Focus Areas

- NASA Science Overview
- Enabling New Science
- Fostering Innovation
- Cultivating Mission Success
NASA Science Mission Directorate

An Integrated Program Enabling Great Science

- Solar System
- JASD
- Heliophysics
- Astrophysics
- Earth
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>SPACECRAFT</td>
<td>106 Missions, 88 Spacecraft</td>
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<tr>
<td>CUBESATS</td>
<td>22 Science Missions, 15 Technology Demos</td>
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<tr>
<td>SOUNGING ROCKETS</td>
<td>16 Science Missions, 3 Tech/Student Missions</td>
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<tr>
<td>EARTH-BASED INVESTIGATIONS</td>
<td>25 Major Airborne Missions, 8 Global Networks</td>
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<tr>
<td>BALLOONS</td>
<td>13 Science Payloads, 1 HASP with up to 12 student experiments</td>
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Current as of May 1, 2018
Key Science THEMES

Protect & Improve Life on Earth

Discover Secrets of the Universe

Search for Life Elsewhere
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What is ROSES?

• It is the name for an omnibus NASA Research Announcement (NRA)
• Always released on Valentine’s Day, February 14
• Basic and Applied Research in support of NASA’s Science Mission Directorate (SMD)
• Contains many individual program elements, each with its own due date and topics
How to Read ROSES

• Appendix A: Earth Science Research Program
• Appendix B: Heliophysics Research Program
• Appendix C: Planetary Science Research Program
• Appendix D: Astrophysics Research Program
• Appendix E: Cross-Divisional Research Program
NASA Research Announcement

SOFIA Next Generation Instrumentation

Solicitation: NNH18ZDA001N-SOFIA

Dates

Release: Feb 14, 2018
Close: Aug 01, 2018

Announcement Documents

› DUE DATES: Table 2 lists all program elements in due date order (.HTML)
› DUE DATES: Table 3 lists all program elements in appendix order (.HTML)
› ROSES 2018 Summary of Solicitation (.PDF)
› Complete ROSES 2018 NRA as amended and clarified (.PDF)
› D.1 Astrophysics Research Program Overview (.PDF)
› D.14 SOFIA Next Generation Instrumentation as amended (.PDF)
D.14 Program Information

- **Expected total program budget**: $15 – 20M over three years (higher values need adequate justification)
- **Number of new awards**: One or more proposals selected to conduct ICS
- **Maximum duration of awards**: ICS phase to be approximately 5 months; the schedule for implementation and delivery of the selected instrument will be determined during the ICS
- **Dates for Pre-proposal Workshops**: Tuesday, April 3, 2018 at 2pm ET; Monday, April 16, 2018 at 4pm ET; Thursday, May 17, 2018 at 2pm ET
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Disruptive Innovation
SmallSat Constellations

Game Changer
Deep Space Laser Communication

Incremental
Discovering More Exoplanets

Breakthrough Innovation
Unprecedented Ocean Measurements

SMD
Enable Innovation

Program Impact

Technology
Example of “Breakthrough” Innovation

Surface Water and Ocean Topography (SWOT) Mission

**Enabling Technology:** Investments in Ka-band interferometer and precision antenna mast

**Result:** Unprecedented swath measurements of terrestrial water heights and sea surface heights (SWOT to launch in 2020)
Example of “Disruptive” Innovation
Cyclone Global Navigation Satellite System (CYGNSS)

**Enabling Technology:** Existing technology (delay mapping receiver) deployed in an unique constellation of 8 LEO spacecraft

**Result:** Frequent and accurate measurement of ocean surface winds will improve tropical cyclone forecasting
Example of “Game Changing” Innovation

**Enabling Technology:** Investment in new spectrometer (Dyson replaces Offner)

**Result:** Small satellite constellations are the new paradigm for future hyper spectral imaging missions
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BALANCED MISSION PORTFOLIO

FLAGSHIP
National priority, civilization scale science

LARGE
High priority, low risk

MEDIUM
Medium priority with moderate risk

SMALL
Focused, higher risk with limited budget

CLASS A
CLASS B
CLASS C
CLASS D

GREAT SCIENCE
Get Involved!

• NASA Solicitation Website: https://nspires.nasaprs.com/external/
• Research Resources: https://science.nasa.gov/researchers
• Review Panel Volunteers: https://science.nasa.gov/researchers/volunteer-review-panels
• Technology Resources: https://science.nasa.gov/technology
• Flight Mission Resources: https://soma.larc.nasa.gov/
• Student Resources: https://science.nasa.gov/learners/learner-opportunities