Breakout Session #1 - A Shared Vision of Future Logistics
Monday a.m., 7 October 2013
Group 5

Vision of arctic logistics (in the future)?

- Question is phrased as more operational instead of strategic. Limits focus to operations, and should focus on what is the strategy of future arctic programs and funding resources (Morten)

- *How do we construct arctic infrastructure that can dynamically shift (agility) to assess heterogeneity in a changing environment? (Mary)
    Have many small stations that can be very mobile
    Some long term stations are entrenched - hard to collaborate and work in/with
    Long term stations are valuable, but should not take up all resources

- What is scientific goals, helps define the logistics. (Audrey)
    Resources for many high resolution (temporal and spatial) measurements
    Identify the resources, and logistic needs would be able to come from there
    Autonomous systems/measurements - key issue
    Instead of focus on large infrastructure, dedicate resources to building new systems and instrumentation that can address autonomous, long-term measurements

- Rapidly changing environment (central arctic) can be dangerous, needs for safety and infrastructure from either above or at surface. (Hans)
    Means to get to areas or during times needed to be studied
        UAVs
        Stable platform (ice breaker ships) - through international cooperation
        "Floating" stations (ala SHEBA)

- Logistics can support to help validate and verify large scale outputs (Rommel)
    Infrastructure that can bridge large scale to small scale
    Instrument platforms (aircraft, UAVs, boats)

- Focus of a lot of research at large research areas (Steve)
    Needed mobility to look at smaller areas, or dynamic events (fires)
    Infrastructure or management flexibility to be nimble to study a rapidly changing environment

- Need flagship observatories, but less extensive sites (mobile, short-term) are needed to address rapidly changing conditions (Hans)

- Infrastructure to access previously inaccessible areas (Hans)

- Science and engineering come together (miniaturization), and decrease in costs (Mary)

- "Oil rig" type platform. Semi-permanent but can actually be moved if needed or science question changes (Ryan)
    Large enough to base other research facilities (UAVs, boats, people)
        Different scales of mobility

- Existing infrastructure to accommodate science (Audrey)
    Ex. - Russia (nuclear ice breaker) but no room for science
    Not practical to be on existing boats

- Need other platform to distribute cheaper disposable (possibly recoverable) instrumentation or systems (Hans)
    Drop from aircraft

- Cube sats (micro-satellites) (Todd)
    Needs for either launch vehicles, or means of deployment
        "Pea pods" - certified launch/drop vehicles or from other platforms
    Needs for smaller common platforms

- Facilities to handle (next generation) instrumentation (Todd)
    Mobile, relocatable,
    Designed to be mobile, autonomous, unmanned

- Communications (Todd)
    Cyberinfrastructure to retrieve and move data from sites
    Power, resistant to failure, telemetry
    Physical limitations of remote access
        What can be done to fix limitations in communications (Ryan)?
    Where data goes to (storage)

- Foster interdisciplinary/international science?
    Some kind of merged or synchronized program calls
        Different deadlines across countries
    Joint programs across countries
    Where to apply for funding on these interdisciplinary/international programs?
    Scientific community becoming more interdisciplinary/international, how does a group form a proposal and who funds

- Logistics delivery?
    Small, group, single contractor mode has made big differences

linking internationally to tackle whole arctic - arctic research community

addressing heterogeneity
- one time events (fires)
  - many small mobile stations and autonomous platforms
    - for some fields, need for systematic evaluation of where these should be deployed before placed
  - few fixed smaller long term stations

Autonomous will be the mode of operation - resources should be placed to develop new systems for high resolution spatial and temporal observations
- UAS, ROVs, AUVs, buoys, ships, stables platforms
- possible translocatable oil rig platform, Barges as platforms

Infrastructure to access previously inaccessible areas

Push toward miniaturization to decrease costs and increase accessibility
- recognize that some instrumentation is constrained by laws of physics or is getting bigger and needing more power

Move toward cheap, disposable or recoverable instrumentation systems that can be deployed from aircraft, ships

Deployment of micro-satellites (cube sats, not DNA) provide options

Cyberinfrastructure for data retrieval and display, real time,
- with sufficient power, resistance to failure.

Foster Interdisciplinary and international programs
- common program dates across arctic research countries
- foster interdisciplinary groups that could approach multiple international funding sources simultaneously

Continue to see single contactor logistical model for logistical support.