.75 | 493.00 | 176.80 | 273.84 |
| Jun | 19.26 | 387.00 | | 18.51 | 29.92 | 113.67 | 182.29 | Jun | | 18.13 | 18.26 | 326.00 | 120.80 | 177.71 |
| Seas_2 | 62.79 | 1574.00 | 14.13 | 55.88 | 91.18 | 359.6 | 679.4 | Seas_2 | 13.95 | 54.67 | 54.97 | 1330.00 | 363.4 | 644.7 |
| Jul | 19.61 | 835.00 | | 19.18 | 30.73 | 226.13 | 405.95 | Jul | | 18.80 | 18.95 | 723.00 | 253.58 | 406.53 |
| Aug | 19.49 | 468.00 | | 19.22 | 30.54 | 134.31 | 222.52 | Aug | | 18.85 | 19.03 | 408.00 | 148.63 | 224.62 |
| Sep | 18.81 | 519.00 | | 18.63 | 29.38 | 146.46 | 248.41 | Sep | | 18.28 | 18.48 | 461.00 | 165.92 | 255.55 |
| Seas_3 | 57.91 | 1822.00 | 6.64 | 57.04 | 90.65 | 406.8 | 791.7 | Seas_3 | 6.56 | 55.93 | 56.47 | 1592.00 | 427.7 | 776.5 |
| Oct | 19.41 | 520.00 | | 19.28 | 30.19 | 147.22 | 248.57 | Oct | | 18.93 | 19.16 | 472.00 | 170.03 | 261.52 |
| Nov | 18.77 | 622.00 | | 18.69 | 29.06 | 172.13 | 299.95 | Nov | | 18.35 | 18.59 | 569.00 | 201.98 | 317.85 |
| Dec | 18.75 | 421.00 | | 18.71 | 28.91 | 121.84 | 199.50 | Dec | | 18.37 | 18.64 | 386.00 | 141.00 | 212.17 |
| Seas_4 | 56.93 | 1563.00 | 26.73 | 56.68 | 88.15 | 358.3 | 673.8 | Seas_4 | 26.61 | 55.64 | 56.39 | 1427.00 | 391.4 | 690.5 |
| Annual | 391.91 | 6237.00 | 102.27 | 219.57 | 353.05 | 1460.8 | 2672.5 | Annual | 100.45 | 213.57 | 215.23 | 5329.00 | 1464.56 | 2576.85 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.61.

Table B.61. The percentage difference between calculation results on PCB-28 mass flows transported from the atmosphere to soil: wet deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMo Chem_2_2 | CliMo Chem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0_3 | SimpleBox 3.12_3 | MSCE-POP_1 | MSCE-POP_2 |
|---------------|-------------------|-------------------|--------------------|--------------------|---------------------|--------------------|---------------------|----------------|----------------|
| Jan | | | -23.8% | -45.1% | -45.1% | -49.5% | 20.0% | 531.2% | 547.3% |
| Feb | | | -43.4% | -42.9% | -42.9% | -46.2% | 49.0% | 628.4% | 622.2% |
| Mar | | | -52.7% | -43.2% | -43.1% | -45.7% | 54.4% | 887.6% | 882.6% |
| Seas_1 | -37.4% | -39.2% | -35.6% | -43.7% | -43.6% | -47.0% | 41.0% | 691.3% | 702.6% |
| Apr | | | -53.5% | -43.8% | -43.6% | -45.9% | 55.4% | 1197.6% | 1203.6% |
| May | | | -51.1% | -44.2% | -44.0% | -46.1% | 54.9% | 1727.0% | 1753.4% |
| Jun | | | -48.7% | -44.5% | -44.2% | -46.2% | 54.0% | 3207.7% | 3274.7% |
| Seas_2 | -58.8% | -60.6% | -51.3% | -44.2% | -43.9% | -46.0% | 54.8% | 1645.0% | 1662.5% |
| Jul | | | -47.1% | -44.6% | -44.3% | -46.3% | 53.1% | 2584.9% | 2577.8% |
| Aug | | | -46.2% | -44.8% | -44.4% | -46.3% | 52.2% | 3172.7% | 3217.1% |
| Sep | | | -45.8% | -44.9% | -44.4% | -46.4% | 51.3% | 2062.5% | 2084.8% |
| Seas_3 | -72.0% | -73.0% | -46.4% | -44.8% | -44.4% | -46.3% | 52.2% | 2525.4% | 2535.8% |
| Oct | | | -45.6% | -44.9% | -44.4% | -46.4% | 50.4% | 1236.8% | 1252.4% |
| Nov | | | -45.5% | -45.0% | -44.5% | -46.4% | 49.6% | 864.3% | 872.6% |
| Dec | | | -45.6% | -45.1% | -44.5% | -46.5% | 48.8% | 807.3% | 814.7% |
| Seas_4 | -51.2% | -52.0% | -45.6% | -45.0% | -44.5% | -46.4% | 49.6% | 943.4% | 952.4% |
| Annual | -49.0% | -50.4% | -41.9% | -44.4% | -44.1% | -46.4% | 49.4% | 1224.5% | 1254.1% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

Gaseous exchange

Reference data set. Calculation results on PCB-28 mass flows between the atmosphere and soil: gaseous exchange calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.62.

Monthly values of PCB-28 mass flows between the atmosphere and soil: gaseous exchange calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.92 a and b, respectively.

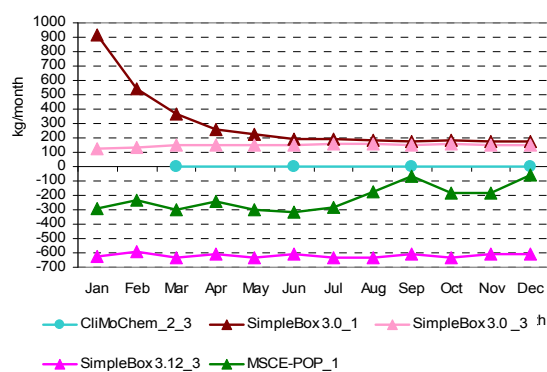


Fig. B.92a. PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (all models)

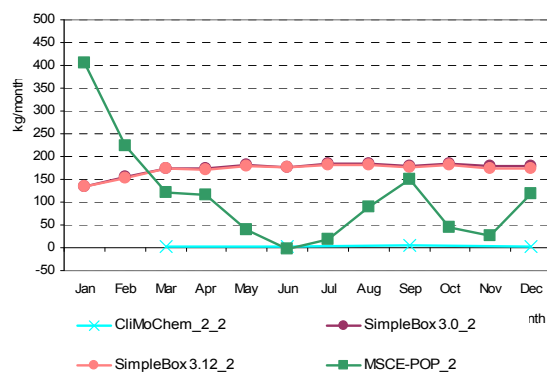


Fig. B.92b. PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows between the atmosphere and soil: gaseous exchange calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.63.

Monthly values of PCB-28 mass flows between the atmosphere and soil: gaseous exchange calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.93 a and b, respectively.

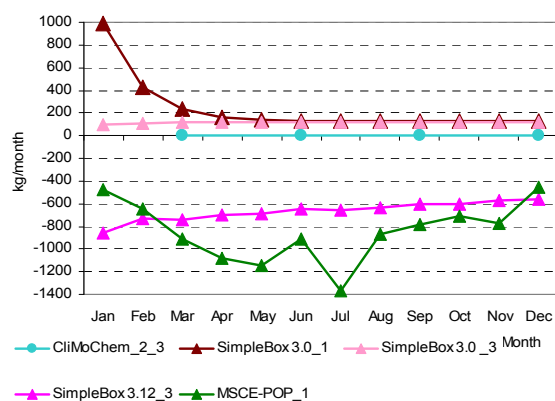


Fig. B.93a. PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions

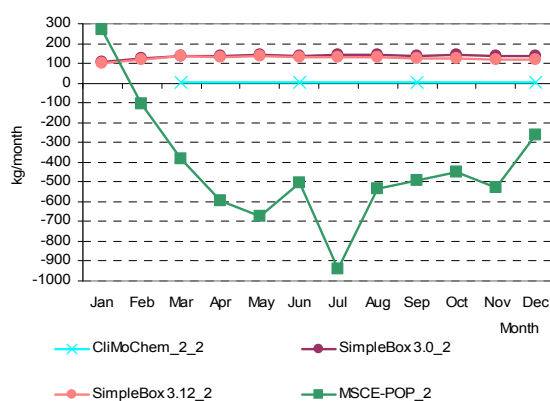


Fig. B.93b. PCB-28 mass between the atmosphere and soil: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

Comparison between results obtained on the basis of two data sets. A comparison of the calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.64.

Table B.62. Calculation results: PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|-----------------|---|------------------|-------------------|----------------|----------------|---------------|--|------------------|-------------------|----------------|----------------|---------------|
| | SimpleBox 3.0_1a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3a | SimpleBox 3.12_3a | | | | CliMoChem_2_2 | SimpleBox 3.0_2a | SimpleBox 3.12_2a | MSCE-POP_2 | | |
| Jan | 920.40 | -289.00 | | 122.05 | -626.50 | 31.74 | 666.84 | Jan | | 133.83 | 133.76 | 406.00 | 224.53 | 157.16 |
| Feb | 541.96 | -234.00 | | 131.70 | -588.59 | -37.23 | 485.36 | Feb | | 154.36 | 153.93 | 224.00 | 177.43 | 40.33 |
| Mar | 367.06 | -298.00 | | 147.33 | -629.19 | -103.20 | 446.66 | Mar | | 174.64 | 173.73 | 121.00 | 156.46 | 30.71 |
| Seas_1 | 1829.42 | -821.00 | 9.55 | 401.08 | -1844.28 | -85.0 | 1373.6 | Seas_1 | 6.06 | 462.84 | 461.42 | 751.00 | 420.3 | 307.9 |
| Apr | 258.88 | -240.00 | | 145.85 | -608.89 | -111.04 | 394.68 | Apr | | 173.73 | 172.37 | 115.00 | 153.70 | 33.52 |
| May | 222.08 | -299.00 | | 152.54 | -629.19 | -138.39 | 400.52 | May | | 182.02 | 180.13 | 40.40 | 134.18 | 81.22 |
| Jun | 194.46 | -320.00 | | 148.65 | -608.89 | -146.45 | 386.12 | Jun | | 177.49 | 175.18 | -2.72 | 116.65 | 103.38 |
| Seas_2 | 675.42 | -859.00 | 8.41 | 447.04 | -1846.97 | -315.0 | 1037.9 | Seas_2 | 9.94 | 533.24 | 527.67 | 152.68 | 305.9 | 265.8 |
| Jul | 191.00 | -281.00 | | 154.28 | -629.19 | -141.23 | 389.59 | Jul | | 184.23 | 181.33 | 18.20 | 127.92 | 95.03 |
| Aug | 186.11 | -171.00 | | 154.77 | -629.19 | -114.83 | 379.02 | Aug | | 184.74 | 181.35 | 88.40 | 151.50 | 54.67 |
| Sep | 177.75 | -70.50 | | 150.11 | -608.89 | -87.88 | 364.67 | Sep | | 179.12 | 175.35 | 150.00 | 168.16 | 15.84 |
| Seas_3 | 554.87 | -522.50 | 7.67 | 459.17 | -1867.26 | -273.6 | 987.9 | Seas_3 | 19.00 | 548.09 | 538.04 | 256.60 | 340.4 | 253.3 |
| Oct | 182.34 | -183.00 | | 155.39 | -629.19 | -118.61 | 378.81 | Oct | | 185.31 | 180.94 | 46.00 | 137.42 | 79.20 |
| Nov | 175.68 | -180.00 | | 150.58 | -608.89 | -115.66 | 366.60 | Nov | | 179.48 | 174.78 | 26.80 | 127.02 | 86.82 |
| Dec | 175.67 | -62.20 | | 150.75 | -608.89 | -86.17 | 364.46 | Dec | | 179.56 | 174.41 | 119.00 | 157.66 | 33.58 |
| Seas_4 | 533.69 | -425.20 | 10.21 | 456.72 | -1846.97 | -254.3 | 969.8 | Seas_4 | 8.90 | 544.36 | 530.14 | 191.80 | 318.8 | 263.1 |
| Annual | 3593.39 | -2627.70 | 35.84 | 1764.01 | -7405.48 | -927.99 | 4285.60 | Annual | 43.91 | 2088.52 | 2057.26 | 1352.08 | 1385.44 | 956.82 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.63. Calculation results: PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|------------------|---|------------------------------|-------------------------------|-----------------|----------------|---------------|--|------------------------------|-------------------------------|-----------------|----------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 986.42 | -478.00 | | 93.32 | -860.86 | -64.78 | 803.02 | Jan | | 103.76 | 103.22 | 270.00 | 158.99 | 96.13 |
| Feb | 423.38 | -650.00 | | 106.77 | -734.57 | -213.61 | 568.69 | Feb | | 123.43 | 121.37 | -106.00 | 46.27 | 131.87 |
| Mar | 235.38 | -916.00 | | 119.99 | -746.12 | -326.69 | 588.40 | Mar | | 138.78 | 134.69 | -383.00 | -36.51 | 300.08 |
| Seas_1 | 1645.17 | -2044.00 | 9.55 | 320.08 | -2341.56 | -482.2 | 1681.3 | Seas_1 | 9.57 | 365.97 | 359.28 | -219.00 | 129.0 | 285.5 |
| Apr | 160.52 | -1080.00 | | 118.07 | -693.86 | -373.82 | 613.35 | Apr | | 136.50 | 130.66 | -592.00 | -108.28 | 418.92 |
| May | 144.23 | -1140.00 | | 122.75 | -692.97 | -391.50 | 633.14 | May | | 141.78 | 133.83 | -675.00 | -133.13 | 469.29 |
| Jun | 132.62 | -908.00 | | 119.08 | -650.30 | -326.65 | 533.02 | Jun | | 137.42 | 127.90 | -505.00 | -79.89 | 368.18 |
| Seas_2 | 437.37 | -3128.00 | 8.41 | 359.90 | -2037.13 | -871.9 | 1616.6 | Seas_2 | 9.95 | 415.70 | 392.39 | -1772.00 | -238.5 | 1039.1 |
| Jul | 134.36 | -1370.00 | | 123.17 | -653.17 | -441.41 | 720.50 | Jul | | 142.01 | 130.34 | -938.00 | -221.88 | 620.20 |
| Aug | 133.10 | -874.00 | | 123.20 | -635.80 | -313.38 | 519.04 | Aug | | 141.92 | 128.43 | -534.00 | -87.88 | 386.41 |
| Sep | 128.06 | -782.00 | | 119.21 | -600.15 | -283.72 | 476.21 | Sep | | 137.20 | 122.45 | -493.00 | -77.78 | 359.66 |
| Seas_3 | 395.52 | -3026.00 | 7.67 | 365.57 | -1889.12 | -829.3 | 1547.3 | Seas_3 | 12.65 | 421.13 | 381.22 | -1965.00 | -287.5 | 1133.4 |
| Oct | 131.75 | -715.00 | | 123.13 | -605.71 | -266.46 | 457.03 | Oct | | 141.58 | 124.63 | -452.00 | -61.93 | 337.92 |
| Nov | 127.02 | -770.00 | | 119.07 | -573.11 | -274.25 | 465.76 | Nov | | 136.80 | 118.78 | -526.00 | -90.14 | 377.57 |
| Dec | 126.60 | -460.00 | | 118.98 | -561.22 | -193.91 | 368.03 | Dec | | 136.57 | 116.99 | -260.00 | -2.15 | 223.52 |
| Seas_4 | 385.37 | -1945.00 | 10.21 | 361.18 | -1740.04 | -585.7 | 1159.2 | Seas_4 | 10.82 | 414.95 | 360.40 | -1238.00 | -113.0 | 771.1 |
| Annual | 2863.44 | -10143.00 | 35.84 | 1406.73 | -8007.85 | -2768.97 | 5891.72 | Annual | 42.99 | 1617.75 | 1493.29 | -5194.00 | -509.99 | 3203.44 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.64. Comparison of the calculation results on PCB-28 mass flows between the atmosphere and soil: gaseous exchange (kg/month) obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets.

