

Program Status

Pam Marcum
SOFIA Project Scientist



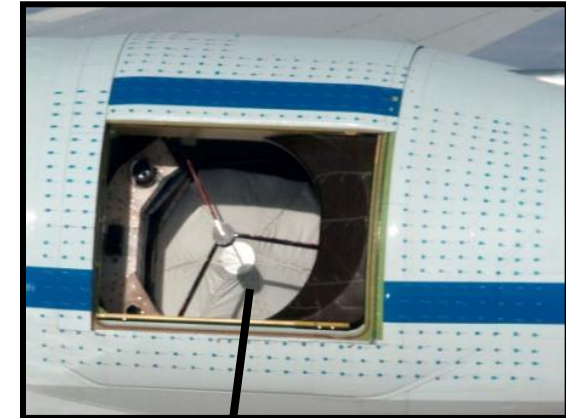


What is SOFIA?

(Stratospheric Observatory for Infrared Astronomy)



- Joint project of US and Germany
- Flies in the dry stratosphere, above the water-absorbing layer of the Earth's atmosphere.
- Different science instruments, which collectively span a wide range in wavelength (0.3-1600 μm) and can be updated to incorporate cutting-edge technologies
- Mobility
- Can be continuously maintained to sustain a long lifetime
- Provides hands-on training and in-flight observing experience to future instrumentalists
- SOFIA will have an important role in education and public outreach

