



ISAES 2019

XIII International Symposium on Antarctic Earth Sciences

22 July (Mon) – 26 July (Fri), 2019
Songdo Convensia, Incheon, Republic of Korea

PROGRAM BOOK



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er Session

on)/23(Tue), 13:45-15:00

Permafrost and Periglacial Ice Free Areas in Antarctica

Bedrock Erosion Rates and the Development of Weathering Features in Antarctica
Dan Morgan *Vanderbilt University, USA*

Geophysical and Geomorphological Investigations of Polygonal Patterned Ground in Continuous Antarctic Permafrost as a Mars Analog
Mauro Guglielmin *University of Insubria, Italy*

Active Layer Modeling at Signy Island (Maritime Antarctica) and the Role of the Surface Type
Stefano Ponti *University of Insubria, Italy*

Statistical Analysis of Soils Properties from Antarctica Based on a Large Database
Mayara Daher *Universidade Federal de Viçosa, Brazil*

Microbial Life in the Brine of Cryo-environments in the Northern Victoria Land (Antarctica)
Maria Papale *Institute of Polar Science, National Research Council, Italy*

Thermal Diffusivity of Antarctic Soil Estimated Using Carslaw-jaeger and Finite Element Methods
Heejung Kim *Seoul National University, Korea*

Electrical Resistivity Imaging to Study Permafrost Distribution in a Marine Terrace in Byers Peninsula, Livingston Island, Maritime Antarctica
Antonio Correia *University of Evora, Portugal*

ed)/25(Thu), 13:30-15:00

Applied Bathymetry for Understanding Quaternary History and Change

New Bathymetric and Multi-channel Seismic Data from the NW Weddell Sea: Implications for the Late Cenozoic Glacial History of the South Orkney Islands Continental Shelf
German Leitchenkov *Research institute for geology and mineral resources of the world ocean, Russia*

IBCSO V2.0: A Collaborative Effort Towards Improved Bathymetric Information
Jan Erik Arndt *Alfred Wegener Institute for Polar and Marine Research, Germany*

Evidence of Accelerated Glacial Retreat on King George Island, South Shetland Islands
Jude Castellino *British Antarctic Survey, United Kingdom*

A Subglacial Hydrologic Switching Hypothesis for Silt Sorting and Deposition during Ice Sheet Retreat in the Amundsen Sea Embayment
Dustin Schroeder *Stanford University, USA*

July 22(Mon)/23(Tue), 13:45-15:00

S12

Geological Records of Ocean and Ice Sheet Change from the Ross Sea

A104 High Resolution Seismo-stratigraphic Evidence from the Edisto Inlet Fjord, Western Ross Sea (Antarctica)
Francesca Battaglia *Cà Foscari University of Venice, Italy*

A130 The STREAM Project: Late Quaternary Evolution of the Ocean-ice Sheet Interactions - The Record from the Ross Sea Continental Margin (Antarctica)
Ester Colizza *University of Trieste, Italy*

A131 New Chronologies on East Antarctic Ice Sheet Stability - Surface Exposure Ages from Bennett Platform, Transantarctic Mountains
Julia Lindow *Woods Hole Oceanographic Institution, USA*

A157 Multiple Glaciation in the Middle Segment of the Western Ross Sea: Revealed By Intermediate-resolution Seismic Data
Zhongyan Shen *The Second Institute of Oceanography, China*

A199 Assessing the Orbital Response of the WAIS from a Ross Sea Deep Ocean Perspective Since the Late Pliocene
Molly Patterson *Binghamton University, USA*

A214 Preliminary Results of Geochemical Proxies (Biogenic Opal, TOC, and Caco3) at IODP Site U1523 on the Ross Sea Continental Shelf
Sunghan Kim *Korea Polar Research Institute, Korea*

A288 Plio-pleistocene Antarctic Slope Current in the Outer Ross Sea, and Linkages to West Antarctic Ice Sheet Variability
Benji Griffin *Victoria University of Wellington, New Zealand*

A297 Paleocceanographic Changes during the Past One Million Years in the Central Basin, Northwestern Ross Sea
Minkyung Lee *Korea Polar Research Institute, Korea*

A337 Antarctic Holocene Deglaciation and Environmental Evolution of the Eastern Ross Embayment
Christina Riesselman *University of Otago, New Zealand*

A348 Using Sedimentology and Geochemistry to Elucidate Antarctic Ice Sheet Extent in the Late Miocene to Pliocene: Results from IODP Site U1522 on the Ross Sea Continental Shelf
Denise Kulhanek *Texas A&M University, USA*

A349 XRF Sediment Geochemistry from IODP Site U1523, Outer Ross Sea Continental Shelf, and Its Utility to Distinguish Sediment Input from Various Water Masses
Denise Kulhanek *Texas A&M University, USA*

A388 A Preliminary Study of the Relationship of Chemical Data with the Diatoms Assemblage in the Coastal Core Sediment of the Antarctic Ross Sea
Younho Noh *Korea Polar Research Institute, Korea*

A392 Petrography of Gravel Size Clasts from Iodp_exp374 Drillcores (Ross Sea - Antarctica): Implications for Miocene Ice Flows
Luca Zurlì *University of Siena, Italy*

A431 Late Quaternary Paleoenvironment and Paleoclimate of the Northern Drygalski Basin (Ross Sea, Antarctica) Using Microorganism Assemblages and Sediment Characteristics: Preliminary Results
Florenza Torricella *Università di Pisa, Italy*

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Theme 4: Geological records of ocean and ice sheet change from the Ross Sea

Preliminary results of geochemical proxies (biogenic opal, TOC, and CaCO₃) at IODP Site U1523 on the Ross Sea Continental Shelf

Sunghan Kim¹, Jae Il Lee¹, Min Kyung Lee¹, Rob M. McKay², and the IODP Expedition 374 Scientists³

¹Korea Polar Research Institute, Incheon 21990, South Korea, delongksh@kopri.re.kr; ²Antarctic Research Centre, Victoria University of Wellington, Wellington, New Zealand;

³http://iodp.tamu.edu/scienceops/expeditions/ross_sea_ice_sheet_history.html

It is important to understand past ice sheet dynamics. Because the West and East Antarctic Ice Sheets merged on the Ross Sea, understanding the ice sheet variation particularly in the Ross Sea is crucial. Geochemical proxies respond to surface environmental changes on the shelf in association with ice sheet advance/retreat. Site U1523 was collected from the Ross Sea continental shelf during International Ocean Discovery Program (IODP) Expedition 374. We measured biogenic opal, total organic carbon (TOC), and CaCO₃ concentrations from the top 16 m of Site U1523 to reconstruct the late Pleistocene surface water productivity changes in response to ice sheet advance/retreat and to reconstruct bottom water corrosivity changes. Since our preliminary results of biogenic opal and TOC concentrations show cyclical variations, the variation may be related to degree of duration of sea ice associated with ice sheet advance and retreat on the Ross Sea. Because CaCO₃ preservation is related to bottom water mass property and surface carbonate production, changes in CaCO₃ concentration would provide information on past changes in bottom water corrosivity or surface carbonate production on the Ross Sea. Generally, increased CaCO₃ concentrations occurred together with increases in C/N ratio, indicating that CaCO₃ preservation on the Ross Sea continental shelf is related to ice sheet advance. Because this is preliminary results, more detailed study will be done in the future.