

# OPST- 5: Collection of Task team presentations

Task teams represented (in black):

COSS-TT (Villy and Pierre)

DA-TT (Andy and Matt)

IV-TT (Greg and Fabrice)

MEAP-TT (Stefano and Katja)

OS-Eval TT (Yosuke and Elisabeth)

CP-TT (Chris, Santha and Kristian)



## Current focus of activities

- TT activities, goals and expected outcomes (6 months)
- TT outreach plans (if applicable)
- TT events planned
- TT membership update

## Project plans within the Decade

- What are the TTs Decade plans for projects within the Decade?
- Where do you need participation from other TT/Groups?
- ECOP related plans

## Coordination support from OP/ForeSea

- Ambitions you would like to see out of Decade Programs
- Plans for collaboration with ET-OOFS
- What are the TT needs for advice, communication, etc. from OP and/or ForeSea?

# **COSS-TT**

Villy and Pierre



- **TT activities, goals and expected outcomes (6 months)**
  - TT meetings planned in May 2020 and May 2021 had to be cancelled
  - TT deeply involved in UNDOS through programs ForeSea (Pierre in ST) and CoastPredict (Villy and Pierre in founding group; Villy co-chair; Pierre FA1 co-lead; TT members in SC); Villy in Advisory Group for OceanPredict.US and in the co-Advisory Board for ForeSea and GOOS Programs (inc. CP)
  - TT organized a 3-day virtual meeting in June 2021 to engage TT members on related UNDOS activities and review TT goals (report pending).
  - TT members contributed to an updated Systems Information Table (SIT).
    - “Good practices”: Wrote coastal sections of ET-OOFS Guide, including simplified SIT.
- **TT outreach plans (if applicable)**
  - Indirect plans via participation in UNDOS activities (affiliated Programs)
- **TT events planned**
  - Next COSS-TT meeting: 11-13 April 2022, Montréal, Canada (hybrid) -- will include:
    - Review system updates and science since Madrid 2018
    - Discuss and endorse Decade strategy plan and updated ToRs
- **TT membership update**
  - Some key participants in June, 2021 meeting could become valuable TT members
  - To be discussed in Montréal



- **What are the TTs Decade plans for projects within the Decade?**
  - The June, 2021 meeting reviewed 16 potential embryos of projects with TT participation (mostly within CoastPredict framework) -- see <https://oceanpredict.org/archived-events/1st-coss-tt-online-meeting/#section-presentations>
    - SynObs will be submitted for UNDOS endorsement as a Project under ForeSea, but will also liaise with CoastPredict, with TT participation
  - Pierre co-chairs CoastPredict FA1 *“Integrated observing and modelling for short term coastal forecasting and early warnings”* (well aligned with TT goals)
    - Particular attention to be paid to foundational “core” projects, their planning and funding, the contributions from the TT
- **Where do you need participation from other TT/Groups?**
  - OSEval-TT: definition of suitable coastal in situ observing systems (coastal link to SynObs)
  - IV-TT: assessment of some global/basin-/regional-scale/coastal ocean forecasting systems in coastal regions, with our own quality criteria
  - ...and also DA-TT, MEAP-TT, CP-TT (to be discussed with them)
- **ECOP related plans**
  - TT members can nominate ECOPs who will join the CoastPredict ECOP group



# OP TTs – Coordination support from OP/ForeSea

- **Ambitions you would like to see out of Decade Programs**
  - Focus on a few well-identified transformative actions
  - Legacy: promotion of good practices, training, capacity building
- **Plans for collaboration with ET-OOFS**
  - Contribution to ET-OOFS Guide in 2021, open to more to promote “good coastal ocean forecasting practices”
- **What are the TT needs for advice, communication, etc. from OP and/or ForeSea?**
  - Vision and leadership on fruitful overarching objectives
  - Guidance through the “maze” of endeavors at different levels
  - Coordination to get “core” projects funded



**IV-TT**

Greg and Fabrice



# OP TTs – Current focus of activities

- TT activities, goals and expected outcomes (6 months)
  - Virtual meeting Nov. 22 to redefine strategy for IV-TT
    - Update priorities and UN Decade activities
  - Class4 :
    - Issues with datasets and US GODAE
    - New drift intercomparison
- TT outreach plans (if applicable)
  - Publications (BAMS, sea ice, drift, ...)
- TT events planned
  - Meeting in January, participation in COSS-TT in April 2022
  - Discussing connection with JWGFVR...
- TT membership update
  - Seeking new members for IV-TT and Class4 intercomparison