| Month | CliMoChem_2_3 | | SimpleBox 3.0_1 | | SimpleBox 3.0_2 | | SimpleBox 3.12_2 | | SimpleBox 3.0_3 | | SimpleBox 3.12_3 | | MSCE-POP_1 | | MSCE-POP_2 | | CliMoChem_2_2 | |
|---------------|---------------|--------------|-----------------|----------------|-----------------|----------------|------------------|----------------|-----------------|----------------|------------------|-----------------|-----------------|------------------|----------------|-----------------|---------------|--------------|
| | ref | own | ref | alt | ref | alt | ref | alt | ref | alt | ref | alt | ref | own | ref | own | ref | own |
| Jan | | | 920.40 | 986.42 | 133.83 | 103.76 | 133.76 | 103.22 | 122.05 | 93.32 | -626.50 | -860.86 | -289.00 | -478.00 | 406.00 | 270.00 | | |
| Feb | | | 541.96 | 423.38 | 154.36 | 123.43 | 153.93 | 121.37 | 131.70 | 106.77 | -588.59 | -734.57 | -234.00 | -650.00 | 224.00 | -106.00 | | |
| Mar | | | 367.06 | 235.38 | 174.64 | 138.78 | 173.73 | 134.69 | 147.33 | 119.99 | -629.19 | -746.12 | -298.00 | -916.00 | 121.00 | -383.00 | | |
| Seas_1 | 9.55 | 9.55 | 1829.42 | 1645.17 | 462.84 | 365.97 | 461.42 | 359.28 | 401.08 | 320.08 | -1844.28 | -2341.56 | -821.00 | -2044.00 | 751.00 | -219.00 | 6.06 | 9.57 |
| Apr | | | 258.88 | 160.52 | 173.73 | 136.50 | 172.37 | 130.66 | 145.85 | 118.07 | -608.89 | -693.86 | -240.00 | -1080.00 | 115.00 | -592.00 | | |
| May | | | 222.08 | 144.23 | 182.02 | 141.78 | 180.13 | 133.83 | 152.54 | 122.75 | -629.19 | -692.97 | -299.00 | -1140.00 | 40.40 | -675.00 | | |
| Jun | | | 194.46 | 132.62 | 177.49 | 137.42 | 175.18 | 127.90 | 148.65 | 119.08 | -608.89 | -650.30 | -320.00 | -908.00 | -2.72 | -505.00 | | |
| Seas_2 | 8.41 | 8.41 | 675.42 | 437.37 | 533.24 | 415.70 | 527.67 | 392.39 | 447.04 | 359.90 | -1846.97 | -2037.13 | -859.00 | -3128.00 | 152.68 | -1772.00 | 9.94 | 9.95 |
| Jul | | | 191.00 | 134.36 | 184.23 | 142.01 | 181.33 | 130.34 | 154.28 | 123.17 | -629.19 | -653.17 | -281.00 | -1370.00 | 18.20 | -938.00 | | |
| Aug | | | 186.11 | 133.10 | 184.74 | 141.92 | 181.35 | 128.43 | 154.77 | 123.20 | -629.19 | -635.80 | -171.00 | -874.00 | 88.40 | -534.00 | | |
| Sep | | | 177.75 | 128.06 | 179.12 | 137.20 | 175.35 | 122.45 | 150.11 | 119.21 | -608.89 | -600.15 | -70.50 | -782.00 | 150.00 | -493.00 | | |
| Seas_3 | 7.67 | 7.67 | 554.87 | 395.52 | 548.09 | 421.13 | 538.04 | 381.22 | 459.17 | 365.57 | -1867.26 | -1889.12 | -522.50 | -3026.00 | 256.60 | -1965.00 | 19.00 | 12.65 |
| Oct | | | 182.34 | 131.75 | 185.31 | 141.58 | 180.94 | 124.63 | 155.39 | 123.13 | -629.19 | -605.71 | -183.00 | -715.00 | 46.00 | -452.00 | | |
| Nov | | | 175.68 | 127.02 | 179.48 | 136.80 | 174.78 | 118.78 | 150.58 | 119.07 | -608.89 | -573.11 | -180.00 | -770.00 | 26.80 | -526.00 | | |
| Dec | | | 175.67 | 126.60 | 179.56 | 136.57 | 174.41 | 116.99 | 150.75 | 118.98 | -608.89 | -561.22 | -62.20 | -460.00 | 119.00 | -260.00 | | |
| Seas_4 | 10.21 | 10.21 | 533.69 | 385.37 | 544.36 | 414.95 | 530.14 | 360.40 | 456.72 | 361.18 | -1846.97 | -1740.04 | -425.20 | -1945.00 | 191.80 | -1238.00 | 8.90 | 10.82 |
| Annual | 35.84 | 35.84 | 3593.39 | 2863.44 | 2088.52 | 1617.75 | 2057.26 | 1493.29 | 1764.01 | 1406.73 | -7405.48 | -8007.85 | -2627.70 | -10143.00 | 1352.08 | -5194.00 | 43.91 | 42.99 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

Net mass flows between the atmosphere and soil

Net mass flows are equal to the total mass flows resulted from summing up of dry and wet depositions and gaseous exchange.

Reference data set. Calculation results on PCB-28 net mass flows between the atmosphere and soil calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.65.

Monthly values of PCB-28 net mass flows between the atmosphere and soil calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.94 a and b, respectively.

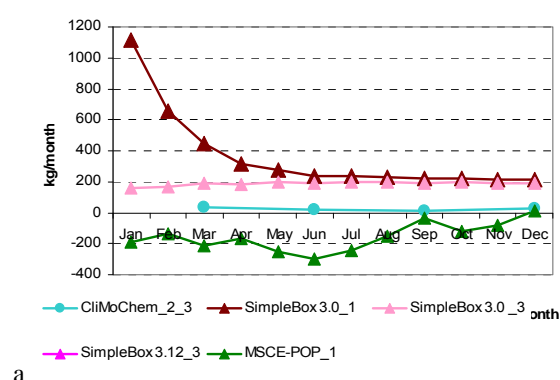


Fig. B.94a. PCB-28 net mass flows between the atmosphere and soil (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (all models)

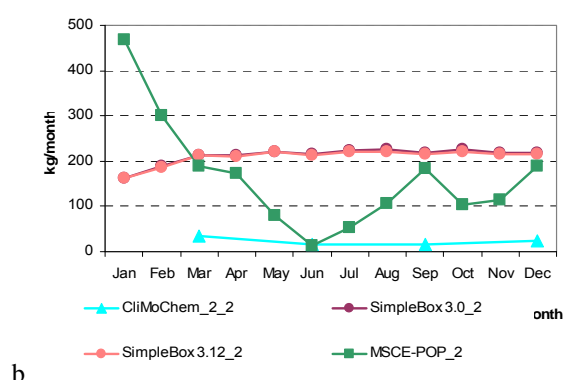


Fig. B.94b. PCB-28 net mass flows between the atmosphere and soil (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Table B.65. Calculation results: PCB-28 net mass flows between the atmosphere and soil (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|-----------------|---|------------------------------|-------------------------------|----------------|----------------|---------------|--|------------------------------|-------------------------------|-----------------|---------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 1115.69 | -192.60 | | 156.48 | -602.70 | 119.22 | 733.20 | Jan | | 162.14 | 162.06 | -192.60 | 43.87 | 204.79 |
| Feb | 660.17 | -138.40 | | 168.44 | -566.33 | 30.97 | 516.48 | Feb | | 187.78 | 187.36 | -138.40 | 78.91 | 188.20 |
| Mar | 448.19 | -213.30 | | 188.03 | -605.39 | -45.62 | 461.84 | Mar | | 212.51 | 211.62 | -213.30 | 70.28 | 245.58 |
| Seas_1 | 2224.05 | -544.30 | 109.72 | 512.95 | -1774.43 | 105.60 | 1467.19 | Seas_1 | 100.81 | 562.43 | 561.04 | -544.30 | 169.99 | 523.43 |
| Apr | 316.93 | -169.40 | | 185.97 | -585.86 | -63.09 | 404.57 | Apr | | 211.46 | 210.14 | -169.40 | 84.07 | 219.51 |
| May | 272.48 | -250.90 | | 194.42 | -605.39 | -97.35 | 409.71 | May | | 221.64 | 219.79 | -250.90 | 63.51 | 272.29 |
| Jun | 238.94 | -301.55 | | 189.43 | -585.86 | -114.76 | 397.69 | Jun | | 216.20 | 213.95 | -301.55 | 42.87 | 298.28 |
| Seas_2 | 828.35 | -721.85 | 50.45 | 569.82 | -1777.12 | -210.07 | 1057.35 | Seas_2 | 49.63 | 649.30 | 643.89 | -721.85 | 155.24 | 648.93 |
| Jul | 234.93 | -241.44 | | 196.61 | -605.39 | -103.82 | 398.13 | Jul | | 224.49 | 221.68 | -241.44 | 68.24 | 268.20 |
| Aug | 229.08 | -150.68 | | 197.23 | -605.39 | -82.44 | 388.76 | Aug | | 225.20 | 221.91 | -150.68 | 98.81 | 216.07 |
| Sep | 218.91 | -33.40 | | 191.31 | -585.86 | -52.26 | 373.25 | Sep | | 218.42 | 214.77 | -33.40 | 133.26 | 144.35 |
| Seas_3 | 682.92 | -425.52 | 40.09 | 585.15 | -1796.65 | -182.80 | 1006.52 | Seas_3 | 49.89 | 668.12 | 658.36 | -425.52 | 237.71 | 528.31 |
| Oct | 224.66 | -119.60 | | 198.05 | -605.39 | -75.57 | 386.29 | Oct | | 226.07 | 221.82 | -119.60 | 109.43 | 198.36 |
| Nov | 216.53 | -84.40 | | 191.95 | -585.86 | -65.44 | 372.81 | Nov | | 219.03 | 214.47 | -84.40 | 116.37 | 173.89 |
| Dec | 216.58 | 14.80 | | 192.18 | -585.86 | -40.58 | 374.48 | Dec | | 219.22 | 214.22 | 14.80 | 149.41 | 116.60 |
| Seas_4 | 657.77 | -189.20 | 75.32 | 582.19 | -1777.12 | -130.21 | 985.70 | Seas_4 | 72.64 | 664.31 | 650.52 | -189.20 | 299.57 | 426.85 |
| Annual | 4393.09 | -1880.87 | 275.58 | 2250.11 | -7125.30 | -417.48 | 4412.32 | Annual | 272.96 | 2544.16 | 2513.80 | -1880.87 | 862.51 | 2115.69 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates;

B.4.2. Comparison of calculated values of PCB-28 mass flows transported from vegetation to soil: Litterfall

Reference data set. Calculation results on PCB-28 mass flows transported from the vegetation to soil: litterfall calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.66.

Monthly values of PCB-28 mass flows transported from vegetation to soil: litterfall calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.95 a and b, respectively. Seasonal variations of low values of mass flows transported from vegetation to soil calculated by the participating models on the basis of “reference” data set and non-zero initial conditions are also shown in Fig. B.95c in more detail.

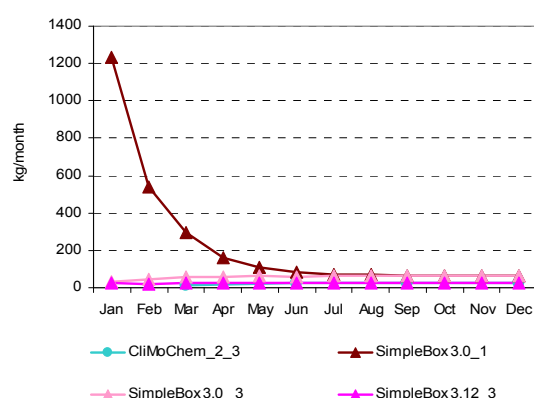


Fig. B.95a. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

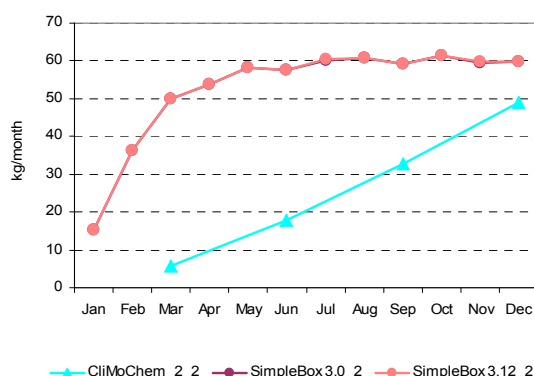


Fig. B.95b. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

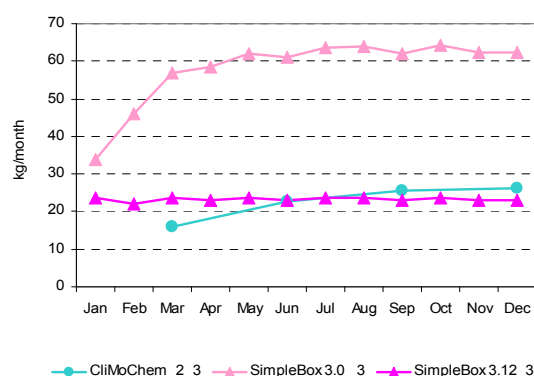
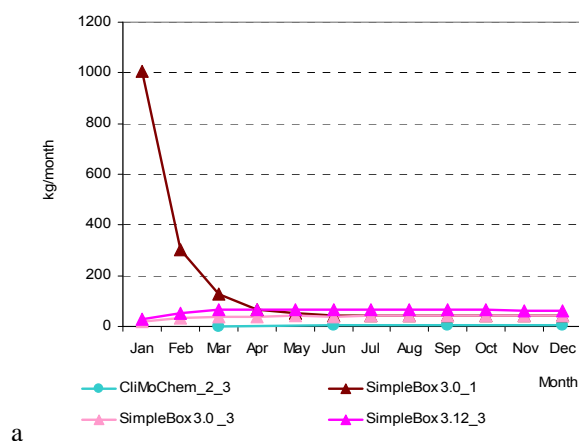


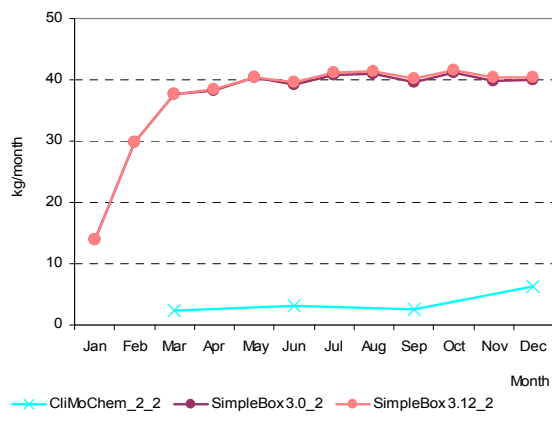
Fig. B.95c. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (models with low values)

Own/alternative data set. Calculation results on PCB-28 mass flows transported from vegetation to soil: litterfall calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.67.

Monthly values of PCB-28 mass flows transported from vegetation to soil: litterfall calculated by all participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.96 a and b, respectively. Seasonal variations of low values of mass flows from vegetation to soil calculated by the participating models on the basis of “reference” data set and non-zero initial conditions are also shown in Fig. B.96c in more detail.



a



b

Fig. B.96a. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

Fig. B.96b. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

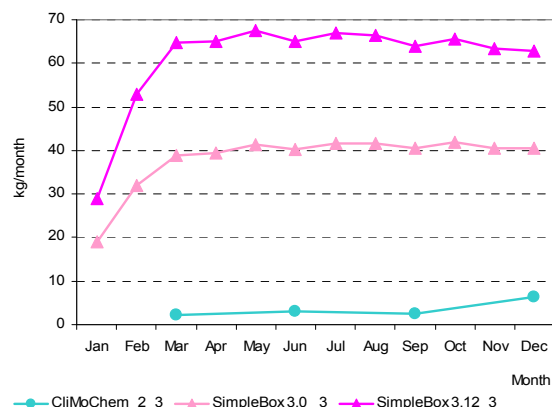


Fig. B.96c. PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (models with low values)

Table B.66. Calculation results: PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | <i>m</i> | σ |
|---------------|---|---|------------------------------|-------------------------------|----------------|----------------|---------------|--|------------------------------|-------------------------------|---------------|---------------|
| | SimpleBox 3.0_1 ^a | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | | |
| Jan | 1235.01 | | 33.79 | 23.72 | 430.84 | 696.45 | Jan | | 15.41 | 15.41 | 15.41 | 0.00 |
| Feb | 540.63 | | 46.18 | 22.19 | 203.00 | 292.64 | Feb | | 36.42 | 36.43 | 36.42 | 0.00 |
| Mar | 295.64 | | 56.76 | 23.72 | 125.37 | 148.38 | Mar | | 50.09 | 50.11 | 50.10 | 0.01 |
| Seas_1 | 2071.28 | 47.83 | 136.73 | 69.62 | 581.37 | 993.99 | Seas_1 | 17.49 | 101.92 | 101.95 | 73.79 | 48.76 |
| Apr | 162.11 | | 58.41 | 22.95 | 81.16 | 72.31 | Apr | | 53.71 | 53.75 | 53.73 | 0.02 |
| May | 110.76 | | 62.12 | 23.72 | 65.53 | 43.62 | May | | 58.14 | 58.19 | 58.17 | 0.04 |
| Jun | 82.37 | | 61.00 | 22.95 | 55.44 | 30.10 | Jun | | 57.59 | 57.66 | 57.63 | 0.05 |
| Seas_2 | 355.24 | 68.22 | 181.53 | 69.62 | 168.65 | 135.24 | Seas_2 | 53.79 | 169.44 | 169.61 | 130.95 | 66.82 |
| Jul | 73.53 | | 63.56 | 23.72 | 53.60 | 26.36 | Jul | | 60.28 | 60.38 | 60.33 | 0.07 |
| Aug | 68.17 | | 63.89 | 23.72 | 51.93 | 24.52 | Aug | | 60.77 | 60.89 | 60.83 | 0.09 |
| Sep | 63.63 | | 62.06 | 22.95 | 49.55 | 23.04 | Sep | | 59.13 | 59.27 | 59.20 | 0.10 |
| Seas_3 | 205.33 | 76.26 | 189.51 | 70.39 | 135.37 | 71.98 | Seas_3 | 98.16 | 180.18 | 180.55 | 152.96 | 47.46 |
| Oct | 64.63 | | 64.30 | 23.72 | 50.88 | 23.53 | Oct | | 61.36 | 61.53 | 61.45 | 0.12 |
| Nov | 62.04 | | 62.37 | 22.95 | 49.12 | 22.66 | Nov | | 59.58 | 59.77 | 59.68 | 0.13 |
| Dec | 61.11 | | 62.49 | 22.95 | 48.85 | 22.44 | Dec | | 59.76 | 59.97 | 59.86 | 0.15 |
| Seas_4 | 187.78 | 78.20 | 189.16 | 69.62 | 131.19 | 66.23 | Seas_4 | 147.45 | 180.70 | 181.27 | 169.81 | 19.37 |
| Annual | 2819.62 | 270.52 | 696.93 | 279.25 | 1016.58 | 1218.38 | Annual | 316.88 | 632.24 | 633.37 | 527.50 | 182.40 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.67. Calculation results: PCB-28 mass flows transported from vegetation to soil: litterfall (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | <i>m</i> | σ |
|---------------|---|---|------------------|-------------------|---------------|---------------|---------------|--|------------------|-------------------|---------------|---------------|
| | SimpleBox 3.0_1a | CliMo Chem_2_3 | SimpleBox 3.0_3a | SimpleBox 3.12_3a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2a | SimpleBox 3.12_2a | | |
| Jan | 1004.27 | | 18.98 | 28.92 | 350.72 | 566.01 | Jan | | 14.00 | 14.00 | 14.00 | 0.00 |
| Feb | 304.17 | | 31.87 | 52.78 | 129.60 | 151.54 | Feb | | 29.73 | 29.75 | 29.74 | 0.02 |
| Mar | 129.78 | | 38.95 | 64.80 | 77.84 | 46.80 | Mar | | 37.60 | 37.67 | 37.63 | 0.05 |
| Seas_1 | 1438.21 | 7.02 | 89.80 | 146.49 | 420.38 | 680.97 | Seas_1 | 7.02 | 81.33 | 81.42 | 56.59 | 42.93 |
| Apr | 66.72 | | 39.31 | 64.94 | 56.99 | 15.34 | Apr | | 38.30 | 38.42 | 38.36 | 0.09 |
| May | 50.65 | | 41.22 | 67.46 | 53.11 | 13.30 | May | | 40.30 | 40.48 | 40.39 | 0.13 |
| Jun | 43.52 | | 40.15 | 65.09 | 49.59 | 13.53 | Jun | | 39.31 | 39.54 | 39.42 | 0.17 |
| Seas_2 | 160.89 | 9.14 | 120.67 | 197.50 | 122.05 | 81.55 | Seas_2 | 9.14 | 117.90 | 118.44 | 81.83 | 62.95 |
| Jul | 43.18 | | 41.64 | 66.90 | 50.57 | 14.16 | Jul | | 40.80 | 41.10 | 40.95 | 0.21 |
| Aug | 42.57 | | 41.74 | 66.50 | 50.27 | 14.06 | Aug | | 40.93 | 41.29 | 41.11 | 0.25 |
| Sep | 40.98 | | 40.48 | 63.97 | 48.47 | 13.42 | Sep | | 39.70 | 40.11 | 39.90 | 0.28 |
| Seas_3 | 126.73 | 7.36 | 123.86 | 197.37 | 113.83 | 78.70 | Seas_3 | 7.36 | 121.43 | 122.49 | 83.76 | 66.17 |
| Oct | 42.24 | | 41.89 | 65.72 | 49.95 | 13.66 | Oct | | 41.11 | 41.58 | 41.35 | 0.33 |
| Nov | 40.82 | | 40.60 | 63.25 | 48.22 | 13.01 | Nov | | 39.86 | 40.36 | 40.11 | 0.36 |
| Dec | 40.79 | | 40.65 | 62.92 | 48.12 | 12.82 | Dec | | 39.92 | 40.47 | 40.19 | 0.39 |
| Seas_4 | 123.85 | 18.99 | 123.14 | 191.89 | 114.47 | 71.35 | Seas_4 | 18.99 | 120.88 | 122.42 | 87.43 | 59.27 |
| Annual | 1849.68 | 42.51 | 457.47 | 733.25 | 770.73 | 773.30 | Annual | 42.51 | 441.54 | 444.77 | 309.61 | 231.32 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.68.

