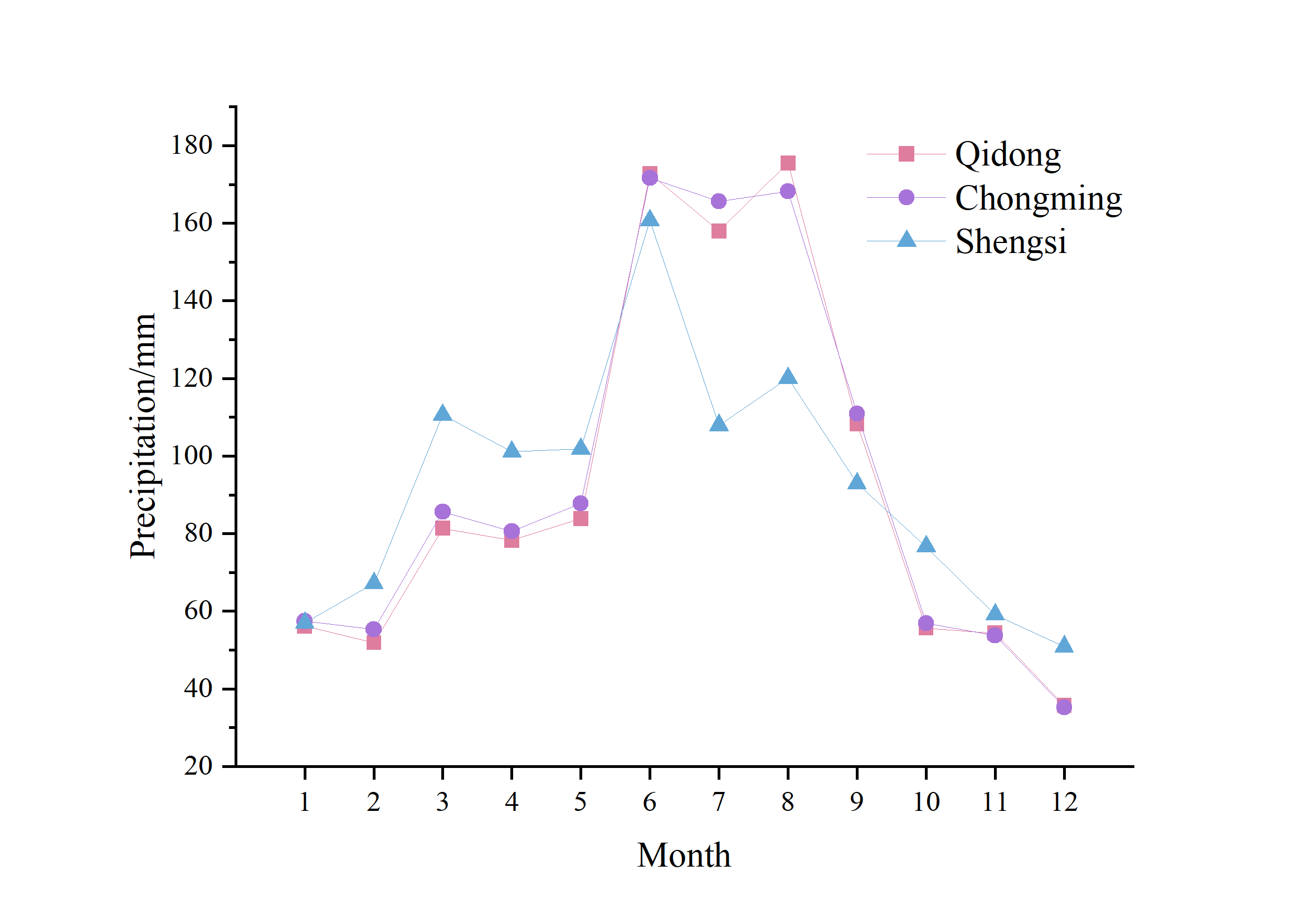
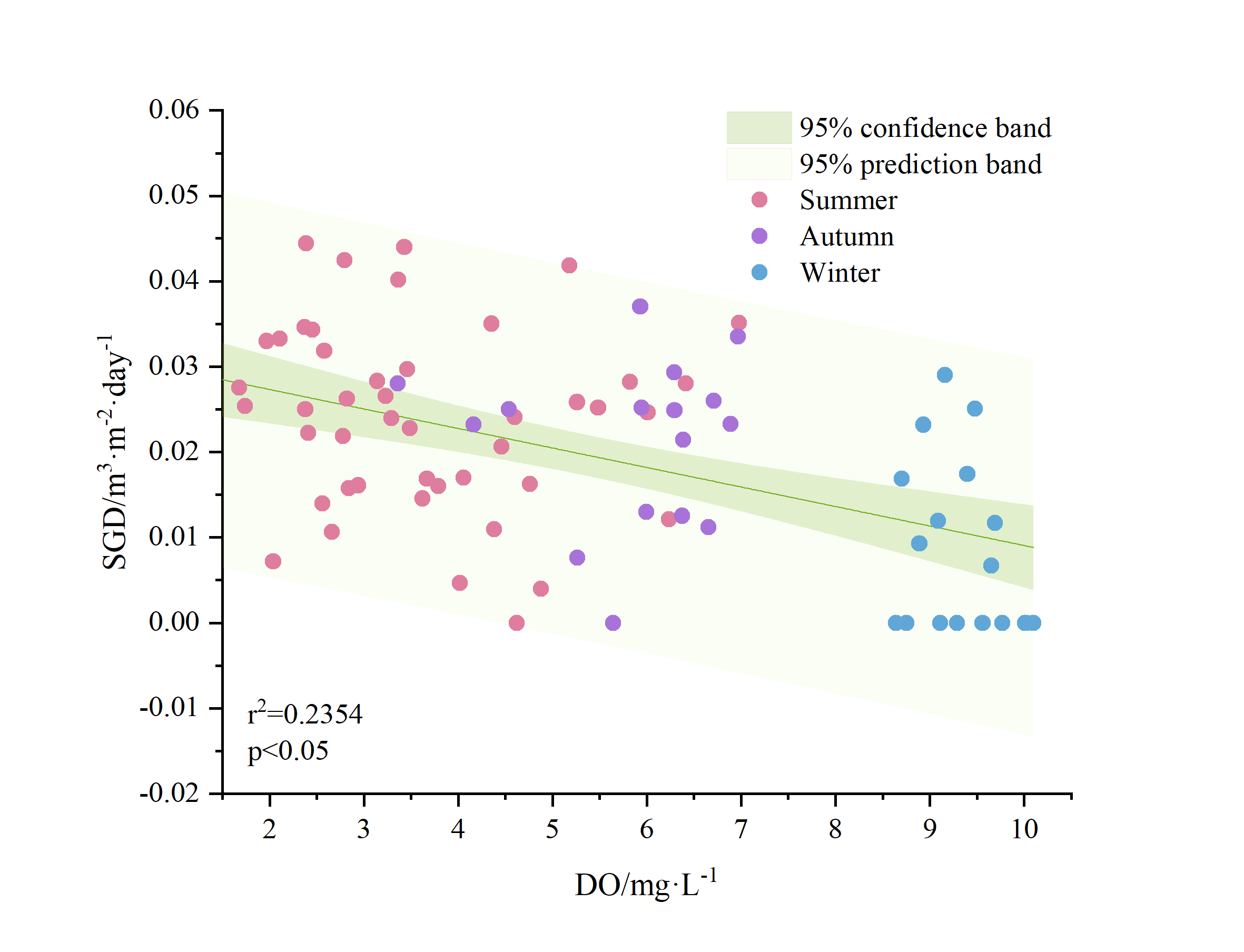
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**Fig. S1.** The average monthly precipitation from 1981 to 2010 at three weather stations.

