

# NASA Physical Oceanography Program

Overview and Potential Contributions to  
Marine Debris Research

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1/20/16



# NASA Physical Oceanography Program

- 1) Support missions on orbit:** Jason-2 & Jason-3 (Altimetry), QuikSCAT (Winds), Aquarius & SMAP (Sea Surface Salinity), RapidSCAT (Winds), MODIS (SST), OMG (EVS-2/sub-orbital)
- 2) Support missions in development:** Surface Water and Ocean Topography (SWOT), Jason-CS/Sentinel-6 (Altimetry),
- 3) Support Science Teams:** Altimetry (OSTST), SST (GHRSSST&US team), SSS (US Team), 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, OOPC, GODAE OceanView, NOAA COSC, IOOC, CEOS, ....
- 5) Process Studies related to NASA missions:** Salinity Processes in the Upper Ocean (SPURS-1, 2012-2015) (SPURS-2 2016-2018), TPOS-2020, IIOE-2, SWOT Ocean Cal/Val

# PO Program by the Numbers

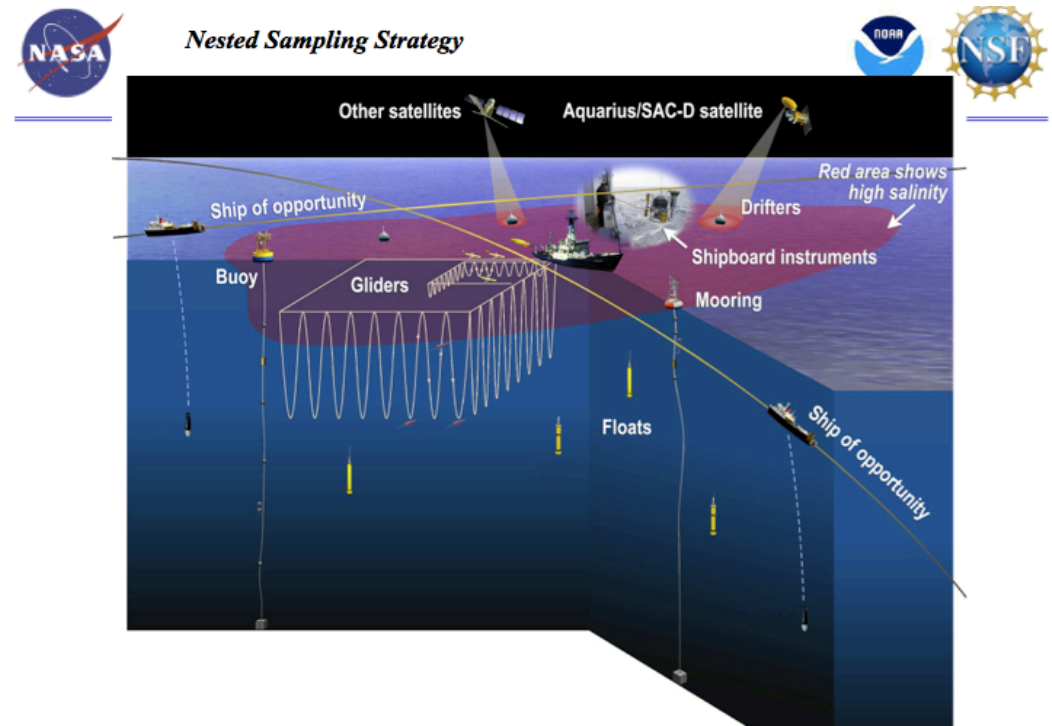
- ~200 Projects (Grants, Contracts, CA)
- ~\$25-30M/yr for Projects
- 8 missions and 7 science teams
- >5 NASA Centers & >20 Universities
- >10 International and Interagency Committees
- 2-5 Proposal Review Panels/year (~150-200 prop/yr)
- >100 Non-Junk Emails/day
- >20 Irregular duties – visas, references, recommendations, journal reviews,
- Staff=1

# Growing a marine debris activity within NASA ESD

- Create a MD community within NASA
- Build a compelling science tracibility matrix for research, sub-orbital, and low Earth orbit activities involving MD.
- Build scientific, societal, and economic arguments for remote sensing MD.

