

# Phenomena, Observations, and Synthesis (POS) panel



Co-chairs:

Renellys C. Perez, UM/CIMAS and NOAA/AOML

Emanuele Di Lorenzo, Georgia Tech

- Summary of POS
- Past year's accomplishments
- Introductions of new and existing panel members
- Overview of agenda and discussions
- Instructions for session co-chairs and rapporteurs

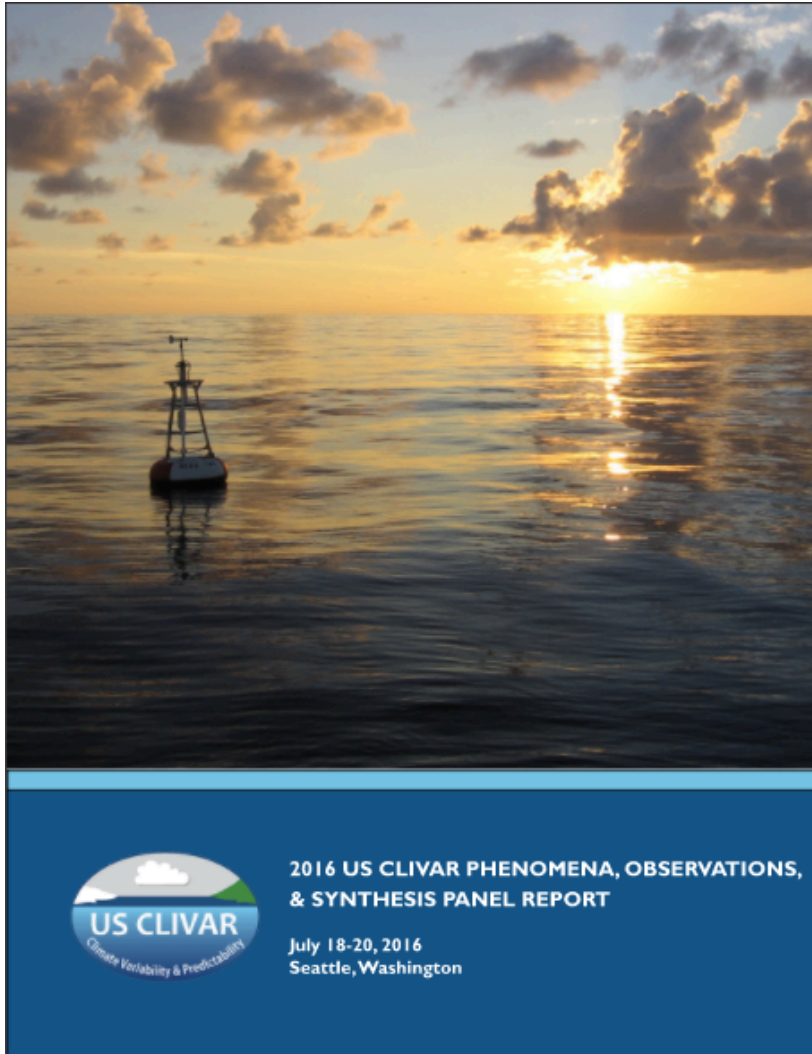
# Summary of POS mission and activities

- **Our mission is to improve understanding of climate variations in the past, present and future, and to develop syntheses of critical climate parameters while sustaining and improving the global climate observing system.**
- We evaluate the current **health of observing platforms/systems, how well observations are synthesized** with other datasets and into analysis products and coupled climate models, whether there are **new technologies** being developed that could be exploited to better observe the global oceans, the depth of our current understanding of different **ocean and atmospheric phenomena**, how well these phenomena are represented in **analysis products and coupled climate models**, and how the POS Panel can **catalyze progress** on some of these fronts.