****

**Fig. S2.** Correlations between SGD fluxes and DO concentrations of all sites in different seasons in the CJE.

**Table S1.** Ranges and average values of 222Rn and 226Ra activities (Bq/m3).

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Winter | | Summer | | | | | Autumn | |
|  |  |  | 2018.3a | 2021.3 | 2017.8b | 2018.7c | 2018.8d | 2019.8 | 2020.7 | 2020.1 | 2021.1 |
| 222Rn | surface | range |  | 0.88-8.85 |  |  |  | 1.68-21.25 | 0.00-15.67 | 0.70-19.50 | 3.67-9.42 |
|  |  | avg. |  | 6.70-2.42 |  |  |  | 9.33-6.22 | 4.93-5.10 | 8.22-5.78 | 6.08-1.97 |
|  | bottom | range | 0.03-14.12 | 1.20-8.77 | 7.50-21.50 | 0.60-32.40 | 11.17-28.02 | 2.57-35.17 | 0.00-21.88 | 6.17-19.72 | 5.98-13.30 |
|  |  | avg. | 4.62-3.85 | 5.17-2.43 | 15.72-5.13 | 11.85-6.82 | 18.55-5.20 | 21.13-7.92 | 8.70-7.40 | 11.45-4.15 | 10.80-2.28 |
| 226Ra | surface | range |  | 2.65-5.97 |  |  |  | 1.97-5.70 | 2.78-5.58 | 1.50-4.90 | 2.15-4.45 |
|  |  | avg. |  | 4.18-1.23 |  |  |  | 3.55-1.37 | 3.52-0.77 | 2.97-1.02 | 3.30-0.80 |
|  | bottom | range | 1.63-9.23 | 2.35-5.35 | 1.03-2.67 | 0.72-7.55 | 1.65-4.62 | 1.33-4.12 | 2.10-4.62 | 1.83-5.72 | 2.02-5.18 |
|  |  | avg. | 4.87-1.95 | 3.28-0.93 | 1.85-0.45 | 3.83-1.52 | 3.42-0.83 | 2.47-0.87 | 2.85-0.65 | 3.52-1.25 | 3.42-1.02 |

a, b,c,d Guo et al., 2020.

**Table S2.** 222Rn loss across the pycnocline

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Station | Sampling depth/(m) | 222Rn/(Bq·m-3) | Pycnocline depth/(m) | *dC/dz*/(Bq·m-4) | *Fpycnocline*/(10-3 Bq·m-2·d-1) |
|
| August, 2019 | | | | | |
| CJK-3-2 | 0 | 14.1±0.4 | 10 | 0.22 | 0.67 |
|  | 10 | 36.3±1.4 |  |  |  |
|  | 20 | 31.0±2.6 |  |  |  |
| CJK-2-3 | 2 | 4.9±0.2 | 10 | 0.08 | 0.17 |
|  | 10 | 11.9±1.0 |  |  |  |
|  | 20 | 15.9±1.5 |  |  |  |
|  | 28 | 19.0±0.6 |  |  |  |
| July, 2020 | | | | | |
| A11-2 | 2 | 3.7±0.4 | 11 | 0.35 | 1.00 |
|  | 13 | 7.5±0.6 |  |  |  |
|  | 26 | 20.1±0.9 |  |  |  |
| A1-4 | 2 | 6.1±0.5 | 2 | 0.16 | 0.50 |
|  | 15 | 4.1±0.4 |  |  |  |
|  | 29 | 17.0±0.8 |  |  |  |
| A1-7 | 2 | 5.1±0.4 | 3 | 0.16 | 0.50 |
|  | 17 | 2.8±0.3 |  |  |  |
|  | 34 | 9.7±0.6 |  |  |  |
| A5-4 | 2 | 0.4±0.3 | 11 | 1.22 | 3.67 |
|  | 10 | 16.6±0.8 |  |  |  |
|  | 20 | 4.5±0.5 |  |  |  |
| A5-6 | 3 | 0 | 17 | 0.48 | 1.33 |
|  | 23 | 9.5±0.5 |  |  |  |
|  | 43 | 4.7±0.4 |  |  |  |
| A7-6 | 3 | 0.1±0.2 | 24 | 0.06 | 0.17 |
|  | 30 | 1.8±0.3 |  |  |  |
|  | 60 | 9.9±0.6 |  |  |  |