

# ★ SynObs Web Meeting 10: Meeting Summary

- ◆ Preparing the draft of the SynObs flagship OSE introduction paper using UKMO, ECCO, JMA, JAMSTEC data
- ◆ We welcome results from other centers. We will use the results for BAMS paper and following analyses.
- ◆ The recommended order of the calculation for OP OSEs is changed as follows:
  1. Analysis Runs for Jan. 2020 to Dec. 2020
  2. Extension of the analysis run to Dec. 2022
  3. Forecast runs for Jun. 2021 to May 2022
  4. Additional Forecast runs for Jan. 2020 to May. 2021 and for Jun. 2022 to Dec. 2022.
    - Other settings in the guideline (forecast length, frequency, etc.) are not changed.
    - Recommend doing 1, 2, 3 for CNTL, NoAlt, NoArgo first, and the other OSEs later
- ◆ Dropbox will be prepared for data transfer. (Prevent from using ftp if possible.)
- ◆ We try to make (at least part of) the flagship OSE data as soon as possible.
- ◆ Several recommendations related to the ocean will be included the 8th WMO OI WS summary.
- ◆ OP2024 Symposium Abstract deadline: 17 June. SynObs plans to have a in-person event in the symposium.
- ◆ Frontiers Marine Science Special Issue deadline: Jul. 1st



# *SynObs Web Meeting 10*

## Agenda

1. Paper on the flagship OSEs for the Frontiers Special Issue. (Y. Fujii, S. Kido)
2. Discussions on the period of the forecast runs of OP OSEs
3. Report on the 8<sup>th</sup> WMO Observation Impact Workshop (Y. Fujii)
4. Information on the OceanPredict 2024 Symposium
5. Communications

# ★ Paper on the flagship OSEs for the Frontiers Special Issue

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- ◆ We decided to write a brief(?) paper other than the editorial Paper for the special issue.
- ◆ The paper will include
  - Introduction of SynObs
  - Introduction and setting of the flagship OSEs
  - Brief description of the system included in the following multi-system analysis
  - Early results of the Multi-system analysis of analysis runs in Ocean Prediction OSEs
  - Future plan and perspective
- ◆ Results of UKMO, ECCO, JMA/MRI, and JAMSTEC are included.
- ◆ Writing have been just started.
- ◆ We plan to write another introduction paper to BAMS.
  - If additional data are provided from the prediction centers, we will add the results
- ◆ Introduction of Figures from Shoichiro

