**Air-water exchange and source apportionment of polycyclic aromatic hydrocarbons (PAHs) in coral reef areas of the South China Sea**

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Table S1 Concentrations (ng/L) of 16 PAHs in water phase

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Congener** | **W1** | **W2** | **W3** | **W4** | **W5** | **W6** | **W7** | **W8** | **W9** | **W10** | **W11** | **W12** | **W13** | **W14** | **W15** | **W16** |
| **Nap** | 15.10 | 36.84 | 10.56 | 35.29 | 10.47 | 14.73 | 3.70 | 24.39 | 10.44 | 13.61 | 21.93 | 7.75 | 7.42 | 9.31 | 36.02 | 38.96 |
| **Ace** | 1.64 | 0.00 | 0.31 | 0.00 | 0.30 | 0.40 | 0.60 | 0.00 | 0.57 | 0.57 | 1.56 | 0.00 | 0.27 | 0.39 | 1.90 | 1.31 |
| **Acy** | 0.44 | 0.53 | 0.33 | 0.51 | 0.33 | 0.40 | 0.30 | 0.45 | 0.36 | 0.36 | 0.42 | 0.44 | 0.28 | 0.34 | 0.53 | 0.52 |
| **Flo** | 3.30 | 4.97 | 1.68 | 4.32 | 1.19 | 1.88 | 1.38 | 3.27 | 1.91 | 1.56 | 3.00 | 4.11 | 1.07 | 1.68 | 4.67 | 4.55 |
| **Phe** | 0.00 | 0.14 | 0.00 | 0.00 | 1.37 | 0.00 | 1.32 | 0.00 | 1.81 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.05 | 0.10 |
| **Ant** | 0.02 | 4.12 | 0.00 | 3.98 | 0.00 | 0.14 | 0.00 | 2.87 | 0.00 | 0.00 | 0.07 | 3.85 | 0.00 | 0.00 | 3.88 | 5.11 |
| **Flu** | 0.96 | 0.47 | 0.24 | 0.32 | 0.20 | 0.38 | 0.14 | 0.23 | 0.29 | 0.18 | 0.32 | 0.36 | 0.14 | 0.24 | 0.36 | 0.75 |
| **Pyr** | 0.73 | 0.51 | 0.28 | 0.44 | 0.20 | 0.83 | 0.17 | 0.29 | 0.25 | 0.21 | 0.39 | 0.36 | 0.16 | 0.31 | 0.51 | 0.81 |
| **BaA** | 0.08 | 0.03 | 0.03 | 0.03 | 0.00 | 0.16 | 0.00 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.00 | 0.04 | 0.04 | 0.00 |
| **Chr** | 0.20 | 0.00 | 0.08 | 0.00 | 0.00 | 0.81 | 0.05 | 0.00 | 0.07 | 0.00 | 0.11 | 0.00 | 0.00 | 0.08 | 0.10 | 0.10 |
| **BbF** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BkF** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BaP** | 0.00 | 11.86 | 0.00 | 0.00 | 0.00 | 11.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **IndP** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **DahA** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BghiP** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **∑16PAHs** | 22.48 | 59.46 | 13.52 | 44.89 | 14.05 | 30.89 | 7.65 | 31.52 | 15.73 | 16.50 | 27.84 | 16.94 | 9.36 | 12.38 | 48.05 | 52.20 |