- **What are the TTs Decade plans for projects within the Decade?**
  - **Project 1: Class4 on Wekeo**
  - **Project 2: Uncertainty estimation and drift**
  - **Project 3: User-relevant and process-based metrics**
  - **Project 4: Regional/Coastal verification with adapted observing system, including ensemble approaches**
- **Where do you need participation from other TT/Groups?**
  - **Connection with COSS-TT(1,2,3,4), DA-TT(2), CP-TT (2,3), OSEVAL-TT (2), MEAP (3)**
  - **Liaise with JWGFVR**
- **ECOP related plans**
  - **Requires further development...**



# OP TTs – Coordination support from OP/ForeSea

- **Ambitions you would like to see out of Decade Programs**
  - **Greater community engagement with OceanPredict and increase in people involved (including Early Career Scientists)**
  - **Liaise with regional/coastal operational, and society-needs oriented demonstrations**
- **Plans for collaboration with ET-OOFS**
  - **Proposal to ETOOFS for Class4 endorsement**
  - **Engage national centers for commitment for operational support.**
- **What are the TT needs for advice, communication, etc. from OP and/or ForeSea?**
  - **Do we need to consider a greater focus on high-impact events?**



**MEAP-TT**

Stefano and Katja

Stefano's screen



Please access the MEAP-TT presentation [here](#)



**DA-TT**

Matt and Andy



- **TT activities, goals and expected outcomes (6 months)**
  - past activities include: joint ECMWF/DA-TT workshop; significant TT involvement in recent WMO DA Symposium; co-chair involvement in planning of coupled model initialization strategies in coordination with with WMO WGs (WGNE, DAOS, OMDP, S2S) and TPOS2020; new technical seminar series
  - continue WMO WG coordination; continue and promote technical seminars; begin planning for next in-person workshop
- **TT outreach plans (if applicable)**
  - ongoing as technical seminar series
- **TT events planned**
  - in-person workshop (2022/23) – location TBC. Joint with another TT?
- **TT membership update**
  - no change to membership
  - possible appointment of new co-Chair(s) pending discussion at next TT workshop (Moore will rotate off and will be replaced by another regional ocean DA expert; Martin also happy to be replaced as co-chair)



## ■ What are the TTs Decade plans for projects within the Decade?

- will liaise closely with SynObs as required
- the generally accepted priorities of the TT over the next decade include: hybrid DA; reanalyses at higher resolution; coupled DA; advance DA community infrastructures (*i.e.* OOPS, JEDI, DART, etc); non-Gaussian DA; utilization of new and novel obs (e.g. SWOT)

## ■ Where do you need participation from other TT/Groups?

- more collaboration is always good; will continue with joint TT workshops (MEAP & OSEVal so far).
- to advance coupled DA, closer ties with CP-TT will be established

## ■ ECOP related plans

- aim to include more early career scientists as members of the DA-TT.
- next co-chair(s) could be early career?
- the TT workshop could include some invited junior DA researchers

# DA TT – Coordination support from OP/ForeSea

## ▪ **Ambitions you would like to see out of Decade Programs**

- advances in coupled DA (with CP-TT)
- more wide-spread adoption of community DA infrastructure such as JEDI
- routine assessment of observation impacts and improved observing system design (within SynObs, OSEVal-TT and IV-TT)
- advances in DA methodologies and use of new data such as SWOT
- advances in coastal DA and linkages between global and coastal systems (with COSS-TT)
- exploration of ML in DA and other aspects of model analysis

## ▪ **Plans for collaboration with ET-OOFS**

- no specific plans, but thought should be given to developing best practices/standards and protocols for DA in operational/real-time systems (in conjunction with DA infrastructure developers)

## ▪ **What are the TT needs for advice, communication, etc. from OP and/or ForeSea?**

- support from OP Programme Coordinator for technical seminars and organizing the next workshop.



