

Subaru Advisory Committee Report 2005

The Subaru Advisory Committee formed in January 2005, as a sub-committee of the Advisory Committee for Optical and Near Infrared Research, to improve Subaru's science output by:

- identifying potential concerns
- discussing operational strategies
- soliciting input from Subaru users and the wider research community

and reporting back to Subaru Telescope and the Japanese optical/near-infrared community with recommendations.

This year's recommendations cover:

Short Term Recommendations

- ★Time Allocation

Mid Term Recommendations

- ★Queue and Service Observing
- ★Contributions to University Education
- ★Use of Archive Data
- ★Outreach

Long Term Recommendations

- ★Future Instrumentation

Time Allocation

MOIRCS GT Time: The Advisory Committee for Optical and Near Infrared Research allocated 20 nights of Guaranteed Observing Time (GT) to the MOIRCS team in September 2005 following extensive discussion involving the SAC, Time Allocation Committee (TAC), the Subaru user community, and the MOIRCS team. Discussion was triggered by the MOIRCS team's initial request for 50 nights of GT, 30 nights in excess of the twenty nights previously allocated to first generation instruments.

Evaluation of Future GT Programs: Discussion about the MOIRCS GT time allocation centered on how to maximizing scientific output by finding an appropriate balance between protected use of a new instrument through GT and open use competition. Although this time the MOIRCS team rejected the hybrid strategy the SAC proposed, guidelines for future evaluation of GT programs should be established based on these discussions.

We strongly recommend that strategic use of new instruments involve the entire Japanese research community. The SAC will continue to encourage discussion on how to operate new instruments, including the role the SAC itself can play in the process.

Service and Queue Observing

In the past year, the SAC sponsored discussion on the following topics:

1. the need for service and queue observing
2. detailed plans for experimental queue observing
3. detailed plans for a full implementation of queue observing

The desire for classical observing is strong in the user community, and many called for the continuation of classical observing along side service and queue observing, possibly allowing the observer to choose the observing mode. However, in light of the value of completing priority observations and the efficient observation of programs that require specific weather conditions, there was an acknowledgment for the need of queue observing. University based researchers wanted an expansion of service observing.

The SAC presented a detailed plan for a limited an experimental queue observing mode and simulations of its impact on observatory operations based on example from earlier semesters. The simulation exercise suggests that a limited implementation is not effective for reaping the benefits of queue observing. This is primarily due to the fact that the large number of instruments on Subaru means that there are not many observing programs per instrument.

Users also expressed reluctance to implementing a limited and experimental queue observing mode. Proposals for a more comprehensive implementation of queue observing require further development. Subaru's current observing mode, a combination of classical and service observing (which started in S03A for short programs) and "buffer" nights remains a viable option.

Contributions to University Education

Based on discussions with the Working Group on Subaru and University Education and at the Subaru Users' Meeting, here are the committee's suggestions for enhancing Subaru's contribution to the training of the next generation of Japanese astronomers:

Observation and Data Reduction:

1. Create web based virtual experiences that convey the observatory's work flow and work environment.
2. Expand the scope of past data reduction workshops by scheduling them regularly, drawing on the expertise of university-based researchers, and investing in computer infrastructure so that more people can attend.
3. Increase observing opportunities for graduate students, possibly by providing instrument handbooks, and providing funds for graduate student travel.
4. Create tools that would make it easier to find useful data from the archive, and provide resources for bringing people up to speed on data reduction such as practice data and reduction tools with examples of well reduced data.
5. Facilitate the sharing of data that is not yet available on the archive, but for one reason or another will not be analyzed immediately by the PIs.

6. Continue to ensure access on UH88 and UKIRT

Instrumentation:

7. Make technical documentation for the design stage of an instrument publicly available
8. Encourage the development and use of PI instruments
9. Continue to provide resources such as Messia5 and Mfront2 for detector development
10. Coordinate collaboration between universities and NAOJ for the joint development of future instruments.

Use of Archive Data

Access numbers to the Subaru Mitaka Kiso Okayama Archive System (SMOKA) is increasing steadily. Ninety percent of downloaded data is from Subaru Suprime-Cam and forty percent of the users are non-Japanese. However, less than ten percent of papers based on Subaru data are based on archive data, despite the fact that two to three times more data is being downloaded from the archive compared to data obtained through new observations.

The modest scientific output may be due to several factors:

- Data is not ready to use (uncataloged, uncalibrated, zero to little information on whether data can be calibrated)
- Lack of personnel to provide technical support.
- Lack of software and documentation.