# RMSD of SSH against CNTL run

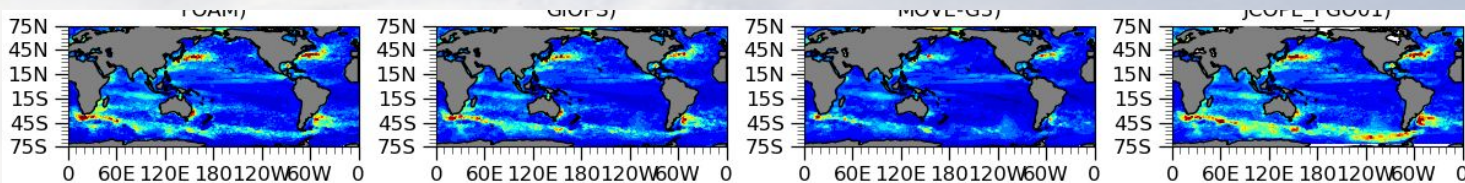
FOAM

GIOPS

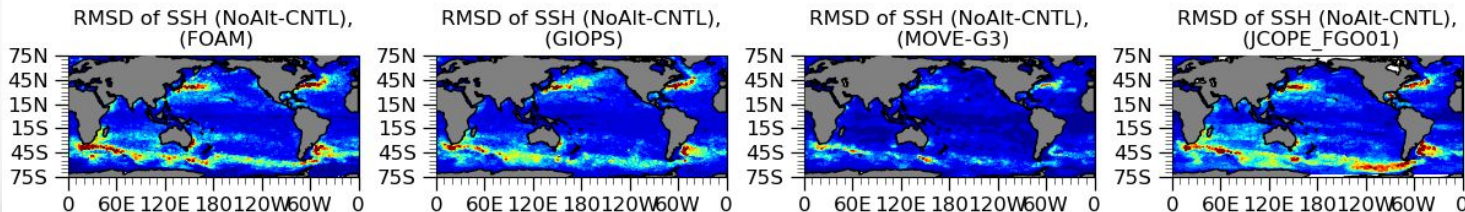
MOVE-G3

JCOPE-FGO

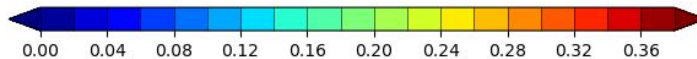
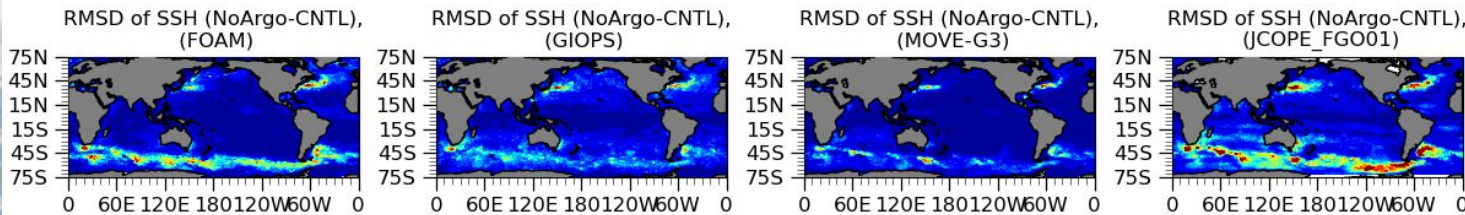
Std of SSH



NoALT-CNTL



NoArgo-CNTL





# RMSD of SSH against satellite altimeter

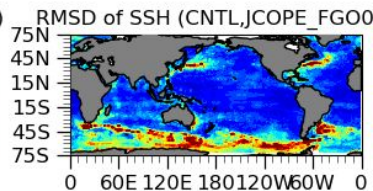
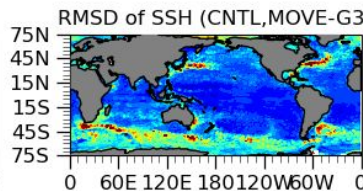
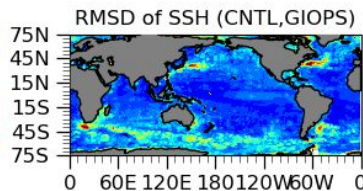
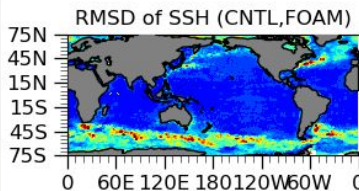
FOAM

GIOPS

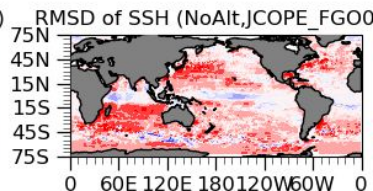
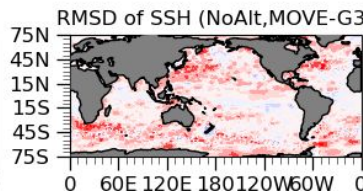
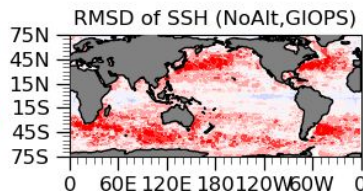
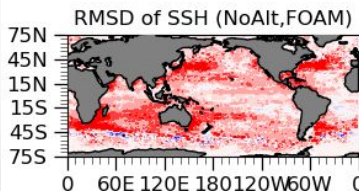
MOVE-G3

JCOPE-FGO

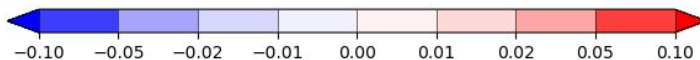
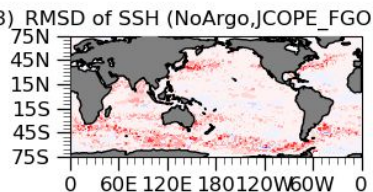
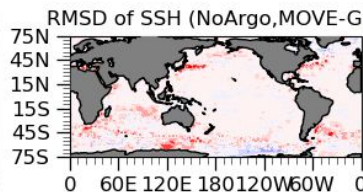
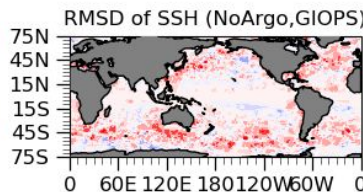
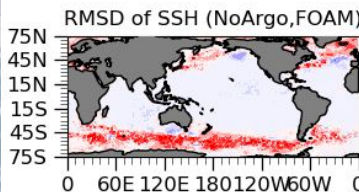
CNTL



