

NASA Physical Oceanography Program

**Overview
of Salinity Continuity Program
29 April 2019
OSST Meeting**

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Washington, DC**

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NASA Physical Oceanography Program

- 1) Support missions on orbit:** Jason-2 & Jason-3 (Altimetry), QuikSCAT(Winds), SMAP (Sea Surface Salinity), MODIS and VIIRS (SST), OMG (EVS-2/sub-orbital). S-MODE (EVS-3/sub-orbital)
- 2) Support missions in development:** Surface Water and Ocean Topography (SWOT) LRD-4/2021, Jason-CS/Sentinel-6A&B (Altimetry) 2020/2025, CIMR and Earth Explorer developments for Salinity.
- 3) Support Science Teams:** Altimetry (OSTST), SST (GHRSSST&US team), SSS (OSST), Winds (OVWST), Sea Level Change (N-SLCT), SWOT (SWOT ST), Atlantic Meridional Overturning Circulation (AMOC)
- 4) Support Climate Focus Area/Ocean Observing:** US CLIVAR, USGCRP, GOOS, GCOS, GODAE OceanView, NOAA COSC, IOOC, CEOS,
- 5) Process Studies related to NASA missions:** Salinity Processes in the Upper Ocean (SPURS-1, 2011-2015) (SPURS-2 2015-2019), SWOT Ocean & Hydrology Cal/Val, SPURS-Follow-on

“Salinity Continuity Program”

- NASA has consolidated ongoing support for salinity remote sensing and research under a single new budget line. The total support is approximately \$7.4M/year. This will support both directed and competed funding.

Elements of Salinity Continuity

- SMAP salinity product
- Ongoing Cal/Val of salinity sensors/products
- Aquarius Reprocessing – V6.0 products
- Salinity Process Studies – SPURS-2 analysis and SPURS Follow-on
- Ocean Salinity Science Team – ROSES
- Support R&D for next generation mission (ESA CIMR and NASA Earth Explorer concepts)

SMAP salinity product

- SMAP salinity product will be regularized through a new partnership started in 2018 between RSS (algorithm and production) and PODAAC (distribution).

Ongoing Cal/Val of salinity sensors/products

- Aquarius supported a robust cal/val activity at GSFC and JPL. “The Tuesday Telecom Group” has been integral to the steady improvement of salinity product.
- Salinity Continuity supports, through direct funding, a continuation of this activity.

Legacy of Aquarius

- Salinity Continuity program is prepared to support reprocessing of Aquarius data (to V6.0) in future to ensure a seamless Climate Data Record with SMAP salinity.

Salinity Process Studies

- Scientific interpretation of surface salinity products has been supported by a science team (Ocean Salinity Science Team) and process studies (Salinity Processes in Upper-ocean Regional Studies/SPURS).
- Salinity Continuity program is supporting the synthesis phase of SPURS-2.
- The planning of a SPURS Follow-on can start at any time with execution NET 2022. Coordination with SWOT and S-MODE should be considered.

Ocean Salinity Science Team

- OSST support is now entirely under Salinity Continuity program and is currently planned to support a ROSES call of \$2M/yr during odd years (2019, 2021, 2023) and a field program investigation as required (ROSES 2020?).

R&D for next generation mission

- An integral part of NASA research enterprise is to promote concepts for next generation missions.
- NASA PO is currently helping support development of L/P band radiometer and antenna (Sid Misra, Tony Lee, Simon Yueh...).
- Salinity Continuity is focused on having a community prepared and engaged for next generation salinity mission (CIMR, Earth Explorer).

Salinity Continuity Program by the Numbers

- \$7.4M/yr (~25% of Physical Oceanography Program)
- ~40% directed funding, ~60% competed (flexible)
- 2 NASA Centers & >10 Universities
- OSST ~Standing stock of 24-30 research projects
- ROSES call OSST - ~30-40 proposals per cycle/selecting ~12-15
- Salinity Process Study ~ one per five-year period support by separate ROSES call (SPURS-1 2011-15, SPURS-2 2015-2019, "SPURS-FO" 2019-23)
- Separate ROSES call for SPURS (8-10 PI who also become part of OSST)

What to expect

- May 2019 – NASA-ESA cooperation (PI-MEP Cooperation) established at ESA LPS.
- June 2019 – Special Issue of Oceanography on SPURS-2
- August 2019 – Receive next OSST proposals. “Due Last Thursday of August”
- August 2019 – CIMR Workshop (by invitation) coordinated by Simon Yueh
- TBD – SPUR Follow-on planning activity?

