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# Science Mission Operations Plans for Ramp Up to Full Operations

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SOFIA Users' Group Meeting

# Basic Science Experience

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- During Basic Science SOFIA supported roughly 68 hours of FORCAST and 71 hours of GREAT observations
- Typical Basic Science observing cadence was 2 flights per week with surges of 3 flights per week on two occasions
  - Significant stress on the entire team
  - Flight Crew duty day was typically 14 hours
  - Lots of overtime hours
- As we ramp up to full operations, we have planned for the needed additional staff to support increased flight operations

# Ramp Up in Flight Rate

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- Flight Hours Assumptions

	Flight Weeks	Flight Hours	Research Hours	GO Grants
FY13	23	670	519	\$1,246k
FY14	20	635	492	\$1,181k
FY15	36	1,260	980	\$2,352k
FY16	34	1,260	980	\$2,352k
FY17	36	1,260	980	\$2,352k

- Flight Rate Assumptions

	Flight Rate	Staff To
FY12 thru February 2013	2	2
February 2013 thru August 2014	3	3
August 2014 thru 2017	3.5	4

# Key Operations Positions

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- Mission Director
- Science Flight Planner
- Telescope Operator
- Instrument Scientist
- Instrument Specialist
- Ground Support HW Engineer
- Ground Support SW Engineer
- Instrument Hardware Engineer
- Instrument Software Engineer

# Additional Operational Enhancements

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- Long term planning software
  - Optimal scheduling of an observatory remains a mathematically challenging topic, but useful long term planning tools are under development
- Simulation environments
  - Hardware and software simulators of the observatory system allow checkout of observing plans prior to flight
  - Telescope Assembly Alignment Structure is a high fidelity optical/mechanical interface that allows alignment and checkout of instruments prior to mounting on SOFIA

# Pipeline Activities

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- Pre-2008 Data Plan
  - Science Center provided Level 2 (artifact corrected) data products for Facility Science Instruments
  - Instrument teams were responsible for data product support for their instruments
- New Pipeline Plan
  - Science Center will provide Level 3 (calibrated) products for Facility Science Instruments
  - Science Center will provide Level 3 (calibrated) products for PI Class Science Instruments
- We are in the process of hiring the people needed to implement the new pipeline plan

# SOFIA SI Data Deliverables

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	2008 SOW	2011 (SMOR2)
Level 1 (raw) data in archive	All instruments	All instruments
Data processing pipeline	FSI teams develop and deliver by acceptance review	FSI Same as 2008 SOW; PSI teams develop
Level 2 (artifact-corrected) data in archive	FSI only	All instruments
Level 3 (calibrated data) in archive	n/a	All instruments

# Science Outreach

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- Plan to continue the SOFIA Community Task Force
  - Clearing house for science outreach activities
  - Tele-Talks provide SOFIA-related science talks to a wide audience
- Regular participation at major astronomical meetings
  - AAS, DPS, LPSC
- Possible SOFIA Science Conference in 2013 being explored
  - Hans Zinnecker leading organizing activities
  - Modeled after annual Spitzer topical conferences



# Summary

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- There are activities in many areas to ramp up Science Mission Operations capabilities to support the planned increase in flight rate
  - Mission Operations staff
  - Science Operations staff
  - Long term planning software
  - Pipeline
  - Simulation environments
  - Science Outreach