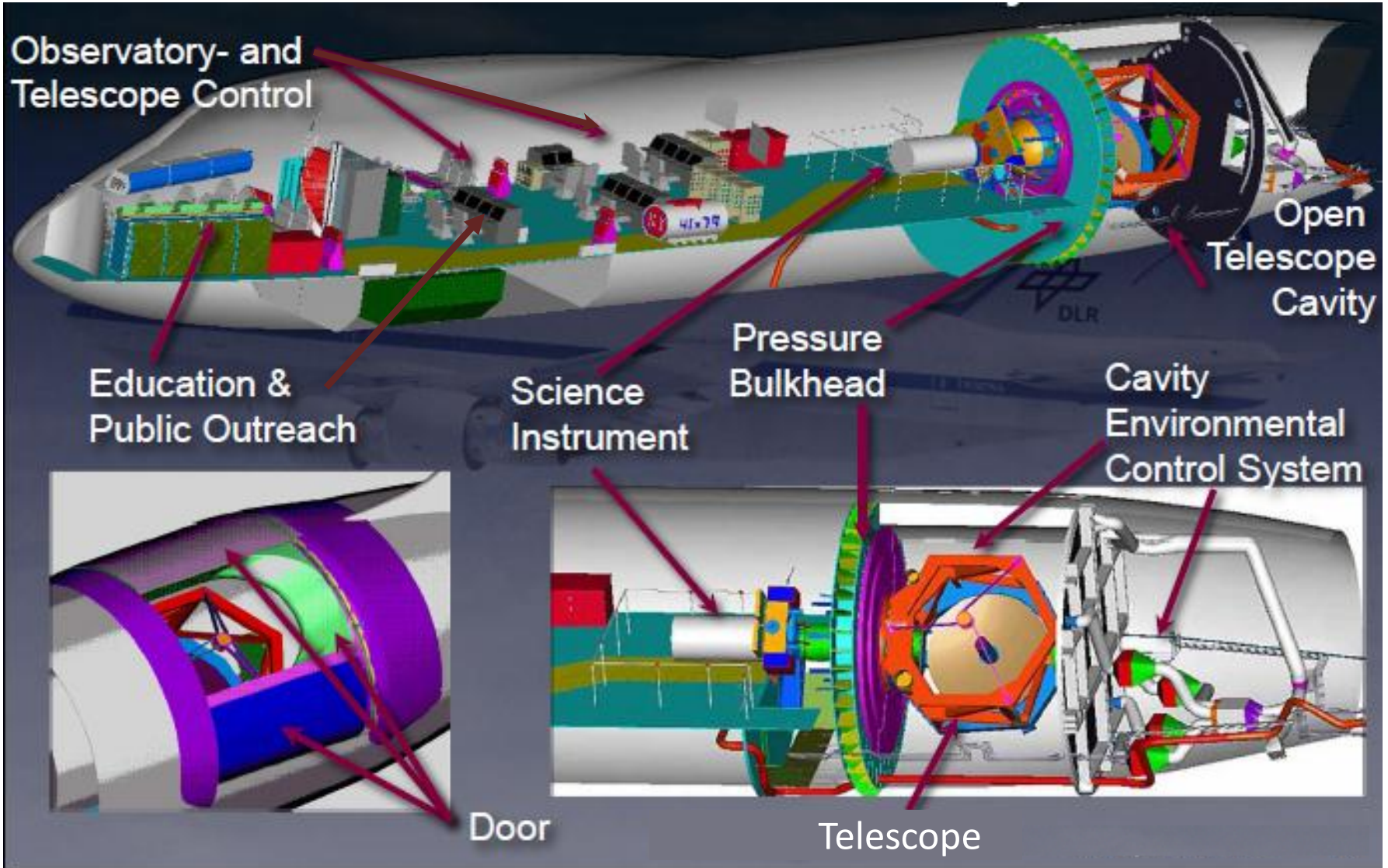


2.5-meter





SOFIA – The Observatory





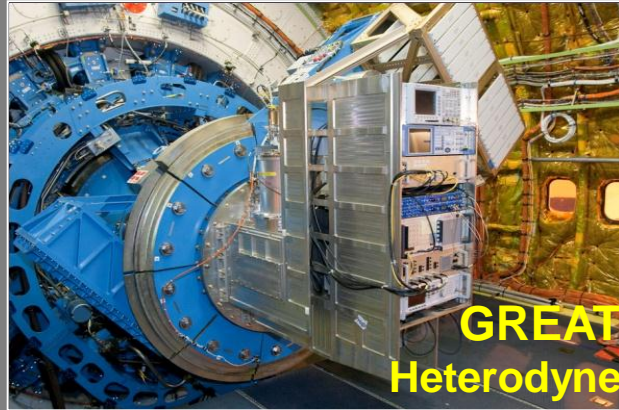
SOFIA'S 1st-GENERATION SCIENCE INSTRUMENTS



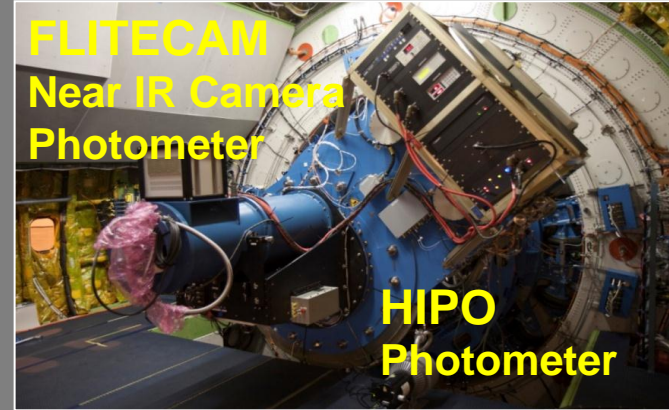
4 SCIENCE INSTRUMENTS AVAILABLE TO SUPPORT COMMUNITY OBSERVATIONS



FORCAST
Mid-IR Camera



GREAT
Heterodyne
spectrometer



FLITECAM
Near IR Camera
Photometer

HIPO
Photometer

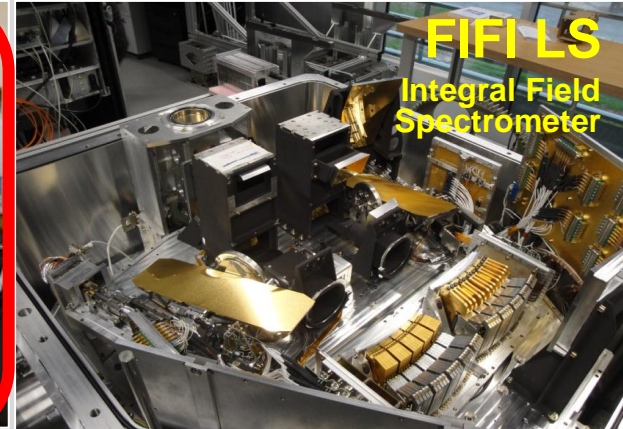
3 SCIENCE INSTRUMENTS CURRENTLY IN DEVELOPMENT



