

ART WORKSHOP MEETING REPORT

The proposed program entitled “Arctic in Rapid Transition” (ART) is an initiative of the Arctic Ocean Sciences Board: the Marine Scientific Standing Committee of the International Arctic Science Committee. During the March 2009 meeting of the AOSB, the Board directed the ART steering group (SG), comprised almost exclusively of early career scientists, to organize a workshop to begin the process of developing a science and implementation plan for ART.

On 7-9 November, the ART Initiation Workshop was held in Fairbanks, Alaska. 58 scientists from 9 countries participated in the workshop which was hosted by the International Arctic Research Center at the University of Fairbanks. The workshop was sponsored by AOSB/IASC, the US NSF, the Norwegian Research Council, the Department of Fisheries and Oceans Canada, the Association of Polar Early Career Scientists, and IFM-GEOMAR.

The workshop was unique in that it was entirely planned by early career scientists and over half of the participants were early career scientists or students. Participants were asked to prepare a one-page summary of what they viewed to be the most critical question of those posed in the ART white paper which can be found at www.aosb/art.

The workshop began with six keynote speakers from various disciplines. (Agenda attached) These presentations helped put ART in the context of ongoing research in the Arctic and set the stage for the working group meetings that took place for most of the first and second days.

The meeting was organized around seven key questions posed in the white paper. Each working group reviewed the question, discussed whether or not it was the right question in light of our current knowledge about the arctic and then discussed how to go about answering the question.

The final day of the workshop was spent in plenary. Each working group reported to the full workshop on the results of their discussions. This resulted in a further narrowing of the critical questions into three main questions centered around sea ice, land-ocean interactions, and ecosystem responses. These questions are:

- A. How do recent spatial and temporal transitions in sea ice extent and thickness compare to those in past and projected climates, and what are the influences on and feedbacks from energy flows, carbon cycling and biological productivity?
- B. How will biogeochemical cycling respond to transitions in terrestrial, gateway, and shelf-to-basin fluxes and what are the consequences for socio-economic activities?
- C. How do ecosystems respond and feedback to changes in temperature, vertical stratification, seasonal ice zones, and acidification associated with current environmental transitions?

Because of the large number of early career scientists attending the workshop, an expert panel was convened to talk about the process of taking an idea like ART from concept to science and implementation plan and then to the proposal stage. Six experts shared their views on how this is best done and have offered to continue to provide support to the early career SG as they write the science and implementation plan.

In addition, the workshop included a ½ day field trip to learn more about the impact of climate change in Alaskan permafrost. The fieldtrip was led by Dr. Kenji Yoshikawa from UAF.

The SG met for one full day after the conclusion of the workshop to refine the key scientific questions, to develop an outline for a science plan, and to develop a timeline to complete the science plan by the time of the AOSB meeting in Nuuk Greenland in April 2010. The outline they developed is attached.

The SG is grateful to the sponsors of the workshop for their support in bringing so many high quality expert scientists and numerous early career scientists to Fairbanks. The exchanges that took place will help to shape the final science plan. The SG intends to continue to interact with workshop participants to receive their feedback and ideas as the science plan takes shape.

ART Timeline

November

- 15 send meeting report to SG
- 25 submit abstract for SOA meeting

December

- 10 submit final key questions, subquestions and motivation/rationale
submit list of related programs/projects

January

- 10 submit first drafts of sections
- 15 submit abstract for Oslo IPY conference
- 30 prepare poster
Comments on first drafts due
Comments on questions due

February

- 5 Circulate question sections to targeted people
- 20 Circulate question sections to WGs for comments
- 22-26 Ocean Sciences meeting/possible presentation at town hall meeting

March

- 1 submit EOS article
- 10-12 Arctic Workshop, Boulder CO
- 15 All draft chapters due to Carolyn
- 16-19 State of the Arctic (Try to hold a side meeting with anyone from drafting group and people who participated in workshop. Sara will arrange.)

April

- 1 Draft to be sent to AOSB
- 12-13 ART SG meeting in Copenhagen
- 15 AOSB meeting

May

- 2-7 EGU meeting, Vienna

June

8-12 Oslo IPY meeting

Side meeting of SG to begin work on Implementation plan

Fall 2010

Workshop to write implementation plan

AGENDA

Friday 6 November

18:00 Registration
Princess Hotel

19:00-20:30 Icebreaker
Princess Hotel

Saturday 7 November

IARC University of Alaska at Fairbanks

8:00-8:15 Vans leave Princess Hotel for IARC

8:00-8:45 Registration

8:45 Welcome and Opening (Carolyn Wegner, Session Chair)
Room: 401
Carolyn Wegner and Larry Hinzman

9:00 Expert speakers of different disciplines on additional background of ART's key scientific question

1. Large Scale Processes and changes in the ecosystem: Paul Wassmann
2. Sea Ice: Hajo Eicken
3. Paleo-oceanography: Matthias Forwick

