

Antarctic Permafrost, Soils and Periglacial Environments - ANTPAS

Joint IPA Interest Group / SCAR Expert Group

Promoting research on Antarctic Permafrost, Soils and Periglacial environments



Agenda:

0. Presentation of members
1. Informations
2. Presentation of the QuAntarctica project
3. Discussion of the future of ANTPAS
4. Review of structure of ANTPAS
5. Conclusions

Apologies:

Megan Balks, Joe Levy, Fionna Shanhun

Co-Chairs:

Mauro Guglielmin (Italy) and Gonçalo Vieira (Portugal)

Secretary:

Megan Balks (New Zealand)

Webmanagers:

Felipe Simas (Brazil) and Fiona Shanhun (New Zealand)

Geomorphology:

Jeronimo Lopez Martinez (Spain)

Ecosystems:

Joseph Levy (USA)

Permafrost:

A. Abramov (Russia)

Soils:

Iain Meiklejohn (South Africa)





Main recent activities

- **ANTPAS Workshops:**
SCAR OSC Auckland 2014, 11th ICOP 2016 Potsdam, SCAR OSC Kuala Lumpur 2016
- **Organization of ANTPAS sessions in major conferences:**
SCAR ISAES Goa (2015), IPA ICOP Potsdam (2016), SCAR OSC Kuala Lumpur (2016).
- **Special issues:** Geomorphology (2014)
- **Travel support to young researchers:** Goa, Kuala Lumpur.
- **GTN-P**
- **IPA "Permafrost research priorities"**
- **Contribution to "The State of the Climate"**
- **Letters of support to project applications.**



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SCAR Expert Group / IPA Working Group

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SURVEY TO BE SUBMITTED BY 13 JUNE 2016 – PHASE 1

Name (and email):

Other team members (and email):

Institution:

Country:

Main Antarctic region conducting research:

1. Synthesis of research (1 page)
2. Research Plans for 2016-2019 (1 page)
3. Main difficulties for your team's research activity? (i.e. funding, access to sites, ...)
4. What can you offer for partners? (i.e. drilling equipment, soil lab, ...)
5. SWOT Analysis of ANTPAS
6. Suggestions to improve the role of ANTPAS





Synthesis of survey results

Federal University of Viçosa	Brazil
Universidad de Magallanes	Chile
Masaryk University, Department of Geography	Czech Republic
Insubria University	Italy
University of Waikato	New Zealand
CEG/IGOT - Universidade de Lisboa	Portugal
Centro de Química Estrutural – IST. Universidade de Lisboa	Portugal
CEG/IGOT - Universidade de Lisboa	Portugal
Institute of physico-chemical and biological problems in soil science	Russia
Universidad Autónoma de Madrid	Spain
Vanderbilt University	USA
University of Texas at Austin	USA
University of Washington	USA

- 9 Countries
- 13 Responsible researchers
- 46+ researchers (current ANTPAS mailing list ~140 members)





Synthesis of survey results

- List of current activities
- Planned activities
- Research needs
- Offers to partners



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Strengths (Internal):

- large group of experts
- active cooperation between members
- integration in networks (SCAR, IPA, GTN-P)
- Strong presence in the field all over Antarctica with unique observatories
- long-term goals of many groups
- frequent sessions in major conferences
- ability to publish thematic issues



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Weaknesses (internal):

- Lack of visibility as a group
- Website (not actively updated)
- Large gap between meetings (normally 1-2 years)
- Antarctica is very large and ice-free environments very disconnected spatially.
- Small involvement of members.
- Lack of funding.
- Lack of clear integration with other groups and disciplines
- No clear strategy since the IPY
- limited membership



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Opportunities (external):

- Scientific significance of the topic (e.g. climate change, changing environments, etc.)
- Interdisciplinary nature of permafrost as key to many disciplines (e.g. terrestrial ecology, chemistry, etc.)
- More interaction with other scientists (ie biologists)
- Fast changing nature of the Antarctic permafrost environments
- Large monitoring and interdisciplinary programs (?)
- Possibility for joining bi-polar projects.
- Continue developing the involvement in SCAR and IPA in a coordinated manner
- The Umbrella of ANTPAS can help to increase the success of funding applications.



