The SIRTF Science Operations System:
How Well Are We Really Doing?

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Oral Presentation

The Space Infrared Telescope Facility (SIRTF) was successfully launched on
August 25th, 2003. After a 90 day In Orbit Checkout and Science Verification period,
SIRTF began its five year mission of science observations at wavelengths ranging from
3.6 to 160 microns. Early results from SIRTF show the Observatory performing
exceptionally well, meeting performance requirements in virtually all areas. The
California Institute of Technology is the home for the SIRTF Science Center (SSC). SSC
is responsible for selecting observation proposals, providing technical support to the
science community, performing mission planning and science observation scheduling,
instrument calibration and performance monitoring during operations, and production and
archival quality data products.

The SIRTF development and operations activities are highly cost constrained.
The challenge has been to design, and now operate, a highly efficient Science Operations
System (SOS) which meets the scientific community’s expectations for NASA’s last
Great Observatory. One principle SOS design component was to incorporate a set of
efficient, easy to use tools for scientists to plan their observation sequences in a rapid and
automated manner. Observation requests are translated directly into command
sequences, simplifying both the long range planning and short term scheduling processes.
Pipeline data processing is highly automated and data-driven, with a direct linkage to the
uplink data system to insure data accountability at the observation level. Innovative web-
based tools with a similar look and feel as the planning software are used to retrieve and
analyze the archived data.

This paper will describe how the SIRTF Science Operation System has performed
since launch, and how the system has been adapted based upon in-flight performance. It
will also discuss lessons learned which can be applied to future science operation
systems. This work was performed at the California Institute of Technology under
contract to the National Aeronautics and Space Administration.