Table B.68. The percentage difference between calculation results on PCB-28 mass flows transported from vegetation to soil: litterfall obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_2 | CliMoChem_2_3 | SimpleBox_3.0_1 | SimpleBox_3.0_2 | SimpleBox_3.12_2 | SimpleBox_3.0_3 | SimpleBox_3.12_3 |
|---------------|---------------|---------------|-----------------|-----------------|------------------|-----------------|------------------|
| Jan | | | -18.7% | -9.1% | -9.1% | -43.8% | 21.9% |
| Feb | | | -43.7% | -18.4% | -18.3% | -31.0% | 137.9% |
| Mar | | | -56.1% | -24.9% | -24.8% | -31.4% | 173.2% |
| Seas_1 | -59.9% | -85.3% | -30.6% | -20.2% | -20.1% | -34.3% | 110.4% |
| Apr | | | -58.8% | -28.7% | -28.5% | -32.7% | 182.9% |
| May | | | -54.3% | -30.7% | -30.4% | -33.6% | 184.5% |
| Jun | | | -47.2% | -31.7% | -31.4% | -34.2% | 183.6% |
| Seas_2 | -83.0% | -86.6% | -54.7% | -30.4% | -30.2% | -33.5% | 183.7% |
| Jul | | | -41.3% | -32.3% | -31.9% | -34.5% | 182.1% |
| Aug | | | -37.6% | -32.7% | -32.2% | -34.7% | 180.4% |
| Sep | | | -35.6% | -32.9% | -32.3% | -34.8% | 178.7% |
| Seas_3 | -92.5% | -90.3% | -38.3% | -32.6% | -32.2% | -34.6% | 180.4% |
| Oct | | | -34.6% | -33.0% | -32.4% | -34.8% | 177.1% |
| Nov | | | -34.2% | -33.1% | -32.5% | -34.9% | 175.6% |
| Dec | | | -33.2% | -33.2% | -32.5% | -35.0% | 174.1% |
| Seas_4 | -87.1% | -75.7% | -34.0% | -33.1% | -32.5% | -34.9% | 175.6% |
| Annual | -86.6% | -84.3% | -34.4% | -30.2% | -29.8% | -34.4% | 162.6% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

B.4.3. Comparison of calculated values of PCB-28 mass flows transported from the atmosphere to water

Dry deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to water: dry deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.69.

Monthly values of PCB-28 mass flows transported from the atmosphere to water: dry deposition calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.97 a and b, respectively.

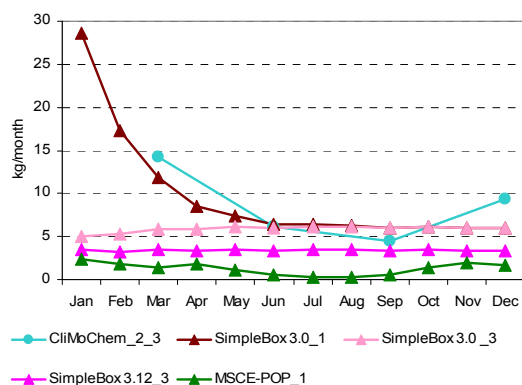


Fig. B.97a. PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

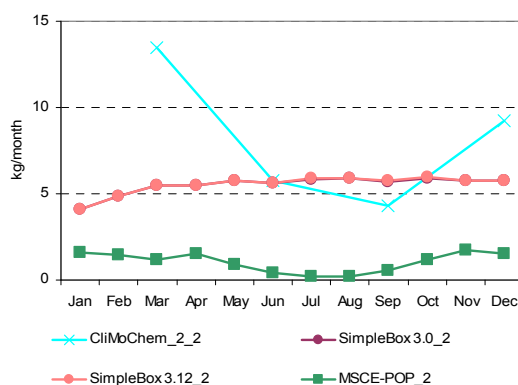


Fig. B.97b. PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to water: dry deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.70.

Monthly values of PCB-28 mass flows transported from the atmosphere to water: dry deposition calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.98 a and b, respectively.

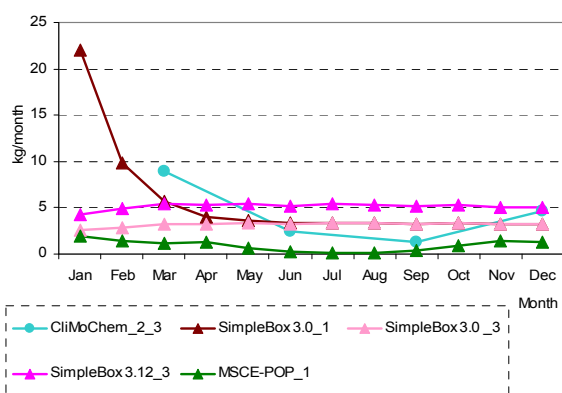


Fig. B.98a. PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

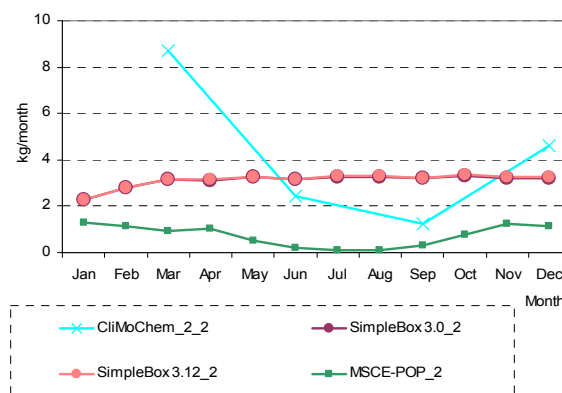


Fig. B.98b. PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero initial conditions

Table B.69. Calculation results: PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|--------------|---|------------------------------|-------------------------------|--------------|--------------|---------------|--|------------------------------|-------------------------------|--------------|--------------|--------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 28.54 | 2.39 | | 5.00 | 3.46 | 9.85 | 12.51 | Jan | | 4.11 | 4.11 | 1.60 | 3.27 | 1.45 |
| Feb | 17.28 | 1.77 | | 5.34 | 3.23 | 6.91 | 7.07 | Feb | | 4.86 | 4.86 | 1.44 | 3.72 | 1.97 |
| Mar | 11.85 | 1.45 | | 5.92 | 3.46 | 5.67 | 4.51 | Mar | | 5.51 | 5.51 | 1.20 | 4.07 | 2.49 |
| Seas_1 | 57.68 | 5.61 | 42.66 | 16.27 | 10.15 | 26.47 | 22.59 | Seas_1 | 40.35 | 14.47 | 14.47 | 4.24 | 18.38 | 15.42 |
| Apr | 8.47 | 1.81 | | 5.84 | 3.35 | 4.87 | 2.92 | Apr | | 5.49 | 5.49 | 1.55 | 4.18 | 2.27 |
| May | 7.35 | 1.06 | | 6.09 | 3.46 | 4.49 | 2.80 | May | | 5.76 | 5.77 | 0.90 | 4.14 | 2.81 |
| Jun | 6.48 | 0.50 | | 5.93 | 3.35 | 4.07 | 2.74 | Jun | | 5.63 | 5.64 | 0.43 | 3.90 | 3.01 |
| Seas_2 | 22.30 | 3.37 | 18.39 | 17.86 | 10.15 | 14.41 | 7.58 | Seas_2 | 17.36 | 16.88 | 16.90 | 2.88 | 13.51 | 7.09 |
| Jul | 6.40 | 0.28 | | 6.16 | 3.46 | 4.07 | 2.86 | Jul | | 5.86 | 5.87 | 0.24 | 3.99 | 3.25 |
| Aug | 6.25 | 0.24 | | 6.18 | 3.46 | 4.03 | 2.84 | Aug | | 5.89 | 5.90 | 0.21 | 4.00 | 3.28 |
| Sep | 5.99 | 0.63 | | 6.00 | 3.35 | 3.99 | 2.57 | Sep | | 5.72 | 5.73 | 0.55 | 4.00 | 2.99 |
| Seas_3 | 18.64 | 1.15 | 13.51 | 18.33 | 10.26 | 12.38 | 7.19 | Seas_3 | 12.87 | 17.46 | 17.50 | 1.00 | 12.21 | 7.78 |
| Oct | 6.16 | 1.36 | | 6.21 | 3.46 | 4.30 | 2.34 | Oct | | 5.93 | 5.95 | 1.21 | 4.36 | 2.73 |
| Nov | 5.95 | 1.89 | | 6.02 | 3.35 | 4.30 | 2.03 | Nov | | 5.75 | 5.78 | 1.71 | 4.41 | 2.34 |
| Dec | 5.95 | 1.62 | | 6.03 | 3.35 | 4.24 | 2.15 | Dec | | 5.77 | 5.79 | 1.50 | 4.35 | 2.47 |
| Seas_4 | 18.06 | 4.87 | 28.21 | 18.26 | 10.15 | 15.91 | 8.89 | Seas_4 | 27.61 | 17.45 | 17.51 | 4.42 | 16.75 | 9.51 |
| Annual | 116.67 | 15.00 | 102.76 | 70.72 | 40.71 | 69.17 | 42.22 | Annual | 98.19 | 66.26 | 66.40 | 12.54 | 60.85 | 35.53 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.70. Calculation results: PCB-28 mass flows transported from the atmosphere to water: dry deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|--------------|---|------------------|-------------------|--------------|--------------|---------------|--|------------------|-------------------|-------------|--------------|--------------|
| | SimpleBox 3.0_1a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3a | SimpleBox 3.12_3a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2a | SimpleBox 3.12_2a | MSCE-POP_2 | | |
| Jan | 22.01 | 1.96 | | 2.56 | 4.21 | 7.68 | 9.60 | Jan | | 2.28 | 2.28 | 1.32 | 1.96 | 0.56 |
| Feb | 9.89 | 1.42 | | 2.91 | 4.90 | 4.78 | 3.69 | Feb | | 2.81 | 2.81 | 1.16 | 2.26 | 0.95 |
| Mar | 5.67 | 1.11 | | 3.25 | 5.42 | 3.86 | 2.13 | Mar | | 3.16 | 3.17 | 0.93 | 2.42 | 1.30 |
| Seas_1 | 37.57 | 4.49 | 26.83 | 8.72 | 14.53 | 18.43 | 13.61 | Seas_1 | 26.13 | 8.25 | 8.26 | 3.41 | 11.51 | 10.01 |
| Apr | 3.98 | 1.24 | | 3.20 | 5.28 | 3.42 | 1.69 | Apr | | 3.12 | 3.13 | 1.06 | 2.44 | 1.19 |
| May | 3.63 | 0.59 | | 3.33 | 5.44 | 3.25 | 2.00 | May | | 3.25 | 3.27 | 0.50 | 2.34 | 1.59 |
| Jun | 3.36 | 0.27 | | 3.23 | 5.24 | 3.02 | 2.05 | Jun | | 3.16 | 3.19 | 0.23 | 2.19 | 1.70 |
| Seas_2 | 10.97 | 2.10 | 7.41 | 9.75 | 15.96 | 9.24 | 5.07 | Seas_2 | 7.32 | 9.54 | 9.59 | 1.79 | 7.06 | 3.67 |
| Jul | 3.42 | 0.13 | | 3.35 | 5.38 | 3.07 | 2.17 | Jul | | 3.28 | 3.31 | 0.12 | 2.23 | 1.84 |
| Aug | 3.40 | 0.12 | | 3.35 | 5.35 | 3.05 | 2.17 | Aug | | 3.29 | 3.32 | 0.10 | 2.24 | 1.85 |
| Sep | 3.28 | 0.34 | | 3.25 | 5.14 | 3.00 | 1.98 | Sep | | 3.19 | 3.23 | 0.30 | 2.24 | 1.68 |
| Seas_3 | 10.11 | 0.59 | 3.72 | 9.95 | 15.87 | 8.05 | 5.99 | Seas_3 | 3.67 | 9.76 | 9.86 | 0.52 | 5.95 | 4.63 |
| Oct | 3.39 | 0.88 | | 3.37 | 5.28 | 3.23 | 1.80 | Oct | | 3.30 | 3.34 | 0.79 | 2.48 | 1.47 |
| Nov | 3.28 | 1.39 | | 3.26 | 5.09 | 3.25 | 1.51 | Nov | | 3.20 | 3.25 | 1.26 | 2.57 | 1.13 |
| Dec | 3.27 | 1.24 | | 3.27 | 5.06 | 3.21 | 1.56 | Dec | | 3.21 | 3.25 | 1.15 | 2.54 | 1.20 |
| Seas_4 | 9.94 | 3.51 | 13.95 | 9.89 | 15.43 | 10.54 | 4.63 | Seas_4 | 13.89 | 9.71 | 9.84 | 3.20 | 9.16 | 4.42 |
| Annual | 68.59 | 10.69 | 51.91 | 38.32 | 61.79 | 46.26 | 22.91 | Annual | 51.01 | 37.26 | 37.55 | 8.91 | 33.68 | 17.72 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.71.

Table B.71. The percentage difference between calculation results on PCB-28 mass flows transported from the atmosphere to water: dry deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_2 | CliMoChem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0_3 | SimpleBox 3.12_3 | MSCE-POP_1 | MSCE-POP_2 |
|---------------|---------------|---------------|-----------------|-----------------|------------------|-----------------|------------------|---------------|---------------|
| Jan | | | -22.9% | -44.5% | -44.4% | -48.9% | 21.8% | -18.0% | -17.5% |
| Feb | | | -42.8% | -42.2% | -42.2% | -45.5% | 51.4% | -19.8% | -19.4% |
| Mar | | | -52.1% | -42.5% | -42.4% | -45.1% | 56.9% | -23.4% | -22.9% |
| Seas_1 | -35.2% | -37.1% | -34.9% | -43.0% | -42.9% | -46.4% | 43.2% | -20.0% | -19.7% |
| Apr | | | -53.0% | -43.1% | -42.9% | -45.3% | 57.9% | -31.5% | -31.6% |
| May | | | -50.6% | -43.5% | -43.3% | -45.4% | 57.4% | -44.1% | -44.2% |
| Jun | | | -48.1% | -43.8% | -43.5% | -45.6% | 56.5% | -47.1% | -47.1% |
| Seas_2 | -57.9% | -59.7% | -50.8% | -43.5% | -43.2% | -45.4% | 57.3% | -37.8% | -37.9% |
| Jul | | | -46.5% | -44.0% | -43.6% | -45.6% | 55.6% | -52.3% | -52.1% |
| Aug | | | -45.6% | -44.1% | -43.7% | -45.7% | 54.6% | -51.9% | -51.2% |
| Sep | | | -45.2% | -44.2% | -43.8% | -45.8% | 53.7% | -45.8% | -45.6% |
| Seas_3 | -71.5% | -72.5% | -45.8% | -44.1% | -43.7% | -45.7% | 54.6% | -48.7% | -48.3% |
| Oct | | | -45.0% | -44.3% | -43.8% | -45.8% | 52.8% | -35.1% | -35.0% |
| Nov | | | -44.9% | -44.4% | -43.8% | -45.8% | 52.0% | -26.5% | -26.3% |
| Dec | | | -45.0% | -44.4% | -43.8% | -45.9% | 51.2% | -23.5% | -23.3% |
| Seas_4 | -49.7% | -50.5% | -45.0% | -44.4% | -43.8% | -45.8% | 52.0% | -27.9% | -27.7% |
| Annual | -48.1% | -49.5% | -41.2% | -43.8% | -43.4% | -45.8% | 51.8% | -28.7% | -29.0% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

Wet deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to water: wet deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.72.

Monthly values of PCB-28 mass flows transported from the atmosphere to water: wet deposition calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.99 a and b, respectively.