# POS impacts

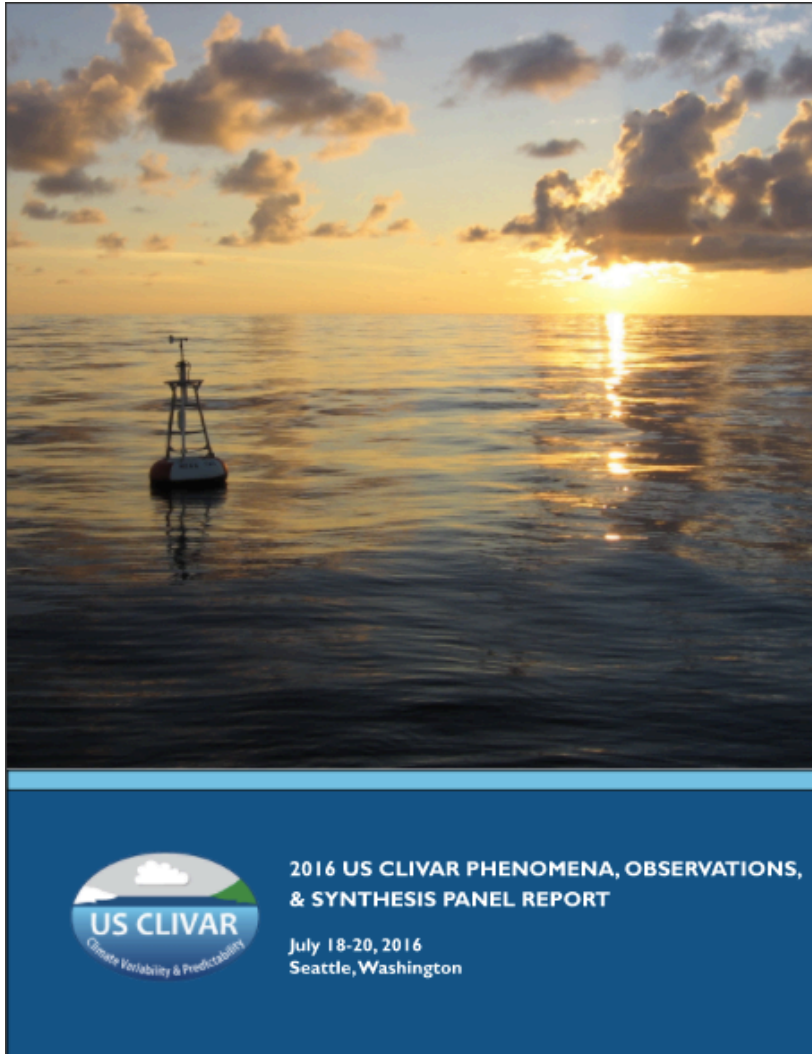
- Influence research programs (observational or modeling, insights on ongoing or new research initiatives)
- Provide guidance and inspiration for new science directions (and funding)
- Promote new forums for the exchange of ideas (e.g., new working groups, new workshops, publications, syntheses)
- Science communication
- Flag current anomalies and programmatic and knowledge gaps of the climate system (e.g., science with high societal relevance, the health of observing systems)
- Engage and promote early career and a diversity of scientists

# 2016-2017 Action Items



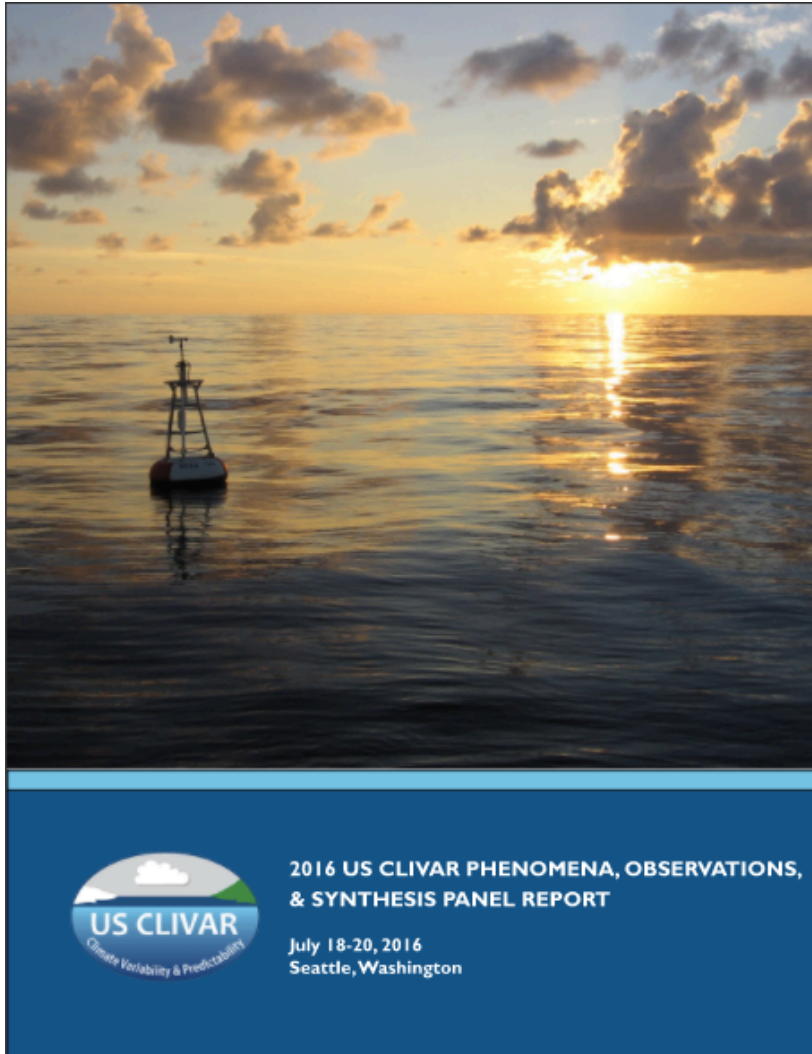
- Encourage members of US CLIVAR to attend AtlantOS workshops and register under AtlantOS work packages of interest (Renellys Perez). *Renellys signed up for WP5.*
- Encourage participation in National Academies Sustained Ocean Observations workshop, which should take place early/mid November 2016 (Bob Weller). *Bob, Mike, Rick Lumpkin (past POS member) attended.*
- Write a statement in the POS panel meeting report supporting further satellite scatterometer and salinity missions and include within the panel report (Subra Bulusu). *Done. NAS decadal survey report expected Dec 2017.*

