



Past Antarctic Ice Sheet Dynamics (PAIS) Conference

Trieste, Italy, 10<sup>th</sup>-15<sup>th</sup> September 2017

#### WORKSHOPS

##### Antarctic Seismic Data Library System (SDLS) business meeting

Chairs: Frank Nitsche [fnitsche@ldeo.columbia.edu](mailto:fnitsche@ldeo.columbia.edu)

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This is a business meeting of the Antarctic Seismic Data Library System <http://sdls.ogs.trieste.it/>

The Antarctic SDLS was created in April 1991 to function under the auspices of the Scientific Committee on Antarctic Research, and to provide open access to Antarctic multichannel seismic-reflection data (MCS) for use in cooperative research projects.

The Antarctic SDLS is under the mandates of the Antarctic Treaty System, and as such, all institutions that collect MCS data in Antarctica must submit their MCS data to the Antarctic SDLS. The SDLS has library branches worldwide at which researchers may view and study MCS data.

The formal guidelines that govern the SDLS are outlined in general in [Antarctic Treaty Consultative Meeting Resolution XVI-12](#), and in particular in [SCAR Report No 9](#).

##### APECS - Association of Polar Early Career Scientists - Social Media and Science Communication

<http://www.apecsitaly.it/social-media-and-science-communication/>

Chairs:

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##### Mid- to high latitude climate variations and impacts on the East Antarctic Ice sheet stability since the LGM

Chairs:

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Obtaining information on past stability of East Antarctica, and retrieving climate situations which may induce critical instability conditions of the ice sheet is important to constrain forecasts of ice sheet wastage. Collecting and compiling all the paleo-climate reconstructions since the LGM, as well as obtaining a continuous dataset over a long time period, is crucial to demonstrate occurrence of past ice sheet instabilities and to link them with synchronous atmospheric or oceanic circulation changes. Since these changes depend on how the atmospheric and oceanic circulations vary within a large range of latitudes, collecting all available data is a big challenge that requires the attention of a large international community. This workshop aims at pursuing the Bentley et al. (2014) initiative to collect all available data (ice core and sediment core records (including deep ocean, fjords, and lakes), moraine dating...), and to analyze data according to transects between mid and high latitudes, in order to offer new understanding of past

responses of Antarctica to climate changes, and allow defining regions of high priority for research. The final objectives are the following:

- 1) understanding significant ice sheet retreat episodes from paleoclimate information,
- 2) synchronizing this ice sheet variability with the high resolution mid- to high latitude climate change since the LGM.

The large datasets already collected by Bentley et al. (2014) and in the framework of HOLOCLIP (B. Stenni, X. Crosta) may be used as a starting point to study climate and cryosphere variations since the Last Glacial Maximum (LGM). This workshop proposes further discussion to define:

1. How can we best use and complement the past climate data already collected?
2. Relevant transects where a new focus is needed?
3. Data gaps and defining where new data (e.g., drilling of new cores) are required?
4. Whether this initiative should be included in future SCAR priorities (e.g., through a SCAR Expert group, or included in the PAIS/AntClim21 main objectives)?

#### PAIS Subcommittee on paleobathymetry and paleotopography

Chairs:

Karsten Gohl karsten.gohl@awi.de

Stewart Jamieson stewart.jamieson@durham.ac.uk

Workshop aims to discuss recent results, ongoing and future projects on reconstruct circum-Antarctic stratigraphy and palaeobathymetry and the palaeotopography to show change in bedrock elevations, landforms, and geotectonic configurations of Antarctica over the past ~100 million years

#### Can we constrain and reconstruct the extent of the past and future ice shelves?" Aim: cross-disciplinary and put together models and observations around the issue of Antarctica future tipping point. (See special requirements)

Chairs:

Florence Colleoni, florence.colleoni@cmcc.it

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This workshop is cross-disciplinary and intends to discuss dynamical aspects of past ice-ocean-atmosphere-continental margins interactions of the Antarctic ice shelves and how to use this knowledge to project their future evolution. Numerous scientific gaps still exist in the knowledge of the physical processes related to the ice shelves dynamics. The challenges are many: Do climate proxies reflect mean states or extreme events? Can we define the mean state of Antarctica during past periods (Oligocene, Miocene, Pliocene, past interglacials)? Should we tune the models to past warm periods? What is the impact of short-term processes on the past dynamics of the ice sheet? We hope to discuss those questions and define some possible future directions for the next PAIS program.