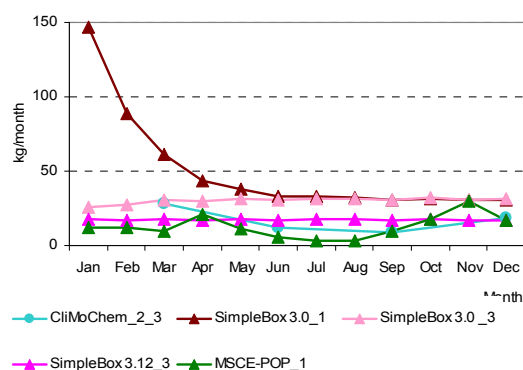


Fig. B.99a. PCB-28 mass flows transported from the atmosphere to water: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

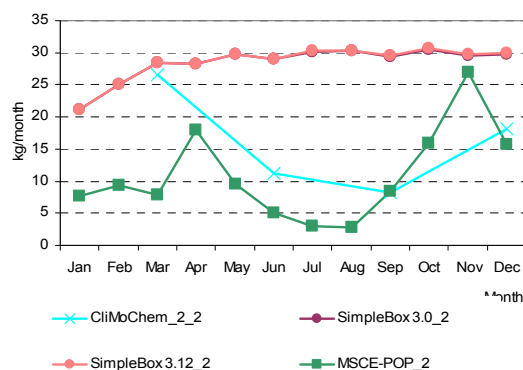


Fig. B.99b. PCB-28 mass flows transported from the atmosphere to water: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to water: wet deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.73.

Monthly values of PCB-28 mass flows transported from the atmosphere to water: wet deposition calculated by all participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.100 a and b, respectively.

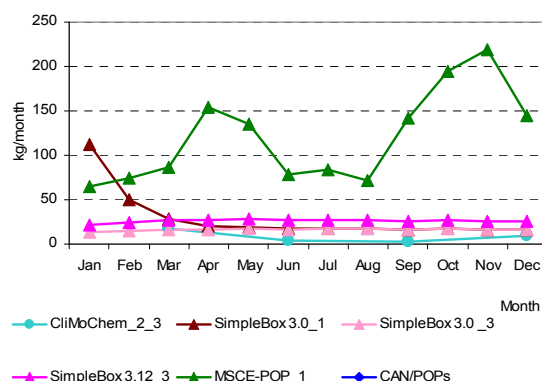


Fig. B.100a. PCB-28 mass flows transported from the atmosphere to water: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions

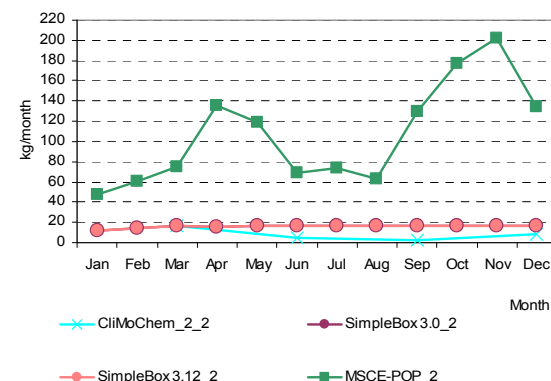


Fig. B.100b. PCB-28 mass flows transported from the atmosphere to water: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.74.

Gaseous exchange

Reference data set. Calculation results on PCB-28 mass flows between the atmosphere and water: gaseous exchange calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.75.

Monthly values of PCB-28 mass flows between the atmosphere and water: gaseous exchange calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.101 a and b, respectively.

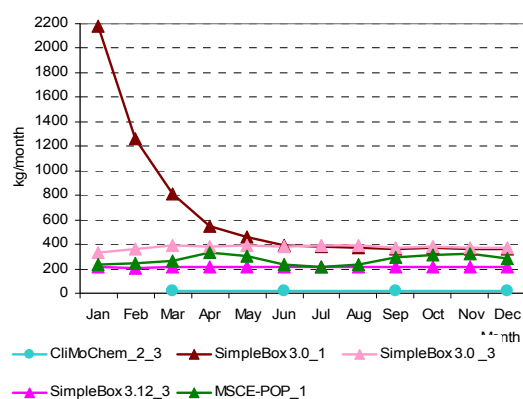


Fig. B.101a. PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

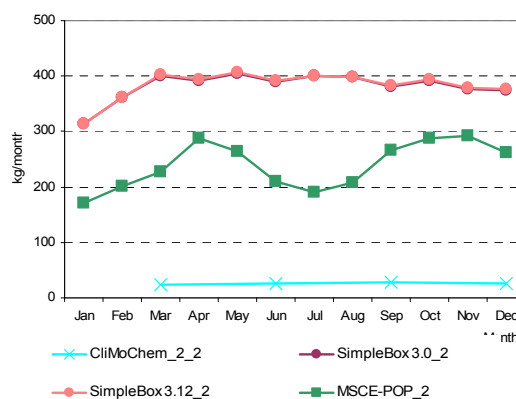


Fig. B.101b. PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Table B.72. Calculation results: PCB-28 mass flows between the atmosphere and water: wet deposition (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|---------------|---|-----------------|-------------------------------|---------------|---------------|---------------|--|------------------------------|-------------------------------|---------------|---------------|---------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 147.13 | 12.00 | | 25.79 | 17.82 | 50.69 | 64.54 | Jan | | 21.17 | 21.17 | 7.76 | 16.70 | 7.74 |
| Feb | 89.08 | 11.70 | | 27.54 | 16.67 | 36.25 | 35.84 | Feb | | 25.03 | 25.04 | 9.33 | 19.80 | 9.07 |
| Mar | 61.10 | 9.28 | | 30.52 | 17.82 | 29.68 | 22.69 | Mar | | 28.38 | 28.39 | 7.81 | 21.53 | 11.88 |
| Seas_1 | 297.30 | 32.98 | 84.57 | 83.85 | 52.31 | 110.20 | 106.86 | Seas_1 | 79.98 | 74.58 | 74.61 | 24.90 | 63.52 | 25.87 |
| Apr | 43.66 | 20.80 | | 30.09 | 17.25 | 27.95 | 11.79 | Apr | | 28.29 | 28.31 | 17.90 | 24.83 | 6.00 |
| May | 37.86 | 11.30 | | 31.41 | 17.82 | 24.60 | 12.18 | May | | 29.70 | 29.74 | 9.62 | 23.02 | 11.60 |
| Jun | 33.40 | 5.94 | | 30.59 | 17.25 | 21.79 | 12.70 | Jun | | 29.02 | 29.07 | 4.97 | 21.02 | 13.90 |
| Seas_2 | 114.92 | 38.04 | 35.73 | 92.08 | 52.31 | 66.62 | 35.20 | Seas_2 | 33.73 | 87.01 | 87.13 | 32.49 | 60.09 | 31.16 |
| Jul | 32.97 | 3.52 | | 31.74 | 17.82 | 21.51 | 13.82 | Jul | | 30.19 | 30.25 | 3.00 | 21.15 | 15.72 |
| Aug | 32.24 | 3.46 | | 31.85 | 17.82 | 21.34 | 13.68 | Aug | | 30.34 | 30.41 | 2.90 | 21.22 | 15.86 |
| Sep | 30.88 | 9.55 | | 30.90 | 17.25 | 22.14 | 10.58 | Sep | | 29.48 | 29.56 | 8.46 | 22.50 | 12.16 |
| Seas_3 | 96.09 | 16.53 | 26.08 | 94.50 | 52.89 | 57.22 | 37.23 | Seas_3 | 24.84 | 90.01 | 90.22 | 14.36 | 54.86 | 40.94 |
| Oct | 31.75 | 17.80 | | 32.00 | 17.82 | 24.84 | 8.12 | Oct | | 30.56 | 30.66 | 15.90 | 25.71 | 8.49 |
| Nov | 30.65 | 29.70 | | 31.03 | 17.25 | 27.16 | 6.63 | Nov | | 29.66 | 29.77 | 27.00 | 28.81 | 1.57 |
| Dec | 30.69 | 17.20 | | 31.08 | 17.25 | 24.05 | 7.89 | Dec | | 29.74 | 29.85 | 15.70 | 25.10 | 8.14 |
| Seas_4 | 93.09 | 64.70 | 55.43 | 94.12 | 52.31 | 71.93 | 20.30 | Seas_4 | 54.26 | 89.96 | 90.28 | 58.60 | 73.28 | 19.53 |
| Annual | 601.40 | 152.25 | 201.81 | 364.54 | 209.83 | 305.97 | 183.33 | Annual | 192.82 | 341.56 | 342.24 | 130.35 | 251.74 | 107.19 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.73. Calculation results: PCB-28 mass flows between the atmosphere and water: wet deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | m | σ | Month | Results obtained on the basis of zero initial concentrations | | | | m | σ |
|---------------|---|----------------|---|------------------|-------------------|---------------|---------------|---------------|--|------------------|-------------------|----------------|---------------|---------------|
| | SimpleBox 3.0_1a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3a | SimpleBox 3.12_3a | | | | CliMoChem_2_2 | SimpleBox 3.0_2a | SimpleBox 3.12_2a | MSCE-POP_2 | | |
| Jan | 112.23 | 64.40 | | 13.04 | 21.48 | 52.79 | 45.56 | Jan | | 11.63 | 11.64 | 48.00 | 23.76 | 21.00 |
| Feb | 50.43 | 74.20 | | 14.84 | 24.96 | 41.11 | 26.66 | Feb | | 14.30 | 14.32 | 61.10 | 29.91 | 27.01 |
| Mar | 28.93 | 86.00 | | 16.57 | 27.66 | 39.79 | 31.30 | Mar | | 16.13 | 16.18 | 74.50 | 35.60 | 33.69 |
| Seas_1 | 191.59 | 224.60 | 51.39 | 44.45 | 74.10 | 117.22 | 84.48 | Seas_1 | 50.04 | 42.07 | 42.13 | 183.60 | 79.46 | 69.53 |
| Apr | 20.28 | 154.00 | | 16.29 | 26.93 | 54.38 | 66.56 | Apr | | 15.92 | 15.98 | 136.00 | 55.97 | 69.31 |
| May | 18.51 | 135.00 | | 16.96 | 27.75 | 49.55 | 57.16 | May | | 16.59 | 16.68 | 119.00 | 50.76 | 59.10 |
| Jun | 17.15 | 78.60 | | 16.47 | 26.70 | 34.73 | 29.62 | Jun | | 16.13 | 16.25 | 69.40 | 33.93 | 30.72 |
| Seas_2 | 55.93 | 367.60 | 14.06 | 49.72 | 81.38 | 113.74 | 143.93 | Seas_2 | 13.89 | 48.65 | 48.91 | 324.40 | 108.96 | 144.56 |
| Jul | 17.45 | 84.10 | | 17.07 | 27.42 | 36.51 | 32.09 | Jul | | 16.73 | 16.87 | 74.10 | 35.90 | 33.08 |
| Aug | 17.35 | 71.60 | | 17.11 | 27.26 | 33.33 | 25.95 | Aug | | 16.77 | 16.94 | 63.00 | 32.24 | 26.64 |
| Sep | 16.74 | 142.00 | | 16.58 | 26.22 | 50.39 | 61.24 | Sep | | 16.27 | 16.45 | 130.00 | 54.24 | 65.61 |
| Seas_3 | 51.55 | 297.70 | 7.04 | 50.76 | 80.90 | 97.59 | 114.93 | Seas_3 | 6.95 | 49.77 | 50.25 | 267.10 | 93.52 | 117.49 |
| Oct | 17.28 | 194.00 | | 17.16 | 26.94 | 63.84 | 86.89 | Oct | | 16.84 | 17.05 | 177.00 | 70.30 | 92.41 |
| Nov | 16.70 | 219.00 | | 16.63 | 25.93 | 69.57 | 99.72 | Nov | | 16.33 | 16.55 | 202.00 | 78.29 | 107.13 |
| Dec | 16.69 | 144.00 | | 16.65 | 25.79 | 50.78 | 62.29 | Dec | | 16.35 | 16.59 | 134.00 | 55.65 | 67.86 |
| Seas_4 | 50.67 | 557.00 | 26.62 | 50.44 | 78.66 | 152.68 | 226.77 | Seas_4 | 26.49 | 49.52 | 50.19 | 513.00 | 159.80 | 235.72 |
| Annual | 349.74 | 1446.90 | 99.11 | 195.37 | 315.05 | 481.23 | 548.90 | Annual | 97.37 | 190.01 | 191.49 | 1288.10 | 441.74 | 565.95 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.74. The percentage difference between calculation results on PCB-28 mass flows between the atmosphere and water: wet deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMo Chem_2_2 | CliMo Chem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0 3 | SimpleBox 3.12_3 | MSCE-POP_1 | MSCE-POP_2 |
|---------------|-------------------|-------------------|--------------------|--------------------|------------------|--------------------|---------------------|----------------|----------------|
| Jan | | | -23.7% | -45.1% | -45.0% | -49.5% | 20.5% | 436.7% | 518.6% |
| Feb | | | -43.4% | -42.9% | -42.8% | -46.1% | 49.7% | 534.2% | 554.9% |
| Mar | | | -52.7% | -43.1% | -43.0% | -45.7% | 55.2% | 826.7% | 853.9% |
| Seas_1 | -37.4% | -39.2% | -35.6% | -43.6% | -43.5% | -47.0% | 41.6% | 581.0% | 637.3% |
| Apr | | | -53.6% | -43.7% | -43.5% | -45.8% | 56.2% | 640.4% | 659.8% |
| May | | | -51.1% | -44.1% | -43.9% | -46.0% | 55.7% | 1094.7% | 1137.0% |
| Jun | | | -48.7% | -44.4% | -44.1% | -46.1% | 54.8% | 1223.2% | 1296.4% |
| Seas_2 | -58.8% | -60.6% | -51.3% | -44.1% | -43.9% | -46.0% | 55.6% | 866.4% | 898.5% |
| Jul | | | -47.1% | -44.6% | -44.2% | -46.2% | 53.9% | 2289.2% | 2370.0% |
| Aug | | | -46.2% | -44.7% | -44.3% | -46.3% | 52.9% | 1969.4% | 2072.4% |
| Sep | | | -45.8% | -44.8% | -44.4% | -46.3% | 52.0% | 1386.9% | 1436.6% |
| Seas_3 | -72.0% | -73.0% | -46.4% | -44.7% | -44.3% | -46.3% | 53.0% | 1701.0% | 1760.0% |
| Oct | | | -45.6% | -44.9% | -44.4% | -46.4% | 51.2% | 989.9% | 1013.2% |
| Nov | | | -45.5% | -45.0% | -44.4% | -46.4% | 50.3% | 637.4% | 648.1% |
| Dec | | | -45.6% | -45.0% | -44.4% | -46.4% | 49.6% | 737.2% | 753.5% |
| Seas_4 | -51.2% | -52.0% | -45.6% | -45.0% | -44.4% | -46.4% | 50.4% | 760.9% | 775.4% |
| Annual | -49.5% | -50.9% | -41.8% | -44.4% | -44.0% | -46.4% | 50.1% | 850.3% | 888.2% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 – MSCE-POP results calculated on the basis of initial concentrations given as input data

MSCE-POP_2 – MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 – SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a – SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Own/alternative data set. Calculation results on PCB-28 mass flows between the atmosphere and water: gaseous exchange calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.76.

Monthly values of PCB-28 mass flows between the atmosphere and water: gaseous exchange calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.102 a and b, respectively. Seasonal variations of gaseous exchange flows between the atmosphere and water calculated by the participating models on the basis of “own or alternative” data set and non-zero initial conditions are also shown in Fig. B.102c in more detail.

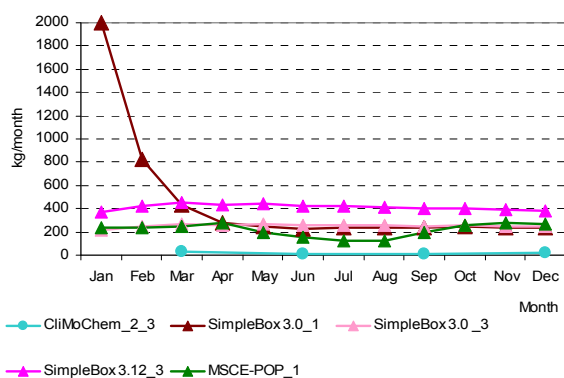


Fig. B.102a. PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

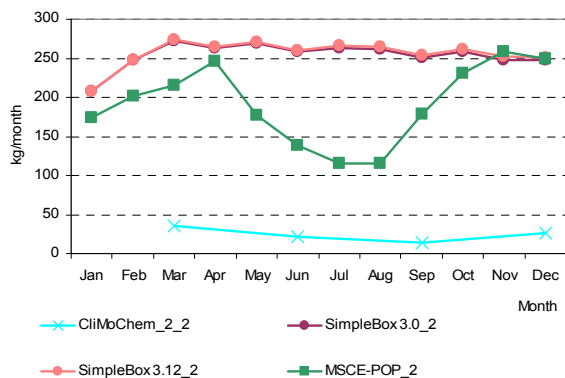


Fig. B.102b. PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

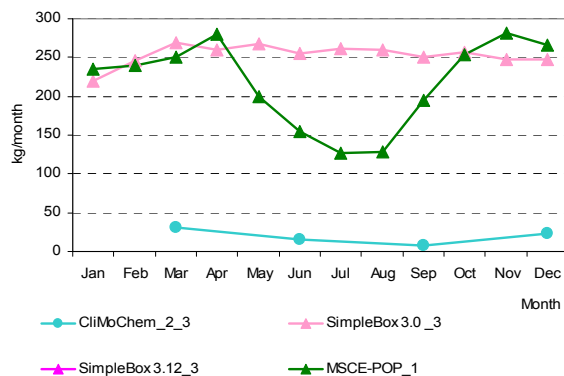


Fig. B.102c. PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (models with low values)

Comparison between results obtained on the basis of two data sets. A comparison of the calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.77.

