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New geophysical evidence from Edisto Inlet fjord, Cape Hallett (Ross Sea, Antarctica)

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Edisto Inlet, located along the northern Victoria Land coast, is a small fjord about 15 km long and 4 km wide, carved by glacial processes and separated by a sill from the larger Moubray Bay.
The bathymetry shows a reversed slope and ranges from 670 m in the innermost sector of the bay to 100 m near the entrance of the bay.
The Edisto Inlet is seldom accessible due the presence of persistent sea ice but in 2017 during the PNRA (Programma Nazionale delle Ricerche in Antartide) OGS Explora expedition, exceptional sea-ice free conditions allowed for the first time the acquisition of a wealth of data (including sub-bottom chirp profiles, multibeam swath bathymetry, Acoustic Doppler Current Profiler measurements as well as two gravity cores) inside the fjord.
The geophysical dataset combined with previous echo-sounding data collected in the outer sector of the fjord reveal the presence of sediment drifts that hypothetically formed under the influence of bottom currents. The sediment drifts are characterized by a very high sedimentation rate and are potential excellent paleoclimatic archives.
Paleoclimate records are crucial for understanding current changes taking place in the Antarctica; However, paleoclimate and oceanographic reconstructions, especially from the Antarctic fjords, as well as the circulation and processes impacting their exchange with the shelf and wider ocean, are scarce.
Here we present the first report of the integrated analysis of all geophysical dataset aimed to understand relationship between the seabed morphology and present day velocity and direction of the currents. Moreover, the evolution over the late deglaciation phase can be inferred by comparing the results with the stratigraphic information from existing sediment cores.
The comparison of all data and observations with the numerical simulation of ocean dynamics, will permit to understand the climatic evolution of the fjord. Link with the climatic evolution of the Victoria Land coast and with other Antarctic sectors of the same area will allow to understand the interaction between East and West Antarctica.