# OS-Eval TT

Yosuke and Elisabeth

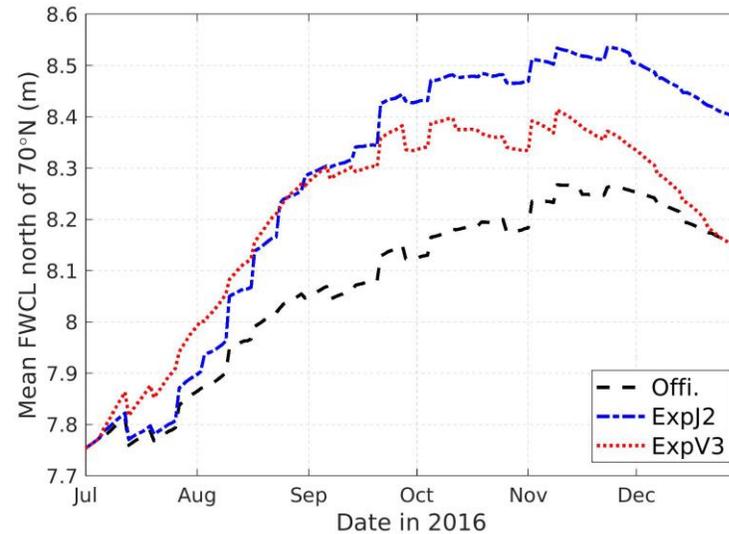


## ■ TT activities

- *Evaluate and help optimize existing ocean observing systems and contribute to the optimal design of future observing systems, in order to enhance their impacts on ocean and coupled predictions at regional/coastal to global scale*
  - **Regular web meetings** are organized (approx. each 2 months) to share results from OSEval studies through presentations and discussions made by the TT members
  - Set up of a **table on observation usage** in the different OP centers  
(<https://docs.google.com/spreadsheets/d/17pztRAwDztloyNn5gJbNft5Ln6nq9F75kPlxAkQUvMQ/edit?usp=sharing>)
  
- *Enhance the communication between OceanPredict and observational communities and international organization linked to ocean observing network management.*
  - Invitation of external **presenters involved in observation network management:**
    - Peter Oke (Argo)
    - Craig Donlon (ESA)
    - Cooper Von Vranken (Fishing Vessel observations, oceandata.net)
  - Set up of the UN Decade SynObs project -> *Yosuke presentation*



- Assimilation of new/improved observations : Dedicated SMOS SSS product for the Arctic



$$FWCL = \int_{z2}^{z1} \frac{[Sref - S(z)]}{Sref} dz,$$

Lat >70N; unit: m

Sref =34.8

Integration depth; S≤34.8

Exp0: default TOPAZ DA without SSS

Expv2: Exp0 + Arctic SSS V2 (BEC 2018)

ExpV3: Exp0 + Arctic SSS V3.1 (ESA project)

1-year OSEs with the TOPAZ system:

- The level of accuracy of the latest **SMOS Arctic product (v3)** is enough to be considered for assimilation in reanalysis.
- Fresh Water Content analysis shows the **SSS assimilation can tune the FWC seasonal variance** -> a longer run will help to understand its full impact.

*Xie et al. (2019): OS,  
10.5194/os-15-1191-2019*

*Jiping Xie, Laurent Bertino, et al.*

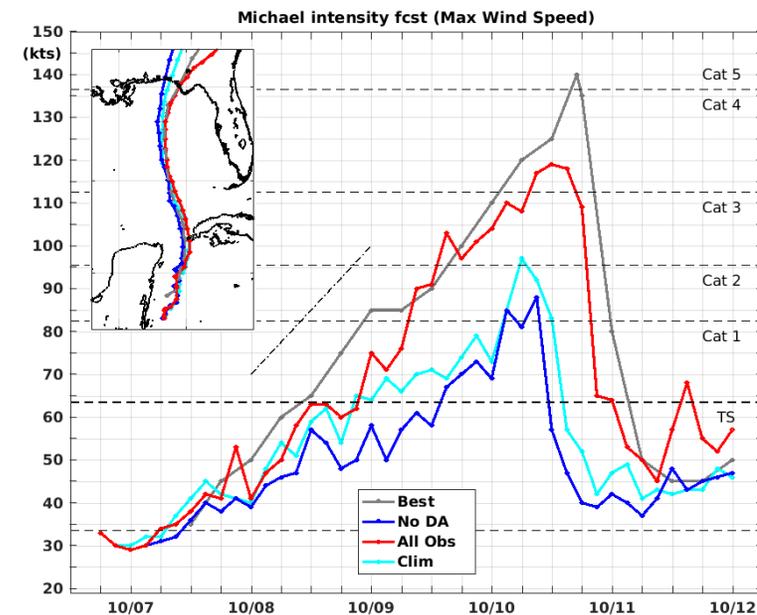


- Impacts of Ocean Observation on extreme events :

Application to Hurricane forecast in a coupled model at NOAA

The **correct representation** of the **ocean** leads to **reduced error** in **hurricane intensity** forecasts, which is best achieved by **assimilating a combination of observations**:

- Altimetry (mesoscale features),
- Profilers (gliders) (vertical structure),
- SST (mixed layer temperature and heat).