Table S2 Concentrations (ng/m3) of 16 PAHs in gas phase

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Congener** | **W1** | **W2** | **W3** | **W4** | **W5** | **W6** | **W7** | **W8** | **W9** | **W10** | **W11** | **W12** | **W13** | **W14** | **W15** | **W16** |
| **Nap** | 1.77 | 2.71 | 2.18 | 3.95 | 5.46 | 4.26 | 2.83 | 4.19 | 5.05 | 2.38 | 11.78 | 1.77 | 2.04 | 1.26 | 1.89 | 2.20 |
| **Acy** | 0.37 | 0.16 | 0.12 | 0.18 | 0.73 | 1.38 | 0.09 | 0.12 | 0.23 | 0.11 | 0.47 | 0.12 | 0.04 | 0.03 | 0.15 | 0.11 |
| **Ace** | 0.25 | 0.31 | 0.22 | 0.25 | 0.38 | 0.70 | 0.07 | 0.17 | 0.18 | 0.11 | 0.11 | 0.21 | 0.05 | 0.06 | 0.09 | 0.19 |
| **Flo** | 1.38 | 2.41 | 1.80 | 1.11 | 2.42 | 4.17 | 0.95 | 2.43 | 1.52 | 1.69 | 0.81 | 2.53 | 0.54 | 0.61 | 1.34 | 1.20 |
| **Phe** | 11.59 | 14.29 | 16.58 | 10.75 | 22.50 | 52.47 | 19.65 | 13.50 | 27.84 | 15.76 | 7.87 | 24.44 | 9.95 | 12.52 | 14.38 | 25.82 |
| **Ant** | 1.50 | 2.01 | 2.16 | 1.75 | 3.17 | 7.10 | 2.96 | 0.00 | 4.13 | 2.46 | 1.34 | 4.27 | 1.41 | 1.67 | 2.31 | 3.83 |
| **Flu** | 3.68 | 6.48 | 7.26 | 8.96 | 8.61 | 25.38 | 8.77 | 6.41 | 36.47 | 12.49 | 5.61 | 10.28 | 3.91 | 8.27 | 10.08 | 12.65 |
| **Pyr** | 2.40 | 3.29 | 4.21 | 6.74 | 4.35 | 20.60 | 4.58 | 3.09 | 16.04 | 5.87 | 1.79 | 5.27 | 1.84 | 4.82 | 5.10 | 6.74 |
| **BaA** | 0.03 | 0.04 | 0.05 | 0.36 | 0.06 | 0.22 | 0.08 | 0.08 | 0.39 | 0.13 | 0.04 | 0.08 | 0.03 | 0.06 | 0.06 | 0.00 |
| **Chr** | 0.40 | 0.33 | 0.42 | 0.77 | 0.47 | 1.10 | 0.57 | 0.39 | 1.80 | 0.68 | 0.25 | 0.38 | 0.25 | 0.30 | 0.28 | 0.67 |
| **BbF** | 0.02 | 0.02 | 0.02 | 0.06 | 0.03 | 0.02 | 0.03 | 0.03 | 0.05 | 0.05 | 0.02 | 0.03 | 0.02 | 0.01 | 0.03 | 0.02 |
| **BkF** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BaP** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **IndP** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **DahA** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BghiP** | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| **∑16PAHs** | 23.40 | 32.06 | 35.02 | 34.90 | 48.21 | 117.42 | 40.60 | 30.39 | 93.71 | 41.73 | 30.08 | 49.40 | 20.09 | 29.60 | 35.70 | 53.44 |

