时空三极环境大数据平台

**Coccolith morphological parameters, coccolith flux, and coccolith mass accumulation rate at ODP Site 1143 in the South China Sea over the past 2 Myr**

英文标题：Coccolith morphological parameters, coccolith flux, and coccolith mass accumulation rate at ODP Site 1143 in the South China Sea over the past 2 Myr

1、摘要

The marine calcifying algae coccolithophores are one of the major contributors to the marine carbonate counter pump. The long-term change in coccolith size/mass that imprints the degree of coccolith calcification could have exerted impacts on the past carbon cycle and climate changes in the geological times. Here, we investigated coccolith morphological parameters, coccolith flux, and coccolith mass accumulation rate at Ocean Drilling Program (ODP) Site 1143 (113.285° E, 9.362° N, 2,772 m water depth) in the South China Sea over the past 2 Myr. The coccolith morphological parameters are measured in the coccolith slides, including the data of coccolith length, coccolith area, and coccolith thickness. Coccolith thickness is calibrated by its brightness under a circular polarized microscope. Coccolith mass then can be calculated from coccolith area, thickness and calcite density. The coccolith flux data that reflect the coccolithophore productivity are determined by an absolute coccolith counting method in the coccolith slides. Thereafter, coccolith mass accumulation rate can be resolved by coccolith flux and coccolith mass.   
Our coccolith data confirm the idea that Earth eccentricity controlled coccolith size diversity and calcite export production in tropical oceans in the Pleistocene. In addition, we consider a possible origin of the long-term increase in coccolith size as a result of increased oceanic alkalinity availability. As coccolithophores evolved simultaneously in global oceans, the increased coccolith calcification may have promoted global marine particulate inorganic carbon production, especially for the interglacial stages. Therefore, the enhanced coccolith-based CCP may account for a stepwise increase in interglacial CO2 levels over the middle Pleistocene. High CO2 levels at the onset of the interglacial stages may reduce the glaciation rate, thereby prolonging an entire interglacial-glacial cycle after the middle Pleistocene.

2、关键词

主题关键词：碳酸盐,海相沉积,Coccolith,古气候重建  
学科关键词：古环境  
地点关键词：South China Sea  
时间关键词：Pleistocene

3、数据细节

1.比例尺：None

2.投影：

3.文件大小：0.05MB

4.数据格式：None

4、空间范围

|  |  |  |
| --- | --- | --- |
| - | 北：10.0 | - |
| 西：113.0 | - | 东：114.0 |
| - | 南：9.0 | - |

5、时间范围2022-07-01 16:00:00+00:00--2022-07-02 16:00:00+00:00

6、引用方式

数据的引用:

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文章的引用:

7、资助项目信息

8、数据资源提供者

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