NoALT  
-CNTL

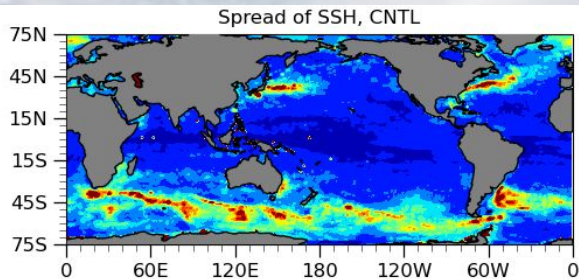


NoArgo  
-CNTL

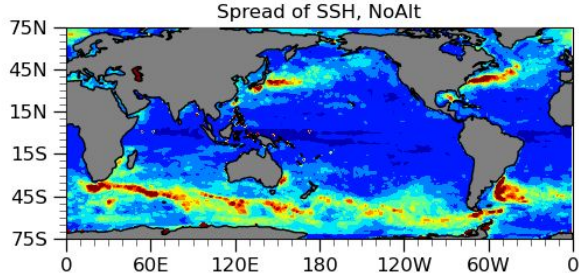


# Spread of SSH among 4 systems (FOAM, MOVE-G3, GIOPS, and JCOPE-FGO)

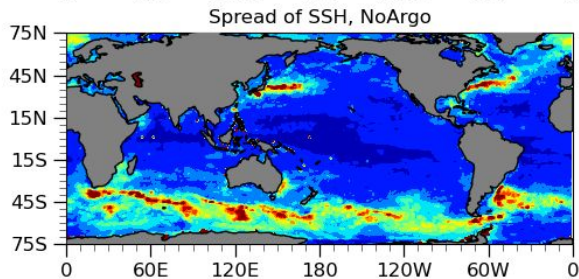
CNTL



NoALT



NoArgo

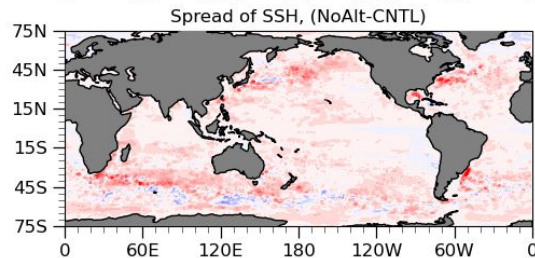


[m]

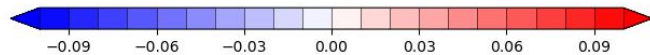
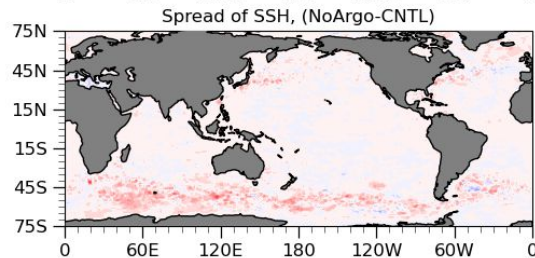
$Spread =$

$$\frac{1}{365} \sum_{t=1}^{365} \sqrt{\sum_{i=1}^4 \frac{((A_i(t) - \overline{A}(t))^2}{4}}$$

NoALT-CNTL



NoArgo-CNTL



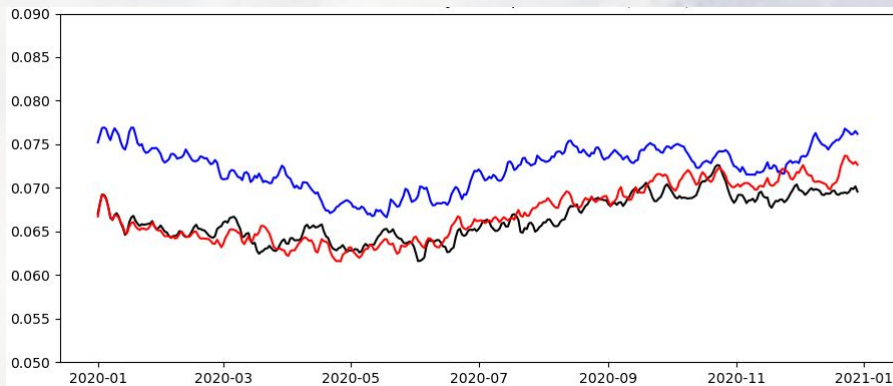
[m]



