The Gen2 Observation Control System
Current Status and Directions

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About Gen2

Gen2 is the second generation Observation Control System for Subaru Telescope. In previous Subaru Users Meetings we have presented on the design and goals of the new system.

Current Status

Gen2 went into production use in September, 2010, after the telescope downtime for mirror recoating and top ring modifications.

Gen2 is currently being used for all Subaru instruments except Suprime Cam.

For Suprime-Cam we found a performance lag with the shot-to-shot command completion time in certain modes compared to SOSS. Although significant progress has been made in closing the performance gap the issue is still under investigation. We hope to be using SPCAM with Gen2 soon.

New Features

One of the goals of Gen2 is to remain backward compatible in the most important ways. In *SOSS Compatibility Mode* it is possible to execute legacy-style observations for all currently active Subaru instruments. The user interfaces are being updated or rewritten and we are adding some new features and smoothing some of the more difficult aspects of SOSS-style observation. In the following sections we will highlight some of these changes.

Integgui 2

The integrated control GUI has been completely rewritten to better integrate into the Gen2 back-end architecture. Integgui2 features a flexible desktop/workspace/page organization that allows a variety of different kinds of plug-in pages to be developed. The default configuration will still be familiar to users, showing the frame information, launchers, observation/log messages and OPE files in the usual locations.

Gen2 allows the use of the existing OPE file format. In most cases no changes are required.
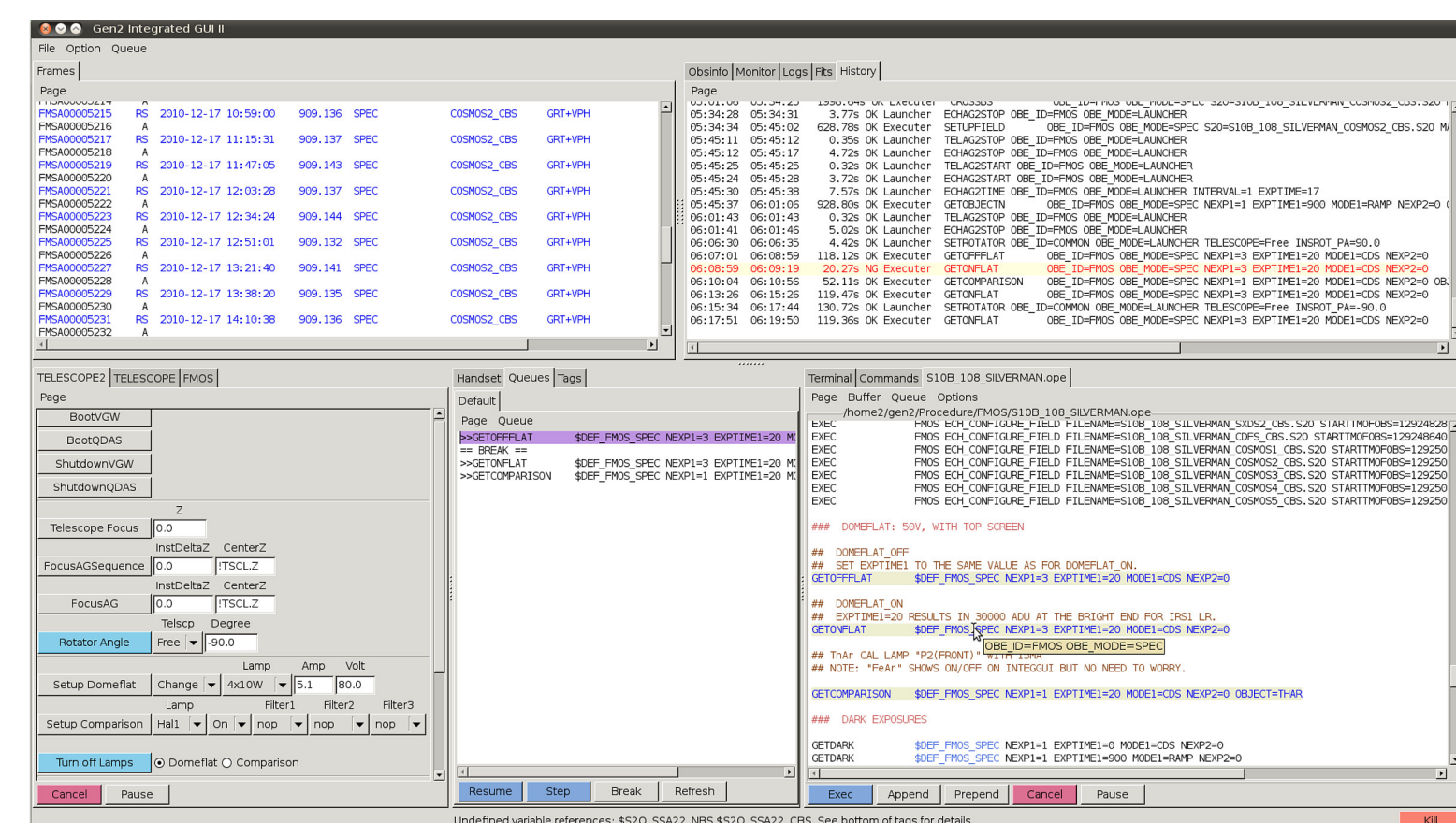
Integgui2 has a new kind of Monitor page that shows the dynamic execution of abstract commands with a colorful animated display. This can be very helpful in diagnosing exactly where errors happened during skeleton file execution. It also can help understand the concurrency when developing abstract commands.

