

Appendix A. ROSES Program Elements Included in the Yearbook with Corresponding SMD Division and Solicited ROSES years

<b>SMD Division</b>	<b>Solicited ROSES Years</b>	<b>Program Name</b>
Astrophysics	2016-21	Astrophysics Data Analysis
Astrophysics	2016	Astrophysics Explorer U.S. Participating Investigator
Astrophysics	2016	Astrophysics Probe Mission Concept Studies
Astrophysics	2016-18, 2020-21	Astrophysics Research and Analysis
Astrophysics	2018, 2019	Astrophysics Science SmallSat Studies
Astrophysics	2016-17, 2019, 2021	Astrophysics Theory
Astrophysics	2020	Extreme Precision Radial Velocity Foundation Science
Astrophysics	2018, 2020	LISA Preparatory Science
Astrophysics	2020, 2021	Pioneers
Astrophysics	2018	SOFIA Next Generation Instrumentation
Astrophysics	2016-2018, 2021	Strategic Astrophysics Technology
Astrophysics	2017, 2019	System-Level Segmented Telescope Design
Astrophysics	2017, 2020	Theoretical and Computational Astrophysics Networks
Astrophysics	2017	X-ray Astronomy Recovery Mission (XARM) Participating Scientists
Biological and Physical Sciences	2018	Development of Microgravity Food Production
Biological and Physical Sciences	2020	Fluid Physics Experiments on the ISS: Flow Boiling to Support Cryogenic Propellant Tank Transfer Research
Biological and Physical Sciences	2016	Fundamental Physics: Science and Dusty Plasmas
Biological and Physical Sciences	2016	Fundamental Physics: Translational Systems Biology and Informatics Research Using the GeneLab Data System
Biological and Physical Sciences	2018	Inclusion in a Russian Bion-M2 Mission
Biological and Physical Sciences	2021	Lunar Explorer Instrument for Space Biology Applications

Biological and Physical Sciences	2016	Parabolic and Suborbital Flights
Biological and Physical Sciences	2017-2021	Physical Sciences Informatics System
Biological and Physical Sciences	2016	Research Using Microgravity Simulation Devices
Biological and Physical Sciences	2021	Space Biology: Animal Studies
Biological and Physical Sciences	2016	Space Biology: Antarctic Balloon Flights
Biological and Physical Sciences	2016, 2018, 2020	Space Biology: Flight and Ground Space Biology Research
Biological and Physical Sciences	2018	Space Biology: Orion Exploration Mission-1 Research Pathfinder for Beyond Low Earth Orbit Space Biology Investigations
Biological and Physical Sciences	2016	Space Biology: Post-Doctoral Fellowships in Space Biology to Study the Microbiome of the ISS as a Built Environment
Cross Divisional	2020-2021	Citizen Science Seed Funding Program
Cross Divisional	2016-2021	Exoplanet Research Program
Cross Divisional	2014-2020	Habitable Worlds
Cross Divisional	2020	Open-Source Tools, Frameworks, and Libraries
Cross Divisional	2020-2021	Payloads and Research Investigations on the Surface of the Moon
Cross Divisional	2021	Science Activation Program Integration
Earth Science	2017, 2020	Advanced Component Technology
Earth Science	2016, 2018, 2021	Advanced Information Systems Technology
Earth Science	2017, 2019	Advancing Collaborative Connections for Earth System Science
Earth Science	2016, 2019	Airborne Instrument Technology Transition
Earth Science	2021	Arctic Radiation-Cloud-Aerosol-Surface Interaction Experiment
Earth Science	2020	Atmospheric Composition Campaign Data Analysis and Modeling
Earth Science	2017, 2020	Atmospheric Composition: Laboratory Research
Earth Science	2016, 2018	Atmospheric Composition: Modeling and Analysis

Earth Science	2016, 2020	Atmospheric Composition: Upper Atmospheric Composition Observations
Earth Science	2019	Aura Science Team
Earth Science	2020, 2021	Biodiversity
Earth Science	2016, 2020	Carbon Cycle Science
Earth Science	2016, 2018, 2020	Carbon Monitoring System
Earth Science	2016, 2020	Citizen Science for Earth Systems Program
Earth Science	2016	Carbon Cycle Science
Earth Science	2016, 2018	Carbon Monitoring System
Earth Science	2016	Citizen Science for Earth Systems Program
Earth Science	2016	Cloud and Aerosol Monsoonal Processes - Philippines Experiment
Earth Science	2018, 2021	CloudSat and CALIPSO Science Team Recompete
Earth Science	2020	Commercial SmallSat Data Analysis
Earth Science	2017	Computational Modeling Algorithms and Cyberinfrastructure
Earth Science	2017, 2020, 2021	Cryospheric Science
Earth Science	2017, 2020	CYGNSS Competed Science Team
Earth Science	2019	Decadal Survey Incubation Study Teams: Planetary Boundary Layer and Surface Topography and Vegetation
Earth Science	2014	DSCOVr Earth Science Algorithms
Earth Science	2018, 2021	DSCOVr Science Team
Earth Science	2018	Earth Science Applications: Disaster Risk Reduction and Response
Earth Science	2016	Earth Science Applications: Ecological Forecasting
Earth Science	2021	Earth Science Applications: Equity and Environmental Justice
Earth Science	2016	Earth Science Applications: Food Security and Agriculture
Earth Science	2017, 2021	Earth Science Applications: Health and Air Quality
Earth Science	2020	Earth Science Applications: Health and Air Quality Science Team
Earth Science	2021	Earth Science Applications: Socioeconomic Benefits/Assessments
Earth Science	2016, 2018, 2021	Earth Science Applications: Water Resources
Earth Science	2019	Earth Science Research from Operational Geostationary Satellite Systems
Earth Science	2014, 2016, 2018, 2020	Earth Science U.S. Participating Investigator
Earth Science	2015-2021	Earth Surface and Interior