NASA PO in ROSES 19

- Physical Oceanography R&A (27 June 2019)
- Salinity (29 Aug 2019)
- (NOI due 30 days ahead for all these)

ROSES is issued annually around Valentine's Day (14 Feb)

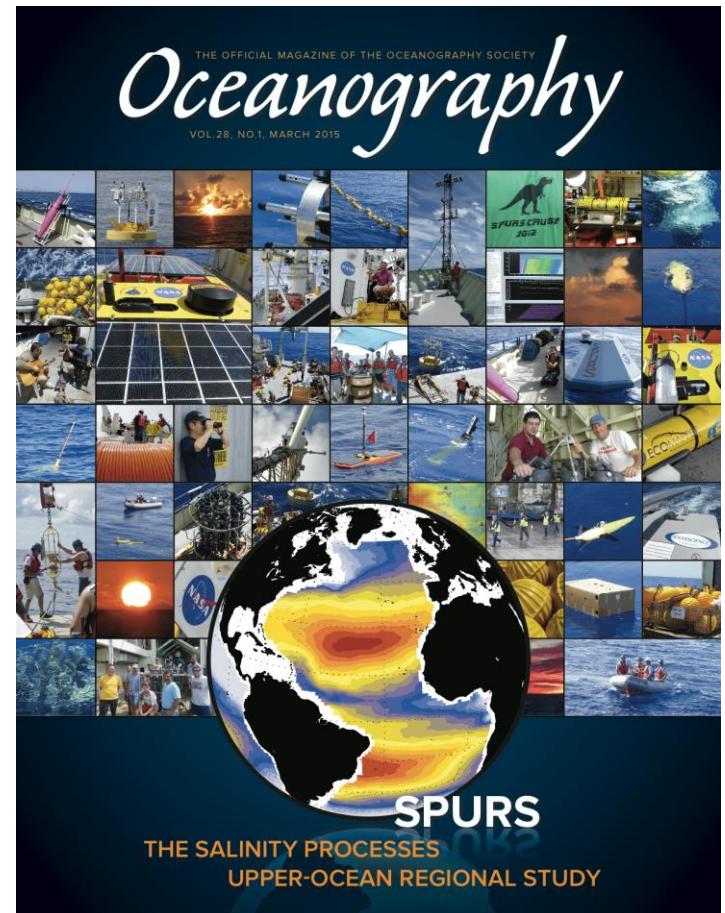


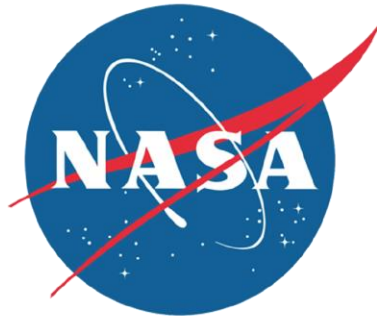
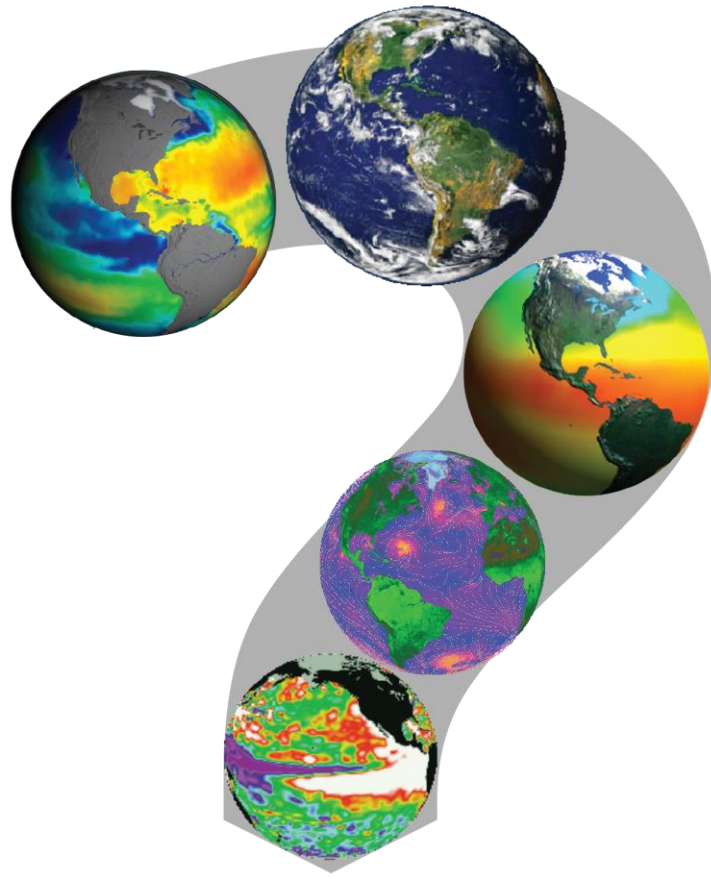
Rose of Galaxies from Hubble