Multiple OPE files can be open at the same time, and text can be copied back and forth. In addition, skeleton files, PARA files, Launcher definition files and the like can be opened, edited and reloaded directly from the GUI, allowing for very quick and convenient debugging.

The Terminal page allows several terminal windows to be opened right in the GUI, so that your choice of editor can be used to edit the files, without ever leaving the GUI.

Scheduling multiple commands is now more flexible.

The Queue page allows scheduled commands to be added, deleted, or rearranged easily in your personal queues. Commands can be executed step-by-step, and breakpoints can be set anywhere in the scheduled command sequence.

The FrameInfo page shows each frame's status at all times, including allocated, in transfer from the instrument, received, and archived, as well as failed transfers.

Flexible Data Routing

Gen2 features a new data routing model based based on private keys. A unique secret key is generated for each proposal.

By downloading and running a simple Python program (provided by Subaru) in combination with the key, observation data can be streamed directly to the observer's laptop during the night (in addition to the usual locations like ana, hana, *etc).*

You can do quick look and personal archive using your own carry-in tools!
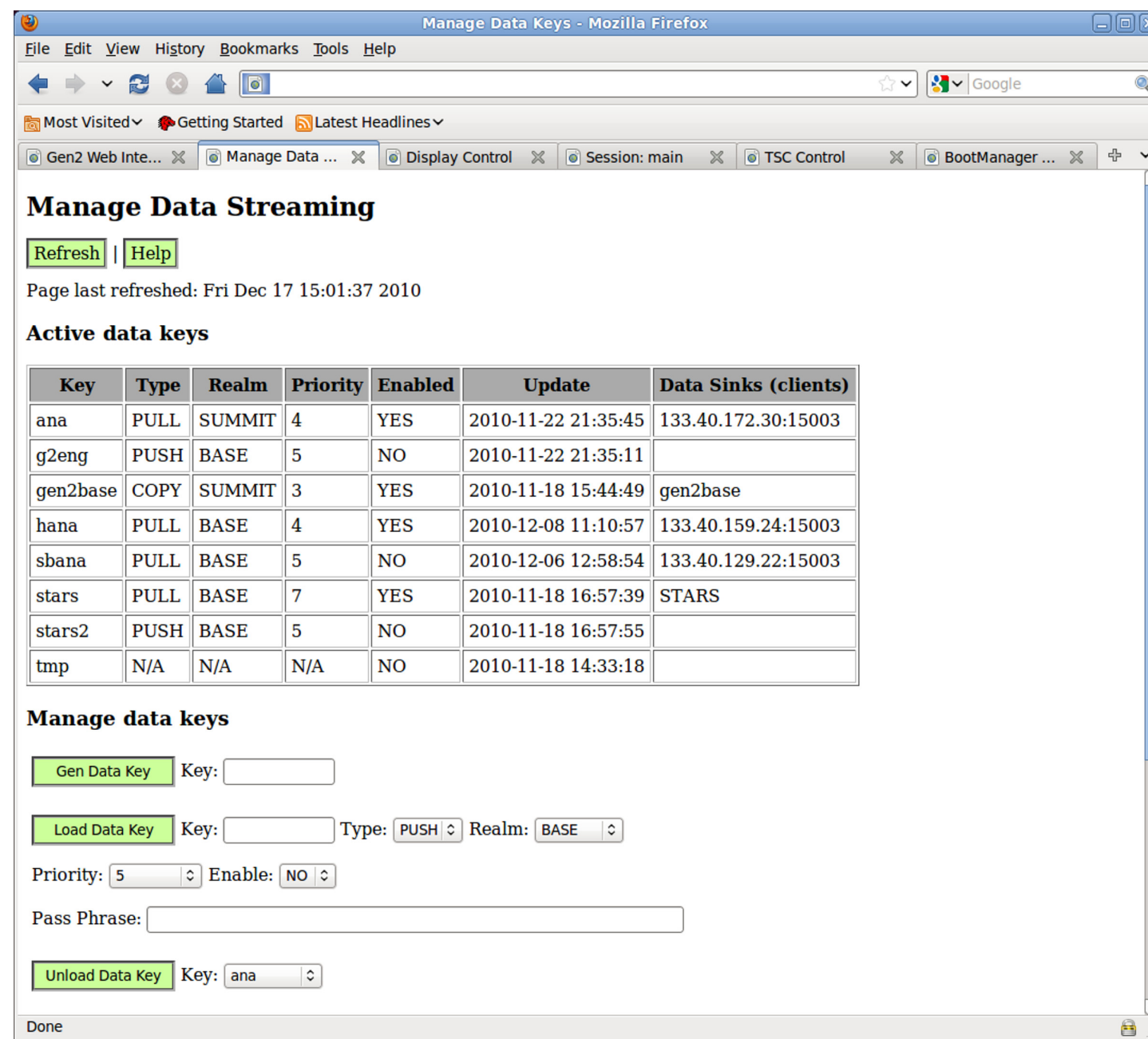
New Sky Monitor

