

Keck Science Steering Committee Meeting Summary

SSC: 18-19 Feb 2009

Attendees

- Caltech: Chris Martin (co-chair), Judy Cohen, Shri Kulkarni (ex officio)
- UC: Jean Brodie (co-chair), Jason X. Prochaska (deputy co-chair), Alex Filippenko, Mike Bolte (ex officio)
- UH: Mike Liu
- NASA: Tom Greene, Rachel Akeson
- WMKO: Taft Armandroff (ex officio), Hilton Lewis (ex officio), Members of the WMKO staff
- Swinburne: Karl Glazebrook (observer)

Observatory Report

- Substantial instrumentation changes coming up: LRIS-R upgrade (June 2009); MOSFIRE (April 2010; NIRC no longer available); OSIRIS moving to Keck 1 for enhanced performance in 2010A
- The Keck 1 laser has overcome significant technical challenges but its delivery date has slipped substantially
- Factors contributing to segment cracks being quantitatively assessed
- Keck continues to be very productive – comparison metrics are impressive
- SSC was pleased with the observatory status

NGAO report

- MRI proposal for K2 Laser launch telescope submitted Jan 09 (\$1.9M)
- Build-to-cost plan being prepared for B2C review
March 18
 - *SSC encourages the inclusion of members of the newly formed NGAO Science Advisory Team (NSAT) & some SSC members*
- Laser collaboration formed to reduce laser procurement risk (WMKO-lead, TMT, GMT partnering with ESO). 2 vendors identified.
- PSF (MASS/DIMM) collaboration formed with TMT, CFHT, UH. No work effort/cost for Keck.

Keck Science Strategic Plan

- Good start at Half-Moon Bay meeting Sep 2008
- Strategic decision to re-phase strategic planning effort to better accommodate, and benefit from, the Decadal Survey activities
- SSC developed science mission statement & agreed that priorities should flow from this
- Priorities still not finalized, considerable discussion still needed to reach consensus
- Community buy-in will also be needed, will circulate plan to Keck community again after further development
- SSC hopes to have document finished for November board meeting, but depends on decadal survey activities

Astro2010: Efforts to Date

- Science White Papers (WP)
 - Keck leadership solicited specific community members to write WPs that would help highlight future initiatives
 - Encouraged collaboration with TMT activities
 - e.g. Ghez (Galactic center), Marcy (radial velocity), Martin (IGM emission), Marshall (lensing)
- 2 Notices of Intent submitted on Jan 14
 - Generic observatory NOI on future enhancements
 - NGAO
 - Keck goals in the process:
 - Maintain a high profile in the system
 - Sustain/enhance TSIP; encourage a new instrument funding line at NSF

Astro2010: Next Steps

- Keck ‘State of the Profession Position Paper’
 - “The Role of Keck in US Astronomy” [Taft]
 - Emphasize
 - Number of US astronomers/institutions as Keck PIs [Bolte]
 - Importance of TSIP to WMKO (MOSFIRE, NGAO)
 - Value and success of public/private relationship
 - Keck should be considered a jewel of the US system
 - Due March 15, 2009
- Accord ‘State of the PPP’
 - “How do US large-aperture telescopes maintain scientific leadership in the coming decade?”
 - Bolte+Kulkarni will encourage this activity at the next Accord meeting

Astro2010: Next Steps

- NGAO Activity Paper
 - To submit to the PPP
 - Compete NGAO against WFMOS and the like
 - Charge to NSAWG (Bolte → M. Morris)
- Technology development papers [→ AKCG = Astro2010 Keck Coordination Group = Taft+Chris+Mike+Shri+Jean+X+Hilton]
 - Due March 29
 - Keck leadership should solicit contributions from within the community on topics valued by the observatory
 - e.g., Coatings, laser development, tomography, detectors, OH suppression, etc.
 - Encourage coordination with the TMT
- WMKO Activity paper [→ AKCG]
 - Goal: Highlight future, non-NGAO initiatives
 - Who will write this and with what emphases?
- Rachel+Tom → NASA/Keck WP for a State of Profession