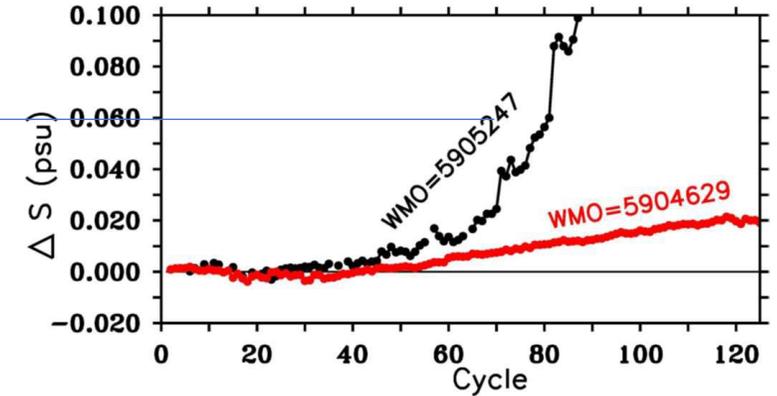
*M. Le Henaff et al., 2021*  
<https://doi.org/10.1029/2020JC016969>

*Observed wind intensities (Best, grey), with simulated ones for the All Obs (red), No DA (blue), Climatology (cyan) cases starting on 6 Oct., 18Z.*

- Impact of drifting sensors / QC procedure in Ocean Reanalysis

**Some Argo salinity sensors are drifting in time.**

Two examples of SBE CTDs that showed salty sensor drift: a “slow” drift (in red), and a “fast” drift (WMO, in black). (Fig.11 in Wong et al. 2020)



Kanako Sato, JAMSTEC

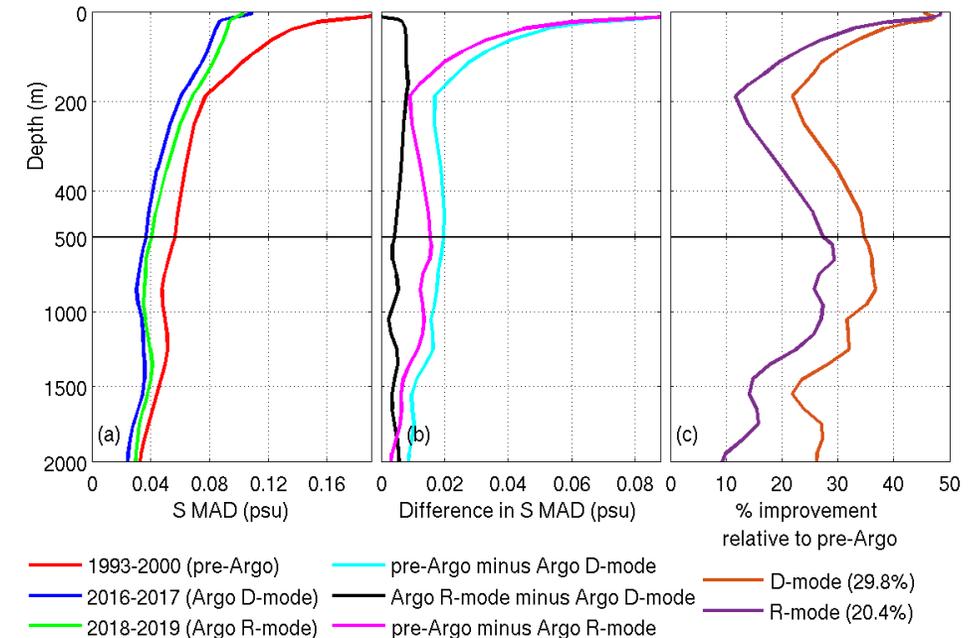
Impact of using Argo R-mode vs D-mode data set in the Bluelink reanalysis

D-mode Argo data benefit from improved delayed-mode quality-control:

- Benefit seen even on high-resolution ocean reanalyses (part of bad data vs drifting salinity sensor?)