# NASA PO – Activities & ROSES 16

- Interdisciplinary Science – “Life in a Moving Ocean” (mid summer?))
- Ocean Surface Topography Science Team (30 May 2016)
- Physical Oceanography R&A (30 June 2016)
- Salinity (30 Oct 2016)
- Sea Level Change (15 Nov 2016)



# NASA Opportunities

## Marine Debris- Near Term

- **Interdisciplinary Science - “Life in a Moving Ocean”**
  - Seeking proposals to enable preparations for future space missions by improving its current ability to integrate remote sensing of ocean motion at approximately 10km spatial scale with similar or finer scale data on the movement of marine fish, mammal, and other species, as well as the movement of marine debris.
- **Earth Ventures Program (Missions, Instruments, Airborne Science)**
  - Examples of COral Reef Airborne Laboratory (CORAL) and Oceans Melting Greenland (OMG)
- **Physical Oceanography Program**
  - Ocean circulation and the movement and accumulation of marine debris?
- **Topical Workshops, Symposia, and Conferences**
  - Community organizing like this workshop

# Interagency Opportunities

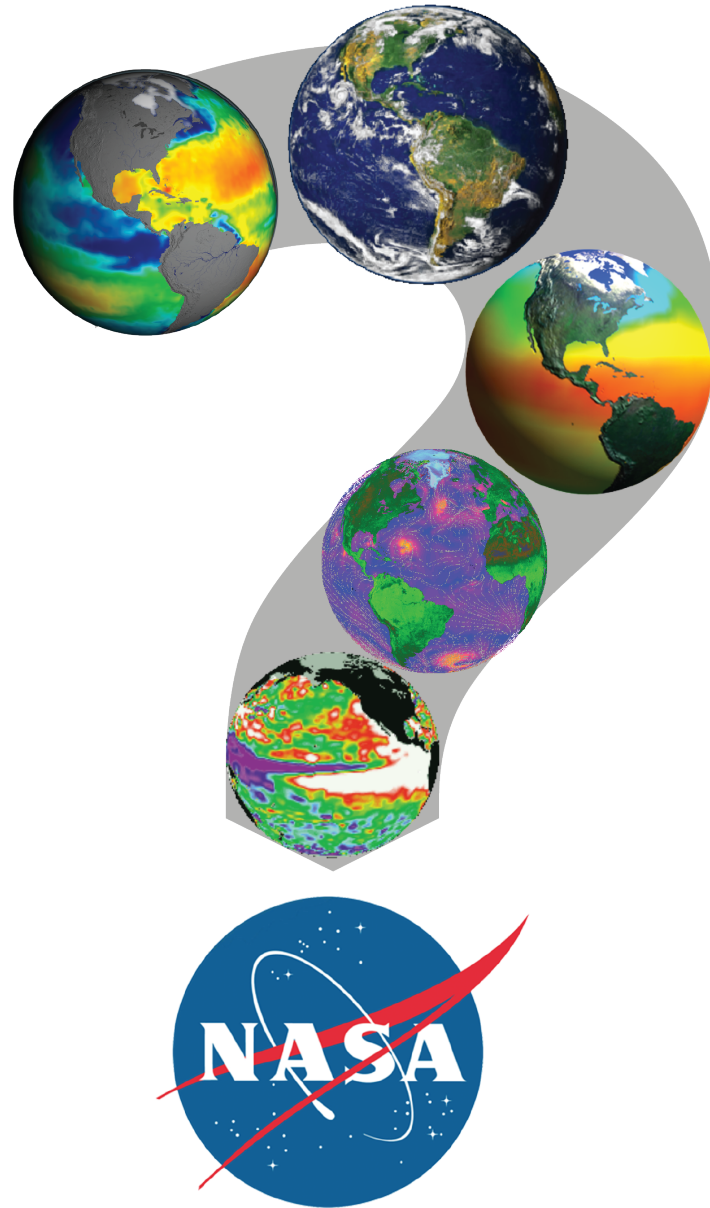
- Interagency Ocean Observation Committee (NASA, NOAA, NSF, EPA, ONR, etc)
- National Oceanographic Partnership Program
- Individual agency opportunities in NOAA, NSF, and others.