EXES
Mid-IR Spectrometer

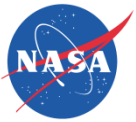


HAWC+
Bolometer Camera

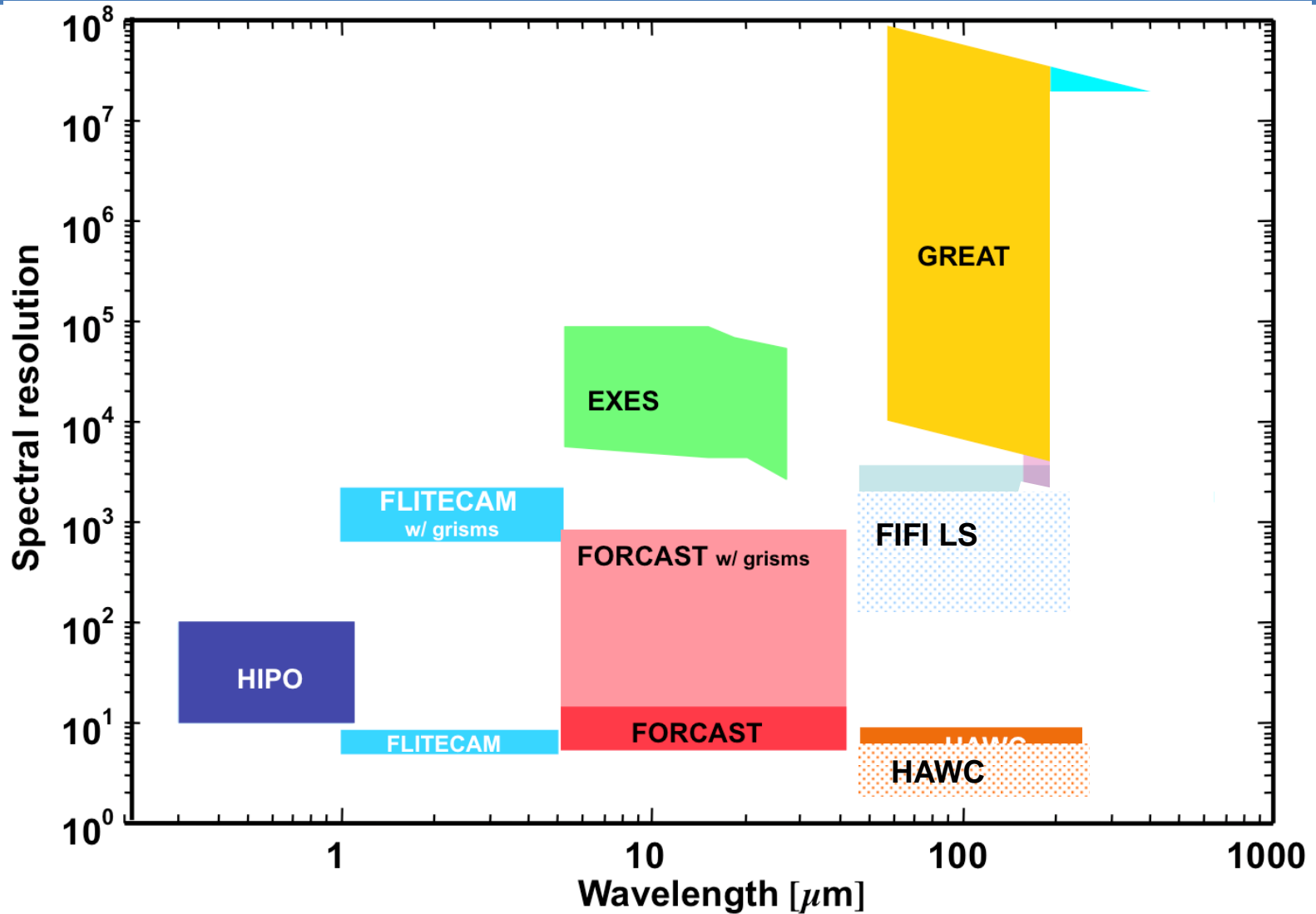


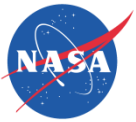
FIFI LS
Integral Field
Spectrometer





First Generation Instrument Capabilities





New SOFIA leadership team members



NASA HQ:

Program Scientist:

Glenn Wahlgren

Deputy Program Scientist:

Michael Garcia

SOFIA Program:

Program Manager:

Eddie Zavala

Science Project Manager:

Pete Zell

USRA/DAOF Project Manager:

William B Latter

Science Instrument Development:

Erin Smith

Airframe Development/Test Ops:

Tim Krall





2012 – Milestones



- **Publications from Early Science flights (ApJL, A&A Supp SOFIA special eds).**
- Announcement of 2nd-Generation Science Instrument selections by NASA HQ:
- Announcement of Awarded Cycle 1 Observations by SOFIA SMO Director:
- **Telescope Improvements:**
 - An upgraded focal plane guide camera
 - Improved pointing capability
- **Observatory Improvements:**
 - Mirror Coating Facility assembled in the SOFIA hangar
 - Primary, secondary and tertiary mirrors show no degradation.
 - Water vapor monitor now fully functional (needed for calibration and in-flight assessment of weather conditions).
 - Data archiver and acquisition systems to automate on-board data collection
- **Aircraft Improvements:**
 - Power Distribution System increased power available to science instruments
 - Cockpit/avionics modernization
 - These needed improvements have taken longer than anticipated, but they are now complete

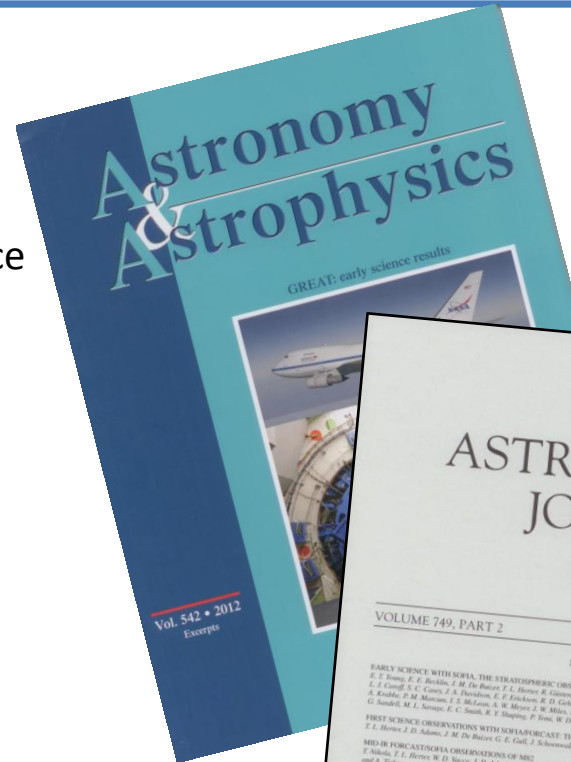




SOFIA Early Science Published

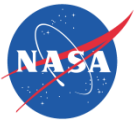


- Special Section in the U.S. publication *Astrophysical Journal*
 - Features FORCAST results from Early Science
 - 8 papers published in the April 2012 issue
- Special Issue of European Journal *Astronomy & Astrophysics*
 - Features GREAT results from Early Science
 - 22 papers published in June 2012



30 papers published in refereed journals from 330 hours of science and engineering flights





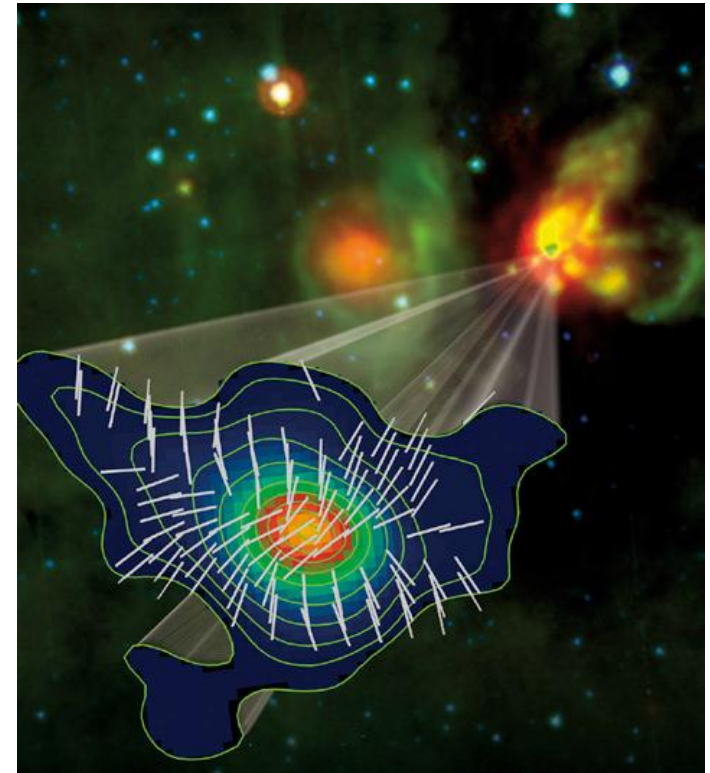
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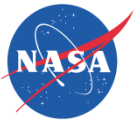


