Workshop on Circum-Antarctic Climate, Moss and Peat

Date: 30 September – 3 October 2014
Location: Dartington Hall, Totnes, UK

1. Workshop Goal and Objectives
The overall goal is to facilitate research coordination and synthesis of knowledge and data on moss peat banks and other moss-dominated ecosystems in and around Antarctica, including peatlands in Patagonia and the sub-Antarctic Islands, and moss carpets in Antarctica.

Specific objectives:
(1) to communicate results and ideas among participants;
(2) to discuss and identify key questions, data and knowledge gaps, and ways forward, including more coordination with new SCAR Scientific Research Programme (e.g., AntEco); and
(3) to generate an initial synthesis product or a white paper on research agenda related to Antarctic moss peat banks.

2. Workshop Program and Schedule

Tuesday, 30th September:
• Afternoon arrival and check in
• Meeting room is available in the afternoon for informal discussions if required
• Dinner at 19:00

Wednesday, 1st October:
09:00 – Dan Charman: Welcome
09:10 – Zicheng Yu: Introduction and initial discussions

(1). Antarctic peat and mosses
09:30 – Dan Charman: Records of climate and environmental change from Antarctic Peninsula moss banks

09:50 – Jessica Royles: Maritime Antarctic peat banks and the physiology of moss growth

10:10 – David Beilman: Timing of the development of peat-forming ecosystems of the Antarctica Peninsula and challenges in detecting recent responses

10:30 – Zicheng Yu: Transformations of peat-forming ecosystems on the western Antarctic Peninsula

10:50 – 11:10 Coffee break

11:10 – Julie Loisel: Developmental history of an intriguing peat-forming community along the west Antarctic Peninsula

11:30 – Sharon Robinson: What can East Antarctic moss beds tell us about recent climate?

11:50 – Pete Convey: Patterns and timescales in Antarctic terrestrial biogeography

(2). Records from the sub-Antarctic Islands and Patagonia
12:10 – Dominic Hodgson: Late Quaternary changes in the westerly winds over the Southern Ocean – a progress report from lake and peat sediment records
12:30 – 13:30 – Lunch break

13:30 – Nathalie van der Putten: South Atlantic and South Indian sub-Antarctic peat records: palaeoecological and palaeoclimatological reconstructions

13:50 – Svante Bjorck: Records of eolian activity from peat sequences on Isla de los Estados, east of Tierra del Fuego - do they register the southern hemisphere westerlies?

14:10 – François de Vleeschouwer: Peat bogs as archives of past atmospheric dust: insight on some ongoing studies

(3). Modelling peat-forming ecosystems
14:30 – Angela Gallego-Sala: Thoughts on modelling peatland distribution in the circum-Antarctic region

(4). Workshop discussion
14:50 – Plenary discussion: what do we want to achieve in the next two days?

15:30 – 15:50 – Coffee Break

15:50 – 17:00 – Breakout group discussion: key questions, data/knowledge gaps and future directions

Dinner at 19:00

Thursday, 2nd October:
09:00 – 12.30: Plenary summary of breakout group discussion

10:45 – 11:00 – Coffee break

12:30 – 13:30 – Lunch break

13:30 – 17.00 – Breakout group analysis and writing

15:15 – 15:30 – Coffee break

Dinner at 19:00

Friday, 3rd October:
09:00 – 12:00 – Wrap up onsite writing and plan for follow-up

10:30 – 10:45 – Coffee break

12:00 – 13:00 – Lunch break

13:00 – Departure

3. Agenda and Topics for Discussion
Let’s focus on the following 3 inter-related topics to guide our discussion and synthesis.

(1) Ideas: Circum-Antarctic perspective on peat inception and accumulation
   • Why is there peat?
• What controls peat inception, persistence and accumulation? Climate, topography, potential biota (species availability) or C balance?

• Why is there extensive peat on the AP but not in continental Antarctica?

• What is the difference between peatlands and moss peat banks? In terms of their ecology and climatic requirements?

• How will Antarctic peat change in the future? Can we use the existing peat-dominated ecosystems in Patagonia, South Georgia or other nearby regions as a spatial analogue (“space-for-time substitute”) for the future in the AP?

• What controls the transitions between different types of peat? Ecological succession or climate-driven?

• How to answer these questions? Targeted observations, experiments, modeling or data synthesis?

(2) Data: Circum-Antarctic data synthesis for peat C and climate histories and for process understanding

• Is it possible to develop an environment/climate space for mosses and peat types?

• How are peat inception and accumulation history related to Holocene climate histories as derived from ice and marine cores?

• How different or similar are peat accumulation histories in different sub-Antarctic islands across the Southern Ocean? Why?

(3) Challenges and opportunities for future research

4. Organizers
Zicheng Yu (Lehigh University)
Matt Amesbury (University of Exeter)
Dan Charman (University of Exeter)
Tom Roland (University of Exeter)

5. Workshop Sponsors:

INQUA
International Union for Quaternary Research

Ant Eco
State of the Antarctic Ecosystem

PAGES
PAST GLOBAL CHANGES
(WG: C-Peat: Carbon in Peat on Earth Through Time)
6. List of Participants

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<tr>
<th>Name</th>
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<tr>
<td>Dan Charman</td>
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