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Threats (external):

- Being taken over by other larger groups
- Losing identity once permafrost becomes a topic for a whole breadth of disciplines
- Danger of poor management/communication/lack of visible activity leaving ANTPAS to slowly lose momentum and support.
- Most of the research is focused on the idea of a warming AP, which is not true.





Brainstorming in the Potsdam Workshop:

a. Which are the key hot-topics for Antarctic permafrost and soils research?

- Soil contamination, disturbance, recovery and resilience (human impacts)
- Soil microbial diversity
- Age of permafrost
- Response of permafrost and soils to environmental change and infrastructure impacts
- Baseline data for decadal change
- Comparisons between permafrost environments in high-altitude mountains and Antarctica
- Wind/microclimate effects on soil properties, distribution and ecology (bipolar approach)
- Potential for increased ice-free areas due to glacier retreat and inception of cryopedogenesis
- Mars analogues
- Modelling and ecosystem-permafrost coupling / atmosphere-permafrost coupling - scale issue
- Review of the existing soil description protocol and further development for a multipurpose soil sampling protocol, easy to apply (allowing 3D assessment of environmental variables - using remote sensing and GIS)
- 39 and 42 SCAR HORIZON SCAN



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A roadmap for Antarctic and Southern Ocean science for the next two decades and beyond

M.C. KENNICUTT II, S.L. CHOWN, J.J. CASSANO, D. LIGGETT, L.S. PECK, R. MASSOM, S.R. RINTOUL, J. STOREY, D.G. VAUGHAN, T.J. WILSON, I. ALLISON, J. AYTON, R. BADHE, J. BAESEMAN, P.J. BARRETT, R.E. BELL, N. BERTLER, S. BO, A. BRANDT, D. BROMWICH, S.C. CARY, M.S. CLARK, P. CONVEY, E.S. COSTA, D. COWAN, R. DECONTO, R. DUNBAR, C. ELFRING, C. ESCUTIA, J. FRANCIS, H.A. FRICKER, M. FUKUCHI, N. GILBERT, J. GUTT, C. HAVERMANS, D. HIK, G. HOSIE, C. JONES, Y.D. KIM, Y. LE MAHO, S.H. LEE, M. LEPPE, G. LEITCHENKOV, X. LI, V. LIPENKOV, K. LOCHTE, J. LÓPEZ-MARTÍNEZ, C. LÜDECKE, W. LYONS, S. MARENSSI, H. MILLER, P. MOROZOVA, T. NAISH, S. NAYAK, R. RAVINDRA, J. RETAMALES, C.A. RICCI, M. ROGAN-FINEMORE, Y. ROPERT-COUDERT, A.A. SAMAH, L. SANSON, T. SCAMBOS, I.R. SCHLOSS, K. SHIRAIISHI, M.J. SIEGERT, J.C. SIMÕES, B. STOREY, M.D. SPARROW, D.H. WALL, J.C. WALSH, G. WILSON, J.G. WINTHER, J.C. XAVIER, H. YANG and W.J. SUTHERLAND

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39. What are and have been the rates of geomorphic change in different Antarctic regions, and what are the ages of preserved landscapes?

42. How will permafrost, the active layer and water availability in Antarctic soils and marine sediments change in a warming climate, and what are the effects on ecosystems and biogeochemical cycles? (*Cross-cuts “Antarctic Life”*)





Brainstorming in the Potsdam Workshop:

b. How to use ANTPAS as a frame for project applications?

- Publish a set of key questions that people can cite when preparing applications,
- Publish a regular report - "State of the Antarctic Permafrost and Soil Environment" - outreach
- Database on who and what is doing in ANTPAS,
- Framework document that includes the goals of ANTPAS and the key questions.
- National - letters of support, framed within the ANTPAS strategy
- International level - use ANTPAS as a niche topic with interest at a Global scale





Brainstorming in the Potsdam Workshop:

c. What is the importance of ANTPAS?

- Promote the importance of studying the ice-free areas
- forum/network for discussion and framework for research

d. What do we want ANTPAS to be?

