NOAO System Science Center Update:

Verne V. Smith

Tales of the Modern Astronomer: **ANTARES RISING**

NOAO UC, Tucson, June 2014 (V2)
NSSC Structure: No changes since September 2013

- **System User Support (SUS)**
  - Letizia Stanghellini, Program Head

- **System Community Development (SCD)**
  - Knut Olsen, Program Head
  - see presentations on DataLab (Olsen) and ANTARES (Matheson)

- **Science Data Management (SDM)**
  - Betty Stobie, Program Head & Mark Dickinson, Program Scientist
  - see presentation on Data Operations (Stobie & Dickinson)

- **Telescope Allocation Committee (TAC)**
NSSC-wide Recent Developments: Summary

• The evolution of NSSC $\rightarrow$ NSSDC (NOAO System Science and Data Center) in FY2016: The Transformation Plan

• Initial plan developed with tasks defined and staffed

• A more detailed plan, broken down into individual work packages, with specific individuals, and complete budgets is being worked on in conjunction with the FY2015 Budget and Annual Program Plan (APP15) – the transformation from FY15 to FY16 must be smooth
SUS/TAC Summary Points

• The Gemini Large and Long Program (LP) has arrived in 2014B with TAC panel managed by NOAO
  − GLLP TAC with 10 members (6 US, 2 CA, 1 AU, 1 AR) met in Tucson 30 Apr – 1 May 2014
  − 32 proposals received requesting 1357hr in 2014B alone!
  − see Surveys presentation by Lauer

• 2014B Gemini Phase II’s for US programs to be done by Gemini
  − SUS staff “on alert” to help
  − Future SUS support for Gemini under discussion
  − Help with data to papers – ~80% of US-only programs produce papers within ~3 yrs; joint proposals with US component not included yet, but will in future
  − Other 20% - how can SUS help, if at all – Stanghellini investigating
SCD Summary Points
(see detailed presentations by Olsen and Matheson on DataLab and ANTARES)

• Transient and variable Universe for LSST
  – ANTARES Event Broker
  – Predicting the variable sky

• Community input to LSST
  – Spectroscopy in the era of LSST (11-12 April 2013)
  – Exploring Cadences with LSST I. Metrics and Merit Functions (11-14 August 2014)

• NOAO Data Lab: leading the community to large dataset/catalog science now
  – Community DECam Survey catalogs
  – Serving DES catalogs

• TMT Liaison Office
    – 2 days plenary meetings + 1 day instrumentation workshop
SDM Summary Points

- Pipeline operations for Mosaic, NEWFIRM, DECam community, and pODI
- Improvements to NOAO Science Archive
- Continuing IRAF support and development
- VAO support
- Working with SCD on Data Lab development
- New instrument observing and data needs (KOSMOS and COSMOS) – initial observing manuals
NSSC Summary Conclusions
(FY2014 is an active time within NSSC)

- All programs preparing for transformation to FY16
- SUS role as US NGO is evolving → will result in closer ties to both Gemini and individual users
- Closer ties between TAC and Gemini through LP TAC
- SCD, in cooperation with SDM, is in detailed development of the Data Lab to train and assist the community in LSST-type science now via DECam and DES catalog science
- SCD via TMT Liaison gathering community input for US community access to TMT
- SDM supporting DECam, pODI, NEWFIRM, Mosaic pipelines, improving the archive, planning for future catalog support
- SDM data support for KOSMOS/COSMOS
Detailed Slides: System User Support (SUS)

Letizia Stanghellini, Program Head
• System User Support (SUS) is one program within NSSC
• SUS provides help to users of the O/IR system facilities, from handling proposals, to observation preparation, to data reduction (excluding CTIO and KPNO)
• SUS is the home of the US National Gemini Office; as such it provides the interface for US users of the Gemini telescopes
SUS Recent Activities

- SUS continues in its traditional responsibilities of System access, user technical support, and community interaction
- Handled 440 Gemini proposals in the last two semesters, plus AAT and CHARA proposals
  - Technical appraisal for Gemini and Chara programs, technical assistance during TAC, participation in Gemini ITAC
  - Phase II support for all US Gemini queue and classical programs, and handle all tier 1/ several tier 2 helpdesk queries
- Members of the SUS participated in the Gemini Operations WG (OpsWG), the Gemini Science and Technology AC (GSTAC), and the Gemini ITAC
A successful System Verification with GPI has been completed. GPI offered in shared-risk mode.