<http://solicitation.nasaprs.com/>

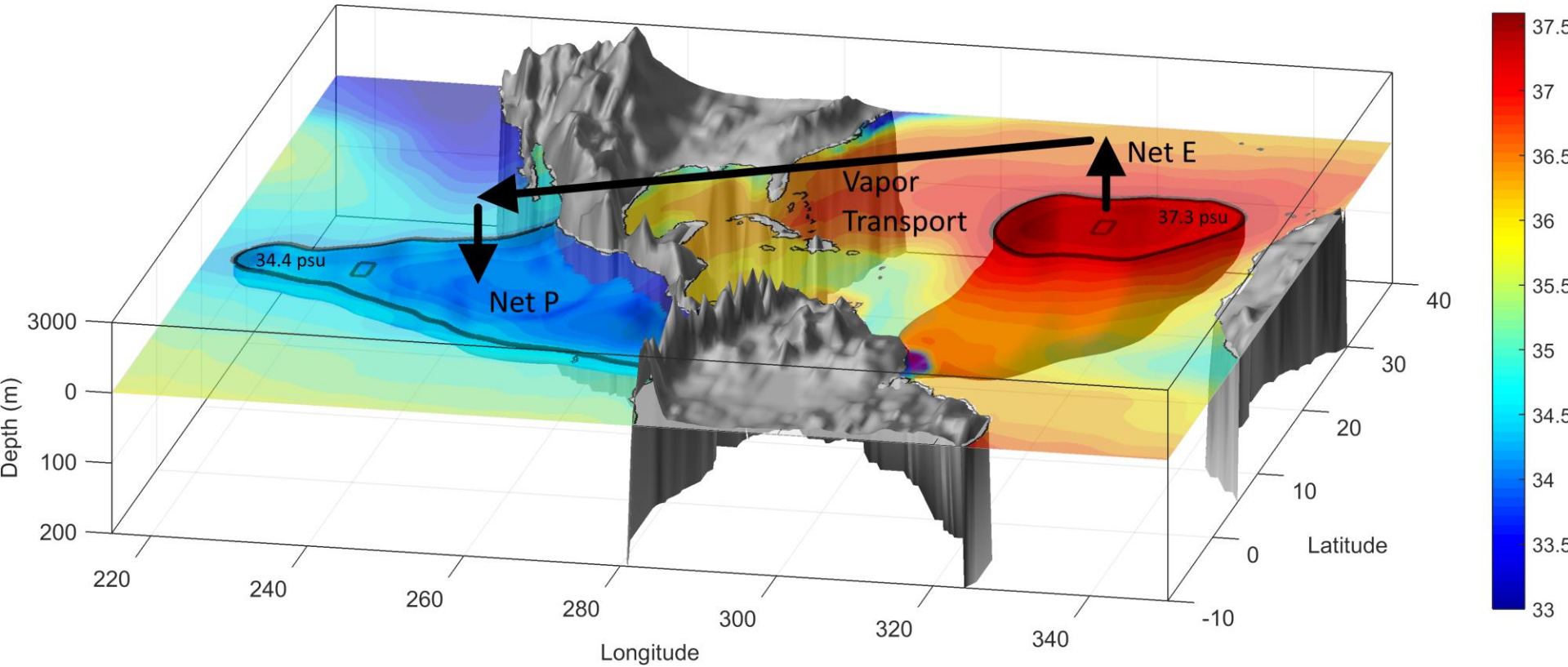
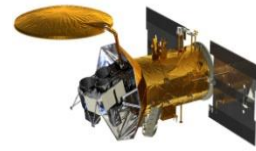
Program Highlight 2015-2019