Table S3 Fugacity fractions (*ff*) of PAHs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Congener** | **W1** | **W2** | **W3** | **W4** | **W5** | **W6** | **W7** | **W8** | **W9** | **W10** | **W11** | **W12** | **W13** | **W14** | **W15** | **W16** |
| **Nap** | 0.161 | 0.232 | 0.097 | 0.164 | 0.041 | 0.071 | 0.028 | 0.113 | 0.043 | 0.112 | 0.039 | 0.088 | 0.074 | 0.140 | 0.296 | 0.281 |
| **Ace** | 0.050 | 0.000 | 0.029 | 0.000 | 0.005 | 0.003 | 0.073 | 0.000 | 0.028 | 0.056 | 0.037 | 0.000 | 0.080 | 0.117 | 0.127 | 0.122 |
| **Acy** | 0.012 | 0.011 | 0.010 | 0.013 | 0.006 | 0.004 | 0.025 | 0.017 | 0.013 | 0.021 | 0.023 | 0.013 | 0.037 | 0.033 | 0.038 | 0.017 |
| **Flo** | 0.010 | 0.008 | 0.004 | 0.015 | 0.002 | 0.002 | 0.006 | 0.005 | 0.005 | 0.004 | 0.015 | 0.006 | 0.008 | 0.011 | 0.014 | 0.015 |
| **Phe** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Ant** | 0.000 | 0.004 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.003 | 0.003 |
| **Flu** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Prene** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **BaA** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Chr** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **BbF** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **BkF** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **BaP** | 0.000 | 0.213 | 0.000 | 0.000 | 0.000 | 0.212 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **InP** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **DBahA** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **BghiP** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S4 Air-water exchange fluxes (ng/m2/d) of PAHs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Congener** | **W1** | **W2** | **W3** | **W4** | **W5** | **W6** | **W7** | **W8** | **W9** | **W10** | **W11** | **W12** | **W13** | **W14** | **W15** | **W16** |
| **Nap** | -0.09 | -0.17 | -0.17 | -0.25 | -0.39 | -0.13 | -0.05 | -0.17 | -0.09 | -0.04 | -0.20 | -0.03 | -0.06 | -0.11 | -0.11 | -0.14 |
| **Ace** | -0.04 | -0.03 | -0.02 | -0.03 | -0.10 | -0.08 | 0.00 | -0.01 | -0.01 | 0.00 | -0.01 | 0.00 | 0.00 | -0.01 | -0.02 | -0.02 |
| **Acy** | -0.05 | -0.09 | -0.06 | -0.06 | -0.09 | -0.07 | 0.00 | -0.02 | -0.01 | -0.01 | -0.01 | -0.01 | 0.00 | -0.02 | -0.03 | -0.06 |
| **Flo** | -0.41 | -1.07 | -0.79 | -0.43 | -0.89 | -0.67 | -0.08 | -0.55 | -0.13 | -0.15 | -0.07 | -0.22 | -0.09 | -0.31 | -0.68 | -0.60 |
| **Phe** | -7.10 | -13.04 | -14.95 | -8.69 | -16.93 | -17.06 | -3.42 | -6.24 | -4.86 | -2.75 | -1.38 | -4.27 | -3.22 | -12.99 | -14.92 | -26.80 |
| **Ant** | -0.85 | -1.68 | -1.80 | -1.30 | -2.20 | -2.13 | -0.48 | 0.00 | -0.67 | -0.40 | -0.22 | -0.69 | -0.42 | -1.60 | -2.20 | -3.66 |
| **Flu** | -6.08 | -15.97 | -17.67 | -19.55 | -17.49 | -22.27 | -4.06 | -7.99 | -16.92 | -5.80 | -2.60 | -4.77 | -3.42 | -23.15 | -28.22 | -35.42 |
| **Pyr** | -3.22 | -6.56 | -8.29 | -11.91 | -7.15 | -14.64 | -1.72 | -3.11 | -6.02 | -2.20 | -0.67 | -1.98 | -1.30 | -10.93 | -11.56 | -15.28 |
| **BaA** | -0.19 | -0.36 | -0.45 | -2.87 | -0.46 | -0.70 | -0.14 | -0.36 | -0.65 | -0.22 | -0.06 | -0.13 | -0.11 | -0.62 | -0.62 | 0.00 |
| **Chr** | -2.56 | -3.13 | -3.99 | -6.52 | -3.73 | -3.76 | -1.00 | -1.87 | -3.20 | -1.20 | -0.45 | -0.68 | -0.86 | -3.23 | -3.07 | -7.31 |
| **BbF** | -0.29 | -0.45 | -0.38 | -1.17 | -0.58 | -0.15 | -0.14 | -0.28 | -0.19 | -0.19 | -0.07 | -0.10 | -0.13 | -0.31 | -0.65 | -0.57 |
| **BkF** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BaP** | 0.00 | -0.05 | 0.00 | 0.00 | -0.05 | -0.02 | -0.01 | 0.00 | 0.00 | -0.01 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| **InP** | -0.02 | -0.10 | 0.00 | 0.00 | -0.05 | -0.06 | -0.04 | 0.00 | 0.00 | -0.05 | 0.00 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| **DBahA** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | -0.17 | 0.00 |
| **BghiP** | -0.22 | -0.27 | -0.26 | 0.00 | -0.23 | -0.10 | -0.06 | -0.08 | -0.03 | -0.07 | 0.00 | -0.04 | -0.02 | 0.00 | 0.00 | 0.00 |
| **∑16PAHs** | -21.12 | -42.97 | -48.83 | -52.78 | -50.34 | -61.82 | -11.21 | -20.68 | -32.76 | -13.10 | -5.74 | -12.98 | -9.64 | -53.27 | -62.25 | -89.85 |