Earth Science	2017	Earth System Science Pathfinder (ESSP) Venture-class Science Investigations: Earth Venture Suborbital-3
Earth Science	2018	ECOSTRESS Science and Applications Team
Earth Science	2017	Fire Impacts on Regional Emissions and Chemistry
Earth Science	2020	Global Ecosystem Dynamics Investigation (GEDI) Science Team
Earth Science	2019	Global Navigation Satellite System Research
Earth Science	2019	GRACE and GRACE-FO Science Team
Earth Science	2016	Group on Earth Observations Work Programme
Earth Science	2016	IceBridge Science Team
Earth Science	2017, 2020	In-Space Validation of Earth Science Technologies
Earth Science	2016, 2019, 2020	IceSat and CryoSat -2 Studies
Earth Science	2021	Increasing Participation of Minority Serving Institutions in Earth Science Division Surface-Based Measurement Networks
Earth Science	2016, 2019, 2021	Instrument Incubator Program
Earth Science	2016, 2019	Interdisciplinary Research in Earth Science
Earth Science	2016-2021	Land-Cover/Land-Use Change (includes SARI)
Earth Science	2017	Making Earth System Data Records for Use in Research Environments
Earth Science	2016, 2019, 2020	Modeling, Analysis, and Prediction
Earth Science	2016	NASA Data for Operation and Assessment
Earth Science	2018	NASA Energy and Water Cycle Study
Earth Science	2018	NASA ISRO Synthetic Aperture Radar Mission Science Team
Earth Science	2020	NASA Suomi NPP and JPSS Satellites Standard Products for Earth System Data Records
Earth Science	2016, 2020	Ocean Biology and Biogeochemistry
Earth Science	2018, 2020	Ocean Salinity Field Campaign
Earth Science	2016, 2017, 2019, 2021	Ocean Salinity Science Team
Earth Science	2016, 2020	Ocean Surface Topography Science Team
Earth Science	2017	Ocean Vector Winds Science Team
Earth Science	2017, 2020	OCO Missions Science Teams
Earth Science	2018	PACE Mission System Vicarious Calibration
Earth Science	2019	PACE Science and Applications Team
Earth Science	2016-2020	Physical Oceanography
Earth Science	2018, 2021	Precipitation Measurement Missions (PMM) Science Team
Earth Science	2016-2021	Rapid Response and Novel Research in Earth Science

Earth Science	2016, 2021	Remote Sensing of Water Quality
Earth Science	2018	Remote Sensing Theory for Earth Science
Earth Science	2017, 2020	SAGE III/ISS Science Team
Earth Science	2020	Science Activation Program Integration
Earth Science	2017, 2020	Science of TERRA, AQUA, and SUOMI NPP
Earth Science	2016, 2019	Sea Level Change Science Team
Earth Science	2018, 2021	SERVIR Applied Sciences Team
Earth Science	2019	Soil Moisture Active-Passive Mission Science Team
Earth Science	2017, 2020	Solar Irradiance Science Team
Earth Science	2016	Space Geodesy Research
Earth Science	2021	Subseasonal-to-Seasonal Hydrometeorological Prediction
Earth Science	2019	Surface Water and Ocean Topography Science Team
Earth Science	2019	Sustainable Land Imaging - Technology
Earth Science	2018	Sustaining Living Systems in a Time of Climate Variability and Change
Earth Science	2016, 2018, 2021	Terrestrial Ecology
Earth Science	2016, 2017, 2019, 2020	Terrestrial Hydrology
Earth Science	2019	Understanding Changes in High Mountain Asia
Earth Science	2019	Utilization of Airborne L- and S- Band Synthetic Aperture Radar Imagery over North America
Earth Science	2016	Utilization of Airborne Visible/Infrared Imaging Spectrometer – Next Generation Data from an Airborne Campaign in India
Earth Science	2016, 2019	Weather and Atmospheric Dynamics
Heliophysics	2021	Geospace Dynamics Constellation Interdisciplinary Scientists
Heliophysics	2020	GOLD-ICON Guest Investigators
Heliophysics	2016-2021	Heliophysics (Infrastructure and) Data Environment Enhancements
Heliophysics	2019-2020	Heliophysics Flight Opportunities for Research and Technology
Heliophysics	2020-2021	Heliophysics Flight Opportunities Studies
Heliophysics	2016	Heliophysics Grand Challenges Research
Heliophysics	2016-2021	Heliophysics Guest Investigators
Heliophysics	2021	Heliophysics Innovation in Technology and Science
Heliophysics	2016-2021	Heliophysics Living with a Star Science
Heliophysics	2021	Heliophysics Living with a Star Infrastructure
Heliophysics	2021	Heliophysics Living with a Star Strategic Capabilities
Heliophysics	2021	Heliophysics Living with a Star Tools and Methods
Heliophysics	2020-2021	Heliophysics Low-Cost Access to Space