GSAOI offered regularly, limited total nights available.

Flamingos2 offered in imaging and long-slit modes.

Subaru was offered through Gemini-exchange with strong US demand. Unfortunately, the minimum number of nights promised across partnership was not honored by Subaru – to be discussed with Gemini at OpsWG.

SUS Members are active Gemini users of mature and new instruments; we are always updating in-house expertise for PI support.
US Gemini Telescope Requests (new programs only, excludes ongoing, surveys, LP)

The subscription stays healthy on Gem-N and is increasing on Gem-S

2014B Gem-N good pressure due to visitor instruments

2014B Gem-S increased pressure due to new instruments and CCDs
Gemini North

2014B US Requests and Allocations

fraction of proposals requesting the instrument

Requested

 Scheduled

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Gemini South
2014B US Requests and Allocations
fraction of proposals requesting the instrument

Requested

Scheduled

GMOS-S

GSAOI

GPI

F2

NOAO UC, Tucson, June 2014 (V2)
The US NGO will be focused on post-data acquisition activities to support US Gemini users and foster science publication.

SUS is now planning the following activities:

- Editing data cookbooks for selected modes of optical and IR instruments.
- Organizing data analysis workshops, either within the AAS meeting or as stand alone workshops.
- Giving feedback to Gemini for selection of Phase II sequences and calibration, based on post-data acquisition analysis.

Starting 2014B (3-year trial period) Gemini will be responsible for Phase IIs of US programs; we stand ready for consultation.

We will perform technical reviews post-TAC (pre-ITAC) from 2015A;

Pre-TAC technical review will still be available for specific programs, new instruments, and at the specific request of a TAC member.

We will offer technical support during TAC meeting.
Refereed papers per calendar year based on allocation through the NOAO TAC
Chornock et al. (2013, ApJ 774, 26) published a milestone study of GRB afterglow based on GMOS spectroscopy. Thanks to the fast response of the Gemini queue, GRB 130606A spectra have been acquired just after 13 hours from detection by Swift BAT. The spectrum is compatible with z=5.91.

There are only a few GRBs at such redshifts and this is the one with best S/N spectrum, thus allowing the study of ISM of the host galaxy, and metallicity of both the host and intervening clouds, and finally yielding to the ionization status of the IGM through the line of sight.

z~6 demarks the epoch of the end of reionization

They found [O/H] ≈ -1.5±0.1, [C/H]≈ -1.9±0.1, [S/H]< -0.5, all comparable to DLAs, but at the lower end of the metallicity distribution of field galaxies at lower redshift
Abundances derived from emission-line targets such as H II regions and planetary nebulae (PN) in nearby, face-on spiral galaxies allow to constraint the metallicity gradients both in young and old stellar populations.


They found that the NGC628 radial oxygen gradient is shallower than previously determined by means of the less reliable “strong-line” abundance method.

This important result raises a red flag on the validity of the gradients in nearby spiral galaxies known to date, which do not employ plasma diagnostics. This is an example on how GMOS can make a real difference in constraining galaxy formation and evolution.
Detailed Slides: Telescope Allocation Committee (TAC)

Verne V. Smith, Acting Manager
## 2014B Proposal Statistics

<table>
<thead>
<tr>
<th>Telescope</th>
<th>Requested Nights</th>
<th>Available Nights (new programs)</th>
<th>Oversubscription*</th>
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373 new proposals
930 nights req.
433 nights avail.
2014B Breakdown of Investigators by US State

858 investigators
119 grad students
57 thesis projects

No proposers:
AK
ID
MT
NV
SD
WV
Gemini

- ~ 61 nights Gemini N, ~ 47 nights Gemini S available in classical or queue mode for new programs (currently running NOAO surveys + new Gemini LP)
- Number of programs requesting GMOSN (51), GNIRS (27), NIRI (16), NIFS (13), TEXES (21), DSSI (10), GMOSS (53), GSAOI (6), Flamingos2 (16), GPI (21)

Subaru

- ~ 5 nights available in classical mode at Subaru through Gemini exchange
- New requests by instrument: MOIRCS (2), COMICS (3), FMOS (3), IRCS +AO188 (1), HSC (1), HDS (7)

AAT

- 10 nights available through service observing mode
- New requests by instrument: AAΩ (5), UCLES (3), Hermes2+2dF (1), KOALA (2)