NASA Earth and Space Science Fellowship (NESSF) Program – 2015

NASA received a total of 712 applications in 2015 to the NASA Earth and Space Science (NESSF) Fellowship Program announced in November 2014 among Earth Science Research, Heliophysics Research, Planetary Science Research, and Astrophysics Research – the four research programs of the Science Mission Directorate (SMD) at NASA Headquarters.

These four SMD science divisions make respective selection of applications for award on a competitive basis. Criteria for evaluation included: (a) the scientific merit of the proposed research; (b) the relevance of the proposed research to NASA's objectives in Earth or space science; and (c) academic excellence based upon an applicant's transcripts, the letter of recommendation by the student's academic advisor, and the degree to which it supported the proposed research. Evaluation was conducted via either mail or panel review, or both, and by the relevant expertise in the science divisions of SMD.

The purpose of the NESSF is to ensure continued training of a highly qualified workforce in disciplines required to achieve NASA's scientific goals. Awards resulting from the competitive selection are made in the form of training grants to the respective universities and educational institutions, with the faculty advisor serving as the principal investigator.

NESSF awards are made initially for one year and may be renewed for no more than two additional years, contingent upon satisfactory progress, as reflected in academic performance, research progress, and recommendation by the faculty advisor, and the availability of funds. An award is $30,000 per annum, including $24,000 student stipend and an allowance of up to $6,000, consisting of $3,000 for student expenses and $3,000 for university expenses.

The student allowance may be used for tuition; fees; travel in support of the research investigation to conferences, symposia, or collaborative meetings; books; expendable laboratory supplies; page charges for journal articles; printing of a thesis; health insurance; and other similar expenses related to the proposed research investigation. The university allowance may be used for tuition or research expenses, if agreed upon by the student and faculty advisor; it may also support research-related travel for the advisor (i.e. to accompany the student to a scientific meeting, oversee the student's research, etc.); or by the student. The budget in these two allowance categories may be exchanged, as long as the total sum for the two combined allowance categories does not exceed $6,000.

An individual accepting this award may not concurrently receive other Federal fellowships or traineeships. However, NASA may allow an applicant to receive supplements from other U.S. Federal agencies to cover expenses not covered by NASA's graduate fellowships; for example, the purchase of equipment, which is not permitted through a NASA fellowship.

The names of the students and their faculty advisors, institutions, and proposal titles of the 2015 NESSF selections are listed below by one of the four SMD science divisions.

The announcement for 2016 NESSF is anticipated in November 2015. The release will be posted at http://nspires.nasaprs.com/external/, and the deadline for submission of new applications to NASA will be February 1, 2016.

Inquiries about the program may be directed to:

Program Administrator for NESSF Earth Science Research – Claire Macaulay at 202/358 0151 or by E-mail at claire.i.macaulay@nasa.gov.

Program Administrator for NESSF Heliophysics Research, Planetary Science Research, and Astrophysics Research – Dolores Holland at (202) 358-0734 or by E-mail at hq-nessf- Space@nasa.gov.

Earth Science
NASA received a total of 391 applications in Earth Science Research and selected 64 for award, pending acceptance by each applicant and their respective institution; they are:

James Allen (Student); David Siegel (Advisor); University of California, Santa Barbara
Retrieval of Phytoplankton Size Distribution from Satellite Imagery

Grayson Badgley (Student); Christopher Field (Advisor); Stanford University
Improving Estimates of Terrestrial Gross Primary Productivity with Remote Sensing of Solar-Induced Chlorophyll Fluorescence

Sarah Bang (Student); Edward Zipser (Advisor); University of Utah
Seeking Reasons for the Differences in Structure, Evolution, and Lightning of Deep Convective Systems Over Land and Ocean

William Battye (Student); Viney Aneja (Advisor); North Carolina State University
Use of Satellite Measurements to Validate and Improve Air Quality Predictions of Ammonia and Fine Particulate Matter