#### PRAMSO - Palaeoclimate Records from the Antarctic Margin and Southern Ocean

Chair:

Tim Naish Timothy.Naish@vuw.ac.nz

Workshop aims to provide the Antarctic climate and palaeoclimate communities with the coordination and support for proposed and developing shallow and deep sea drilling projects. This includes identification of site survey needs, discuss recent results, ongoing and future projects

#### Terrestrial-Marine Regional Glacial History, Terra Nova Bay area

Chair:

Jamey Stutz: jamey.stutz@vuw.ac.nz

As part of a regional collaboration, an interdisciplinary, international group of researchers from Korea, New Zealand, U.S. and the U.K. have teamed up to constrain the Last Glacial Maximum (LGM) to present day glacial history of the Terra Nova Bay area. We aim to collect new terrestrial and marine records to reconstruct the extent, timing and magnitude of glacial retreat since the LGM. New terrestrial chronologies from cosmogenic surface exposure dating will provide a history of ice-surface lowering for major outlet glaciers (David, Priestley, Reeves and Campbell) while newly acquired marine-sediment cores and marine-

geophysical observations will constrain the past extent, timing and behavior of marine-based grounded ice. As part of this project, a New Zealand-based field team will conduct field work in the austral summer of 2017/18 along the flanks of David Glacier to sample glacial erratics for cosmogenic surface exposure dating. We recognize the history of research on this topic in this area and propose this workshop as an opportunity to involve the wider glacial-geology community.

We look forward to 1) discussing our upcoming field objectives, 2) developing ideas for regional collaboration/synthesis and 3) to simply share knowledge and experience of this fascinating area. All are invited.

#### IODP mission-specific platform Expedition 373, Antarctic Cenozoic Climate

Trevor Williams trevor@ldeo.columbia.edu

Carlota Escutia cescutia@ugr.es

Half-day workshop: IODP mission-specific platform Expedition 373, Antarctic Cenozoic Climate We invite interested researchers to participate in a science planning workshop to help shape research arising from International Ocean Discovery Program (IODP) Expedition 373, Antarctic Cenozoic Climate from George V Land and Adélie Land shelf sediments, led by Trevor Williams and Carlota Escutia. This mission-specific platform expedition is currently scheduled for the austral summer of 2019-2020 ([www.ecord.org/expedition373/](http://www.ecord.org/expedition373/)). The aim of the expedition is to investigate Antarctica's warm climates of the Eocene, climate cooling, and the growth of ice sheets on the continent during the Eocene-Oligocene transition. We aim to interpret ocean and land temperatures, vegetation, ice advance, and the timing of environmental changes in terms of Antarctica's role in the global climate system. The purpose of the workshop is to: 1. Further develop the science questions that can be addressed by drilling this margin; 2. Review the current understanding of the field area gained from seismic profiles, dredge samples, shallow cores, and modelling; 3. Discuss existing and emerging analytical methods and proxies appropriate for shallow marine Antarctic sediments; and 4. Plan drilling strategy and contingencies in cases such as heavy sea-ice or unexpected ages of the drilled strata.

#### Southern Ocean Climate Evolution (IODP 918-Pre) mini-workshop

Chairs:

Minoru Ikehara, ikehara@kochi-u.ac.jp

Xavier Crosta x.crosta@epoc.u-bordeaux1.fr

The aim of the mini-workshop is to share the newest information of IODP 918-Pre and to put in place a strategy for the writing of the Full Proposal. The main objective of 918-pre is to drill five high sediment accumulation sites located across a latitudinal transect on Del Caño Rise, Conrad Rise and Enderby Abyssal Plain to document the climate variability in the SW Indian sector of the Southern Ocean and associated interactions-feedbacks between the atmosphere, ocean and cryosphere on a variety of timescales spanning the Middle Miocene to the Holocene. We encourage and welcome participation of researchers who has an interest in this project.