# 2016-2017 Action Items



- Ask IIOE-2 to send proposal to US CLIVAR and NSF OCB for a US IIOE-2 planning workshop to bring Indian Ocean issues to the forefront with a focus on phenomena and processes (Kyla Druskha, Subra Bulusu). *Secured support from NSF OCB and some agencies. The meeting will take place September 11-13, 2017 in La Jolla, CA (<http://www.us-ocb.org/indian-ocean-workshop/>)*
- Organize an ocean and land surface flux town hall during the January 2017 AMS meeting (Carol Anne Clayson, Yolande Serra, Art Miller, Bob Weller). *Carol Anne organized “Air-Sea Fluxes: Challenges and Opportunities” workshop.*

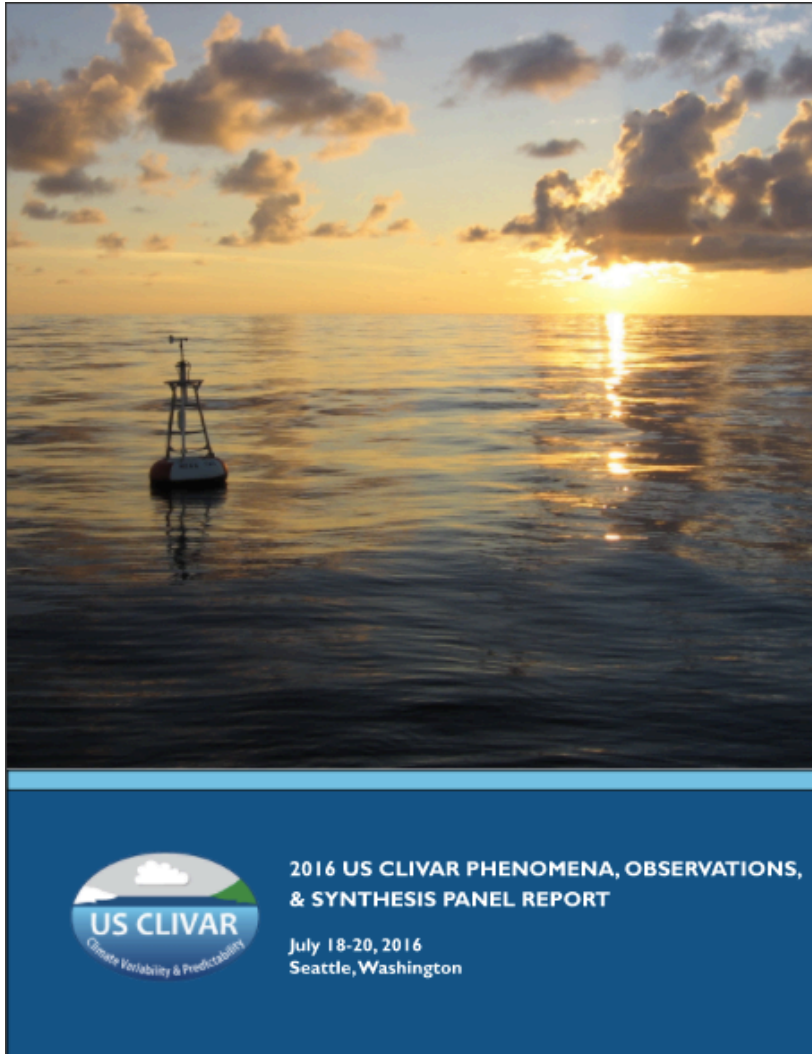
# 2016-2017 Action Items



- US CLIVAR will engage in a review of the GOSHIP program, US CLIVAR SSC and Ocean Carbon Biogeochemistry (OCB) SSC will contact GOSHIP and begin this process. Develop a framework, terms of reference for review of GO-SHIP (Mike Patterson, Fred Bingham). *General consensus was that the scope of the terms of reference is on target, but OCB would like to defer to 2018.*
- Provide POS panel input on the TPOS2020 interim report. (Renellys Perez, Yolande Serra, Carol Anne Clayson, Kyla Drushka). *The POS panel provided a joint review of the TPOS2020 interim report, made recommendations which influenced final draft ( <http://tpos2020.org/first-report/>).*

