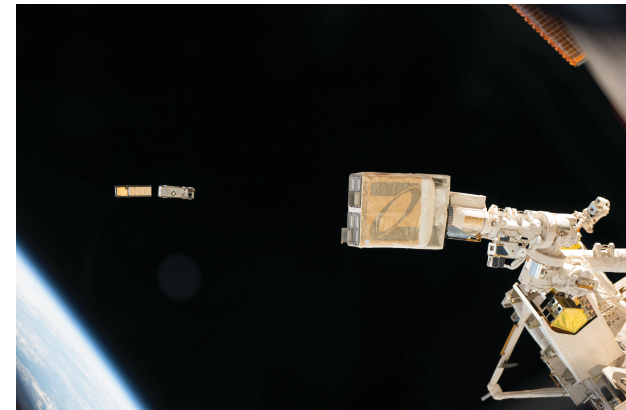
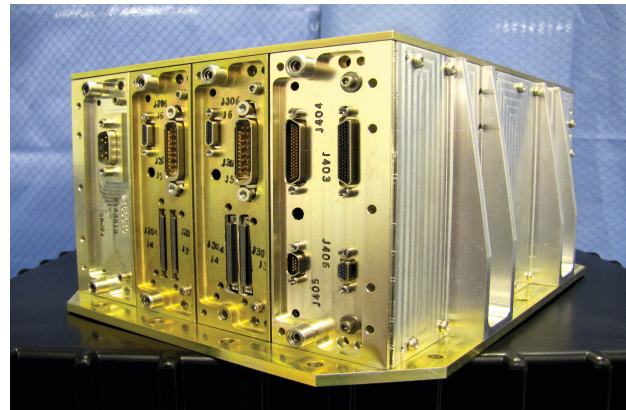
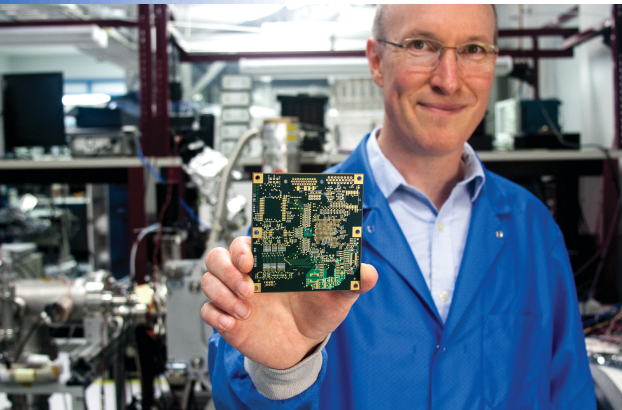


Technology Enabling SCIENCE

National Aeronautics and
Space Administration



Instrument Incubator Program (IIP)
A.49 ROSES-19

Potential Bidders' Conference-May 15, 2019

Parminder Ghuman
Earth Science Technology Office (ESTO)
p.ghuman@nasa.gov

IIP-19 Bidders' Conference

This conference is being recorded and all material will be posted for public use.

To access the audio portion of this conference, please dial:

USA Toll Free #: 1-844-467-4685

USA Local/Toll #: 1-720-259-7012

Participant Passcode: #: 7294728170

This presentation will be available after this meeting at
http://esto.nasa.gov/about_esto_solicitations.html

KINDLY MUTE YOUR PHONE

SMD Org Chart

Embeds / POCs

Chief Engineer:
Joe Gasbarre (Acting)

