



学 术 报 告

Main breakthrough research discoveries resulting from scientific ocean drilling of contourite drifts in polar areas

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报告时间: 2026 年 9 月 8 日 10:00

地 点: 图书馆三楼报告厅

主 办: 全国重点实验室、新生代生物演化与环境研究室



报告人及报告简介:

Dr. Michele Rebesco is a Research Director at the National Institute of Oceanography and Applied Geophysics (OGS), Italy, and a distinguished expert in polar marine geology, contourite sedimentology, and paleoclimate reconstruction. He serves as Editor-in-Chief of the journal *Marine Geology* (Elsevier). His research interests are centred on the geological/geophysical exploration of continental margins, aimed at depositional processes and paleoclimatic reconstruction. His main focus is on polar margins and interacting downslope and alongslope deep-sea sedimentary processes and submarine instabilities.

Scientific ocean drilling of contourite drifts in polar regions has revolutionized our understanding of paleoclimate, ocean circulation, and ice sheet dynamics. As bottom currents slow, they deposit fine-grained sediments that over millions of years pile up into contourite drifts. Located beyond ice-sheet scour, these deep-sea drifts accumulate rapidly and continuously, filtering local noise and coastal gaps. They are high-resolution "tape recorders" of Earth's climate history.

This presentation synthesises major breakthroughs achieved by polar scientific ocean drilling. Continuous deep-sea contourite archives document pronounced ice-sheet oscillations modulated by orbital cycles, as well as prominent ice-sheet collapse events driven primarily by ocean warming instead of atmospheric forcing. These findings deliver critical geological analogues for evaluating the vulnerability of present-day polar ice-sheet systems.