Sarah Benjaram (Student); Jean Dixon (Advisor); Montana State University
Climate Controls on Weathering in a Post-Glacial Landscape

Saiprasanth Bhalachandran (Student); Dev Niyogi (Advisor); Purdue University
Integrating Land Surface Processes for Improved Simulation of Landfalling Tropical Cyclones

Jonathan Bielli (Student); Tiruvalam Krishnamurti (Advisor); Florida State University
Impacts on Hurricane and Monsoon Extreme Rainfall Forecasts From Inflowing Buoyancy Streams Using Physical Initialization and Downscaled GPM Rain Rates Within a Cloud Resolving Model

Ruth Branch (Student); Alexander Horner-Devine (Advisor); University of Washington
River Discharge and Estuary Dynamics Inferred from Sea Surface Height Measurements: New Applications for SWOT

Matthew Brege (Student); Lynn Mazzoleni (Advisor); Michigan Technological University
Aqueous Phase Oxidation of Biomass Combustion Emissions in Clouds

Matthew Brown (Student); Michael Behrenfeld (Advisor); Oregon State University
Resolving Physiological Mechanisms of Photoacclimation for an Improved Interpretation of NASA's Satellite Chlorophyll Data Record

Nick Carr (Student); Yang Hong (Advisor); University of Oklahoma
Evaluating the Connection Between Surface Properties and Precipitation Characteristics: Bridging GPM and SMAP

Yi-Yin Chang (Student); Sundar Christopher (Advisor); University of Alabama in Huntsville
A Novel Approach for Examining Radiative Effects of Absorbing Aerosols Above Cloud Based on In Situ and Satellite Observations

Winnie Chu (Student); Robin Bell (Advisor); Columbia University
Investigating the Influence of Subglacial Hydrologic Conditions on Seasonal Velocity in Northwest Greenland

David Coe (Student); Jianhua Qian (Advisor); University of Massachusetts Lowell
Daily Weather Types in Four Seasons in the Northeast US and Climate Tele-Connection

Leila Cooper (Student); Ashley Ballantyne (Advisor); University of Montana
Landsat-Driven Analysis of the Impacts of Climate Change on Carbon Release Resulting From Forest Disturbance

Kerstin Cullen (Student); Emily Shroyer (Advisor); Oregon State University
Air-Sea Interaction of the Sea Surface Salinity Anomaly in the Upwelling Sri Lanka Dome

Caroline Curtis (Student); Bethany Bradley (Advisor); University of Massachusetts Amherst
Using Time Series of Remotely Sensed Imagery to Understand Invasive Pine Dispersal

Jennifer DeHart (Student); Robert Houze (Advisor); University of Washington
Analysis of the Interaction of Hurricane Karl (2010) with the Topography of Mexico

Tedward Erker (Student); Philip Townsend (Advisor); University of Wisconsin, Madison
Linkage of Remote Sensing, Field Spectroscopy and Modeling to Characterize Ecosystem Function in Relation to the Heat Island and Carbon Budget of an Urban Area

Catherine Garcia (Student); Adam Martiny (Advisor); University of California, Irvine
Global Distributional Patterns of Phytoplankton Communities and Their Elemental Stoichiometry Using MODIS Satellite Data

Allison Goodwell (Student); Praveen Kumar (Advisor); University of Illinois, Urbana-Champaign
A Complex Network Approach to Characterize and Predict Ecohydrologic Shifts

Heather Greaves (Student); Lee Vierling (Advisor); University of Idaho
Multisensor Fusion for Mapping of Low-Stature Arctic Vegetation Communities and Woody Biomass

Danielle Groenen (Student); Vasubandhu Misra (Advisor); Florida State University
Mid-Summer Droughts Amidst Landfalling Tropical Cyclones and Atmospheric Rivers

Brice Grunert (Student); Colleen Mouw (Advisor); Michigan Technological University
CDOM Variability and Its Influence on Phytoplankton Distribution in a Sub-Arctic Basin

