A Big Earth Data Platform for Three Poles

**A new radiotracer for particulate carbon dynamics: Examination of 210Bi-210Pb in seawater**

1、Description

210Bi (t1/2=5.01 d) is theoretically a radionuclide for tracing the particle cycle over a timescale of hours to days. However, it has been rarely investigated in marine environments due to its very short half-life and low activity. Here, 210Bi and 210Pb were examined in the water column on the shelf/slope of the northern South China Sea (SCS), as well as their atmospheric deposition. In rainwater, the 210Bi/210Pb ratio averaged 0.54±0.28, indicating the influence of atmospheric deposition on the disequilibrium between 210Bi and 210Pb in surface seawater. On the shelf, 210Bi/210Pb averaged 0.73±0.10 in the euphotic zone and 1.25±0.10 below, supporting a quick removal of 210Bi from the euphotic zone and regeneration in the twilight zone. On the slope, deficits in 210Bi (210Bi/210Pb of 0.81±0.07) were also observed in the productive low euphotic zone. The concurrence of 210Bi deficits and higher particulate organic carbon (POC) concentrations implied that POC largely dominates the deficit and excess of 210Bi. Based on a simple model, the removal fluxes of 210Bi at the euphotic base were 728±73 dpm m-2 d-1 and 216±89 dpm m-2 d-1 on the shelf and slope. The residence time of particulate 210Bi was 14±2 d. The 210Bi-derived export flux of POC was 1.7±0.7 mmol-C m-2 d-1 out of the euphotic zone over the slope. These results lay the foundation for 210Bi/210Pb to quantify the sinking and remineralization of particulate organic matter in coastal seas.

2、Keywords

Theme：Marine Chemistry,Island and Coastal Zone,Marine Disaster  
Discipline：Ocean  
Places：South China Sea  
Time：2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.015MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：25.0 | - |
| west：11.7 | - | east：118.5 |
| - | south：20.0 | - |

5、Time frame:2020-05-17 16:00:00+00:00--2020-09-29 16:00:00+00:00

6、Reference method

References to data:

YANG Weifeng . A new radiotracer for particulate carbon dynamics: Examination of 210Bi-210Pb in seawater. A Big Earth Data Platform for Three Poles, doi:10.11888/Ocean.tpdc.2728762022

References to articles:

7、Supporting project information

8、Data resource provider

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