|  |  |  |
| --- | --- | --- |
| **Congener** | **PC1** | **PC2** |
| **Nap** | 0.859 | -0.315 |
| **Acy** | 0.957 | -0.198 |
| **Flo** | 0.919 | -0.314 |
| **Phe** | -0.529 | -0.171 |
| **Ant** | 0.8 | -0.477 |
| **Flu** | 0.711 | 0.256 |
| **Pyr** | 0.814 | 0.515 |
| **BaA** | 0.302 | 0.893 |
| **Chr** | 0.183 | 0.929 |

Table S5 Principal component analysis result of water phase

Table S6 Multiple linear regression result of water phase

|  |  |  |  |
| --- | --- | --- | --- |
| **MLR factor** | **Standardized**  **coefficient** | **T** | **Significant** |
| **factor score 1** | 0.439 | 1.855 | 0 |
| **factor score 2** | 0.278 | 1.172 | 0.086 |

Table S7 Principal component analysis result of gas phase

|  |  |  |  |
| --- | --- | --- | --- |
| **Congener** | **PC1** | **PC2** | **PC3** |
| **Acy** | 0.883 | -0.02 | 0.096 |
| **Ace** | 0.898 | 0.033 | 0.178 |
| **Flo** | 0.797 | -0.032 | 0.398 |
| **Phe** | 0.905 | 0.236 | 0.194 |
| **Ant** | 0.81 | 0.29 | 0.234 |
| **Pyr** | 0.774 | 0.581 | -0.009 |
| **BaA** | 0.211 | 0.928 | -0.091 |
| **Chr** | 0.424 | 0.844 | -0.034 |
| **BbF** | -0.213 | 0.876 | 0.218 |
| **BaP** | 0.326 | -0.024 | 0.889 |
| **IndP** | 0.13 | 0.115 | 0.928 |
| **BghiP** | 0.152 | -0.012 | 0.87 |

Table S8 Multiple linear regression result of gas phase

|  |  |  |  |
| --- | --- | --- | --- |
| **MLR factor** | **Standardized**  **coefficient** | **T** | **Significant** |
| **factor score 1** | 0.895 | 13.483 | 0 |
| **factor score 2** | 0.349 | 5.258 | 0 |
| **factor score 3** | 0.155 | 2.341 | 0.037 |

Table S9 Physicochemical properties of sampling sites

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sampling sites** | **Longitude** | **Latitude** | **Air temperature(K)** | **Pressure(Pa)** | **Wind speed(m/s)** | **Gas**  **Volume(L)** |
| **W1** | 112.32°E | 16.80°N | 293.81 | 101528.90 | 5.79 | 244.76 |
| **W2** | 115.18°E | 10.10°N | 297.77 | 101328.16 | 6.97 | 247.12 |
| **W3** | 116.37°E | 10.32°N | 299.34 | 101231.11 | 6.91 | 232.21 |
| **W4** | 116.64°E | 10.42°N | 300.92 | 101186.40 | 6.51 | 203.76 |
| **W5** | 116.83°E | 10.57°N | 300.25 | 101147.57 | 6.30 | 177.66 |
| **W6** | 114.77°E | 11.13°N | 301.19 | 100941.09 | 4.59 | 212.24 |
| **W7** | 113.34°E | 13.93°N | 300.95 | 100932.88 | 4.01 | 234.13 |
| **W8** | 111.90°E | 16.70°N | 300.81 | 100878.44 | 5.13 | 228.17 |
| **W9** | 113.33°E | 13.10°N | 301.03 | 100813.85 | 3.25 | 236.99 |
| **W10** | 114.21°E | 11.03°N | 301.49 | 100887.21 | 3.05 | 250.78 |
| **W11** | 115.31°E | 9.50°N | 301.78 | 100926.91 | 3.28 | 230.08 |
| **W12** | 115.46°E | 9.37°N | 301.67 | 100876.72 | 3.88 | 339.88 |
| **W13** | 115.96°E | 9.33°N | 301.45 | 100829.85 | 4.58 | 229.10 |
| **W14** | 115.86°E | 9.73°N | 301.31 | 100933.00 | 7.44 | 233.82 |
| **W15** | 115.57°E | 9.85°N | 300.00 | 101000.00 | 7.44 | 237.76 |
| **W16** | 115.54°E | 9.90°N | 300.00 | 101000.00 | 7.44 | 226.17 |