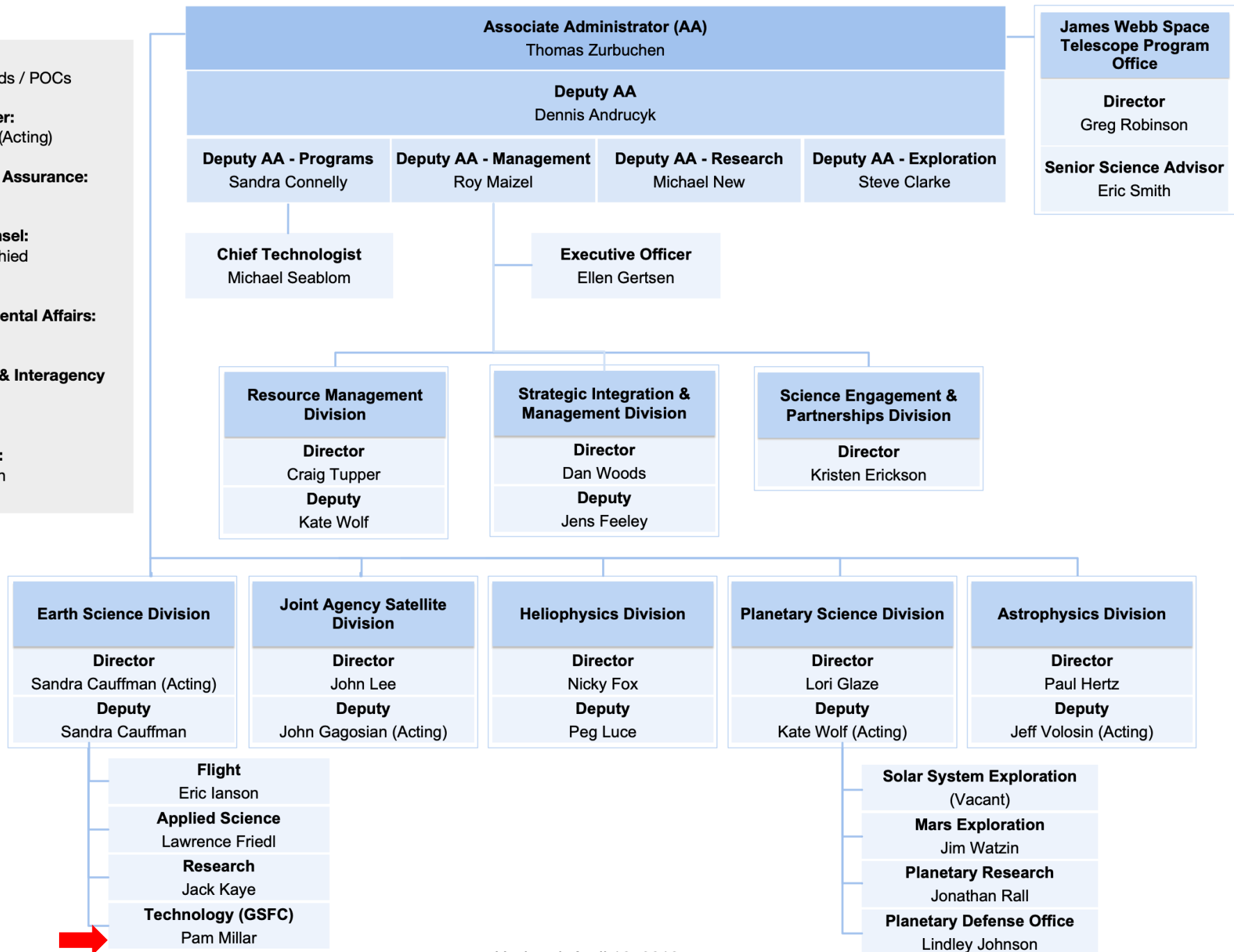
Safety & Msn Assurance:
Pete Panetta

General Counsel:
Ellen Espenschied

Legislative & Intergovernmental Affairs:
Gabriel Adler

International & Interagency Relations:
Gib Kirkham

Public Affairs:
Dwayne Brown



Updated: April 10, 2019

ESTO Org Chart

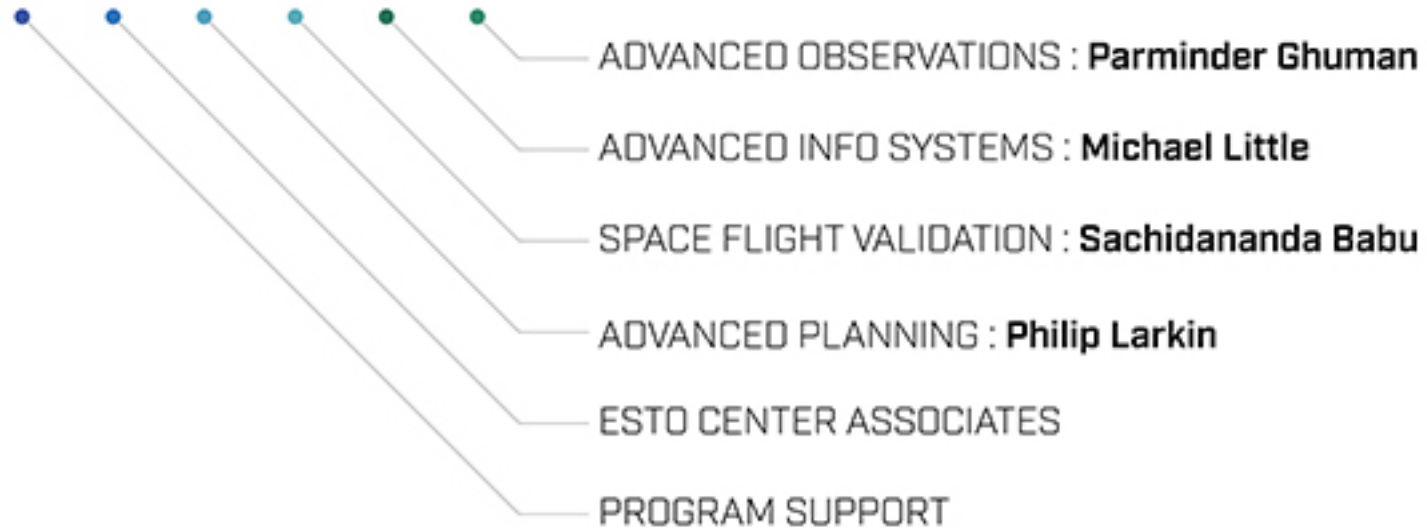


ESTO Organizational Chart

PROGRAM DIRECTOR : **Pamela Millar**

DEPUTY PROGRAM DIRECTOR : **Robert Bauer**

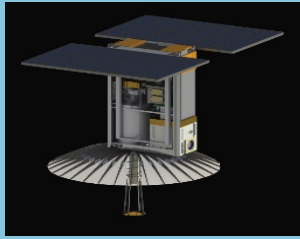
OFFICE ADMINISTRATOR : **Deborah Compere**



Earth Science Technology Program Elements

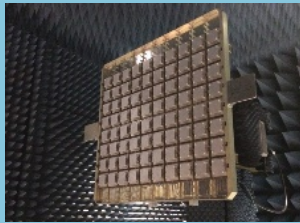
ESTO manages, on average, 120 active technology development projects. Most are funded through the primary program lines below. Nearly 800 projects have completed since 1998.

Advanced Technology Initiatives (ATI)



In-Space Validation of Earth Science Technologies (InVEST)

on-orbit technology validation and risk reduction for small instruments and instrument systems that could not otherwise be fully tested on the ground or airborne systems
(average award: \$1-1.8M per year over three years)



Advanced Component Technologies (ACT)

critical components and subsystems for advanced instruments and observing systems
(average award: \$400K per year over two/three years)



Instrument Incubator Program (IIP)

innovative remote sensing instrument development from concept through breadboard and demonstration
(average award: \$1.5M per year over three years)