Ryan Hardy (Student); Robert Nerem (Advisor); University of Colorado
Improving Estimates of Antarctic Ice Mass Loss From GRACE by Reducing Atmospheric Modeling Errors

Souichiro Hioki (Student); Ping Yang (Advisor); Texas A&M University
Variability of Ice Cloud Particle Roughness Determined from Polarimetric Satellite Observations

James Hite (Student); Athanasios Nenes (Advisor); Georgia Institute of Technology
Quantifying Organic Aerosol Volatility and Its Relationship to Composition, Hygroscopicity, and Other Properties

Xie Hu (Student); Zhong Lu (Advisor); Southern Methodist University
Quantifying Landslide Dynamics Using InSAR: Applications to Landslides in Northwestern USA

Alex Huth (Student); Benjamin Smith (Advisor); University of Washington
Triggers for the Collapse of Ice Shelves in Antarctica: Investigating Compressive Arch Failure with Numerical Models

Kelsey Kremers (Student); Adrian Rocha (Advisor); University of Notre Dame
Is Arctic Greening Consistent with the Temperature Sensitivity of Coupled Carbon and Nitrogen Cycles?

Abdiel Laureano-Rosario (Student); Frank Muller-Karger (Advisor); University of South Florida
Evaluating Water Quality and Tropical Vector-Borne Disease Risk by Satellite Remote Sensing

Patricia Lawston (Student); Brian Hanson (Advisor); University of Delaware
Impacts of Irrigation and Wind Turbines on Land-Atmosphere Interactions and Coupled Prediction

Xiang Li (Student); Albert Presto (Advisor); Carnegie Mellon University
Constraining Marcellus Shale Methane Emissions with Remote Sensing Data

Xiaoqiong Li (Student); Mingfang Ting (Advisor); Columbia University
Asian Monsoon Response to the Changing Climate: Role of Anthropogenic Forcing

David Lilien (Student); Ian Joughin (Advisor); University of Washington
Modeling Melt Sensitivity of Smith, Pope, and Kohler Glaciers, West Antarctica

Bernard Lipat (Student); Lorenzo Polvani (Advisor); Columbia University
Quantifying and Understanding Linkages Between Clouds and the General Circulation

Rainer Luptowitz (Student); Bob Allen (Advisor); University of California, Riverside
Investigation of Recent and Future Hydrological Changes in the Southwest United States

Grant Macdonald (Student); Douglas MacAyeal (Advisor); University of Chicago
Investigating Supraglacial Lake Evolution and Hydrology on the Grounded and Floating Portions of Petermann Glacier, North Greenland

Margaret Marvin (Student); Ross Salawitch (Advisor); University of Maryland, College Park
Connecting Emissions and Oxidation of Isoprene Through In Situ and Remote Observations of Formaldehyde

Susan Meerdink (Student); Dar Roberts (Advisor); University of California, Santa Barbara
Discriminating California Plant Species and Evaluating Temperature Relations Across Seasons Within Drought Impacted Ecosystems

Vikalp Mishra (Student); John Mecikalski (Advisor); University of Alabama in Huntsville
Downscaling Microwave/Thermal Infrared Coupled Soil Moisture Estimates and Its Application to Crop Modeling

Bailey Morrison (Student); Jonathan Greenberg (Advisor); University of Illinois at Urbana-Champaign
The Velocity of Tree Cover in California

David New (Student); Xin-Zhong Liang (Advisor); University of Maryland, College Park
A Unified Representation of the Planetary Boundary Layer and Shallow Cumulus Convection

Lavanya Periasamy (Student); Albin Gasiewski (Advisor); University of Colorado at Boulder
Calibration and Validation of the PolarCube 3U Temperature Sounding Radiometer Mission

Michael Polen (Student); Ryan Sullivan (Advisor); Carnegie Mellon University
Experimental Parameterization of the Emission and Properties of Ice Nuclei from Biomass Burning to Improve Interpretations of Satellite-Retrieved Cloud Properties