hskymon is a new sky monitor written by Akito Tajitsu. It shows a background sky image provided by the UH88 all-sky camera. OPE files can be loaded, displaying the observation targets on the field. The position of the telescope and time to target is shown graphically. A variety of useful functions are provided from plotting target rise/fall times, integration with various internet astronomic catalogs, outline of the CCD and more.
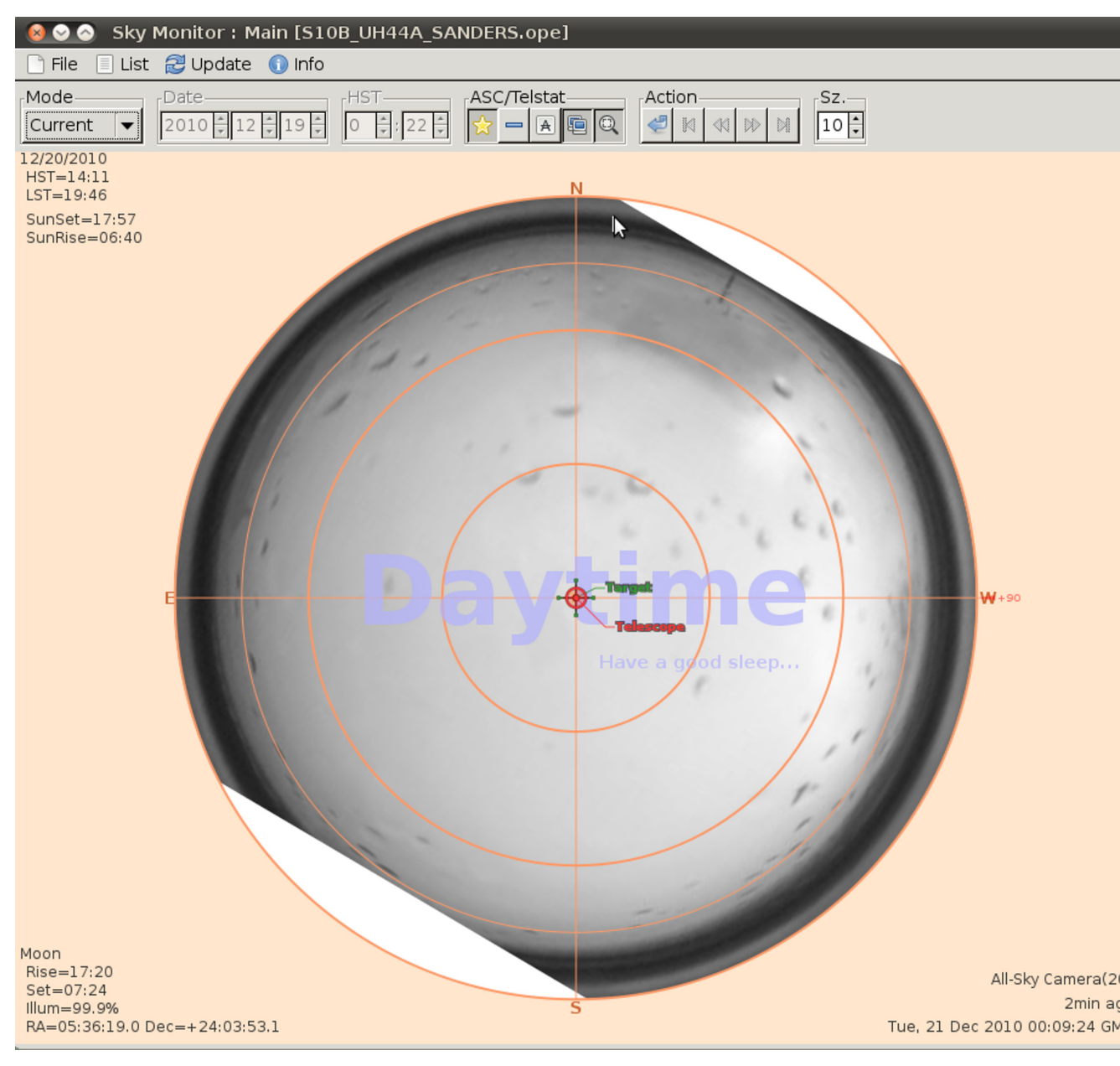