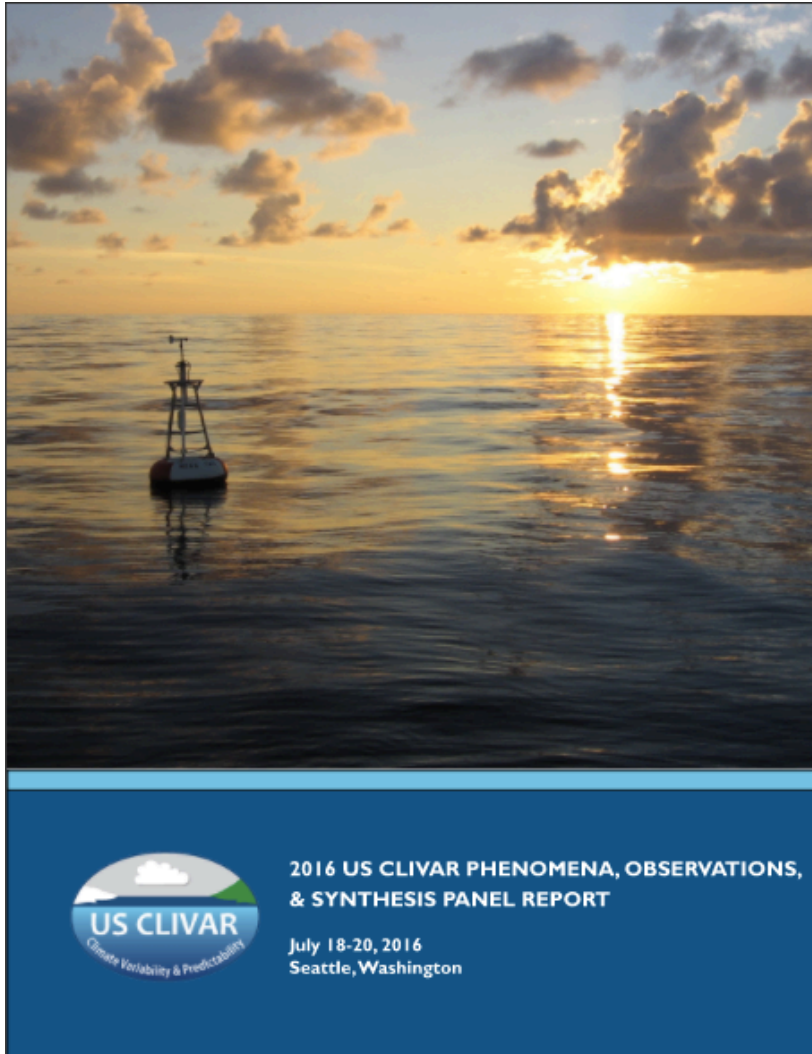


# 2016-2017 Action Items



- Write a letter to the Sid Thurston, the Global Drifter Program (GDP) program manager, supporting the GDP's continuation for SST, SSV, and its expansion to include other parameters (thermistor chains, salinity sensors, barometric pressure, wind, waves) (Alison Macdonald). *Letter written by Alison (with input from members of POS panel) and sent to the GDP program manager. The POS panel is awaiting a formal response.*
- Recommend to IASClip to organize a US CLIVAR workshop that brings together observationalists and modelers to look at IAS mechanisms (Yolande Serra). *A workshop proposal was submitted by Yolande, but agency programs did not indicate interest in supporting the workshop.*