Table B.75. Calculation results: PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | <i>σ</i> | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | <i>σ</i> |
|---------------|---|----------------|---|-----------------|-------------------------------|----------------|----------------|---------------|--|------------------------------|-------------------------------|----------------|----------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 2180.81 | 233.00 | | 335.01 | 218.81 | 741.91 | 960.66 | Jan | | 314.10 | 314.10 | 171.00 | 266.40 | 82.62 |
| Feb | 1256.60 | 241.00 | | 357.00 | 204.70 | 514.82 | 498.76 | Feb | | 361.41 | 361.50 | 202.00 | 308.30 | 92.06 |
| Mar | 814.13 | 262.00 | | 391.14 | 218.81 | 421.52 | 271.79 | Mar | | 401.47 | 401.70 | 227.00 | 343.39 | 100.80 |
| Seas_1 | 4251.54 | 736.00 | 63.87 | 1083.16 | 642.32 | 1355.38 | 1659.96 | Seas_1 | 73.94 | 1076.98 | 1077.31 | 600.00 | 707.06 | 478.27 |
| Apr | 549.93 | 328.00 | | 380.95 | 211.75 | 367.66 | 140.57 | Apr | | 392.83 | 393.20 | 288.00 | 358.01 | 60.63 |
| May | 457.83 | 301.00 | | 393.04 | 218.81 | 342.67 | 104.69 | May | | 405.55 | 406.10 | 265.00 | 358.88 | 81.30 |
| Jun | 394.81 | 237.00 | | 378.63 | 211.75 | 305.55 | 94.52 | Jun | | 390.28 | 390.98 | 210.00 | 330.42 | 104.29 |
| Seas_2 | 1402.57 | 866.00 | 58.61 | 1152.63 | 642.32 | 824.43 | 515.59 | Seas_2 | 79.52 | 1188.66 | 1190.28 | 763.00 | 805.36 | 524.00 |
| Jul | 385.85 | 215.00 | | 389.08 | 218.81 | 302.19 | 98.49 | Jul | | 400.43 | 401.30 | 191.00 | 330.91 | 121.17 |
| Aug | 376.09 | 231.00 | | 386.88 | 218.81 | 303.20 | 90.64 | Aug | | 397.44 | 398.48 | 207.00 | 334.31 | 110.25 |
| Sep | 360.08 | 294.00 | | 372.44 | 211.75 | 309.57 | 73.74 | Sep | | 381.95 | 383.09 | 266.00 | 343.68 | 67.27 |
| Seas_3 | 1122.01 | 740.00 | 48.51 | 1148.40 | 649.38 | 741.66 | 446.96 | Seas_3 | 83.08 | 1179.83 | 1182.88 | 664.00 | 777.44 | 523.23 |
| Oct | 370.55 | 317.00 | | 383.00 | 218.81 | 322.34 | 74.72 | Oct | | 392.14 | 393.48 | 288.00 | 357.87 | 60.52 |
| Nov | 358.13 | 318.00 | | 369.05 | 211.75 | 314.23 | 71.76 | Nov | | 377.27 | 378.72 | 292.00 | 349.33 | 49.65 |
| Dec | 361.01 | 279.00 | | 367.61 | 211.75 | 304.84 | 74.00 | Dec | | 375.31 | 376.90 | 261.00 | 337.73 | 66.46 |
| Seas_4 | 1089.69 | 914.00 | 61.18 | 1119.65 | 642.32 | 765.37 | 436.98 | Seas_4 | 74.69 | 1144.73 | 1149.09 | 841.00 | 802.38 | 506.11 |
| Annual | 7865.80 | 3256.00 | 232.16 | 4503.83 | 2576.34 | 3686.83 | 2805.57 | Annual | 311.23 | 4590.19 | 4599.56 | 2868.00 | 3092.24 | 2024.86 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.76. Calculation results: PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|----------------|---|------------------------------|-------------------------------|----------------|----------------|---------------|--|-----------------|-------------------------------|----------------|----------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE- POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 1997.44 | 235.00 | | 219.69 | 370.72 | 705.71 | 863.82 | Jan | | 207.66 | 207.73 | 174.00 | 196.46 | 19.45 |
| Feb | 828.61 | 240.00 | | 246.29 | 422.09 | 434.25 | 276.12 | Feb | | 247.48 | 247.81 | 202.00 | 232.43 | 26.35 |
| Mar | 428.93 | 250.00 | | 269.80 | 457.42 | 351.54 | 106.76 | Mar | | 272.51 | 273.24 | 216.00 | 253.92 | 32.84 |
| Seas_1 | 3254.98 | 725.00 | 94.57 | 735.79 | 1250.23 | 1212.11 | 1213.24 | Seas_1 | 105.22 | 727.66 | 728.77 | 592.00 | 538.41 | 295.85 |
| Apr | 278.91 | 280.00 | | 260.55 | 436.28 | 313.94 | 82.05 | Apr | | 263.22 | 264.32 | 246.00 | 257.84 | 10.27 |
| May | 248.87 | 200.00 | | 266.88 | 441.39 | 289.28 | 105.27 | May | | 269.30 | 270.84 | 177.00 | 239.05 | 53.74 |
| Jun | 231.60 | 154.00 | | 255.82 | 418.27 | 264.92 | 111.07 | Jun | | 257.79 | 259.66 | 138.00 | 218.48 | 69.71 |
| Seas_2 | 759.38 | 634.00 | 46.17 | 783.25 | 1295.94 | 703.75 | 446.48 | Seas_2 | 64.32 | 790.30 | 794.82 | 561.00 | 552.61 | 343.35 |
| Jul | 238.45 | 127.00 | | 262.08 | 423.97 | 262.87 | 122.49 | Jul | | 263.76 | 266.08 | 115.00 | 214.95 | 86.56 |
| Aug | 239.80 | 128.00 | | 260.11 | 416.64 | 261.14 | 118.83 | Aug | | 261.48 | 264.18 | 116.00 | 213.89 | 84.78 |
| Sep | 233.67 | 195.00 | | 250.14 | 397.08 | 268.97 | 88.48 | Sep | | 251.22 | 254.16 | 178.00 | 227.79 | 43.15 |
| Seas_3 | 711.92 | 450.00 | 24.54 | 772.32 | 1237.69 | 639.29 | 445.76 | Seas_3 | 42.12 | 776.46 | 784.41 | 409.00 | 503.00 | 353.66 |
| Oct | 242.94 | 253.00 | | 257.11 | 404.74 | 289.45 | 77.09 | Oct | | 258.00 | 261.39 | 231.00 | 250.13 | 16.65 |
| Nov | 236.29 | 281.00 | | 247.69 | 386.91 | 287.97 | 68.63 | Nov | | 248.37 | 251.97 | 259.00 | 253.11 | 5.41 |
| Dec | 237.20 | 266.00 | | 246.75 | 382.70 | 283.16 | 67.43 | Dec | | 247.28 | 251.19 | 250.00 | 249.49 | 2.01 |
| Seas_4 | 716.43 | 800.00 | 69.33 | 751.54 | 1174.34 | 702.33 | 398.64 | Seas_4 | 78.72 | 753.64 | 764.55 | 740.00 | 584.23 | 337.16 |
| Annual | 5442.71 | 2609.00 | 234.60 | 3042.90 | 4958.20 | 3257.48 | 2077.98 | Annual | 290.38 | 3048.06 | 3072.55 | 2302.00 | 2178.25 | 1308.40 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.77. Comparison of the calculation results on PCB-28 mass flows between the atmosphere and water: gaseous exchange (kg/month) obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_3 | | SimpleBox 3.0_1 | | SimpleBox 3.0_2 | | SimpleBox 3.12_2 | | SimpleBox 3.0_3 | | SimpleBox 3.12_3 | | MSCE-POP_1 | | MSCE-POP_2 | | CliMoChem_2_2 | |
|---------------|---------------|---------------|-----------------|----------------|-----------------|----------------|------------------|----------------|-----------------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|
| | ref | own | ref | alt | ref | alt | ref | alt | ref | alt | ref | alt | ref | own | ref | own | ref | own |
| Jan | | | 2180.81 | 1997.44 | 314.10 | 207.66 | 314.10 | 207.73 | 335.01 | 219.69 | 218.81 | 370.72 | 233.00 | 235.00 | 171.00 | 174.00 | | |
| Feb | | | 1256.60 | 828.61 | 361.41 | 247.48 | 361.50 | 247.81 | 357.00 | 246.29 | 204.70 | 422.09 | 241.00 | 240.00 | 202.00 | 202.00 | | |
| Mar | | | 814.13 | 428.93 | 401.47 | 272.51 | 401.70 | 273.24 | 391.14 | 269.80 | 218.81 | 457.42 | 262.00 | 250.00 | 227.00 | 216.00 | | |
| Seas_1 | 63.87 | 94.57 | 4251.54 | 3254.98 | 1076.98 | 727.66 | 1077.31 | 728.77 | 1083.16 | 735.79 | 642.32 | 1250.23 | 736.00 | 725.00 | 600.00 | 592.00 | 73.94 | 105.22 |
| Apr | | | 549.93 | 278.91 | 392.83 | 263.22 | 393.20 | 264.32 | 380.95 | 260.55 | 211.75 | 436.28 | 328.00 | 280.00 | 288.00 | 246.00 | | |
| May | | | 457.83 | 248.87 | 405.55 | 269.30 | 406.10 | 270.84 | 393.04 | 266.88 | 218.81 | 441.39 | 301.00 | 200.00 | 265.00 | 177.00 | | |
| Jun | | | 394.81 | 231.60 | 390.28 | 257.79 | 390.98 | 259.66 | 378.63 | 255.82 | 211.75 | 418.27 | 237.00 | 154.00 | 210.00 | 138.00 | | |
| Seas_2 | 58.61 | 46.17 | 1402.57 | 759.38 | 1188.66 | 790.30 | 1190.28 | 794.82 | 1152.63 | 783.25 | 642.32 | 1295.94 | 866.00 | 634.00 | 763.00 | 561.00 | 79.52 | 64.32 |
| Jul | | | 385.85 | 238.45 | 400.43 | 263.76 | 401.30 | 266.08 | 389.08 | 262.08 | 218.81 | 423.97 | 215.00 | 127.00 | 191.00 | 115.00 | | |
| Aug | | | 376.09 | 239.80 | 397.44 | 261.48 | 398.48 | 264.18 | 386.88 | 260.11 | 218.81 | 416.64 | 231.00 | 128.00 | 207.00 | 116.00 | | |
| Sep | | | 360.08 | 233.67 | 381.95 | 251.22 | 383.09 | 254.16 | 372.44 | 250.14 | 211.75 | 397.08 | 294.00 | 195.00 | 266.00 | 178.00 | | |
| Seas_3 | 48.51 | 24.54 | 1122.01 | 711.92 | 1179.83 | 776.46 | 1182.88 | 784.41 | 1148.40 | 772.32 | 649.38 | 1237.69 | 740.00 | 450.00 | 664.00 | 409.00 | 83.08 | 42.12 |
| Oct | | | 370.55 | 242.94 | 392.14 | 258.00 | 393.48 | 261.39 | 383.00 | 257.11 | 218.81 | 404.74 | 317.00 | 253.00 | 288.00 | 231.00 | | |
| Nov | | | 358.13 | 236.29 | 377.27 | 248.37 | 378.72 | 251.97 | 369.05 | 247.69 | 211.75 | 386.91 | 318.00 | 281.00 | 292.00 | 259.00 | | |
| Dec | | | 361.01 | 237.20 | 375.31 | 247.28 | 376.90 | 251.19 | 367.61 | 246.75 | 211.75 | 382.70 | 279.00 | 266.00 | 261.00 | 250.00 | | |
| Seas_4 | 61.18 | 69.33 | 1089.69 | 716.43 | 1144.73 | 753.64 | 1149.09 | 764.55 | 1119.65 | 751.54 | 642.32 | 1174.34 | 914.00 | 800.00 | 841.00 | 740.00 | 74.69 | 78.72 |
| Annual | 232.16 | 234.60 | 7865.80 | 5442.71 | 4590.19 | 3048.06 | 4599.56 | 3072.55 | 4503.83 | 3042.90 | 2576.34 | 4958.20 | 3256.00 | 2609.00 | 2868.00 | 2302.00 | 311.23 | 290.38 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

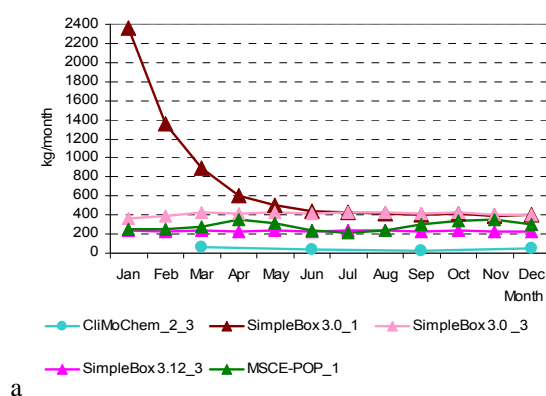
SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

Net mass flows between the atmosphere and water

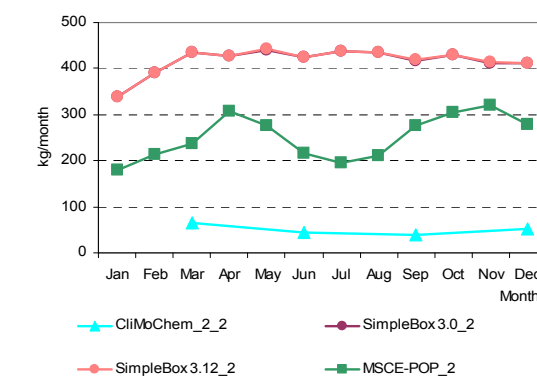
Net mass flows are equal to the total mass flows resulted from summing up of dry and wet depositions and gaseous exchange.

Reference data set. Calculation results on PCB-28 net mass flows PCB-28 between the atmosphere and water calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.78.

Monthly values of PCB-28 net mass flows PCB-28 net mass flows between the atmosphere and water (kg/month) calculated by the participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.103 a and b, respectively.



a



b

Fig. B.103a. PCB-28 net mass flows between the atmosphere and water (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

Fig. B.103b. PCB-28 net mass flows between the atmosphere and water (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Table B.78. Calculation results: PCB-28 net mass flows between the atmosphere and water (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | m | σ | Month | Results obtained on the basis of zero initial concentrations | | | | m | σ |
|---------------|---|----------------|---|------------------------------|-------------------------------|----------------|----------------|---------------|--|------------------------------|-------------------------------|----------------|----------------|----------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 2356.48 | 247.39 | | 365.81 | 240.09 | 802.44 | 1037.62 | Jan | | 339.38 | 339.39 | 180.36 | 286.37 | 91.81 |
| Feb | 1362.96 | 254.47 | | 389.88 | 224.60 | 557.98 | 541.45 | Feb | | 391.30 | 391.40 | 212.77 | 331.82 | 103.10 |
| Mar | 887.08 | 272.73 | | 427.58 | 240.09 | 456.87 | 298.24 | Mar | | 435.36 | 435.61 | 236.01 | 368.99 | 115.17 |
| Seas_1 | 4606.52 | 774.59 | 191.10 | 1183.27 | 704.78 | 1492.05 | 1776.39 | Seas_1 | 194.27 | 1166.03 | 1166.39 | 629.14 | 788.96 | 470.40 |
| Apr | 602.06 | 350.61 | | 416.87 | 232.35 | 400.47 | 154.55 | Apr | | 426.60 | 427.01 | 307.45 | 387.02 | 68.91 |
| May | 503.04 | 313.36 | | 430.55 | 240.09 | 371.76 | 117.53 | May | | 441.01 | 441.61 | 275.52 | 386.05 | 95.72 |
| Jun | 434.69 | 243.44 | | 415.15 | 232.35 | 331.41 | 108.37 | Jun | | 424.94 | 425.69 | 215.40 | 355.34 | 121.20 |
| Seas_2 | 1539.79 | 907.41 | 112.73 | 1262.57 | 704.78 | 905.46 | 547.40 | Seas_2 | 130.61 | 1292.55 | 1294.31 | 798.37 | 878.96 | 550.78 |
| Jul | 425.22 | 218.80 | | 426.98 | 240.09 | 327.77 | 113.87 | Jul | | 436.48 | 437.42 | 194.24 | 356.05 | 140.13 |
| Aug | 414.58 | 234.70 | | 424.91 | 240.09 | 328.57 | 105.39 | Aug | | 433.67 | 434.80 | 210.11 | 359.53 | 129.40 |
| Sep | 396.94 | 304.18 | | 409.33 | 232.35 | 335.70 | 83.36 | Sep | | 417.14 | 418.38 | 275.01 | 370.18 | 82.42 |
| Seas_3 | 1236.74 | 757.68 | 88.09 | 1261.22 | 712.53 | 811.25 | 479.35 | Seas_3 | 120.79 | 1287.29 | 1290.60 | 679.36 | 844.51 | 561.57 |
| Oct | 408.45 | 336.16 | | 421.21 | 240.09 | 351.48 | 83.17 | Oct | | 428.63 | 430.09 | 305.11 | 387.94 | 71.74 |
| Nov | 394.73 | 349.59 | | 406.10 | 232.35 | 345.69 | 79.41 | Nov | | 412.69 | 414.26 | 320.71 | 382.55 | 53.56 |
| Dec | 397.65 | 297.82 | | 404.72 | 232.35 | 333.13 | 83.05 | Dec | | 410.81 | 412.54 | 278.20 | 367.19 | 77.07 |
| Seas_4 | 1200.83 | 983.57 | 144.82 | 1232.03 | 704.78 | 853.21 | 448.66 | Seas_4 | 156.55 | 1252.14 | 1256.89 | 904.02 | 892.40 | 517.65 |
| Annual | 8583.88 | 3423.25 | 536.73 | 4939.10 | 2826.88 | 4061.97 | 2982.35 | Annual | 602.23 | 4998.01 | 5008.20 | 3010.89 | 3404.83 | 2091.16 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates;

B.4.4. Comparison of calculated values of PCB-28 mass flows transported from the atmosphere to vegetation

Dry deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.79.

Monthly values of PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.104 a and b, respectively.