New Fits Viewer

A new FITS viewer is under development to replace the aging one carried over from SOSS. Although the new one is not yet at feature-parity, it provides a very clear way to quickly verify that the FITS headers are correctly set.
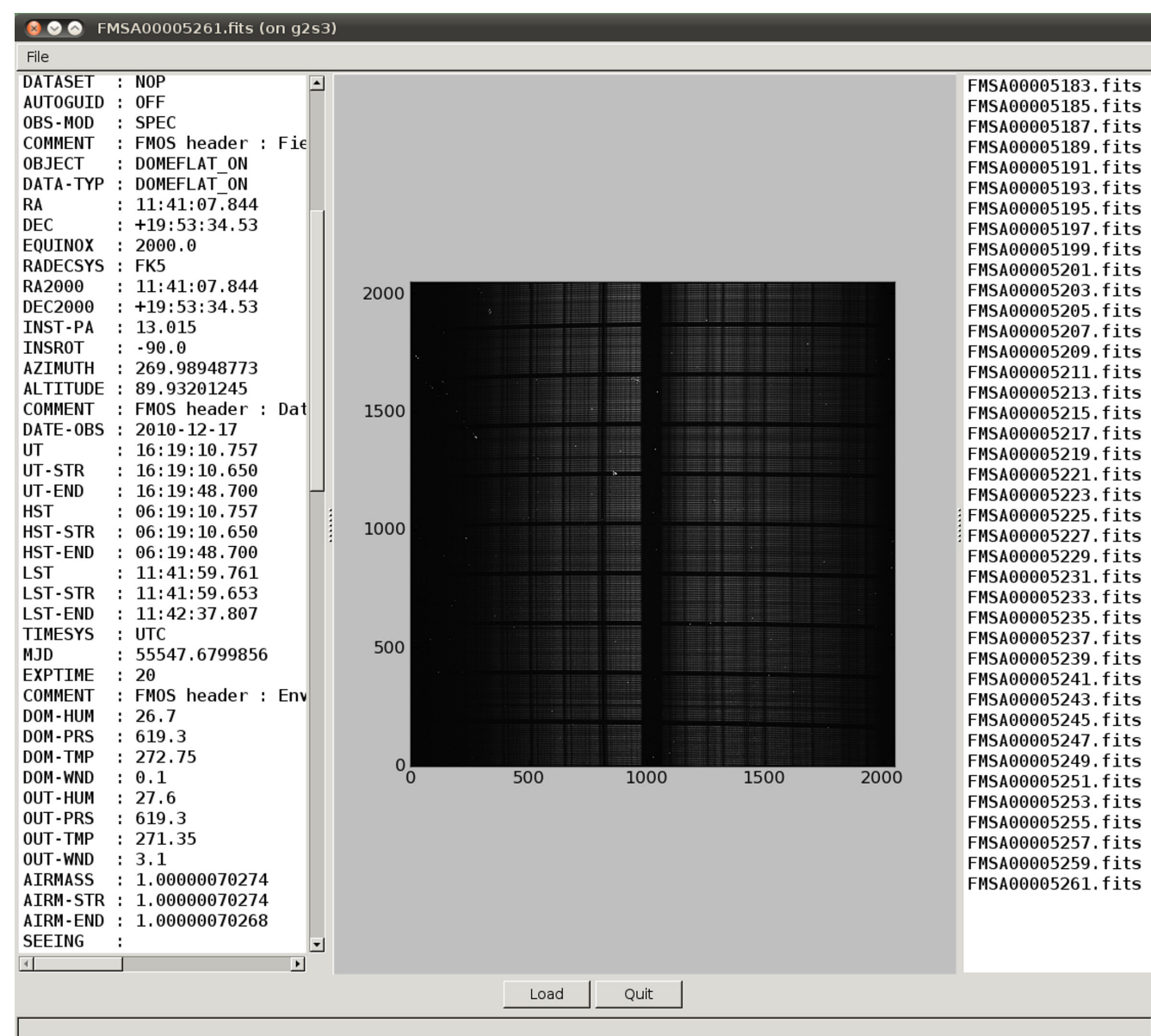
Environment Monitor

