



Late Quaternary glacial fluctuation in the deposits of the Joides Basin (Antarctica): High Resolution Seismostratigraphy

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The Joides Basin, a tectonic depression modelled by glacial erosion, is located in a key area in the western Ross Sea where the different Late Quaternary glacial fluctuations are recorded in sediment deposits. In fact during glacial periods grounded ice sheets largely occupied Joides basin and prevented the preservation of complete and undisturbed marine sedimentary sequences and probably the action of ice sheet on the continental shelf is came from various contributors and sediment inputs: Western and Eastern Antarctic Ice Sheets with local ice and ice streams from Ross Ice Shelf. It is likely that pre-glacial terrigenous sedimentation of the Joides Basin changed into pro-glacial sedimentation under the influence of the prograding ice stream wedge and than in marine sedimentation after the ice sheet retreat and present processes. This study mainly focuses on the paleoenvironmental of the continental shelf and aims at identifying sedimentary bodies datable to the last 40,000 – 50,000 years and at contributing to the knowledge of the Late Quaternary paleoevents which have driven the evolution of the Antarctic ice sheet on the Ross Sea margin. High resolution seismic data (Sub Bottom Profiler - SBP, Huntec Deep Tow Boomer - HNT and Sparker) and physical properties of some gravity cores collected in the Joides Basin during five Antarctic Oceanographic Cruise (X, XI, XIV, XII and XX) Italian Antarctic Research Programme – PNRA) are particularly indicative to unravel the ice sheet fluctuations from the Last Glacial Maximum till present. The geophysical instrument configuration adopted allowed us to obtain an areal and vertical high-resolution. In particular the submetric resolution and penetration of 300 ms (TWTT) for the Sparker and decimetric resolution for the SBP and HNT allowed us to distinguish postglacial sediments, their relative seismic facies and better understand the sedimentation processes following the retreat of the ice sheet.