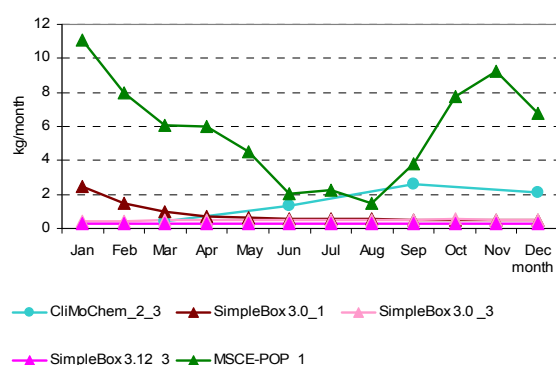


Fig. B.104a. PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

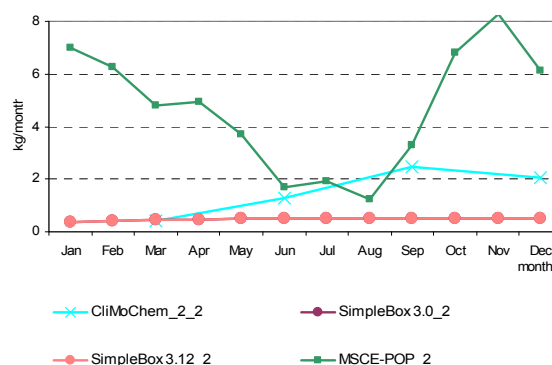


Fig. B.104b. PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.80.

Monthly values of PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.105 a and b, respectively.

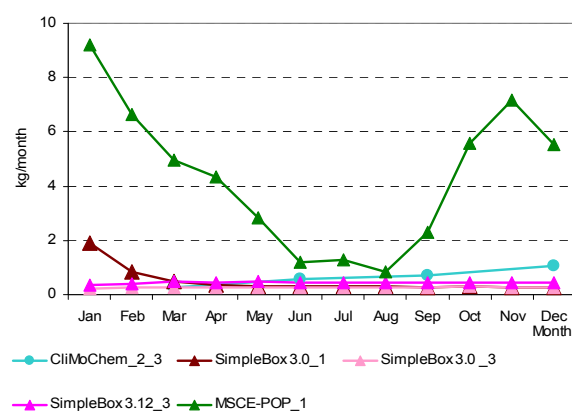


Fig. B.105a. PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

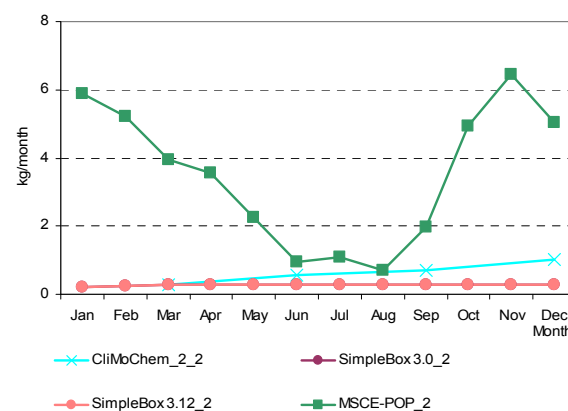


Fig. B.105b. PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

Table B.79 Calculation results: PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation.

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|--------------|---|------------------------------|-------------------------------|--------------|--------------|---------------|--|------------------------------|-------------------------------|--------------|--------------|--------------|
| | SimpleBox 3.0_1 | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 2.45 | 11.10 | | 0.43 | 0.30 | 3.57 | 5.12 | Jan | | 0.35 | 0.35 | 6.99 | 2.56 | 3.83 |
| Feb | 1.48 | 7.96 | | 0.46 | 0.28 | 2.54 | 3.65 | Feb | | 0.42 | 0.42 | 6.25 | 2.36 | 3.37 |
| Mar | 1.02 | 6.04 | | 0.51 | 0.30 | 1.96 | 2.73 | Mar | | 0.47 | 0.47 | 4.81 | 1.92 | 2.50 |
| Seas_1 | 4.94 | 25.10 | 1.32 | 1.39 | 0.87 | 6.72 | 10.40 | Seas_1 | 1.25 | 1.24 | 1.24 | 18.05 | 5.44 | 8.40 |
| Apr | 0.73 | 5.99 | | 0.50 | 0.29 | 1.88 | 2.75 | Apr | | 0.47 | 0.47 | 4.95 | 1.96 | 2.59 |
| May | 0.63 | 4.54 | | 0.52 | 0.30 | 1.50 | 2.03 | May | | 0.49 | 0.49 | 3.71 | 1.57 | 1.86 |
| Jun | 0.56 | 2.05 | | 0.51 | 0.29 | 0.85 | 0.81 | Jun | | 0.48 | 0.48 | 1.67 | 0.88 | 0.69 |
| Seas_2 | 1.91 | 12.58 | 4.13 | 1.53 | 0.87 | 4.20 | 4.84 | Seas_2 | 3.90 | 1.45 | 1.45 | 10.33 | 4.28 | 4.20 |
| Jul | 0.55 | 2.26 | | 0.53 | 0.30 | 0.91 | 0.91 | Jul | | 0.50 | 0.50 | 1.94 | 0.98 | 0.83 |
| Aug | 0.54 | 1.47 | | 0.53 | 0.30 | 0.71 | 0.52 | Aug | | 0.50 | 0.51 | 1.25 | 0.75 | 0.43 |
| Sep | 0.51 | 3.79 | | 0.51 | 0.29 | 1.28 | 1.68 | Sep | | 0.49 | 0.49 | 3.27 | 1.42 | 1.60 |
| Seas_3 | 1.60 | 7.52 | 7.84 | 1.57 | 0.88 | 3.88 | 3.48 | Seas_3 | 7.47 | 1.50 | 1.50 | 6.46 | 4.23 | 3.18 |
| Oct | 0.53 | 7.74 | | 0.53 | 0.30 | 2.27 | 3.65 | Oct | | 0.51 | 0.51 | 6.82 | 2.61 | 3.64 |
| Nov | 0.51 | 9.24 | | 0.52 | 0.29 | 2.64 | 4.40 | Nov | | 0.49 | 0.49 | 8.28 | 3.09 | 4.50 |
| Dec | 0.51 | 6.79 | | 0.52 | 0.29 | 2.03 | 3.18 | Dec | | 0.49 | 0.50 | 6.14 | 2.38 | 3.26 |
| Seas_4 | 1.55 | 23.77 | 6.33 | 1.56 | 0.87 | 6.82 | 9.73 | Seas_4 | 6.20 | 1.49 | 1.50 | 21.24 | 7.61 | 9.35 |
| Annual | 10.00 | 68.97 | 19.61 | 6.06 | 3.49 | 21.62 | 27.17 | Annual | 18.81 | 5.68 | 5.69 | 56.08 | 21.56 | 23.83 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.80. Calculation results: PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | m | σ | Month | Results obtained on the basis of zero initial concentrations | | | | m | σ |
|---------------|---|--------------|---|------------------------------|-------------------------------|--------------|--------------|---------------|--|------------------------------|-------------------------------|--------------|--------------|--------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMo Chem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMo Chem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | 1.89 | 9.22 | | 0.22 | 0.36 | 2.92 | 4.27 | Jan | | 0.20 | 0.20 | 5.88 | 2.09 | 3.28 |
| Feb | 0.85 | 6.64 | | 0.25 | 0.42 | 2.04 | 3.08 | Feb | | 0.24 | 0.24 | 5.23 | 1.90 | 2.88 |
| Mar | 0.49 | 4.96 | | 0.28 | 0.46 | 1.55 | 2.28 | Mar | | 0.27 | 0.27 | 3.95 | 1.50 | 2.12 |
| Seas_1 | 3.22 | 20.82 | 0.83 | 0.75 | 1.25 | 5.37 | 8.69 | Seas_1 | 0.81 | 0.71 | 0.71 | 15.06 | 4.32 | 7.16 |
| Apr | 0.34 | 4.33 | | 0.27 | 0.45 | 1.35 | 1.99 | Apr | | 0.27 | 0.27 | 3.55 | 1.36 | 1.89 |
| May | 0.31 | 2.81 | | 0.28 | 0.47 | 0.97 | 1.23 | May | | 0.28 | 0.28 | 2.26 | 0.94 | 1.14 |
| Jun | 0.29 | 1.20 | | 0.28 | 0.45 | 0.55 | 0.44 | Jun | | 0.27 | 0.27 | 0.97 | 0.50 | 0.40 |
| Seas_2 | 0.94 | 8.34 | 1.66 | 0.84 | 1.37 | 2.63 | 3.21 | Seas_2 | 1.64 | 0.82 | 0.82 | 6.78 | 2.51 | 2.87 |
| Jul | 0.29 | 1.30 | | 0.29 | 0.46 | 0.59 | 0.48 | Jul | | 0.28 | 0.28 | 1.10 | 0.55 | 0.47 |
| Aug | 0.29 | 0.83 | | 0.29 | 0.46 | 0.47 | 0.25 | Aug | | 0.28 | 0.28 | 0.71 | 0.42 | 0.24 |
| Sep | 0.28 | 2.30 | | 0.28 | 0.44 | 0.83 | 0.99 | Sep | | 0.27 | 0.28 | 1.97 | 0.84 | 0.98 |
| Seas_3 | 0.87 | 4.43 | 2.16 | 0.85 | 1.36 | 1.93 | 1.49 | Seas_3 | 2.13 | 0.84 | 0.84 | 3.78 | 1.90 | 1.39 |
| Oct | 0.29 | 5.58 | | 0.29 | 0.45 | 1.65 | 2.62 | Oct | | 0.28 | 0.29 | 4.92 | 1.83 | 2.68 |
| Nov | 0.28 | 7.17 | | 0.28 | 0.44 | 2.04 | 3.42 | Nov | | 0.27 | 0.28 | 6.46 | 2.34 | 3.57 |
| Dec | 0.28 | 5.52 | | 0.28 | 0.43 | 1.63 | 2.60 | Dec | | 0.27 | 0.28 | 5.03 | 1.86 | 2.74 |
| Seas_4 | 0.85 | 18.27 | 3.13 | 0.85 | 1.32 | 4.88 | 7.54 | Seas_4 | 3.12 | 0.83 | 0.84 | 16.41 | 5.30 | 7.48 |
| Annual | 5.88 | 51.86 | 7.78 | 3.28 | 5.29 | 14.82 | 20.77 | Annual | 7.70 | 3.19 | 3.22 | 42.02 | 14.03 | 18.78 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.81.

Table B.81. The percentage difference between calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: dry deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMo Chem_2_2 | CliMo Chem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0_3 | SimpleBox 3.12_3 | MSCE- POP_1 | MSCE- POP_2 |
|---------------|-------------------|-------------------|--------------------|--------------------|---------------------|--------------------|---------------------|----------------|----------------|
| Jan | | | -22.9% | -44.5% | -44.4% | -48.9% | 21.9% | -16.9% | -15.9% |
| Feb | | | -42.8% | -42.2% | -42.2% | -45.5% | 51.5% | -16.6% | -16.3% |
| Mar | | | -52.1% | -42.5% | -42.4% | -45.1% | 57.0% | -17.9% | -17.9% |
| Seas_1 | -35.2% | -37.1% | -34.9% | -43.0% | -42.9% | -46.4% | 43.3% | -17.1% | -16.6% |
| Apr | | | -53.0% | -43.1% | -42.9% | -45.2% | 58.0% | -27.7% | -28.3% |
| May | | | -50.6% | -43.5% | -43.3% | -45.4% | 57.5% | -38.1% | -39.1% |
| Jun | | | -48.1% | -43.8% | -43.5% | -45.6% | 56.6% | -41.5% | -42.0% |
| Seas_2 | -57.9% | -59.7% | -50.8% | -43.5% | -43.2% | -45.4% | 57.3% | -33.7% | -34.4% |
| Jul | | | -46.5% | -44.0% | -43.6% | -45.6% | 55.7% | -42.5% | -43.3% |
| Aug | | | -45.6% | -44.1% | -43.7% | -45.7% | 54.7% | -43.6% | -43.5% |
| Sep | | | -45.2% | -44.2% | -43.7% | -45.7% | 53.8% | -39.3% | -39.8% |
| Seas_3 | -71.5% | -72.5% | -45.8% | -44.1% | -43.7% | -45.7% | 54.7% | -41.1% | -41.5% |
| Oct | | | -45.0% | -44.3% | -43.8% | -45.8% | 52.9% | -27.9% | -27.9% |
| Nov | | | -44.9% | -44.4% | -43.8% | -45.8% | 52.1% | -22.4% | -22.0% |
| Dec | | | -45.0% | -44.4% | -43.8% | -45.8% | 51.3% | -18.7% | -18.1% |
| Seas_4 | -49.7% | -50.5% | -45.0% | -44.4% | -43.8% | -45.8% | 52.1% | -23.1% | -22.7% |
| Annual | -59.1% | -60.3% | -41.2% | -43.8% | -43.4% | -45.8% | 51.9% | -24.8% | -25.1% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 – MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 – MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 – SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

Wet deposition

Reference data set. Calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.82.

Monthly values of PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.105 a and b, respectively.

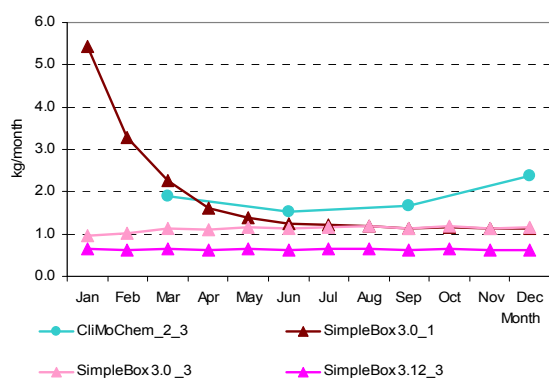


Fig. B.105a. PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (all models)

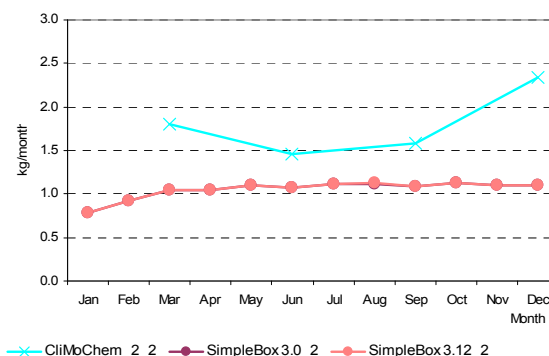


Fig. B.105b. PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.83.

Monthly values of PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.107 a and b, respectively.

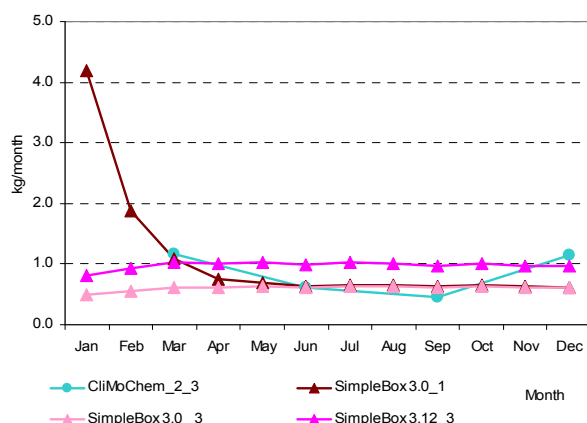


Fig. B.107a. PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions

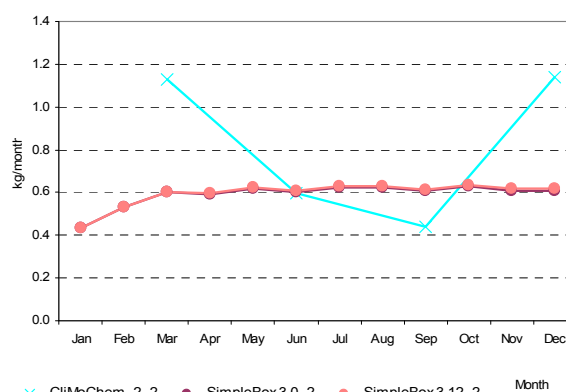


Fig. B.107b. PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

Table B.82. Calculation results: PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | <i>m</i> | σ |
|---------------|---|---|------------------------------|-------------------------------|--------------|-------------|---------------|--|------------------------------|-------------------------------|--------------|-------------|
| | SimpleBox 3.0_1 ^a | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | | |
| Jan | 5.43 | | 0.95 | 0.66 | 2.35 | 2.67 | Jan | | 0.78 | 0.78 | 0.78 | 0.00 |
| Feb | 3.29 | | 1.02 | 0.61 | 1.64 | 1.44 | Feb | | 0.92 | 0.92 | 0.92 | 0.00 |
| Mar | 2.25 | | 1.13 | 0.66 | 1.35 | 0.82 | Mar | | 1.05 | 1.05 | 1.05 | 0.00 |
| Seas_1 | 10.97 | 5.72 | 3.09 | 1.93 | 5.43 | 4.02 | Seas_1 | 5.41 | 2.75 | 2.75 | 3.64 | 1.54 |
| Apr | 1.61 | | 1.11 | 0.64 | 1.12 | 0.49 | Apr | | 1.04 | 1.04 | 1.04 | 0.00 |
| May | 1.40 | | 1.16 | 0.66 | 1.07 | 0.38 | May | | 1.10 | 1.10 | 1.10 | 0.00 |
| Jun | 1.23 | | 1.13 | 0.64 | 1.00 | 0.32 | Jun | | 1.07 | 1.07 | 1.07 | 0.00 |
| Seas_2 | 4.24 | 4.61 | 3.40 | 1.93 | 3.54 | 1.19 | Seas_2 | 4.36 | 3.21 | 3.21 | 3.59 | 0.66 |
| Jul | 1.22 | | 1.17 | 0.66 | 1.01 | 0.31 | Jul | | 1.11 | 1.12 | 1.11 | 0.00 |
| Aug | 1.19 | | 1.17 | 0.66 | 1.01 | 0.30 | Aug | | 1.12 | 1.12 | 1.12 | 0.00 |
| Sep | 1.14 | | 1.14 | 0.64 | 0.97 | 0.29 | Sep | | 1.09 | 1.09 | 1.09 | 0.00 |
| Seas_3 | 3.54 | 4.97 | 3.49 | 1.95 | 3.49 | 1.23 | Seas_3 | 4.74 | 3.32 | 3.33 | 3.79 | 0.82 |
| Oct | 1.17 | | 1.18 | 0.66 | 1.00 | 0.30 | Oct | | 1.13 | 1.13 | 1.13 | 0.00 |
| Nov | 1.13 | | 1.14 | 0.64 | 0.97 | 0.29 | Nov | | 1.09 | 1.10 | 1.10 | 0.00 |
| Dec | 1.13 | | 1.15 | 0.64 | 0.97 | 0.29 | Dec | | 1.10 | 1.10 | 1.10 | 0.00 |
| Seas_4 | 3.43 | 7.16 | 3.47 | 1.93 | 4.00 | 2.23 | Seas_4 | 7.01 | 3.32 | 3.33 | 4.55 | 2.13 |
| Annual | 22.19 | 22.46 | 13.45 | 7.74 | 16.46 | 7.17 | Annual | 21.51 | 12.60 | 12.62 | 15.58 | 5.14 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

* - In MSCE-POP model wet deposition on vegetation is not taken into account since it is considered as a part of deposition directly to soil.