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- Two investigations were selected, each is an upgrade to HAWC and will make the following contributions:
 - A new sensitive, large format detector array (Johannes Staguhn, Johns Hopkins U)
 - Added polarimetric capability (Charles Dowell, JPL; PI of combined effort)
- HAWC is the Far-Infrared Camera for SOFIA; these upgrades will support investigations of magnetic fields in the interstellar medium via Far IR imaging polarimetry





2012 – Milestones

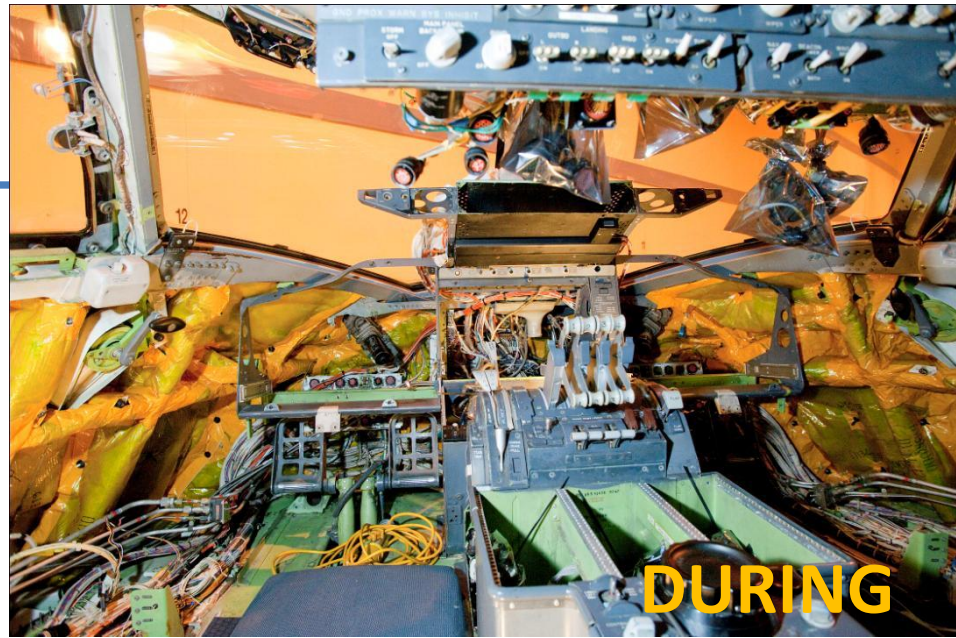


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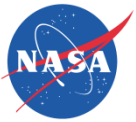
BEFORE



DURING



AFTER



Upcoming Milestones: One Year Look-Ahead



- **Observatory Performance Test Flights** (early 2013)
- **Science Instrument Commissioning** (GREAT, FORCAST, FLITECAM, HIPO, FLIPO)
- **Cycle 1 Observations** (early 2013)
- **Deployment:**
 - A Southern Hemisphere deployment, originally planned for 2014, is now being planned for July 2013 as part of Cycle 1, in response to Cycle 1 proposal demand.
- **Cycle 2 Call for Proposals** (Spring 2013)
- **Preparation for 3rd-Generation Science Instrument Announcement of Opportunity** planned for 2014.



Program has begun the transition from a development-driven schedule to a **Science-driven schedule** from this point forward.

- Science campaigns will become fixed in time and duration to provide increase schedule stability
- There will continue to be a considerable Development / Operations overlap during this transition. Observatory development, integration, testing, and SI commissioning will be prioritized to meet science schedule
- All Cycle 1 Science Instruments are ready for commissioning and science

