

Breakout Session #1 - A Shared Vision of Future Logistics  
Monday a.m., 7 October 2013  
Group 3

Envision Arctic field research 10 or 20 years from now in an ideal world (i.e., no funding constraints):

- What does field research look like?
- What logistics support is in place?
- How is the support delivered?
- How would it be the same or different from today?
- How would we foster interdisciplinary science and system-level understanding?

### **What does field research look like in 10 or 20 years?**

1. Autonomous systems
  - Relying on miniaturization, low power, alternative energy
  - Allow for increased spatial and temporal coverage
  - Prepare for new measurements with technological advances, things that we cannot currently measure or cannot measure easily (especially in biology or chemistry)
  - Use a combination of new stations and mobile sensors (e.g., tagging birds with miniaturized sensors)
  - Partner with people outside of science for sensor development (e.g., medical community)
  - Continued development of Unmanned Aerial Systems (UASs), including potential use of dropsondes in place of radiosondes
  - Question: Can social sciences be supported by increased use of social media?
2. Comprehensive coverage of the Arctic
  - Expect continued resistance to direct access to Russian portions of the Arctic
  - Encourage scientists in Arctic nations to make measurements themselves
  - It was noted that we can't do everything we want in Alaska, so why do we need to make measurements elsewhere directly?
3. Increased levels of human activity in the Arctic
  - Concerned about impact of coming industrialization (ships, airplanes, trucks, rigs)
  - Given that development, could this provide an opportunity to expand observations?
  - Can we partner with, encourage, or require companies or organizations to include an observational component?

- For example, planes and ships currently report conditions elsewhere
- How do we ensure data is delivered?

**What logistics support is in place?**

**How is the support delivered?**

**How would it be the same or different from today?**

1. Different models for logistics support for Greenland, Antarctica and Alaska.
  - Access to each varies
  - Different approaches are required for different projects, different disciplines
  - Key is to maintain flexibility
2. Increase role of the Arctic Council to develop cooperation with other countries
3. Pool funds internationally and administer via the United Nations or other organization
4. Need improved communications, of various kinds
  - Infrastructure in the field: increased bandwidth and greater geographic uniformity
  - Communications with early career scientists, to teach them about how logistics are currently done. Can we bring them to the field or can we bring the field to them (via telecommunications)?
  - Recent push to consolidate Education and Public Outreach (EPO) efforts among fewer U.S. agencies
    - Having a centralized resource would lessen burden on scientists to re-invent the wheel with each project
    - Provide infrastructure for outreach or even facilitate remote surveying
    - What organization should be responsible?
    - Still left with some logistical problems, such as getting cameras/sensors to sites
  - Improve efficiency in facilitating communications with local people, perhaps establish common interfaces
    - Centralized resources help to keep communities from being overwhelmed by researchers

**How do we foster interdisciplinary science and system-level understanding?**

1. Balance process and distributed-data studies
2. Is it preferable to put multiple sensors on single vehicles or to coordinate measurements from single sensors?
3. Facilitate coordination among scientists from different disciplines

4. Extends well beyond NSF
5. Make better use of a reinvigorated IARPC
6. Conduct cross-disciplinary meetings. There used to be more, what happened to them?
7. Establish small groups for cross-collaboration. Hold meeting in person first, follow-up with web-based meetings.