Table B.83. Calculation results: PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | Results obtained on the basis of historical emissions | | | <i>m</i> | <i>σ</i> | Month | Results obtained on the basis of zero initial concentrations | | | <i>m</i> | <i>σ</i> |
|---------------|---|---|------------------------------|-------------------------------|--------------|-------------|---------------|--|------------------------------|-------------------------------|-------------|-------------|
| | SimpleBox 3.0_1 ^a | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | | |
| Jan | 4.19 | | 0.49 | 0.80 | 1.82 | 2.05 | Jan | | 0.43 | 0.43 | 0.43 | 0.00 |
| Feb | 1.88 | | 0.55 | 0.93 | 1.12 | 0.68 | Feb | | 0.53 | 0.53 | 0.53 | 0.00 |
| Mar | 1.08 | | 0.62 | 1.03 | 0.91 | 0.25 | Mar | | 0.60 | 0.60 | 0.60 | 0.00 |
| Seas_1 | 7.15 | 3.48 | 1.66 | 2.76 | 3.76 | 2.38 | Seas_1 | 3.39 | 1.57 | 1.57 | 2.18 | 1.05 |
| Apr | 0.76 | | 0.61 | 1.00 | 0.79 | 0.20 | Apr | | 0.59 | 0.60 | 0.59 | 0.00 |
| May | 0.69 | | 0.63 | 1.03 | 0.79 | 0.22 | May | | 0.62 | 0.62 | 0.62 | 0.00 |
| Jun | 0.64 | | 0.61 | 1.00 | 0.75 | 0.21 | Jun | | 0.60 | 0.61 | 0.60 | 0.00 |
| Seas_2 | 2.09 | 1.82 | 1.85 | 3.04 | 2.20 | 0.57 | Seas_2 | 1.79 | 1.81 | 1.82 | 1.81 | 0.02 |
| Jul | 0.65 | | 0.64 | 1.02 | 0.77 | 0.22 | Jul | | 0.62 | 0.63 | 0.63 | 0.00 |
| Aug | 0.65 | | 0.64 | 1.02 | 0.77 | 0.22 | Aug | | 0.63 | 0.63 | 0.63 | 0.00 |
| Sep | 0.62 | | 0.62 | 0.98 | 0.74 | 0.21 | Sep | | 0.61 | 0.61 | 0.61 | 0.00 |
| Seas_3 | 1.92 | 1.34 | 1.89 | 3.02 | 2.04 | 0.70 | Seas_3 | 1.33 | 1.86 | 1.87 | 1.69 | 0.31 |
| Oct | 0.64 | | 0.64 | 1.00 | 0.76 | 0.21 | Oct | | 0.63 | 0.64 | 0.63 | 0.01 |
| Nov | 0.62 | | 0.62 | 0.97 | 0.74 | 0.20 | Nov | | 0.61 | 0.62 | 0.61 | 0.01 |
| Dec | 0.62 | | 0.62 | 0.96 | 0.74 | 0.20 | Dec | | 0.61 | 0.62 | 0.61 | 0.01 |
| Seas_4 | 1.89 | 3.44 | 1.88 | 2.93 | 2.54 | 0.78 | Seas_4 | 3.42 | 1.85 | 1.87 | 2.38 | 0.90 |
| Annual | 13.05 | 10.07 | 7.29 | 11.75 | 10.54 | 2.49 | Annual | 9.93 | 7.08 | 7.14 | 8.05 | 1.62 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

* - In MSCE-POP model wet deposition on vegetation is not taken into account since it is considered as a part of deposition directly to soil.

Comparison between results obtained on the basis of two data sets. The percentage difference between calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.84.

Table B.84. The percentage difference between calculation results on PCB-28 mass flows transported from the atmosphere to vegetation: wet deposition obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_2 | CliMoChem_2_3 | SimpleBox 3.0_1 | SimpleBox 3.0_2 | SimpleBox 3.12_2 | SimpleBox 3.0_3 | SimpleBox 3.12_3 |
|---------------|---------------|---------------|-----------------|-----------------|------------------|-----------------|------------------|
| Jan | | | -22.9% | -44.5% | -44.4% | -48.9% | 21.9% |
| Feb | | | -42.8% | -42.2% | -42.2% | -45.5% | 51.5% |
| Mar | | | -52.1% | -42.5% | -42.4% | -45.1% | 57.0% |
| Seas_1 | -37.4% | -39.2% | -34.9% | -43.0% | -42.9% | -46.4% | 43.3% |
| Apr | | | -53.0% | -43.1% | -42.9% | -45.2% | 58.0% |
| May | | | -50.6% | -43.5% | -43.3% | -45.4% | 57.5% |
| Jun | | | -48.1% | -43.8% | -43.5% | -45.6% | 56.6% |
| Seas_2 | -58.8% | -60.6% | -50.8% | -43.5% | -43.2% | -45.4% | 57.3% |
| Jul | | | -46.5% | -44.0% | -43.6% | -45.6% | 55.7% |
| Aug | | | -45.6% | -44.1% | -43.7% | -45.7% | 54.7% |
| Sep | | | -45.2% | -44.2% | -43.7% | -45.7% | 53.8% |
| Seas_3 | -72.0% | -73.0% | -45.8% | -44.1% | -43.7% | -45.7% | 54.7% |
| Oct | | | -45.0% | -44.3% | -43.8% | -45.8% | 52.9% |
| Nov | | | -44.9% | -44.4% | -43.8% | -45.8% | 52.1% |
| Dec | | | -45.0% | -44.4% | -43.8% | -45.8% | 51.3% |
| Seas_4 | -51.2% | -52.0% | -45.0% | -44.4% | -43.8% | -45.8% | 52.1% |
| Annual | -53.9% | -55.2% | -41.2% | -43.8% | -43.4% | -45.8% | 51.9% |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period.

Gaseous exchange

Reference data set. Calculation results on PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.85.

Monthly values of PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.108a and b, respectively. Seasonal variations for models with positive values of gaseous exchange flows between the atmosphere and vegetation calculated by the participating models on the basis of “reference” data set and non-zero initial conditions are also shown in Fig. B.108c in more detail.

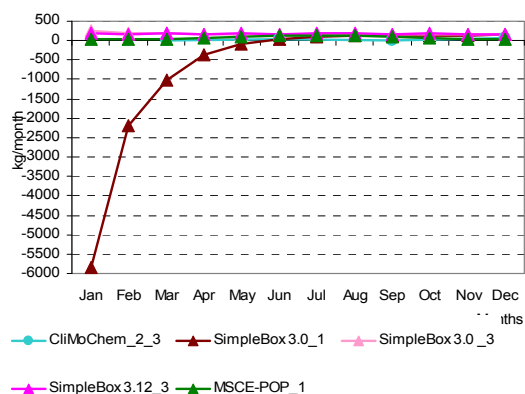


Fig. B.108a. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (all models)

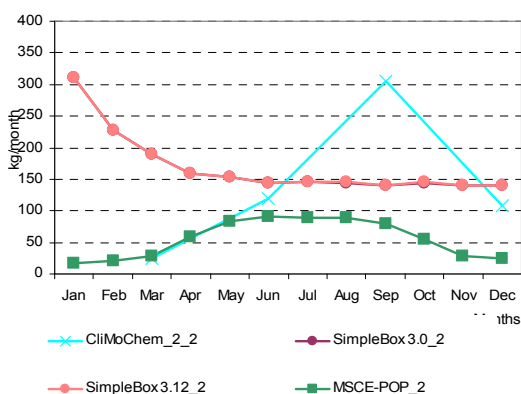


Fig. B.108b. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

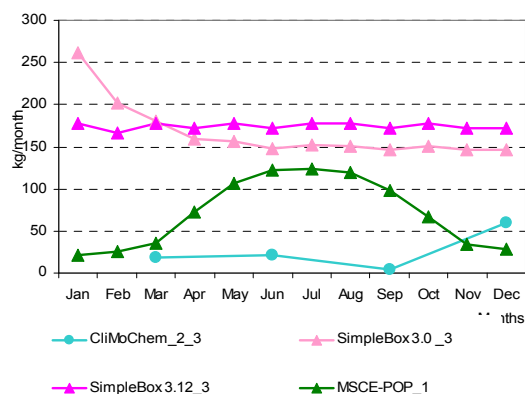


Fig. B.108c. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (models with positive values)

Own/alternative data set. Calculation results on PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.86.

Monthly values of PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange calculated by participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.109a and b, respectively. Seasonal variations for models with positive values of gaseous exchange flows between the atmosphere and vegetation calculated by the participating models on the basis of “own or alternative” data set and non-zero initial conditions are also shown in Fig. B.109c in more detail.

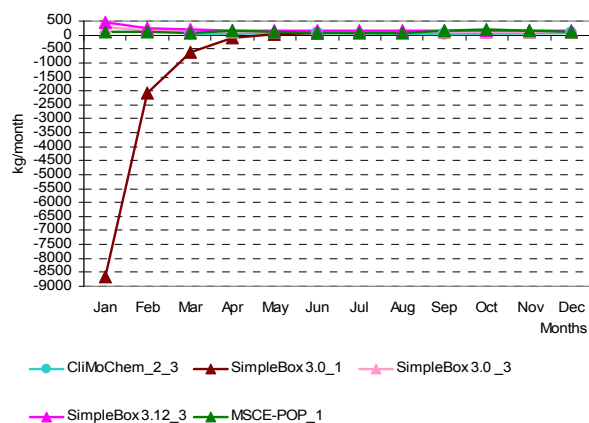


Fig. B.109a. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions (all models)

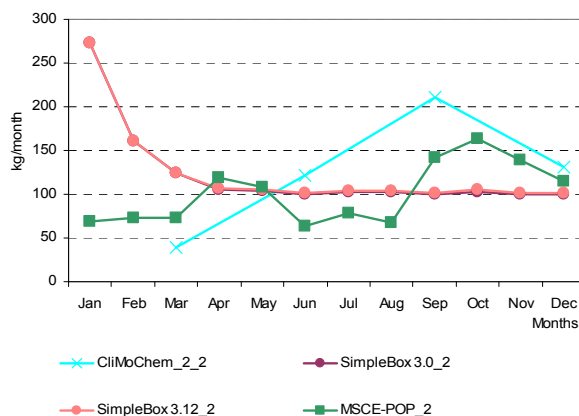


Fig. B.109b. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

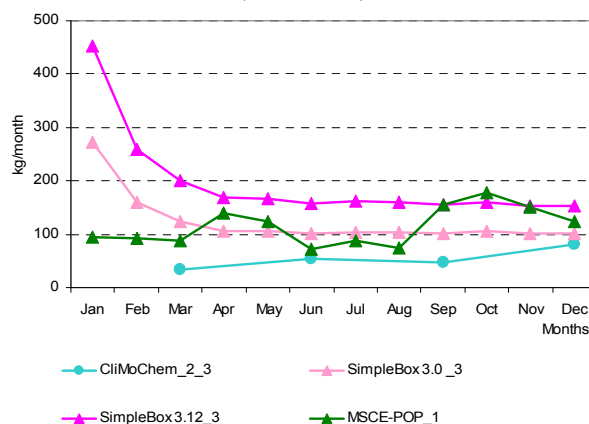


Fig. B.109c. PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by the participating models on the basis of “own or alternative” data set and non-zero initial conditions (models with positive values)

Comparison between results obtained on the basis of two data sets. A comparison of the calculation results obtained with two data sets of physical-chemical properties (for those models who provided calculations for both these sets) is shown in Table B.87.

Table B.85. Calculation results: PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | <i>σ</i> | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | <i>σ</i> |
|---------------|---|---------------|---|-----------------|-------------------------------|-----------------|----------------|---------------|--|------------------------------|-------------------------------|---------------|----------------|---------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | -5839.10 | 20.70 | | 262.24 | 177.58 | -1344.65 | 2997.98 | Jan | | 311.58 | 311.60 | 18.00 | 213.73 | 169.51 |
| Feb | -2194.25 | 26.00 | | 202.39 | 166.12 | -449.94 | 1165.36 | Feb | | 228.33 | 228.43 | 21.50 | 159.42 | 119.44 |
| Mar | -1005.79 | 35.30 | | 180.67 | 177.58 | -153.06 | 572.52 | Mar | | 190.00 | 190.18 | 29.10 | 136.43 | 92.95 |
| Seas_1 | -9039.15 | 82.00 | 56.25 | 645.31 | 521.27 | -1546.86 | 4196.44 | Seas_1 | 73.98 | 729.91 | 730.20 | 68.60 | 400.67 | 380.35 |
| Apr | -366.78 | 72.60 | | 158.63 | 171.85 | 9.07 | 254.40 | Apr | | 159.29 | 159.54 | 57.90 | 125.58 | 58.61 |
| May | -94.47 | 107.00 | | 156.35 | 177.58 | 86.61 | 124.29 | May | | 153.16 | 153.51 | 84.00 | 130.22 | 40.03 |
| Jun | 35.23 | 122.00 | | 148.08 | 171.85 | 119.29 | 59.62 | Jun | | 143.27 | 143.68 | 90.20 | 125.72 | 30.76 |
| Seas_2 | -426.03 | 301.60 | 62.13 | 463.06 | 521.27 | 184.41 | 384.85 | Seas_2 | 359.63 | 455.72 | 456.73 | 232.10 | 376.04 | 106.22 |
| Jul | 96.24 | 123.00 | | 151.57 | 177.58 | 137.10 | 35.19 | Jul | | 145.89 | 146.34 | 89.00 | 127.08 | 32.98 |
| Aug | 124.16 | 120.00 | | 151.02 | 177.58 | 143.19 | 26.73 | Aug | | 145.01 | 145.53 | 89.80 | 126.78 | 32.03 |
| Sep | 132.39 | 98.30 | | 145.99 | 171.85 | 137.13 | 30.63 | Sep | | 140.11 | 140.63 | 79.80 | 120.18 | 34.97 |
| Seas_3 | 352.79 | 341.30 | 12.11 | 448.57 | 527.00 | 336.35 | 196.45 | Seas_3 | 912.97 | 431.01 | 432.50 | 258.60 | 508.77 | 281.56 |
| Oct | 142.62 | 67.50 | | 150.85 | 177.58 | 134.64 | 47.18 | Oct | | 144.80 | 145.39 | 55.00 | 115.06 | 52.02 |
| Nov | 140.68 | 33.70 | | 146.07 | 171.85 | 123.08 | 61.12 | Nov | | 140.25 | 140.88 | 29.10 | 103.41 | 64.35 |
| Dec | 148.92 | 28.00 | | 146.18 | 171.85 | 123.74 | 64.85 | Dec | | 140.40 | 141.10 | 25.50 | 102.33 | 66.54 |
| Seas_4 | 432.23 | 129.20 | 180.21 | 443.10 | 521.27 | 341.20 | 174.61 | Seas_4 | 321.50 | 425.45 | 427.37 | 109.60 | 320.98 | 149.35 |
| Annual | -8680.16 | 854.10 | 310.71 | 2000.04 | 2090.82 | -684.90 | 4533.14 | Annual | 1668.08 | 2042.09 | 2046.80 | 668.90 | 1606.47 | 649.74 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.86. Calculation results: PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) calculated by models on the basis of “own or alternative” data sets and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|----------------|---|------------------------------|-------------------------------|-----------------|----------------|---------------|--|------------------------------|-------------------------------|----------------|----------------|---------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 ^a | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | -8650.78 | 95.70 | | 259.11 | 453.22 | -1960.69 | 4462.46 | Jan | | 272.38 | 272.49 | 69.40 | 204.75 | 117.22 |
| Feb | -2084.62 | 91.70 | | 151.73 | 259.91 | -395.32 | 1128.35 | Feb | | 160.24 | 160.63 | 72.70 | 131.19 | 50.66 |
| Mar | -624.39 | 87.10 | | 122.44 | 200.15 | -53.67 | 383.40 | Mar | | 123.96 | 124.60 | 73.40 | 107.32 | 29.38 |
| Seas_1 | -11359.79 | 274.50 | 102.38 | 533.29 | 913.29 | -1907.27 | 5292.94 | Seas_1 | 117.16 | 556.58 | 557.72 | 215.50 | 361.74 | 229.18 |
| Apr | -112.91 | 140.00 | | 106.34 | 169.26 | 75.67 | 128.32 | Apr | | 105.48 | 106.34 | 119.00 | 110.27 | 7.57 |
| May | 36.94 | 125.00 | | 106.19 | 166.60 | 108.68 | 54.08 | May | | 104.60 | 105.59 | 108.00 | 106.06 | 1.75 |
| Jun | 81.35 | 71.60 | | 101.73 | 158.13 | 103.20 | 38.71 | Jun | | 99.97 | 101.09 | 63.70 | 88.25 | 21.27 |
| Seas_2 | 5.38 | 336.60 | 163.07 | 314.26 | 493.99 | 262.66 | 185.58 | Seas_2 | 365.38 | 310.05 | 313.01 | 290.70 | 319.79 | 31.97 |
| Jul | 98.32 | 88.60 | | 104.85 | 161.84 | 113.40 | 32.98 | Jul | | 103.01 | 104.28 | 79.00 | 95.43 | 14.24 |
| Aug | 102.73 | 74.60 | | 104.82 | 160.80 | 110.74 | 36.11 | Aug | | 102.99 | 104.40 | 67.00 | 91.46 | 21.20 |
| Sep | 100.72 | 156.00 | | 101.48 | 154.77 | 128.24 | 31.35 | Sep | | 99.74 | 101.20 | 142.00 | 114.31 | 23.99 |
| Seas_3 | 301.77 | 319.20 | 142.54 | 311.14 | 477.41 | 310.41 | 118.56 | Seas_3 | 633.58 | 305.73 | 309.88 | 288.00 | 384.30 | 166.46 |
| Oct | 104.47 | 178.00 | | 104.91 | 159.10 | 136.62 | 37.67 | Oct | | 103.13 | 104.78 | 163.00 | 123.64 | 34.10 |
| Nov | 101.24 | 150.00 | | 101.59 | 153.26 | 126.52 | 29.02 | Nov | | 99.87 | 101.60 | 139.00 | 113.49 | 22.11 |
| Dec | 101.33 | 123.00 | | 101.65 | 152.58 | 119.64 | 24.19 | Dec | | 99.96 | 101.80 | 115.00 | 105.59 | 8.21 |
| Seas_4 | 307.04 | 451.00 | 244.67 | 308.15 | 464.94 | 355.16 | 97.43 | Seas_4 | 393.29 | 302.97 | 308.17 | 417.00 | 355.36 | 58.34 |
| Annual | -10745.60 | 1381.30 | 652.66 | 1466.84 | 2349.64 | -979.03 | 5492.76 | Annual | 1509.41 | 1475.33 | 1488.79 | 1211.20 | 1421.18 | 140.69 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