Advanced Information Systems Technology (AIST)

innovative on-orbit and ground capabilities for communication, processing, and management of remotely sensed data and the efficient generation of data products
(average award: \$600K per year over two years)

Instrument Incubator Program

- **Advanced Observation Program Objectives**

- Enable new or greatly enhanced Earth observation measurements, and
- Reduce the risk, cost, size, mass, and development time of Earth observing instruments

IIP supports the development of innovative technologies for new Earth observing instruments, sensors, and systems in support of Earth science. The technologies and measurement concepts developed under the IIP may extend through to field demonstrations, with a longer-term aim for infusion into future ESD research, applications, and flight programs.

For more information on the current and past funded technologies visit esto.nasa.gov

IIP Overview

- Traditionally new solicitations have occurred about every 3 years. Going forward, IIP and ACT will solicit proposals every 2 years. ACT-20 will be in 2020 followed by IIP-21 in 2021
- To date, eight IIP solicitations have been released:
 - IIP-16: 19 awards (14 IIP-IDD awards and 5 IIP-ICD awards); scheduled to be completed in 2019-2020
 - IIP-13 :17 awards
 - IIP-10: 16 awards
 - IIP-07: 21 awards
 - IIP-04: 23 awards
 - IIP-02: 9 awards
 - IIP-01: 11 awards
 - IIP-98: 27 awards

For more information on the current and past funded technologies visit esto.nasa.gov