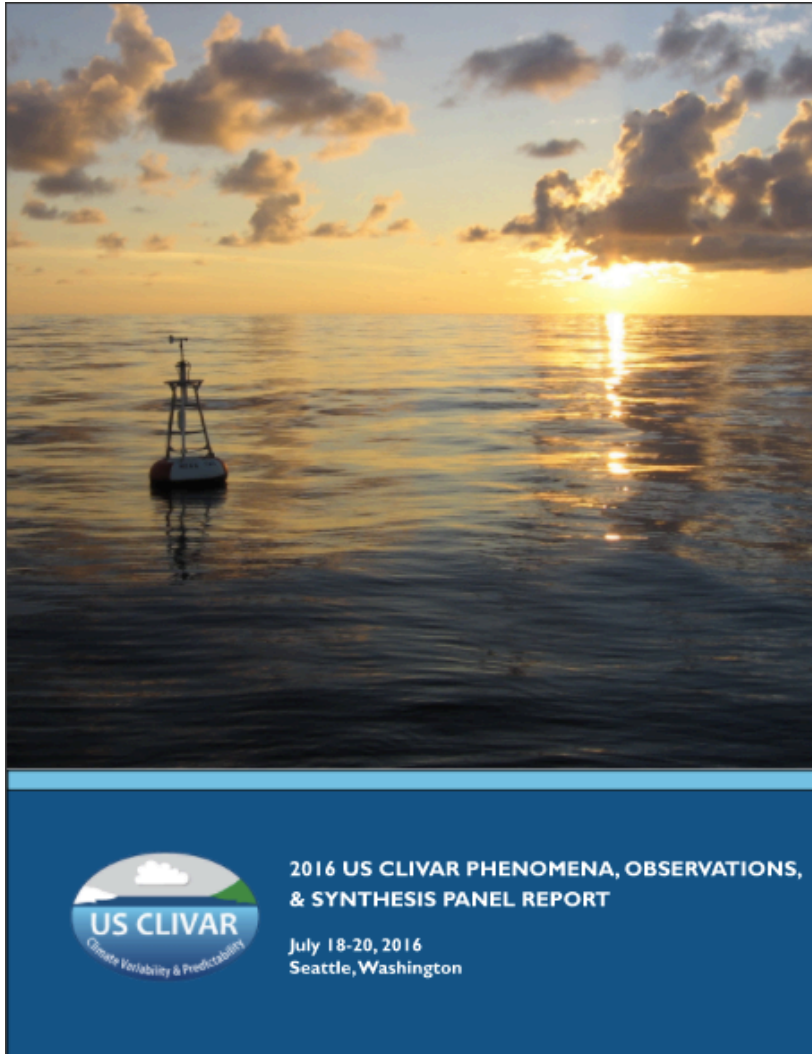
# 2016-2017 Action Items



- Recommend formation of an international panel to coordinate Arctic Ocean climate observations. Start by proposing a US CLIVAR working group to identify and address specific science questions, summarize what has been learned, and make recommendations for Arctic ocean and sub-Arctic seas observing system requirements (Jamie Morison). *A working group proposal was submitted by Jamie, Subra, and Ron Kwok, but no working groups were approved for 2016-2017. However, special sessions are being organized at 2017 US CLIVAR Summit, 2017 Fall AGU meeting, and 2018 Ocean Sciences meeting.*
- *Separately, a proposal to develop a Northern Ocean Regional Panel (NORP) was reviewed and endorsed by CliC and CLIVAR, and the panel is being formed.*



# 2016-2017 Action Items



- POS panel should provide input on the Deep Ocean Observing Strategy (DOOS) (Renellys Perez, Fred Bingham, Alison Macdonald). *Renellys attended DOOS workshop in December. Panel members answered DOOS survey.*

## Other Highlights

- *Yolande contributed to winter 2016 Variations issue on Intra-Americas Seas.*
- *Manu and Aneesh organized an ENSO and Ecosystem Forecasting workshop in Fall 2016. Manu and Art guest editors for winter 2017 Variations issue on topic.*
- *Renellys guest-editor spring 2017 issue of US CLIVAR Variations on Deep Ocean Obs.*
- *Jamie Morison contributed to the summer 2017 Variations issue on Polar ocean and sea ice interactions.*

# US CLIVAR goals and research challenges

- **Goal 1:** Understand the role of the oceans in observed climate variability on different timescales
- **Goal 2:** Understand the processes that contribute to climate variability and change in the past, present, and future
- **Goal 3:** Better quantify uncertainty in the observations, simulations, predictions, and projections of climate variability and change
- **Goal 4:** Improve development and evaluation of climate simulations and predictions
- **Goal 5:** Collaborate with research and operational communities that develop and use climate information

- Challenge 1: Decadal variability and predictability
- Challenge 2: Climate extremes
- Challenge 3: Polar climate changes
- Challenge 4: Climate and marine carbon/BGC