Astro2010: WP Review

- SSC-led 'scrubbing' of the WPs
 - Review all ~350 WPs
 - Ask Keck-friendly Astro2010 panelists for assistance?
 - Divide effort by panel
 - PSF – Planetary Systems & Star Formation – Liu, Akeson
 - SSE – Stars & Stellar Evolution – Cohen, Greene
 - GAN – The Galactic Neighborhood – Raja, Bolte
 - GCT – Galaxies Across Cosmic Time – Ellis, Martin
 - CFP – Cosmology & Fundamental Physics – Prochaska, Filippenko
 - Criteria: Can be done, will be done well at Keck
 - Coordinate with Yale (van Dokkum) [Bolte]
 - CM template. Keck specific commentary, instrument. Goal 7 March.
- Product(s)
 - List of WPs where Keck will contribute
 - Highlight those where future initiatives are critical (e.g. NGAO)
 - Any other characterizations when scrubbing?
 - Generate a new list of scientific priorities that will inform the Keck strategic plan

Instrument Reports

Instrument	SA	Improvement or Repair / Minor Issue / Major Issue / Future Improvements
NIRSPEC	Jim Lyke	<p>Web page overhaul</p> <p>MAGIQ on-demand testing</p> <p>Server crashes</p>
OSIRIS	Jim Lyke	<p>Focus offsets between scales correct automatically</p> <p>Image scale stability (1.5" shift after scale change)</p> <p>Fill instability/thermal leak (likely solved)</p> <p>What factors are impacting effective use?</p>
ESI	Greg Wirth	<p>Guider is problematic</p> <p>Minor guider issues fixed</p> <p>IFU being added</p>
DEIMOS	Greg Wirth	<p>Real-time date reduction – "Quickslit"</p> <p>Mod motor S/W to address grating clampup</p> <p>Added slit scanning mode</p> <p>Update instrument control host</p> <p>Replace rotator control host</p> <p>Investigate grating tilt issues</p>

Instrument Reports

Instrument	SA	Improvement or Repair / Minor Issue / Major Issue Future Improvements
LRIS	Marc Kassis	Red side filter (leaking) will be replaced 831 / 8200 damaged, to be replaced IRAF mask alignment S/W updates Slit guider camera flooded & replaced MAGIC H/W & S/W being modified & integrated New flexure & focus change measurements
Mill		Slit mask 1% errors fixed w/ new spindle, flat table
HIRES	Scott Dahm	Utility board hangs every 2-3 months (in enclosure) Redocumentation, ETC, Web page rehab FTS calibration of Iodine cell
NIRC2	Al Conrad	Transputer failure (Spares identified) Pre-slit vignetting (S/W race condition) fixed Water ice potential Vertical angle jump Add new Y, L-wide, polarizer filters

Instrument Reports

Instrument	SA	Improvement or Repair / Minor Issue / Major Issue Future Improvements
KI	Sam Rangland	<p>Completed Nuller Key science program in 08B</p> <p>Self-phase reference mode (R~1800) 1st light</p> <p>L-band mode 1st light (shared risk time available)</p> <p>Dual-field phase referencing (K<8.5 ref, K<15 science)</p> <p>Astrometry mode (<10" sep, 30 microarcsec)</p>
AO Ops	Randy Campbell	<p>Space command automation</p> <p>LTCS first on target</p> <p>Increased laser propagation time (+30 minutes)</p> <p>AO repairs & bug fixes</p> <p>Faults: 15%, Science: 41%, Overhead: 41%</p> <p>Improve strehl: Better laser focus control</p> <p>Improve background/effic: New IR dichroic</p> <p>Reliability: WFC crashes, Loop Faults</p> <p>Upgrade ageing infrastructure (EPICS)</p> <p>Improve acquisition and dither efficiency</p> <p>Analyze laser dye and exchange if needed</p>

Instrument Reports

Instrument	SA	Improvement or Repair / Minor Issue / Major Issue Future Improvements
Mainland Obs	Greg Wirth	All systems stable. Increased mainland-only mode.
AO Ops	Randy Campbell	Electronic transfer of data from WMKO to NExSci 852 nights of HIRES 3-CCD data ingested 50% of the data are publicly released 40,000 queries (2 TB) since public opening July 2006

Instruments

- SSC was pleased with the Instrument master reports – very helpful
- Instrument community communication wiki
- OSIRIS/MOSFIRE session added (1 day) to KSM 09
 - CfAO—Jason Melbourne, Caltech
- Keck Science Meeting 16-18 Sept 2009.
 - Day 1 OSIRIS/MOSFIRE special session
 - Day 2 General Keck Science
 - Day 3 Keck Community Strategic Forum