Title of 918-pre: Plio-Pleistocene Paleooceanography of the Southwestern Indian sector of the Southern Ocean (PePSI-SO) (Short title: Southern Ocean Climate Evolution)

Proponents: Minoru Ikehara, Xavier Crosta, Samuel Jaccard, Tim Naish, Yoshifumi Nogi, Yusuke Saganuma, Gerhard Kuhn, Giuseppe Cortese, Boo-Keun Khim, Robert Dunbar, Richard Levy, Robert McKay, Thamban Meloth, Robert DeConto, Yasuyuki Nakamura, Takuya Itaki, Elisabeth Michel, Alain Mazaud, Raja Ganeshram, Alfredo Martinez-Garcia

#### Drilling beneath Antarctica's Ice Shelves. A workshop to discuss science objectives and future drill sites to recover records of past climate and environmental change. Sites that test model-driven hypotheses of ice sheet dynamics will be a focus

Chairs :

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Sedimentary archives hidden beneath Antarctica's fringing ice shelves provide direct records of ice sheet response to past environmental change. Importantly, these records offer a means to constrain ice sheet extent during past episodes when Earth's mean surface temperature was at least 2°C warmer than present.

Insight gained from such records are highly relevant given the pressing need to identify the likely response of the AIS to current emissions targets. These archives provide critical proxy environmental data that allow us to constrain sea ice presence/absence, ocean and atmospheric temperature and tell us when the grounding zones advanced beyond their present position or retreated to the continental interiors. When these records are linked to environmental information from distal locations we can interrogate the interactions that cause fluctuations that influence sea level. Observations provide empirical constraints on which we can test model skill. These unique geological records allow our community to us the high priority science themes outlined by the SCAR community. The ice shelves that cover these archives also offer a platform to access these records. During this workshop we will discuss: science questions and priorities, regional 'hot spots', and potential projects. We strongly encourage model-driven hypotheses. We will use this meeting to establish the key international partnerships required to achieve sub-ice shelf drilling. Come along and present your best idea!

Holocene climate variability off Wilkes Land, East Antarctica and Integrating coastal ice cores with high resolution sediment records (closed workshop)

Chairs :

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Aim of the workshop: Current understanding of Antarctic climate changes over the last deglacial warming period and the Holocene, as the baseline of the current global warming, mainly relies on ice cores that provide a synoptic view of atmospheric processes. Very few marine records exist, all of them with a much lower resolution than ice cores. Consequently, our knowledge of Antarctic Ocean evolution at the decadal resolution, at which the global warming affects ocean circulation, environmental conditions and ecosystems, is therefore extremely poor. The international IODP 318 "Wilkes Land Glacial History" retrieved unique laminated sedimentary sequences with the goal of understanding the last ~12,000 years BP at seasonal to decadal timescales. The aim of the workshop is to bring scientists working on these archives in order to better constrain sedimentary archives using novel methods for dating and monitor past changes in regional sea-ice, primary productivity (phytoplankton) and biogeochemical cycles via a series of new and traditional proxies, including a data-model comparison. Due to innovative (but complex) approaches, there is a crucial need to physically face the data and improve models by sharing complementary expertise. This side meeting will provide a unique opportunity to organize such a meeting with the final objective to produce several major publications in highly ranked journals, and to prepare proposals on future joint research by involving both marine and continental (ice core) community.

Sabrina Seafloor Survey Post-Cruise Meeting No. 1 (closed workshop)

Chair: L. Armand leanne.armand@mq.edu.au

PS104/MeBo Science Team post-cruise meeting (closed workshop)

Chair: Karsten Gohl karsten.gohl@awi.de