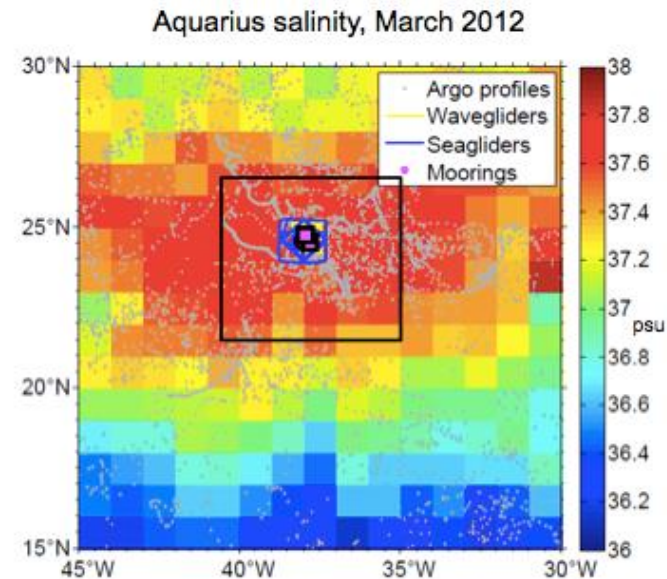
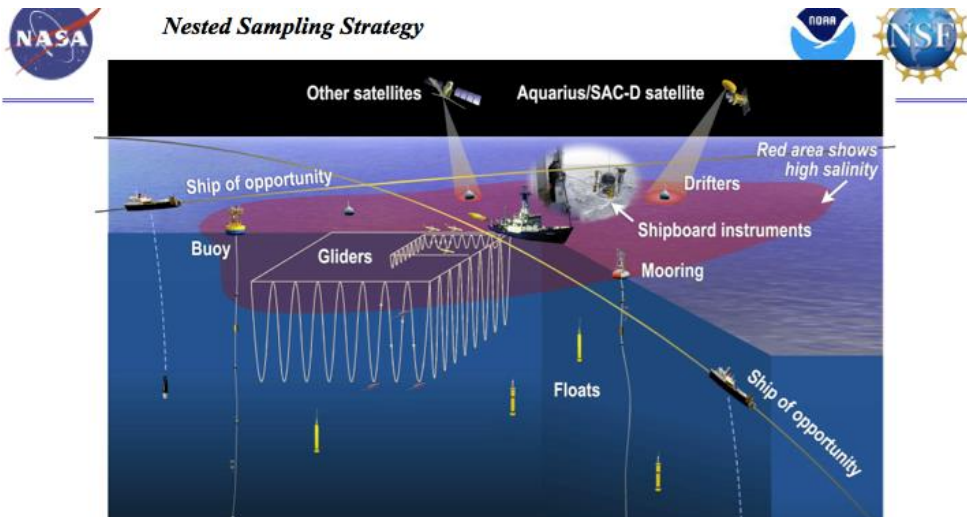
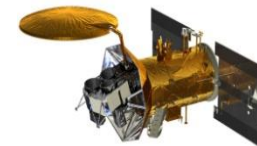
- SPURS-2 in 2015-19
- Field work in tropical eastern Pacific Ocean (near 10N, 125W) from August 2016 – November 2017.
- Synthesis of results in 2018-19.
- Special issue of Oceanography June 2019 devoted to SPURS-2 (Guest Editors: Shcherbina, Edson, Schanze)





5/1/2019





R/V Roger Revelle



2016 Cruise Plan

Summer/Fall Rainy Season Cruise
 Depart Honolulu: 12 Aug
 Arrive 10 N, 125 W: 19 Aug
 26 Science days
 Depart site: 14 Sep
 Arrive Honolulu: 22 Sep

Activity

- Installation of 3 moorings
- Deployment of Lagrangian assets
 - Seagliders
 - Wavegliders
 - Mixed Layer Floats
 - Drifters
- Hydrographic Survey
- Ship-based sampling of rain events
 - Surface Fluxes
 - Near-surface salinity and turbulence
 - Balloon-based IR camera