Table S10 Details about analytical method

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Congener** | **Retention time (min)** | **Mass** | **Product mass** | **Collision energy** |
| **Nap** | 5.70 | 128/128 | 76.6/102.1 | 30/20 |
| **Acy** | 8.38 | 152/152 | 126/151.1 | 25/15 |
| **Ace-D10** | 8.69 | 164/164 | 80/160 | 30/30 |
| **Ace** | 8.74 | 153/153 | 126.6/151.9 | 25/20 |
| **Flo** | 9.78 | 166/166 | 115/165 | 40/15 |
| **Phe-D10** | 11.92 | 188/188 | 80/160 | 30/30 |
| **Phe** | 11.97 | 178/178 | 151.9/176 | 20/25 |
| **Ant** | 12.09 | 178/178 | 151.9/176.1 | 20/25 |
| **Flu** | 15.81 | 101/202 | 88/200.1 | 10/35 |
| **Pyr** | 16.64 | 101/202 | 88/200 | 10/35 |
| **BaA** | 22.16 | 228/228 | 201.9/226.1 | 25/30 |
| **Chr-D12** | 22.24 | 240/240 | 120/236 | 30/30 |
| **Chr** | 22.36 | 113/228 | 112.5/226.1 | 10/30 |
| **BbF** | 27.51 | 126/252 | 113/250.2 | 10/35 |
| **BkF** | 27.63 | 126/252 | 113/250.3 | 10/35 |
| **BaP** | 28.98 | 126/252 | 113/250.1 | 10/35 |
| **Pyr-D12** | 29.26 | 264/264 | 130/260 | 30/35 |
| **InP** | 33.97 | 138/276 | 125/374.1 | 15/40 |
| **DBahA** | 34.17 | 139/278 | 125.9/246.3 | 10/35 |
| **BghiP** | 34.97 | 138/276 | 137.2/274.2 | 15/40 |

Table S11 Physico-chemical properties of PAH congeners

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Congener** | **Ring** | **Henry’s law consistent**  **(Pa/m3/mol)** | **Molar mass *(*g/mol)** | **Molar volume(cm3/mol)** |
| **Nap** | 2 | 55 | 128 | 123.5 |
| **Acy** | 3 | 16 | 152 | 128 |
| **Ace** | 3 | 29 | 154 | 134 |
| **Flo** | 3 | 10 | 166 | 148 |
| **Phe** | 3 | 4.8 | 178 | 157 |
| **Ant** | 3 | 5.2 | 178 | 157 |
| **Flu** | 4 | 1.7 | 202 | 162 |
| **Pyr** | 4 | 2.1 | 202 | 162 |
| **BaA** | 4 | 0.45 | 228 | 191 |
| **Chr** | 4 | 0.42 | 228 | 191 |
| **BbF** | 5 | 0.18 | 252 | 196 |
| **BkF** | 5 | 0.17 | 252 | 196 |
| **BaP** | 5 | 0.21 | 252 | 196 |
| **IndP** | 5 | 0.07 | 276 | 200 |
| **DahA** | 5 | 0.05 | 278 | 225 |
| **BghiP** | 6 | 0.09 | 276 | 200 |

Figure S1 Correlation between air-water exchange flux and wind speed