Goals of IIP-19

- In the past, the IIP focused on the scientific impact of technology development and sought to advance the community's ability to make a "science-quality" measurement, and this will not change. In this program element, successful proposals will demonstrate understanding of the system level for making measurements, incorporating new platforms or existing platforms in new ways, emerging technologies or repurposing technologies from other fields directed toward Earth science applications, combining various measurement techniques to generate an enhanced product or a new/relevant product, and utilizing the rapidly emerging algorithm and architecture advances of data and IT communities.
- Proposals will need to address not just instrument design but an overall measurement system. Proposals must justify the chosen platform (CubeSat, SmallSat, joint or integrated instrument, coordinated observations, formation flying systems, etc.) clearly explaining the advantages of the chosen architecture and how it enables a new data product, or produces a significantly enhanced data product, or duplicates a current data product at a substantially lower cost, ease of use, and/or lower risk deployment posture.
- To be successful, proposals must demonstrate that the proposing team is capable of producing the end-to-end measurement "system architecture," and has the demonstrated expertise in the emerging technology areas utilized, including the data centric components and tasks. The same focus on traceability to the science and applications is required.

IIP-19 Solicitation Focus

- New instrument and measurement technologies that shall support the objective of one or more of the Earth Science Focus Areas. Earth Science Focus Areas are: Carbon Cycle and Ecosystems, Climate Variability and Change, Water and Energy Cycle, Atmospheric Composition, Weather, and Earth Surface and Interior (see Appendix A.1 for descriptions of the focus areas). Relevance to these focus areas is indicated by the degree to which these new types of observations improve: (i) quality (such as temporal, spatial, and temporal resolution, sensitivity) and/or (ii) cost-effectiveness of Earth science measurements.
- Proposals should offer significant improvement to traditional instrumentation and measurement techniques that: (i) enable increased flexibility and adaptability to measurement objectives; and/or (ii) provide small and cost-effective instruments enabling innovative measurement techniques, including those that could employ multiple sensors in formation or use alternative platforms or, potentially, satellites in higher orbits.
- This program element also seeks instruments that demonstrate innovative ways to combine both passive and active measurement capabilities to generate multiple science measurements, or combine signals of interest across the electromagnetic spectrum to advance the accuracy of Earth science measurements.

IIP-19 Solicitation Focus (cont'd)

- **Two distinct subelement topic areas**
 - **Instrument Development and Demonstration (IIP-IDD)**
 - This subelement covers the entire instrument development process, which includes instrument design; breadboard, prototype, and engineering model construction; and laboratory and/or airborne demonstrations for innovative measurement techniques that have the highest potential to meet the objectives of the IIP and substantially improve the state-of-the-art Earth science measurements.
 - The proposed IIP-IDD activity is expected to have an entry Technology Readiness Level (TRL) between 2 and 3, with an exit TRL between 4 and 5. The value of each award will be approximately \$1.5M per year.
 - **Instrument/Measurement Concept Demonstration (IIP-ICD)**
 - This subelement seeks demonstration of innovative concepts that have high potential to meet the objectives of the IIP and substantially improve the state-of-the-art of Earth science measurements.
 - The proposed IIP-ICD activity is expected to have an entry TRL between 1 and 2, with an exit TRL between 2 and 3. The value of each award will be approximately \$500-750K per year.

IIP-19 Solicitation Exclusions

- Research and development of new instruments for Designated Observables recommended by the 2017 Earth Science Decadal Survey (<https://www.nap.edu/catalog/24938>) unless these provide significant improvement over existing techniques; however, these can be targeted for the next decade.
- Instruments that make in situ observations from airborne or ground, unless these involve direct communications with spaceborne systems or signals.
- Airborne instruments with no clearly defined path to space.
- Incremental improvements to existing instruments.

IIP-19 Solicitation Summary

- **Budget**

- Expected program budget for first year of new awards: ~\$27M
- ~12-16 IIP-IDD awards
- ~3-5 IIP-ICD awards
- Value of each IIP-IDD award expected to be in range of ~\$1.5M per year
- Value of each IIP-ICD award expected to be in range of ~\$0.5M per year

- **Duration**

- 1 year minimum to 3 years maximum

- **Schedule**

- Solicitation release: April 12, 2019
- Notice of Intent due: May 31, 2019
- Proposal due: July 12, 2019
- Selection: November 2019 (tentative)

Thank you! Questions?