**Table S1.** Estimation of air-sea CO2 fluxes reduction by surfactants in the western Pacific, North Atlantic and Norwegian Fjords.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | ① | ② | ③ | ④ | Reduction of CO2 fluxes by surfactantsc |
| Area (km2) | Fraction (%) | CO2 fluxes | % coverage by non-slicks |
|   |   | (Tg C year-1) |  ⑤ Tg C year-1 | ⑥ % |
| Pacific oceana | 153.8 x 106 | 100 | -0.46a | 89 | -0.09 | 20 |
| western Pacific  | 3.7 x 106 | 2.4 | -0.01 | 89 | -2.3 x 10-3 | 20 |
| Atlantic oceana | 74.6 x 106 | 100 | -0.58a | 89 | -0.12 | 20 |
| North Atlantic | 0.14 x 106 | 0.2 | -0.001 | 89 | -2.4 x 10-4 | 20 |
| Norwegian Fjords | 1183 | 0.0016 | -9.19 x 10-6 | 70 | -2.0 x 10-6 | 16 |
|   |   |   | ③ = CO2 fluxesa \*②/100 | ④ = 100 - % slicks coverageb | ⑤ = ③ \*(④/100) \*0.23c | ⑥ = ⑤\*100/③ |

a Based on estimated CO2 fluxes (Tg C year-1) (*57*)

b Frequency of ocean coverages by non-slicks by considering slicks coverages in the coastal (30%) and open ocean (11%) (*6*)

c Based on 23% reduction by surfactants from our study