# International Opportunities

(Insert discussion of marine debris)

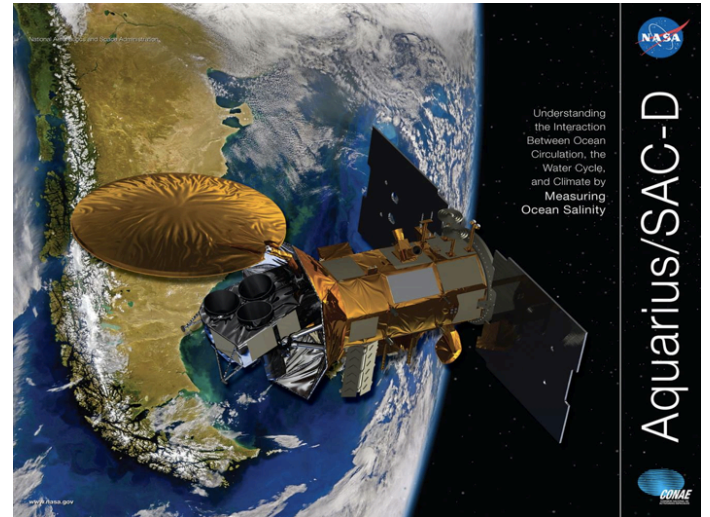
- Global Ocean Observing System - GOOS (in situ observations)
- Committee on Earth Observation Satellites – CEOS (satellite and airborne observations)
- GODAE OceanView – GOV (operational oceanography modeling)





# Science Teams

- Ocean Salinity (2016)
- Ocean Surface Topography (2016)
- Sea Level Change (2016)
- Sea Surface Temperature (Rolling)
- Atlantic MOC (Rolling)
- Ocean Vector Winds (2017)
- SWOT Science Team (2019)



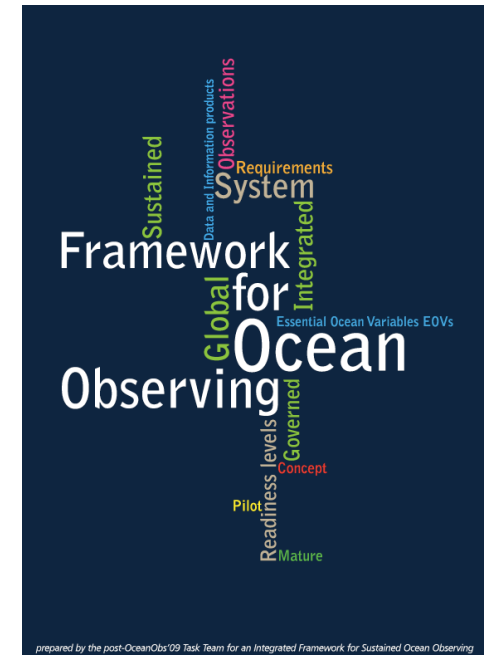
# PODAAC & PO Program

- Support the Science Teams and Satellite Missions of NASA Physical Oceanography
- Innovate and partner with other data providers to enhance satellite data availability for the PO community.
- Work with science teams to document the quality and utility of PODAAC data holdings.

# Interagency/International Activities

- Marine Debris Workshop (Jan 2016)
- GOOS Steering Executive Committee (Feb 2016, OSM New Orleans)
- GCOS Conference (Mar 2016, Amsterdam)
- Multiple Variables Workshop (invite only; Apr 2016)
- Liege Symposium (submesoscale: May)
- OVWST (Sapporo; May)
- GHRST (MD, June)
- NOAA Climate Observing System Council (COSC; Jul)
- SPURS-2 start (Aug/Sep from Honolulu)
- OSTST (Nov; France)
- PORSEC (Nov; Brazil)
- Interagency Ocean Observation Committee (IOOC; bimonthly)

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# Interagency/International (other)

- ATLANTOS External Advisory Board (GOOS/Atlantic)
- Deep Ocean Observing Strategy (GOOS)
- Tropical Pacific Observing System 2020 (TPOS 2020)
- MARE (Portugal) Marine Science External Review Committee (July 2016)
- GODAE OceanView Patrons Group
- Joint Task Force for Instrumenting Submarine Cables

# Program Highlights 2015-2016

- Aquarius completes prime mission – beautiful 3 year& 9 month data set
- Adapting SMAP for continuing the salinity time series
- RapidSCAT cal/val & rapid data delivery
- Jason-3 Launch (Jan 2016)
- SPURS-2 in 2016-17