- rich, active and effective
- provides collaboration and scientific exchange, especially on methods and data (ensures scientific consistency)

e. How can ANTPAS connect with other groups/organizations?

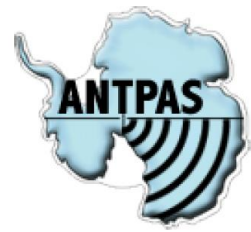
- well connected already, but advertise our expertise (website),
- APECS, SCAR, PYRN, IAG, IPA
- SH publication list needs updating - prepare a SH/Antarctic review on permafrost and soils.



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The future of ANTPAS - SWOT ANALYSIS HIGHLIGHTS

	Positive	Negative
Internal	<p>Strengths:</p> <ul style="list-style-type: none"> • large group of experts • active cooperation between members • integration in networks (SCAR, IPA, GTN-P) • Strong presence in the field all over Antarctica with unique observatories • long-term goals of many groups • frequent sessions in major conferences • ability to publish thematic issues 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of visibility as a group • Website (not actively updated) • Large gap between meetings (normally 1-2 years) • Antarctica is very large and ice-free environments very disconnected spatially. • Small involvement of members. • Lack of funding. • Lack of clear integration with other groups and disciplines • No clear strategy since the IPY • limited membership
External	<p>Opportunities</p> <ul style="list-style-type: none"> • Scientific significance of the topic (e.g. climate change, changing environments, etc.) • Interdisciplinary nature of permafrost as key to many disciplines (e.g. terrestrial ecology, chemistry, etc.) • More interaction with other scientists (ie biologists) • Fast changing nature of the Antarctic permafrost environments • Large monitoring and interdisciplinary programs (?) • Possibility for joining bi-polar projects. • Continue developing the involvement in SCAR and IPA in a coordinated manner • The Umbrella of ANTPAS can help to increase the success of funding applications. 	<p>Threats</p> <ul style="list-style-type: none"> • Being taken over by other larger groups • Losing identity once permafrost becomes a topic for a whole breadth of disciplines • Danger of poor management/communication/lack of visible activity leaving ANTPAS to slowly loose momentum and support. • Most of the research is focused on the idea of a warming AP, which is not true.

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PROPOSAL:

Implementation of Action Groups aiming at specific and short term objectives that will tackle issues detected in the SWOT analysis.

Each Action Group should have:

- Clear objectives (submit abstract to steering committee for approval),
- Short lifetime span.
- 1 or 2 Responsibles + team.



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Action Group proposals and needs:

- ANTPAS Terms of Reference (G. Vieira) - 6 months
- ANTPAS Communication (website, group reports, leaflet, presence in meetings)
- State of the Active Layer (CALM-S) – Paper (M.A. De Pablo)
- ANTPAS Permafrost and soils monitoring network (G. Vieira, M. Guglielmin?)
- Permafrost map of the World (IPA) (G. Vieira, ...)
- Project planning - Ecosystem services in Antarctica (N. Cannone)
- Project planning - Brines / Mars environments (M. Guglielmin)
- Varese Workshop (M. Guglielmin)

- Call for Action Groups (until 30 September)



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Mission of ANTPAS* (PROPOSAL FOR DISCUSSION)

- Promoting advances and cooperation on permafrost, active layer and soils research in the Antarctic and sub-Antarctic
 - Conference sessions;
 - Workshops;
 - Special issues on key topics;
 - Promote new projects.
- Providing expert advice on Antarctic permafrost and soils (e.g. SCAR, IPA, etc)
- Identifying key research topics and facilitate access to funding to members
- Promoting data standardization, archival and sharing (GTN-P, CALM)

* ANTPAS membership is open to all scientists, engineers and students interested in the fields of Antarctic permafrost, soils and periglacial environments





The future of ANTPAS

Review of organizational structure:

Steering Committee

- Co-chairs and members

Action Groups





The future of ANTPAS

Next meetings:

- ANTPAS Workshop - Varese (2017)
- SCAR OSC – Davos (2018)

Other potential meetings:

- Asian Conference on Permafrost – Sapporo (2017)

