A.10 OCEAN SALINITY SCIENCE TEAM

1. Scope of Program

The NASA Ocean Salinity Science Team (OSST) supports basic research and analysis activities associated with production, improvement, and understanding of sea surface salinity data. The objective of this program element is to renew or select additional members for the OSST to support the salinity science within NASA's Physical Oceanography Program.

The overall goals of the OSST are to provide the scientific underpinning for production of the best possible satellite-derived ocean salinity data sets and to demonstrate the Earth science and applications arising from analyses of the ocean surface salinity data. The team assures that data made available are of the highest quality and validated for scientific exploitation. It also conducts ocean science investigations that are possible only through exploitation of remotely sensed sea surface salinity.

NASA's Aquarius satellite (http://aquarius.nasa.gov) completed a nearly four-year mission (June 2011-June 2015), providing global measurements of sea surface salinity (SSS). SSS are also being retrieved from NASA's Soil Moisture Active-Passive (SMAP) satellite (http://smap.jpl.nasa.gov/; launched in January 2015) to provide continuity of NASA's SSS measurements. Version 3 of the SMAP SSS product was released in November 2018. These data products are complemented by SSS measurements from the European Space Agency's Soil Moisture and Ocean Salinity (SMOS) mission and by *in situ* salinity measurements (e.g., from the Argo array of profiling floats). NASA has also supported two major SSS process studies under the name of Salinity Processes in Upper Ocean Regional Studies (SPURS; http://spurs.jpl.nasa.gov/). SPURS investigators and science are also part of the Ocean Salinity Science Team.

Previous announcements for the OSST (in 2009, 2012, 2013, 2015, and 2017) have emphasized the calibration/validation and production of SSS products from Aquarius, as well as applications of Aquarius SSS products for ocean science investigations. The current announcement solicits proposals that address the following topics.

1. Exploitation of NASA satellite SSS measurements to investigate SSS variability, its influence on ocean circulation, and the linkage with climate and water cycle. Synergistic use of NASA SSS measurements with other satellite and *in situ* observations is encouraged.
2. Evaluation and improvement of Aquarius and SMAP SSS products. The Aquarius Project, at its conclusion, produced Version 5.0 of mission data at the end of 2017. There is still much to be learned and improved in the Aquarius retrievals. Likewise, salinity retrievals from SMAP have advanced to Version 3.0 (November 2018) and much work remains to evaluate and improve this product. Also, work to assure the continuity and consistency of the SSS products across the two missions is a high priority. Products and software developed under this solicitation is to be distributed to the public as opean source software, following NASA's Earth Science Data System (ESDS) Open Source Sofware Policy (https://earthdata.nasa.gov/earth-science-data-systems-program/policies/esds-open-source-policy).
3. Improve estimates of total error budget for SMAP and Aquarius SSS for more

meaningful integration of satellite SSS into global observing system and climate models. Revised error budgets are sought to include both observational and sampling errors associated with sub-footprint variability, temporal aliasing, and near-surface stratification. Understanding the underlying physical mechanisms of the expected differences between *in situ* and satellite salinity (e.g., precipitation, small-scale noise, high-frequency fluctuations, etc.) continue to need attention.

2. Programmatic Information

Total funds available for work selected under this solicitation are approximately $2M per year for three years.

Programmatic priority will be given to those proposals making the strongest links to analysis of satellite data and addressing oceanographic problems at basin or global scale. It is expected that all proposals will use satellite SSS in a fundamental way (so that it is not perceived to be peripheral to the proposed work). Selected PIs and/or Co-Is are expected to attend annual OSST meetings in varying US locations, and should include travel support in their budget.

Based on the quality of proposals received, awards will be distributed across the three research themes identified in Section 1. Proposals outside these research themes may be considered but must be highly meritorious.

3. Summary of Key Information

Expected program budget for first year of new awards	~ $2.0M
Number of new awards pending adequate proposals of merit	~ 10-15
Maximum duration of awards	3 years
Due date for Notice of Intent to propose (NOI)	See Tables 2 and 3 of this ROSES NRA
Due date for proposals	See Tables 2 and 3 of this ROSES NRA
Planning date for start of investigation	March 1, 2020
Page limit for the central Science/Technical/Management section of proposal	15 pp; see also Table 1 Table 1 of ROSES *Summary of Solicitation* and the *Guidebook for Proposers*.
Relevance to NASA	This program is relevant to the Earth science questions and goals in the NASA Science Plan. Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the *ROSES Summary of Solicitation*.
Detailed instructions for the preparation and submission of proposals	See the *NASA Guidebook for Proposers* at http://www.hq.nasa.gov/office/procurement/nraguidebook/.

Submission medium	Electronic proposal submission is required; no hard copy is required or permitted.
Web site for submission of proposal via NSPIRES	http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposal via Grants.gov	http://grants.gov/ (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH19ZDA001N-OSST
NASA points of contact concerning this program, both of whom share the following postal address: Earth Science Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001	Eric Lindstrom Telephone: (202) 358-4540 Email: eric.j.lindstrom@nasa.gov Nadya Vinogradova-Shiffer Telephone: (202) 358-0976 Email: nadya.vinogradova-shiffer@nasa.gov