To improve the use of archive data we suggest (in order of priority and feasibility):

1. Providing pre-reduced data of fields of high interest including multi-band photometric catalogs, and data quality information, starting with Suprime-Cam data. Employ a full time post-doc to carry out the work.
2. Providing resources such as sample data sets, reduction software, documentation such as simply data reduction handbooks and instruments handbooks to promote effective use by graduate students, university-based researchers, and other researchers.
3. Providing quality controlled data.
4. Accepting proposals based on archive data and provide support including computer resources, support personnel, and travel funds.

Outreach

In addition to generating public appreciation, Subaru should increase its outreach efforts to the physics community including researchers, engineers, science reporters to promote an accurate understanding of Subaru's contribution to science. We suggest:

1. Working towards the publication of a Subaru special edition of the publication of the Physical Society of Japan.
2. Supporting the outreach activities of individual researchers with resources such as documents and travel funds.

Future Instrumentation

The past year saw active discussion on desirable instrumentation for the 5 to 10 year future. Subaru's main characteristics are wide field of view, good image quality, and stability. Wide-field optical and near-infrared instruments are both a natural and competitive choice. As a single mirror telescope with good image quality and stability, Subaru also has advantages in AO and mid-infrared observing that can carry into the 30m telescope era. Integral field spectroscopy may also be an effective use of Subaru.

Hyper S-Cam: Continue community discussion including realistic design constraints and scientific goals. Subaru's advantage for wide-field optical imaging is clear.

WF MOS: A realistic assessment of the prospects of a combined Hyper S-Cam WF MOS project is necessary as is establishing Japanese initiative in both the science and instrument development. A wide-field optical MOS could address some fundamental questions in astronomy.

Near Infrared Wide Field Camera: Re-investigate in detail the possibility of such a camera with a 20 arcminute FOV at prime focus in parallel with other discussions for prime-focus modifications. There are compelling science goals such as finding $7 < z < 15$ galaxies and establishing the local IMF. Given the current instrument development plans at other telescopes, a 20 arcminute field of view would be desirable for an instrument on Subaru. This could be achieved either at the Cassegrain focus or prime focus with modifications to the telescope. Another option for observational efficiency is a multi-band camera.

Mid Infrared Camera and Spectrograph: Details Next Year

AO+Integral Field Spectroscopy: An AO multi-object integral field spectrograph may be the most powerful next generation AO instrument. Such an instrument will require sophisticated technology and a large budget, so careful discussion of its scientific merit is needed. Subaru's superb imaging quality makes it a superb telescope for AO.

The Role of the SAC in 2006

The SAC will:

1. Summarize the discussion on FMOS GT and operations and formulate policies. Establish guidelines for the operation of future instruments.

2. Facilitate the implementation of recommendations for queue and service observing, support of university education, data archive improvements and outreach to the physics community.

3. Become the central forum for continued discussion on future instrument development. Take on an advisory role for post-Subaru telescope plans.

It will also continue:

- selecting members of the TAC
- making recommendations to the TAC on open use operations and proposal evaluation
- making recommendations about GT, intensive proposals, and observatory time
- making information available to the IfA
- Evaluating proposals by the Subaru director as the representative of the user community
- soliciting input from the user community through SAC symposia and mailing lists

Self-Assessment of 2005 Work

The SAC's discussion over ten meetings and two public forums covered all aspects of telescopes operations. The SAC provided a useful interface between the observatory and the user community. However the committee unanimously agrees that its work has only just begun and must continue.

The SAC's most extensive discussions were on MOIRCS GT. Although a new operation mode for GT was not realized, the discussions brought up important issues that need addressing in any strategic operations plan. We recommend continued proactive discussion of new modes of operation.

The main challenges the committee faced were uncertainties about the SAC's relation to the Advisory Committee for Optical and Near Infrared Research, the binding power of SAC recommendations, and the process for implementing them. In the future, the committee hopes to take a proactive role in improving telescope operations.

SAC Members 2005

- N. Arimoto (NAOJ, chairman)
- K. Ohta (Kyoto Univ., vice-chairman)
- M. Chiba (Tohoku Univ.)
- M. Doi (Univ. of Tokyo)
- N. Kobayashi (Univ. of Tokyo)
- T. Yamada (NAOJ)
- T. Takata (NAOJ)
- T. Usuda (NAOJ)
- K. Kataza (JAXA)
- F. Iwamuro (Kyoto Univ.)