John Rollins (Student); Nadia Lapusta (Advisor); California Institute of Technology
Geodesy-Based Estimates of Loading Rates on Faults Beneath the Los Angeles Basin with a New, Computationally Efficient Method to Model Dislocations in 3D Heterogeneous Media

Javier Sanchez (Student); Nga Lee Ng (Advisor); Georgia Institute of Technology
Measurement of Atmospheric Peroxy Radicals for Constraining Aerosol Formation from Isoprene

Jessica Scheick (Student); Gordon Hamilton (Advisor); University of Maine
Remote Sensing of Icebergs in Greenland's Fjords and Coastal Waters

Ryan Scott (Student); Dan Lubin (Advisor); University of California, San Diego
Cloud Radiative Forcing of the West Antarctic Ice Sheet Surface

Nader Shakibay Senobari (Student); Gareth Funning (Advisor); University of California, Riverside
Producing Robust Earthquake Source Models and Earth Models by Reconciling Models from InSAR and Seismic Waveform Data

Stephanie Stevenson (Student); Kristen Corbosiero (Advisor); State University of New York, Albany
Kinematic and Thermodynamic Analysis of Tropical Cyclone Intensity Changes Signaled by Outer Rainband Lightning Activity During NASA's GRIP and HS3 Missions

Jamie Sziklay (Student); Megan Donahue (Advisor); University of Hawaii
Predictive Models of Coral Disease in the Hawaiian Archipelago

Matthieu Talpe (Student); Robert Nerem (Advisor); University of Colorado
Extending the Record of Ice Sheet Melt in Greenland and Antarctica Using Satellite Tracking Measurements

Yumeng Tao (Student); Soroosh Sorooshian (Advisor); University of California, Irvine
Precipitation Estimation from Multi-Satellite Observations Using Advanced Machine Learning Methods

Jan-Erik Tesdal (Student); Joaquim Goes (Advisor); Columbia University
Assessing the Impacts of Arctic Sea Ice Melting and Freshwater Flux on Phytoplankton Productivity and Carbon Export in the North Atlantic

Srikanth Toppaladoddi (Student); John Wettlaufer (Advisor); Yale University
Oceanic Heat Flux and the Fate of Arctic Sea Ice: A Combined Theoretical and Observational Study

Stephen Tuozzolo (Student); Michael Durand (Advisor); Ohio State University
Determining Controls of Global Runoff from the Upcoming Surface Water and Ocean Topography (SWOT) Satellite

Mollie Van Gordon (Student); Laurel Larsen (Advisor); University of California, Berkeley
Machine Learning and Information-Entropy Methods Using Remote Sensing Data for Understanding Hydrological Dynamics in a Coupled Human-Natural System: The Niger River Basin

Daniel Williams (Student); Michael Ramsey (Advisor); University of Pittsburgh
Analysis of Proximal Volcanic Emissions

Tiantian Xiang (Student); Enrique Vivoni (Advisor); Arizona State University
Improvements in Modeling Regional Land-Atmosphere Interactions and Hydrologic Responses in Complex Terrain and Seasonal Ecosystems

Yuan Xue (Student); Barton Forman (Advisor); University of Maryland
Advancing Atmospheric and Forest Decoupling in Passive Microwave Observations over Snow Covered Land Using the Advanced Microwave Scanning Radiometer (AMSR-E) and the NASA Catchment Land Surface Model

Ting Yuan (Student); Hyongki Lee (Advisor); University of Houston
Diffusion Modeling of Water Flow in the Central Congo Floodplain Using Geodetic and Remote Sensing Measurements

Yunjun Zhang (Student); Falk Amelung (Advisor); University of Miami
Interseismic Deformation from Ionosphere-Corrected L-Band InSAR

Yiqi Zheng (Student); Nadine Unger (Advisor); Yale University
Using Relationships Between Photosynthesis and Formaldehyde Column as a Probe of Isoprene Emission