

Post-CARA Plans

John Carlstrom, U. Chicago, Director CARA

Talk Outline

- Vision
- Polar Astrophysics Management Issues
- Need for an organization
- Existing Models
- The Future Plan

Vision Statement

Antarctica holds tremendous potential for Astrophysics which will be fully realized by an organization that provides logistical support, community access, knowledge transfer, education and outreach. The South Pole Science Institute (SPSI) will be such an organization, and will exploit this potential through an intellectual partnership to conduct the highest quality astrophysics.

Motivation: We are excited about astrophysics at the South Pole. We want to ensure the best science is done. We want the South Pole to be open to the entire community on a level playing ground.

Focus: the unique site conditions

**COLD, TRANSPARENT, STABLE
ATMOSPHERE**

CLEAR ICE

- wide range of science programs
- wide range of instruments

Management Issues (cont.)

- **Limited resources**
 - at site
 - personnel, equipment, power
 - accessibility to site
 - difficult travel
 - not physically accessible 9 months/year
 - size & weight shipping constraints
 - communications
- **Environment**
 - require new techniques
 - failures can cause large delays

Antarctica is a frontier in Astrophysics

- between temperate ground based facilities and satellites
- natural progression from Kitt Peak to Mauna Kea to South Pole to ...

Need for an organization

- Must have an organization to:
 - coordinate logistics, communication
 - manage limited & shared resources
 - manage limited accessibility
 - build on experience in Polar environment
 - avoid reinventing the wheel
 - develop robust solutions
 - provide continuity
 - provide an interface with NSF/OPP, Raytheon, and Astronomical Projects
 - interface with other funding agencies, national and international

Optimize Scientific Output

- Well defined long term scientific plan
- Scientifically driven management
- Responsive to, inclusion of, the astronomical community
- Support for small-scale CARA-like projects
- Site characterization
 - new wavelength bands and new techniques
 - long term testing, archival
- Coordinated outreach and education and human resources

Existing models for the SPSI

- **CARA STC - evolving to the SPSI**
 - manages limited resources
 - characterization of the site
 - education and outreach
 - accessibility to community
 - T.A.C. for AST/RO & IR/Abu program
 - submm and IR examples:
 - site testing -> AST/RO -> 10 meter proposal
 - site testing -> Spirex -> Abu -> 2 meter proposal
 - established international collaborations
 - *shifted to only NSF managed peer-reviewed projects*

Existing models

- Institute for Astronomy: Mauna Kea
- NRAO
 - deployed at different sites, focused on instruments
- University Observatories: BIMA, OVRO, CSO, Keck . . .
 - focused on single instruments
 - do have similar shared risk observing
- Arecibo Observatory
 - cooperative agreement with NSF
- National Particle Accelerators
- Space Telescope Institute

STRATEGIC PLANNING

Over last few years:

- community awareness
 - “Future of Antarctica Astrophysics” workshop at June 1998 AAS meeting
 - participation in the Astronomy Decadal Review
- established collaborations
 - join with AMANDA
 - University of Wisconsin SSEC (Space Science & Engineering Center)
- determined objectives, goals
- developed management plan

STRATEGIC PLANNING

Current status:

- finally (last week) receiving feedback from NSF/OPP

Plan - killed two weeks ago - was:

- SPSI proposal to NSF/OPP by Summer 2000

Scientific Opportunities for SPSI Long Term Plan

- **Large scale structure**
- **Epoch of Galaxy Formation**
- **Star Formation**
- **Neutrino Astrophysics**

Endorsed by the NRC 1990 Decadal Review (Bahcall et al.
1991)

SPSI Structure

All science projects must stand up to the rigor of peer review

Peer review:

- new projects
- existing projects
- the SPSI

Peer Review

- SPSI:
 - 5 year cooperative agreement with NSF
 - annual reports to NSF
 - site visit / renewal every 3 years

- Existing projects:
 - reviewed as part of SPSI ?
(become “internal” projects)
 - *face same rigors as all projects!*
(level playing field)

Peer Review of New Projects

- Proposals submitted to NSF/OPP
- NSF peer review selects subset of projects based on scientific merit
- SPSI provides to NSF an estimate of scientific support cost and impact on resources and other projects
- NSF panel selects proposals for funding; SPSI director ex officio panel member to provide evaluation of proposals based on long term science plans
- PI of new project becomes member of SPSI projects committee
- For large projects, a ranking member of PI's institution becomes member of SPSI Board of Directors

Directorship

Director and SPSI science staff must have a scientific investment and motivation

- SPSI science staff do research (50/50 model)
- Need strong scientific leadership
- SPSI must maintain careful balance between providing science support and doing science
 - must be an attractive job!

(What's in it for the director?)

Directorship

(What's in it for the director?)

- Director must have:
 - strong role in resource allocation within SPSI **and within South Pole Station**
 - strong role in the long term planning of science, and site development and infrastructure
 - strong role in review process
 - ability to seed new projects
 - discretionary funds
 - discretionary time

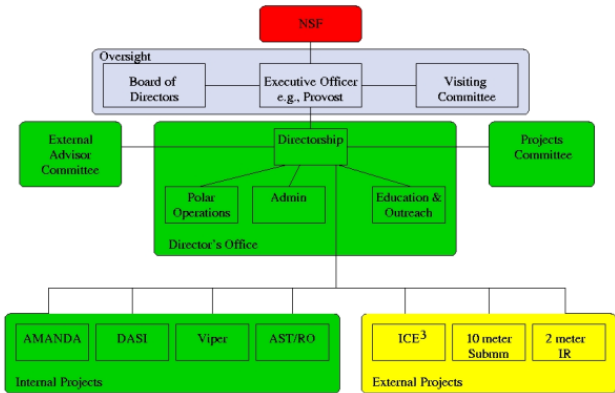
Director needs trust of NSF and community

Directorship

(and what does the director do?)

- Director provides:
 - strong scientific leadership, resource allocation, long term vision and planning
- Director's office oversees:
 - annual reports / renewals
 - fund raising
 - cost / science review
 - business / management office
 - central education and outreach
 - polar operations with control of funds for science support at the Pole
 - liaison(s) with science projects

SPSI Organizational Chart



Org-chart: Administration

- business office
- directs administrative resources for the preparation of financial data and projection analysis
- purchasing
- assist in proposal preparation
- provides financial information for directorship and outside agencies

Org-chart: Polar Operations

- provide science support, advice directly to project groups
- coordinate resources, inventory, shared facilities, population
- evaluation of science support costs and resource needs
- conduct 'readiness' reviews
- provide trained winterovers
- assist project manager
- *tasks Raytheon for science support ?*

Org-chart: Education and Outreach

Central to SPSI mission

- Central coordination for SPSI education and outreach
- K-12, undergraduate, and lifelong learner education programs using the lure of the Antarctic and Astrophysics to promote science literacy
- Facilitate involvement of researchers
- Conferences, workshops, knowledge transfer
- Industry connections
- Developing human resources, especially underrepresented groups

Org-chart: External Projects

- PI member of Projects committee
- Large projects, a ranking member sits on Board of Directors
- Interface directly with Polar Operations
- NSF provides necessary support funds directly to SPSI

for non-NSF funded projects:

- External funding of SPSI support costs negotiated with NSF and SPSI

Summary

We have a plan and are eager to go forward.

Now beginning to work NSF

Eleventh hour loss of Madison & Director

- too late to submit SPSI this year*
- forced to start peer review of ongoing CARA projects*
- have interim sol'n for CARA polar operations*
- bought 1 year extension that **starts** with NSF cooperation*
- we could use your expert advice!*