-> update to D-mode data when possible, in operational systems.

Peter Oke, BlueLink



- Impact of drifting sensors / QC procedure in Ocean Reanalysis

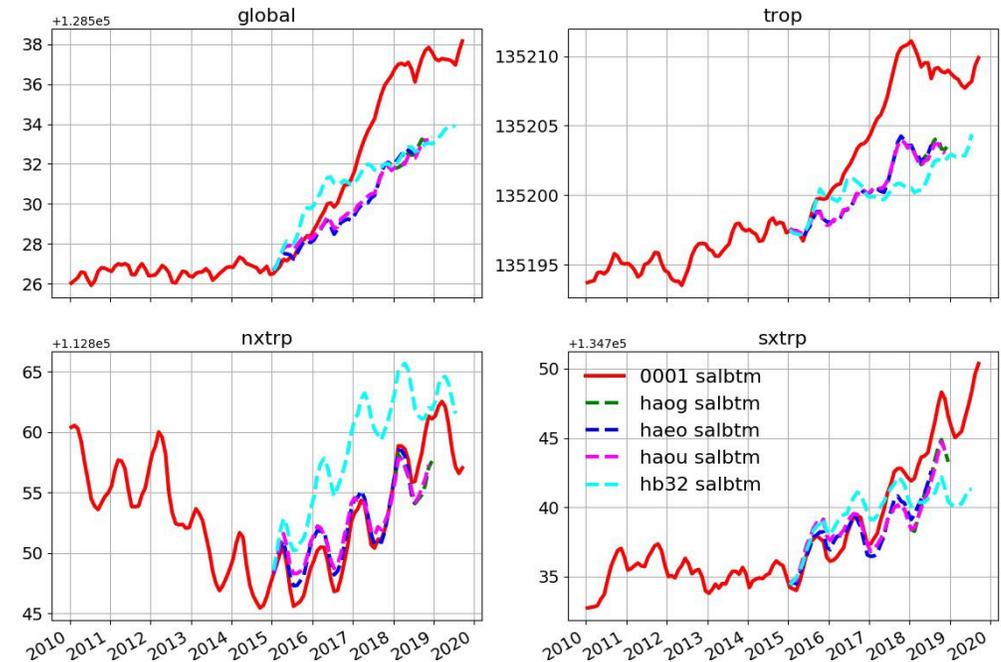
OSEs with an Ocean Reanalysis system at ECMWF

**Impact of QC / RealTime vs RePRocessed version of in situ observations is not negligible.**

More OSEs are on-going including testing different forcings and bulk formulas in the sense of salt content changes.

- *ORAS5-RealTime*
- - - *ORAS5-PRocessed*
- - - *ORAS5-PR-NewQC*
- - - *ORAS5-PR-NoSLA*
- - - *ORAS5-PR-NoSLA-NoArgo*

*Hao Zuo, ECMWF*



*Total salt content (0-bottom)*

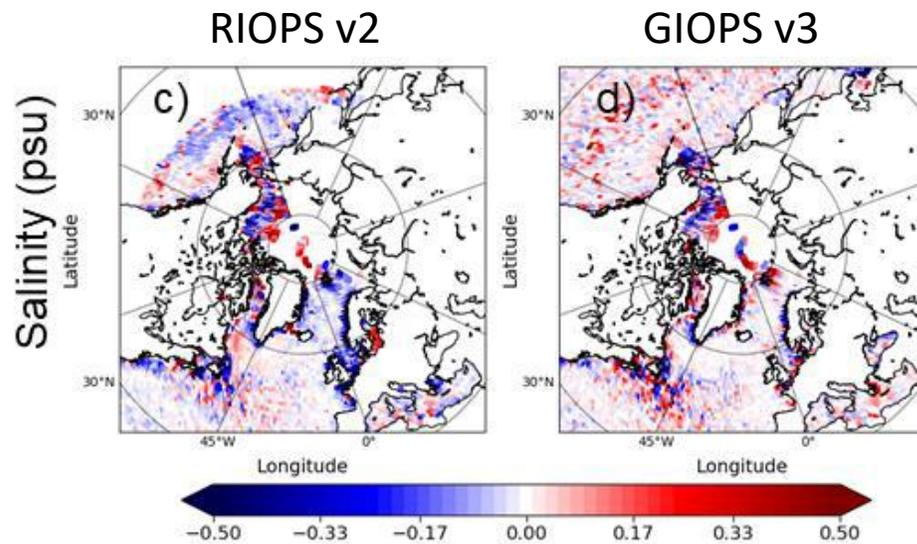
- **Plan of coordinated OSE using different Argo data sets:** several groups already agreed to participate.