# US CLIVAR cross-cutting strategies

- Strategy 1: Sustained and new observations
  - Major focus of POS panel, we also examine the interconnectivity of various observing platforms
- Strategy 2: Process studies
  - Most of observation/synthesis products we discuss target a better understanding of specific physical processes and/or are useful for model initialization/evaluation
- Strategy 3: Model development strategies
- Strategy 4: Quantifying improvements in predictions and projections
- Strategy 5: Communication of climate research
  - Organization of special sessions and townhalls; workshops; working groups; US CLIVAR variations
  - Promote engagement of other organizations for interdisciplinary science

# US CLIVAR cross-cutting strategies

Cross-Cutting Strategies⇒ Goals ↓	Sustained and new observations	Process studies	Model development strategies	Quantifying Improvement in predictions and projections	Communication of climate information
Understand the role of the oceans in observed climate variability on different timescales	Document variations	Data to evaluate and improve models	Improve modeling of climate across processes and timescales	Understand limits of climate predictability	Prioritize observing network and predictability studies and improve predictions of ocean and climate variability
Understand the processes that contribute to climate variability and change in the past, present, and future	Document climate-critical processes	Investigate processes to help explain variations	Property conserving climate reanalyses	Quantifying importance of model uncertainty in projections	Set priorities for observations and predictability studies; communicate about confidence and predictability
Better quantify uncertainties in the observations, simulations, predictions, and projections of climate	Initialize and evaluate model simulations	Model assessment	Improve models	Quantify model, intrinsic and scenario errors	Address needs for predictability and sensitivity studies
Improve the development and evaluation of climate simulations and predictions	Initialize and evaluate climate models	Provide data to develop and test model process representation	Reduce biases in climate models	Quantify importance of model physics errors	Determine key targets for model development across communities
Collaborate with research and operational communities that develop and use climate information	Provide multi-disciplinary datasets	Provide process understanding and opportunity for collaboration across disciplines	Communication between observational and model communities	Improved communication across disciplinary boundaries	Provide information on dominant climate phenomena and predictability

**Table 6.1** Cross-cutting strategies and their intersection with US CLIVAR goals.

# US CLIVAR implementation activities

- Activity 1: Climate process teams
- Activity 2: Working groups
  - *Arctic changes and linkages with mid-latitude weather and climate*
  - *Changing width of tropical belt*
- Activity 3: Science teams
  - *Should organize final presentations to US CLIVAR from US AMOC Science Team*
- Activity 4: Meetings and workshops
  - *ENSO/ecosystems, Ocean's carbon and heat uptake, Deep Ocean Observing System, Working group workshops*
  - *US AMOC Science Team meetings*
  - *Sessions/townhalls organized during large meetings (AMS/AGU/Open Science)*
- Activity 5: Opportunities for early career investigators
  - *Panel membership, and invitations to early career investigators to give talks at Summit*
- Activity 6: Agency solicitations and project awards



# Present POS panel membership

Phenomena, Observations, and Synthesis (POS) Panel		
Member name	Institution	Term through
Emanuele Di Lorenzo, Co-chair	Georgia Institute of Technology	Dec. 2018
Renellys Perez, Co-chair	University of Miami/NOAA Atlantic Oceanographic and Meteorological Laboratory	Dec. 2017
Fred Bingham	University of North Carolina, Wilmington	Dec. 2018
Carol Anne Clayson	Woods Hole Oceanographic Institution	Dec. 2017
Kyla Drushka	University of Washington	Dec. 2018
Shane Elipot	University of Miami	Dec. 2020
Alison Macdonald	Woods Hole Oceanographic Institution	Dec. 2019
Jamie Morison	University of Washington	Dec. 2019
Yolande Serra	University of Washington	Dec. 2019
Samantha Stevenson	NCAR and University of Hawaii	Dec. 2019
Aneesh Subramanian	University of California San Diego/Scripps Institution of Oceanography	Dec. 2020
Xiaosong Yang	NOAA Geophysical Fluid Dynamics Laboratory	Dec. 2018