The environment monitor has been completely rewritten, using new graph widgets that have scrollable, persistent history. Environmental data for several hours can be examined by zooming in and out on the graphs.
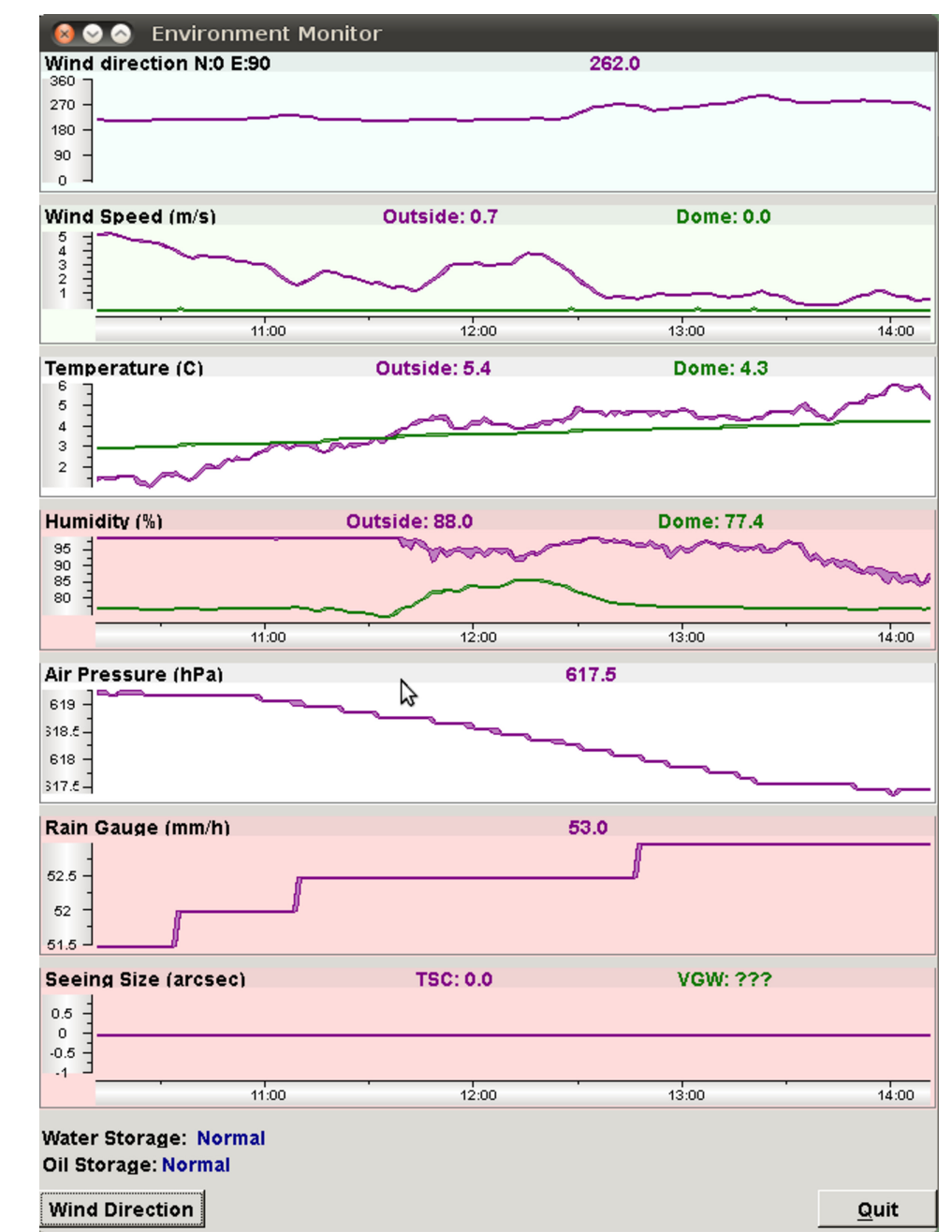

Quick Startup

Gen2 also has some new features to improve the efficiency of operations for staff. The Boot Manager shows the state of the various distributed services running on the cluster and allows operators to troubleshoot and restart them quickly if necessary. The entire set of GUIs can be restarted in about 5 seconds with a single button click!