Heliophysics	2021	Heliophysics Mission Concept Studies
Heliophysics	2018	Heliophysics Phase I DRIVE Science Centers
Heliophysics	2016-2021	Heliophysics Supporting Research
Heliophysics	2019	Heliophysics System Observatory Connect
Heliophysics	2019	Heliophysics System Observatory Data Support
Heliophysics	2016-2021	Heliophysics Technology and Instrument Development for Science
Heliophysics	2019	Heliophysics Theory, Modeling, and Simulations
Heliophysics	2016, 2020	Heliophysics U.S. Participating Investigator
Heliophysics	2020	HERMES Interdisciplinary Science Teams
Heliophysics	2016, 2021	Interdisciplinary Science for Eclipse
Heliophysics	2016, 2017	Magnetospheric Multiscale Guest Investigators
Heliophysics	2019	Outer Heliosphere Guest Investigators
Heliophysics	2020	Parker Solar Probe Guest Investigators
Planetary Science	2019	Akatsuki Participating Scientist
Planetary Science	2021	Analog Activities to Support Artemis Lunar Operations
Planetary Science	2018	Apollo Next Generation Sample Analysis
Planetary Science	2019	Applied Information Systems Research
Planetary Science	2018	Astrodynamics in Support of Icy Worlds Missions
Planetary Science	2016-2021	Cassini Data Analysis (and Participating Scientists)
Planetary Science	2016, 2020	Concepts for Ocean worlds Life Detection Technology
Planetary Science	2018, 2019, 2021	Development and Advancement of Lunar Instrumentation
Planetary Science	2016-2021	Discovery Data Analysis
Planetary Science	2016	Dynamic Power Convertors for Radioisotope Power Systems
Planetary Science	2020	DART Participating Scientist
Planetary Science	2016-2021	Emerging Worlds
Planetary Science	2021	EnVision VenSAR Science Team
Planetary Science	2016-2021	Exobiology

Planetary Science	2019	Gravity/Radio Science Science Team for the Europa Clipper Mission
Planetary Science	2016, 2021	Hot Operating Temperature Technology
Planetary Science	2017	InSight Participating Scientist
Planetary Science	2018	Instrument Concepts for Europa Exploration 2
Planetary Science	2019	Interdisciplinary Consortia for Astrobiology Research
Planetary Science	2017, 2021	Juno Participating Scientist
Planetary Science	2018	Korea Pathfinder Lunar Orbiter Participating Scientist
Planetary Science	2016-2021	Laboratory Analysis of Returned Samples
Planetary Science	2016-2021	Lunar Data Analysis
Planetary Science	2018	Lunar Surface Instrument and Technology Payloads
Planetary Science	2019	Mars 2020 Participating Scientist
Planetary Science	2018	Mars 2020 Returned Sample Science Participating Scientist
Planetary Science	2016-2021	Mars Data Analysis
Planetary Science	2021	Mars Science Laboratory Participating Scientist
Planetary Science	2016, 2018, 2020	Maturation of Instruments for Solar System Exploration
Planetary Science	2016, 2018-2021	New Frontiers Data Analysis
Planetary Science	2017	OSIRIS-REx Participating Scientists
Planetary Science	2021	OSIRIS-REx Sample Analysis Participating Scientists
Planetary Science	2016-2021	Planetary Data Archiving, Restoration, and Tools
Planetary Science	2016-2021	Planetary Instrument Concepts for the Advancement of Solar System Observations
Planetary Science	2018	Planetary Mission Concept Studies

Planetary Science	2017, 2018, 2021	Planetary Protection Research
Planetary Science	2016-2017, 2019, 2021	Planetary Science and Technology Through Analog Research
Planetary Science	2016	Planetary Science Deep Space SmallSat Studies
Planetary Science	2017, 2018	Rosetta Data Analysis Program
Planetary Science	2018	Scientific Exploration Subsurface Access Mechanism for Europa (SESAME) Technology Development Program
Planetary Science	2016-2021	Solar System Observations
Planetary Science	2016-2021	Solar System Workings
Planetary Science	2021	Volatiles Investigating Polar Exploration Rover Co-Investigator
Planetary Science	2020-2021	Yearly Opportunities for Research in Planetary Defense