# Recruiting new members in late 2017

## **Gaps previously identified:**

operational data assimilation

satellite oceanography

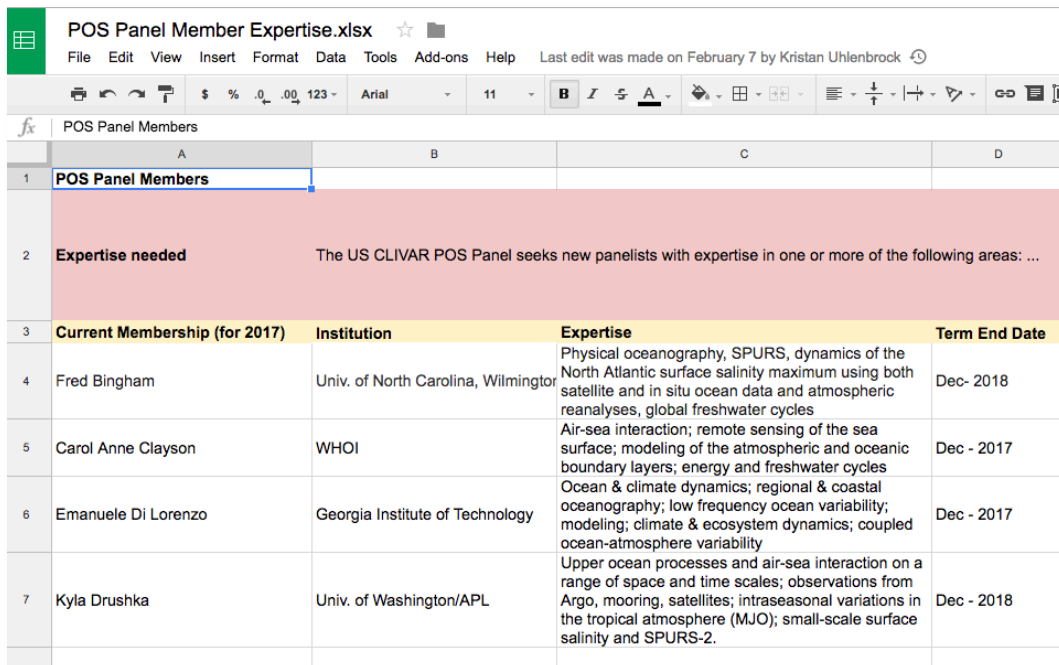
emerging technologies/observations

paleoceanography/paleoclimatology

## **Michelle Gierach from NASA/JPL will join panel next year**

- expertise in the application of satellite and airborne observations, in-situ data, and model simulations to study synoptic to decadal changes in the ocean, with specific focus on biophysical interactions, ecosystem dynamics, and the carbon cycle

# Update descriptions of our areas of expertise, and suggest new areas



POS Panel Member Expertise.xlsx

File Edit View Insert Format Data Tools Add-ons Help Last edit was made on February 7 by Kristan Uhlenbrock

POS Panel Members

	A	B	C	D
1	POS Panel Members			
2	Expertise needed	The US CLIVAR POS Panel seeks new panelists with expertise in one or more of the following areas: ...		
3	Current Membership (for 2017)	Institution	Expertise	Term End Date
4	Fred Bingham	Univ. of North Carolina, Wilmington	Physical oceanography, SPURS, dynamics of the North Atlantic surface salinity maximum using both satellite and in situ ocean data and atmospheric reanalyses, global freshwater cycles	Dec- 2018
5	Carol Anne Clayson	WHOI	Air-sea interaction; remote sensing of the sea surface; modeling of the atmospheric and oceanic boundary layers; energy and freshwater cycles	Dec - 2017
6	Emanuele Di Lorenzo	Georgia Institute of Technology	Ocean & climate dynamics; regional & coastal oceanography; low frequency ocean variability; modeling; climate & ecosystem dynamics; coupled ocean-atmosphere variability	Dec - 2017
7	Kyla Drushka	Univ. of Washington/APL	Upper ocean processes and air-sea interaction on a range of space and time scales; observations from Argo, mooring, satellites; intraseasonal variations in the tropical atmosphere (MJO); small-scale surface salinity and SPURS-2.	Dec - 2018

**POS Panel Member Expertise\_2017.xlsx** in POS Shared Folder

[https://docs.google.com/spreadsheets/d/1gmiReKqZ33KdYUOtRmgBSb\\_ZRPBUaEdPTKkTM\\_6r6wU/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1gmiReKqZ33KdYUOtRmgBSb_ZRPBUaEdPTKkTM_6r6wU/edit?usp=sharing)