- Arctic in situ profile Observations

How can we make the **best use of Arctic profile observations given their sparseness and seasonality?**

Arctic OSEs with the Concepts Ocean data assimilation system: Benefit of increase of in situ observations (Argo and ALAMO floats) deployed during the Year of Polar Prediction (2017-19) to reduce the large forecast errors scheme, significant errors remain in water mass properties in the Beaufort Sea.



*Innovation statistics of salinity over upper 500m for the period 2016 to 2019.*

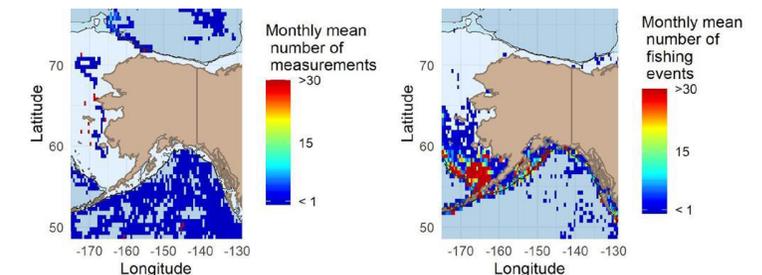
Smith et al. (Frontiers, 2019)  
Smith et al. (GMD, 2021)

*Greg Smith, ECCO*

## ■ Invited talks on in situ and satellite ocean observing systems

- Current status and future plan of satellite missions related to Ocean Prediction, *Craig Donlon (ESA)*
- Fishing vessel observations, *Cooper Van Vranken (oceandata.net)*
- Deep Argo data, *Peter Oke (Argo ST)*

Questionnaire about OceanPredict use of Argo data: <https://oceanpredict.org/argo-use-by-oceanpredict-systems/>



- TT activities, goals and expected outcomes
  - *Advance best practices on evaluation or design ocean observing systems using ocean and coupled prediction systems*  
Lessons learn from coastal/climate/weather systems on optimization method for Observing System **Design** for Operational applications/Reanalysis ?
- TT outreach plans
  - Presentations at different meetings of OSEval TT results (ECMWF Seminar, joint ECMWF OP workshop on DA, PIRATA meeting, US Argo SIG Meeting, Japan Argo SIG Meeting, ...)
- TT events planned
  - Continue the web meetings
  - Tsukuba Symposium, 15-18, Nov. 2022 in Japan
- TT membership update
  - Patrick Heimbach joined the TT.

- **What are the TTs Decade plans for projects within the Decade?**

The OSEval TT is strongly involved with the **SynObs** project, together with other TTs.

The participation/support from other TTs is discussed. SynObs includes evaluation of synergy of observing systems for physical and BGC observations, at global scale and in coastal regions, with coupled ocean-atmosphere systems...

*-> more details in Yosuke Fujii presentation*

- **ECOP related plans**

No plan related to ECOP up to now.

- **Ambitions you would like to see out of Decade Programs**

To establish a secure framework through which OceanPredict community makes feedbacks to observational agencies.

- **Plans for collaboration with ET-OOFS**

Until now, there was no collaboration with ET-OOFS (focus on the forecasting “Systems” and products).



# OSEval TT – Coordination support from OP/ForeSea

## ■ What are the TT needs for advice, communication, etc. from OP and/or ForeSea?

- We already get a very strong and helpful support from Kirsten on communication, meeting organization, for the TT webpages...
- SynObs will be endorsed by IOC as an UN Decade project under ForeSea

We get often external solicitations that are broader than the scope of the TT or even if relevant, we cannot answer them.

- OSE/OSSE/FSOI are heavy,
- their outcomes are limited even if they seem appealing to advocate for “new/improved” observations, ...

More and more requests for involvement of the “modeling” community in observing system design and requirements, especially for in situ observations:

- > getting organized to answer them.

The [Southern Ocean Observing System Design working group](#) is looking for members.



**CP-TT**

Santha, Kristian and Chris

No slides, just a verbal update