Data entry and instrument allocation has been streamlined by integrating support for reading the Telescope Setup Request directly from OPAL. Assuming that the TSR has been properly entered, a single button click will set up the proposal id, input all of the individual names and allocate the instrument. This also makes program changes during the night very quick and convenient.
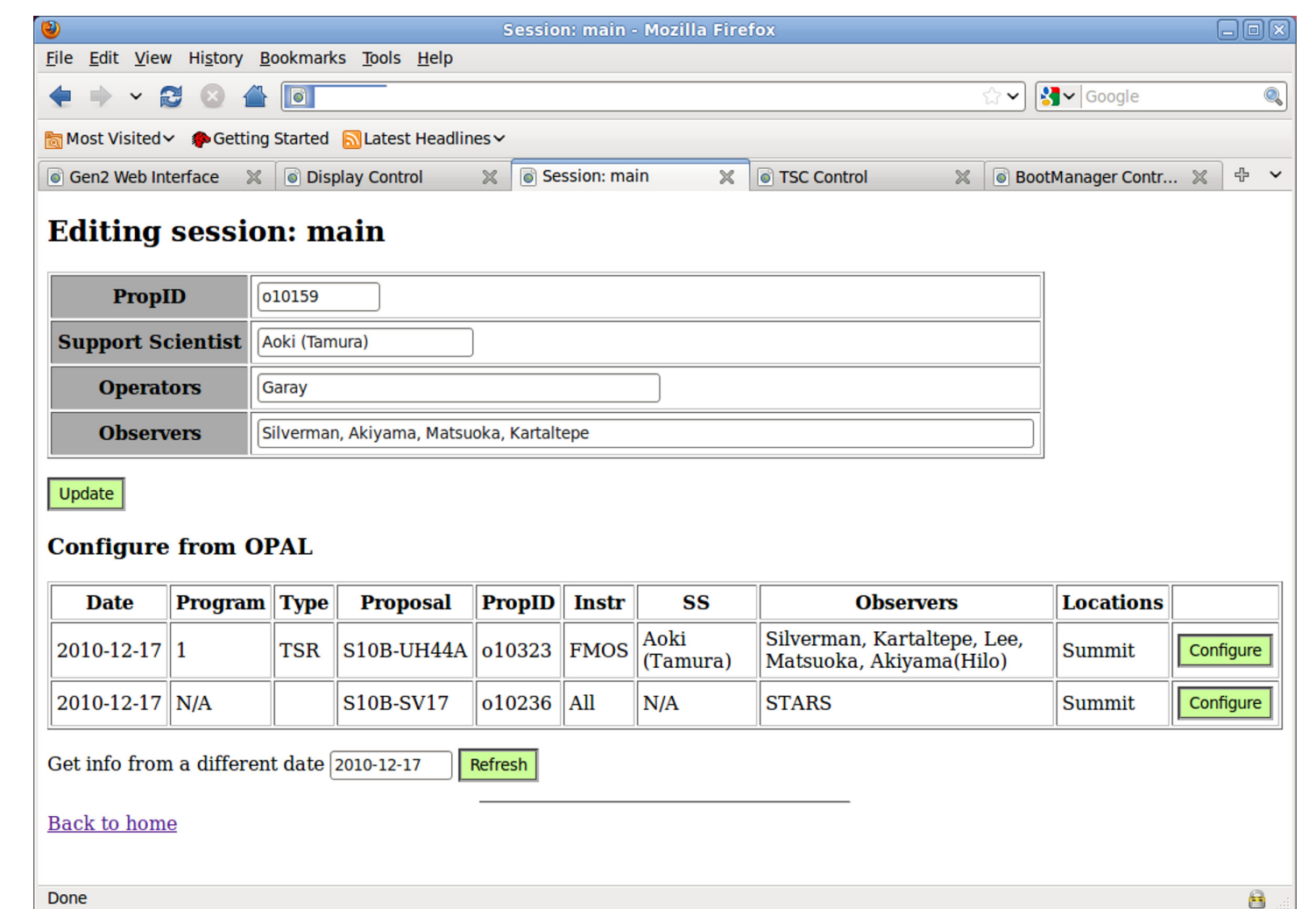
Future Work

Although the Gen2 OCS is established, it is not complete. Much work remains to improve and simplify user interfaces.

In 2011 we will integrate the Hyper Suprime-Cam support into Gen2. We will also work to improve the efficiency of telescope commands. Some initial planning work has been started on a new observation planning tool.

The Gen2 Advisory Committee is working with the OCS team and *your* input to improve the operation and experience for Subaru observers. If you have any questions, feedback or comments, please send it to any one of the email addresses shown at the top, or to gen2@naoj.org.