Suggestion for @USCLIVAR:  
#USCLIVARScientist



# POS Agenda - Tuesday

Tuesday, August 8, 2017			
Time	Agenda/Abstracts	Presenter	Presentation
13:15	POS Panel business <ul style="list-style-type: none"> <li>Summary of POS and past year's accomplishments</li> <li>Introductions of new and existing panel members</li> <li>Overview of agenda and discussions</li> </ul>	Renellys Perez (U. Miami/NOAA AOML), Emanuele Di Lorenzo (Georgia Tech)	
14:00	Teleconnection session	Co-chairs: Emanuele Di Lorenzo (Georgia Tech), Samantha Stevenson (NCAR)	
14:00	Recent observed changes or insights in teleconnection dynamics	Alyssa Atwood (Georgia Tech/U. California-Berkeley)	
14:20	Advancing the representation of teleconnections in climate models	Samantha Stevenson (NCAR)	
14:40	Discussion		
15:15	Break		
15:30	Observational and synthesis requirements for characterizing contemporary sea level rise and predictability <i>Joint POS and PPAI Session</i>	Co-chairs: Aneesh Subramanian (Scripps), Shane Elipot (U. Miami), John Nielsen-Gammon (Texas A&M)	
15:30	Reports from the WCRP/IOC sea level 2017 conference	Nadya Vinogradova (Cambridge Climate Institute)	
15:50	Global perspective	Eric Leuliette (NOAA NESDIS)	
16:10	Regional and coastal perspective	Mark Merrifield (U. Hawaii)	
16:30	Stakeholder perspective	Matt Campo (Rutgers U.)	
16:50	Discussion		
17:00	Break		

# POS Agenda

## - Wednesday

Wednesday, August 9, 2017			
Time	Agenda/Abstracts	Presenter	Presentation
10:00	High-latitude circulation, ocean-sea ice interface <i>Joint POS &amp; PSMI Session</i>	Co-chairs: Jamie Morison (U. Washington), Janet Sprintall (Scripps)	
10:00	Southern Ocean SOCCOM review	Alison Gray (U. Washington)	
10:15	Biogeochemistry in the Southern Ocean	Taka Ito (Georgia Tech)	
10:30	Arctic Ocean effects on global climate	Jamie Morison (U. Washington)	
10:45	Discussion		
11:00	Atlantic Meridional Overturning Circulation <i>Joint POS &amp; PSMI Session</i>	Co-chairs: Renellys Perez (U. Miami/NOAA AOML), Greg Foltz (NOAA AOML), Victoria Coles (U. Maryland)	
11:00	What we've learned from the AMOC observational network about AMOC processes and its role in weather and climate	Shane Elipot (U. Miami)	
11:20	What we've learned from AMOC modeling efforts about AMOC processes and its role in weather and climate	Rong Zhang (NOAA GFDL)	
11:40	Discussion		
12:00	Lunch		
13:30	Health of the climate observing system, Part 1	Co-chairs: Carol Anne Clayson (WHOI), Fred Bingham (U. North Carolina-Wilmington)	
13:30	Tropical ocean	Renellys Perez (U. Miami/NOAA AOML)	
13:50	Subtropical ocean	Carol Anne Clayson (WHOI), Fred Bingham (U. North Carolina-Wilmington)	
14:10	Polar ocean	Jamie Morison (U. Washington)	
14:30	Coastal ocean	Victoria Coles (U. Maryland)	
14:50	Discussion		
15:15	Break		
15:30	Health of the climate observing system, Part 2	Co-chairs: Kyla Drushka (U. Washington), Alison Macdonald (WHOI)	
15:30	Atmospheric, troposphere/stratosphere interactions	Yolande Serra (U. Washington)	
15:50	Air-sea interface from satellite observations	Kyla Drushka (U. Washington), Carol Anne Clayson (WHOI)	
16:10	Surface mixed layer and upper ocean	Greg Foltz (NOAA AOML)	
16:30	Intermediate and deep ocean	Gregory Johnson (NOAA PMEL)	
16:50	Discussion		
17:30	Break		



# POS Agenda - Thursday

Thursday, August 10, 2017			
Time	Agenda/Abstracts	Presenter	Presentation
08:00	POS Panel business (recap & future directions) <ul style="list-style-type: none"><li>• Discussion of important themes from the breakout sessions</li><li>• Identify recommendations and actions items for the next year</li></ul>	Co-chairs: Renelys Perez (U. Miami/NOAA AOML), Emanuele Di Lorenzo (Georgia Tech)	
10:00	Break (return to plenary)		

# Instructions for Session Co-Chairs

- Introduce session, guiding questions, and expected outcomes
- Run the session in a timely manner
- Guide discussion and recall the expected outcomes
- Collect abstracts, key points/figures from speakers (to be used in report)
- Ask speakers if it is okay to post their presentation on summit webpage

# Instructions for Rapporteurs

- Add notes do Google Doc on POS Shared Folder named:  
**POS\_Breakout\_Agenda\_25JUL2017.doc**
- Notes should capture important discussion points, major outcomes, action items which we will synthesize to for the Summit report
- Come up with draft recommendations and/or action items and provide justification content
- These will form the foundation for the panel discussions on Thursday

<https://docs.google.com/document/d/1011u2WHJ8xTahk3tcG4oeZ26otLyzdamHwfBR5fzZe4/edit?usp=sharing>