10:30 Coffee Break

11:00 Expert speakers con't (Marit Reigstad, Session Chair)

4. Atmosphere: John Walsh
5. Ocean circulation and processes: Wieslaw Maslowski
6. Land-Ocean Interface: Paul Overduin

12:30 Lunch Break

- 13:30 Directions to Workshop Participants
 Karen Frey
- Working Groups (see last page for room numbers)
 (i) Sea ice (two groups)
 (ii) Land-ocean transport processes (two groups)
 (iii) Ecosystem responses (three groups)
- 15:00 Coffee Break
- 15:30 Working Groups reconvene
- 17:00 Conclude
- 17:15 Vans leave for Princess Hotel

Sunday 8 November

- 8:00 Vans leave from Princess Hotel for IARC
- 8:30 Working Groups reconvene
 (i) Sea ice (two groups)
 (ii) Land-ocean transport processes (two groups)
 (iii) Ecosystem responses (three groups)
Beginning at 8:45 there will be three mini-sessions. Each session will last 30 minutes. Participants can rotate to up to three sessions to hear a very short report from the working group and to provide comments and insight into the work of that group.
- 10:15 Coffee Break
- 10:45 Working Groups reconvene
 (i) Sea ice (two groups)
 (ii) Land-ocean transport processes (two groups)
 (iii) Ecosystem responses (three groups)
Original working groups reconvene to discuss the input from the mini sessions.
- 12:00 Lunch
- 13:00 Fieldtrip
- 17:00 Arrive at Chena Hot Springs with time to enjoy the hot springs and relax.

18:30 Workshop Dinner hosted by the Norwegian Research Council

20:30 Bus departs restaurant for Princess Hotel

22:00 Bus returns to the hotel.

Monday 9 November

08:30 Vans depart Princess Hotel for IARC

09:00 Christine Michel (Session Chair)

Room: 401

Presentation of 7 working groups

Each working group will have 15 minutes to present their results to the Workshop and to a Marine Round Table (MRT) Panel of Experts.

10:45 Coffee Break

11:15 MRT Panel of Experts

(Jackie Grebmeier, Bernie Coakley, Sue Moore, Steve Solomon and Julie Brigham-Grette)

The expert panel will provide feedback on the working group reports

12:30 Lunch

13:30 Jeremy Mathis (Session Chair)

MRT Panel of Experts will provide expert advice on drafting a science and implementation plan for ART.

15:00 Coffee Break

15:30 Discussion of workshop participants and formulation of the outline of the draft science plan.

17:00 Conclusion of Workshop

17:15 Vans depart IARC for Princess Hotel

Tuesday 10 November

All Day

Drafting Group will meet to begin drafting of the ART science and implementation plan. Tasks will be assigned with the goal of completing the plan by April 2010. (Participants must register in advance if they wish to participate in this drafting session. It is closed except for registered participants)

WORKING GROUPS

Sea Ice

WG A1: What are the spatial and temporal variations in sea-ice cover and ocean circulation through the Holocene; how do these transitions relate to marine ecosystem changes?

Chair: Stefan Hendricks

Reporter: Matt O'Regan

Room: 401

WG A2: How does the transition from multi-year to annual sea ice influence Arctic productivity and food-web transfers, and can Holocene transitions help understand current change?

Chair: John Cassano

Reporter: Karen Frey

Room: 415

Land-Ocean Interaction

WG B1: What is the pan-Arctic role of shelves and gateways (e.g. Siberian shelf, Canadian Archipelago, Atlantic and Pacific inflow and outflow shelves), for global Arctic production and ecosystem functioning, including distribution of organisms (hot spots), and how do these change during states of transition?

Chair: Igor Polyakov

Reporter: Anna Nikolopoulos

Room: 319

WG B2: How did and do the changes in the sea-ice regime, an enhanced hydrological cycle, increased coastal erosion, permafrost melt, and changes in ocean circulation affect cross-shelf to basin and along-shelf transport of organic and inorganic materials, including contaminants?

Chair: Elizabeth Shadwick

Reporter: Carolyn Wegner

Room: 407

Ecosystem Response

WG C1: What is the balance between bottom-up (e.g. nutrients, light availability) and top-down (grazing) constraints on Arctic primary production and biogeochemical cycling and how is this balance changing the Arctic transition?

Chair: Lee Cooper

Reporter: Marit Reigstad

Room: 3rd floor landing

WG C2: How do transition in salinity and temperature affect the niches of organisms, their interactions, and their capacity to survive and reproduce? What are the consequences of the arrival of new or disappearance of endemic species, and what are the consequences for harvestable species?

Chair: Alexandre Forest

Reporter: Christine Michel

Room: 417

WG C3: How will changes in environmental conditions affect the regional distribution of productivity regimes, ecosystem structure and energy flow in the Arctic and what are the consequences for northern communities and society?

Chair: Brendan Kelly

Reporter: Jeremy Mathis

Room: 501