Table B.87. Comparison of the calculation results on PCB-28 mass flows between the atmosphere and vegetation: gaseous exchange (kg/month) obtained by models on the basis of two data sets: “reference” and “own or alternative” data sets

| Month | CliMoChem_2_3 | | SimpleBox 3.0_1 | | SimpleBox 3.0_2 | | SimpleBox 3.12_2 | | SimpleBox 3.0_3 | | SimpleBox 3.12_3 | | MSCE-POP_1 | | MSCE-POP_2 | | CliMoChem_2_2 | |
|---------------|---------------|---------------|-----------------|------------------|-----------------|----------------|------------------|----------------|-----------------|----------------|------------------|----------------|---------------|----------------|---------------|----------------|----------------|----------------|
| | ref | own | ref | alt | ref | alt | ref | alt | ref | alt | ref | alt | ref | own | ref | own | ref | own |
| Jan | | | -5839.10 | -8650.78 | 311.58 | 272.38 | 311.60 | 272.49 | 262.24 | 259.11 | 177.58 | 453.22 | 20.70 | 95.70 | 18.00 | 69.40 | | |
| Feb | | | -2194.25 | -2084.62 | 228.33 | 160.24 | 228.43 | 160.63 | 202.39 | 151.73 | 166.12 | 259.91 | 26.00 | 91.70 | 21.50 | 72.70 | | |
| Mar | | | -1005.79 | -624.39 | 190.00 | 123.96 | 190.18 | 124.60 | 180.67 | 122.44 | 177.58 | 200.15 | 35.30 | 87.10 | 29.10 | 73.40 | | |
| Seas_1 | 56.25 | 102.38 | -9039.15 | -11359.79 | 729.91 | 556.58 | 730.20 | 557.72 | 645.31 | 533.29 | 521.27 | 913.29 | 82.00 | 274.50 | 68.60 | 215.50 | 73.98 | 117.16 |
| Apr | | | -366.78 | -112.91 | 159.29 | 105.48 | 159.54 | 106.34 | 158.63 | 106.34 | 171.85 | 169.26 | 72.60 | 140.00 | 57.90 | 119.00 | | |
| May | | | -94.47 | 36.94 | 153.16 | 104.60 | 153.51 | 105.59 | 156.35 | 106.19 | 177.58 | 166.60 | 107.00 | 125.00 | 84.00 | 108.00 | | |
| Jun | | | 35.23 | 81.35 | 143.27 | 99.97 | 143.68 | 101.09 | 148.08 | 101.73 | 171.85 | 158.13 | 122.00 | 71.60 | 90.20 | 63.70 | | |
| Seas_2 | 62.13 | 163.07 | -426.03 | 5.38 | 455.72 | 310.05 | 456.73 | 313.01 | 463.06 | 314.26 | 521.27 | 493.99 | 301.60 | 336.60 | 232.10 | 290.70 | 359.63 | 365.38 |
| Jul | | | 96.24 | 98.32 | 145.89 | 103.01 | 146.34 | 104.28 | 151.57 | 104.85 | 177.58 | 161.84 | 123.00 | 88.60 | 89.00 | 79.00 | | |
| Aug | | | 124.16 | 102.73 | 145.01 | 102.99 | 145.53 | 104.40 | 151.02 | 104.82 | 177.58 | 160.80 | 120.00 | 74.60 | 89.80 | 67.00 | | |
| Sep | | | 132.39 | 100.72 | 140.11 | 99.74 | 140.63 | 101.20 | 145.99 | 101.48 | 171.85 | 154.77 | 98.30 | 156.00 | 79.80 | 142.00 | | |
| Seas_3 | 12.11 | 142.54 | 352.79 | 301.77 | 431.01 | 305.73 | 432.50 | 309.88 | 448.57 | 311.14 | 527.00 | 477.41 | 341.30 | 319.20 | 258.60 | 288.00 | 912.97 | 633.58 |
| Oct | | | 142.62 | 104.47 | 144.80 | 103.13 | 145.39 | 104.78 | 150.85 | 104.91 | 177.58 | 159.10 | 67.50 | 178.00 | 55.00 | 163.00 | | |
| Nov | | | 140.68 | 101.24 | 140.25 | 99.87 | 140.88 | 101.60 | 146.07 | 101.59 | 171.85 | 153.26 | 33.70 | 150.00 | 29.10 | 139.00 | | |
| Dec | | | 148.92 | 101.33 | 140.40 | 99.96 | 141.10 | 101.80 | 146.18 | 101.65 | 171.85 | 152.58 | 28.00 | 123.00 | 25.50 | 115.00 | | |
| Seas_4 | 180.21 | 244.67 | 432.23 | 307.04 | 425.45 | 302.97 | 427.37 | 308.17 | 443.10 | 308.15 | 521.27 | 464.94 | 129.20 | 451.00 | 109.60 | 417.00 | 321.50 | 393.29 |
| Annual | 310.71 | 652.66 | -8680.16 | -10745.60 | 2042.09 | 1475.33 | 2046.80 | 1488.79 | 2000.04 | 1466.84 | 2090.82 | 2349.64 | 854.10 | 1381.30 | 668.90 | 1211.20 | 1668.08 | 1509.41 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;

MSCE-POP_2 - MSCE-POP results calculated on the basis of zero initial concentrations;

SimpleBox 3.0_1 - SimpleBox results of version 3.0 calculated on the basis of initial concentrations given as input data;

SimpleBox 3.0_2 and SimpleBox 3.12_2 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated on the basis of zero initial concentrations;

SimpleBox 3.0_3 and SimpleBox 3.12_3 – SimpleBox results of versions 3.0 and 3.12, respectively, calculated with historical emissions for 20-year period;

Net mass flows between the atmosphere and vegetation

Net mass flows are equal to the total mass flows resulted from summing up of dry and wet depositions and gaseous exchange.

Reference data set. Calculation results on PCB-28 net mass flows between the atmosphere and vegetation calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.88.

Monthly values of PCB-28 net mass flows between the atmosphere and vegetation calculated by participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.110 a and b, respectively. Seasonal variations for models with low positive values of net mass flows between the atmosphere and vegetation calculated by the participating models on the basis of “reference” data set and non-zero initial conditions are also shown in Fig. B.110c in more detail.

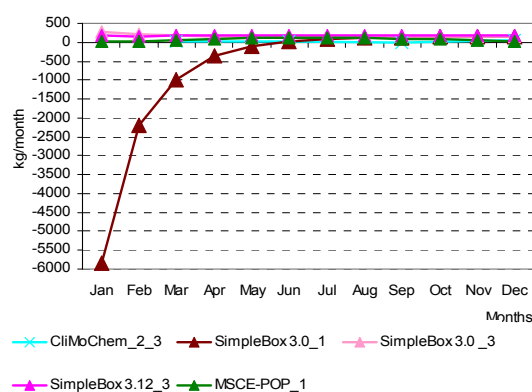


Fig. B.110a. PCB-28 net mass flows between the atmosphere and vegetation (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (all models)

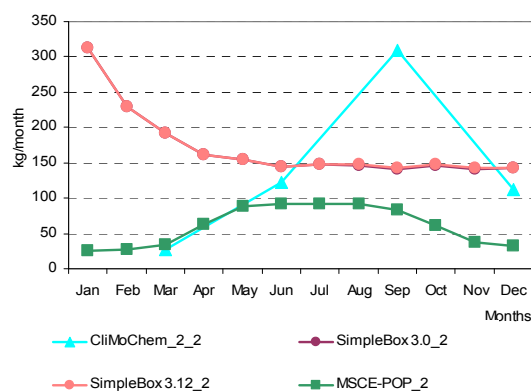


Fig. B.110b. PCB-28 net mass flows between the atmosphere and vegetation (kg/month) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

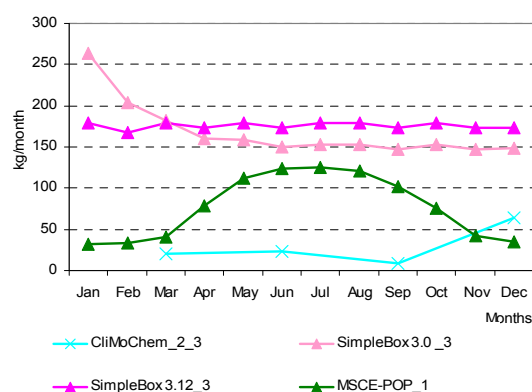


Fig. B.110c. PCB-28 net mass flows between the atmosphere and vegetation (kg/month) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions (models with low values)

Table B.88. Calculation results: PCB-28 net mass flows between the atmosphere and vegetation (kg/month) calculated by models on the basis of “reference” data set and statistical parameters used for evaluation

| Month | Results obtained on the basis of initial concentrations given as input data | | Results obtained on the basis of historical emissions | | | <i>m</i> | σ | Month | Results obtained on the basis of zero initial concentrations | | | | <i>m</i> | σ |
|---------------|---|---------------|---|------------------------------|-------------------------------|-----------------|----------------|---------------|--|-----------------|-------------------------------|---------------|----------------|---------------|
| | SimpleBox 3.0_1 ^a | MSCE-POP_1 | CliMoChem_2_3 | SimpleBox 3.0_3 ^a | SimpleBox 3.12_3 ^a | | | | CliMoChem_2_2 | SimpleBox 3.0_2 | SimpleBox 3.12_2 ^a | MSCE-POP_2 | | |
| Jan | -5831.23 | 31.80 | | 263.62 | 178.53 | -1339.32 | 2996.14 | Jan | | 312.72 | 312.73 | 24.99 | 216.81 | 166.12 |
| Feb | -2189.49 | 33.96 | | 203.87 | 167.01 | -446.16 | 1164.50 | Feb | | 229.66 | 229.77 | 27.75 | 162.39 | 116.60 |
| Mar | -1002.52 | 41.34 | | 182.31 | 178.53 | -150.09 | 572.06 | Mar | | 191.52 | 191.70 | 33.91 | 139.04 | 91.05 |
| Seas_1 | -9023.23 | 107.10 | 63.29 | 649.80 | 524.07 | -1535.80 | 4193.38 | Seas_1 | 80.64 | 733.90 | 734.20 | 86.65 | 408.84 | 375.52 |
| Apr | -364.44 | 78.59 | | 160.23 | 172.77 | 11.79 | 254.27 | Apr | | 160.80 | 161.06 | 62.85 | 128.24 | 56.63 |
| May | -92.45 | 111.54 | | 158.03 | 178.53 | 88.91 | 124.11 | May | | 154.75 | 155.10 | 87.71 | 132.52 | 38.81 |
| Jun | 37.02 | 124.05 | | 149.72 | 172.77 | 120.89 | 59.35 | Jun | | 144.83 | 145.23 | 91.87 | 127.31 | 30.69 |
| Seas_2 | -419.88 | 314.18 | 70.87 | 467.98 | 524.07 | 191.45 | 384.20 | Seas_2 | 367.88 | 460.38 | 461.39 | 242.43 | 383.02 | 103.47 |
| Jul | 98.01 | 125.26 | | 153.26 | 178.53 | 138.77 | 34.81 | Jul | | 147.51 | 147.95 | 90.94 | 128.80 | 32.79 |
| Aug | 125.88 | 121.47 | | 152.72 | 178.53 | 144.65 | 26.47 | Aug | | 146.64 | 147.16 | 91.05 | 128.28 | 32.25 |
| Sep | 134.04 | 102.09 | | 147.64 | 172.77 | 139.13 | 29.45 | Sep | | 141.69 | 142.21 | 83.07 | 122.32 | 34.00 |
| Seas_3 | 357.93 | 348.82 | 24.92 | 453.62 | 529.83 | 343.03 | 192.73 | Seas_3 | 925.18 | 435.83 | 437.33 | 265.06 | 515.85 | 284.61 |
| Oct | 144.32 | 75.24 | | 152.57 | 178.53 | 137.66 | 44.10 | Oct | | 146.43 | 147.03 | 61.82 | 118.43 | 49.02 |
| Nov | 142.32 | 42.94 | | 147.73 | 172.77 | 126.44 | 57.23 | Nov | | 141.83 | 142.47 | 37.38 | 107.23 | 60.49 |
| Dec | 150.56 | 34.79 | | 147.84 | 172.77 | 126.49 | 62.15 | Dec | | 141.99 | 142.69 | 31.64 | 105.44 | 63.92 |
| Seas_4 | 437.21 | 152.97 | 193.70 | 448.14 | 524.07 | 351.22 | 166.42 | Seas_4 | 334.70 | 430.26 | 432.20 | 130.84 | 332.00 | 141.62 |
| Annual | -8647.97 | 923.07 | 352.78 | 2019.54 | 2102.04 | -650.11 | 4531.77 | Annual | 1708.40 | 2060.36 | 2065.11 | 724.98 | 1639.71 | 632.29 |

CliMoChem_2_2 – CliMoChem results calculated on the basis of Land Cover Data given as input data and with zero initial concentrations;

CliMoChem_2_3 - CliMoChem results calculated on the basis of Land Cover Data given as input data and with historical emissions for 20-year period;

MSCE-POP_1 - MSCE-POP results calculated on the basis of initial concentrations given as input data;;

a - SimpleBox data presented here are overall mass flows (to regional and continental cells) calculated as sum of regional and continental level estimates.

B.5. Concentrations at each interface

B.5.1. Comparison of calculated values of PCB-28 concentration in the atmosphere at its interface with soil

Reference data set. Calculation results on PCB-28 concentration in the atmosphere at its interface with soil calculated by the models on the basis of “reference” data set together with statistical parameters used for evaluation are presented in Table B.90.

Monthly values of PCB-28 concentration in the atmosphere at its interface with soil calculated by all participating models on the basis of “reference” data set and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.111 a and b, respectively.

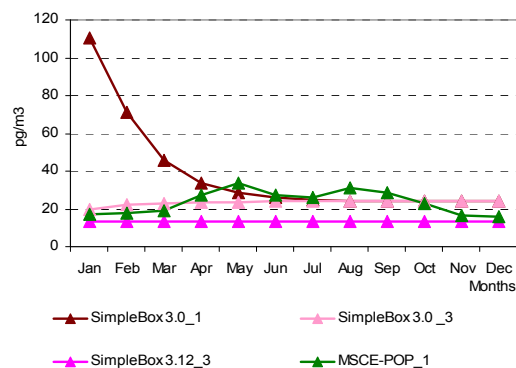


Fig. B.111a. PCB-28 concentration in the atmosphere at its interface with soil (pg/m³) calculated by the participating models on the basis of “reference” data set and non-zero initial conditions

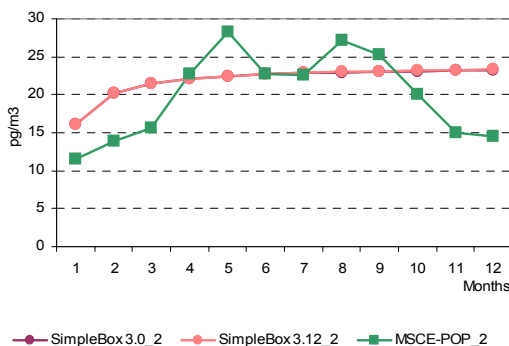


Fig. B.111b. PCB-28 concentration in the atmosphere at its interface with soil (pg/m³) calculated by the participating models on the basis of “reference” data set and zero-initial conditions

Own/alternative data set. Calculation results on PCB-28 concentration in the atmosphere at its interface with soil calculated by models on the basis of “own or alternative” data sets together with statistical parameters used for evaluation are presented in Table B.91.

Monthly values of PCB-28 concentration in the atmosphere at its interface with soil calculated by all participating models on the basis of “own or alternative” data sets and taking into account non-zero (initial concentrations in media or historical emissions) and zero initial conditions are compared in Fig. B.112 a and b, respectively.

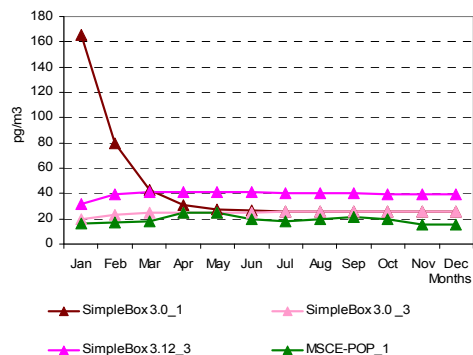


Fig. B.112a. PCB-28 concentration in the atmosphere at its interface with soil (pg/m³) calculated by the participating models on the basis of “own or alternative” data sets and non-zero initial conditions

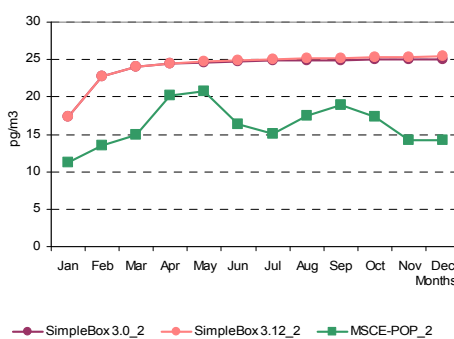


Fig. B.112b. PCB-28 concentration in the atmosphere at its interface with soil (pg/m³) calculated by the participating models on the basis of “own or alternative” data sets and zero-initial conditions