# Time series of multi-system ensemble spreads

## Global Ocean (0°E-0°W, 90°S-90°N)

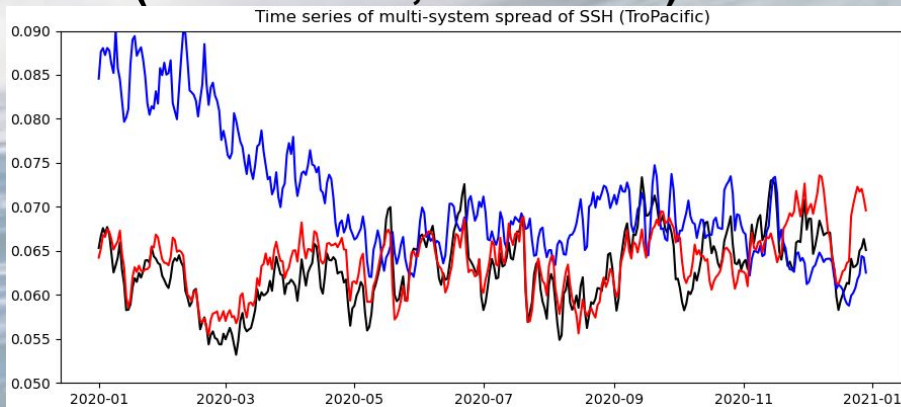
SSH



— CNTL  
— NoAlt  
— NoArgo

## Tropical Pacific (120°E-80°W, 20°S-20°N)

SSH



— CNTL  
— NoAlt  
— NoArgo

# Bias and RMSD of temperature and salinity against reference Argo profiles

Global Ocean (0°E-0°W, 90°S-90°N)

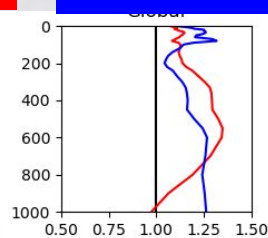
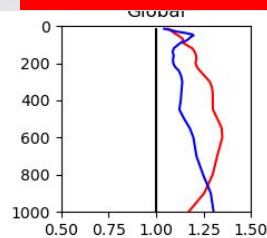
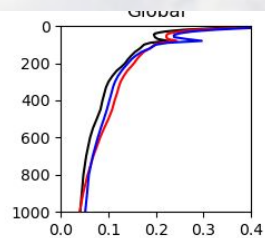
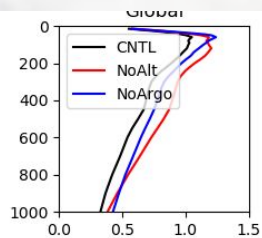
T RMSD

S RMSD

Normalized T  
RMSD

Normalized  
S RMSD

FOAM



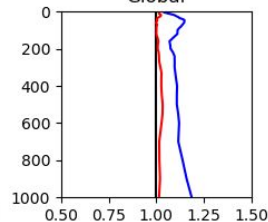
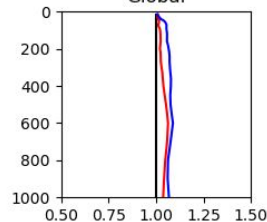
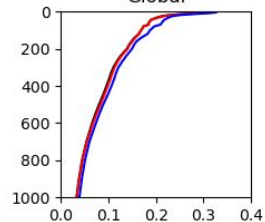
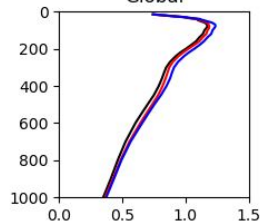
Temperature RMSD  
(MOVE-G3)  
Global

Salinity RMSD  
(MOVE-G3)  
Global

Normalized T. RMSD  
(MOVE-G3)  
Global

Normalized S. RMSD  
(MOVE-G3)  
Global

MOVE-G3



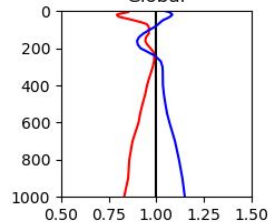
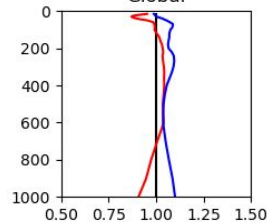
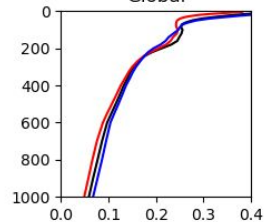
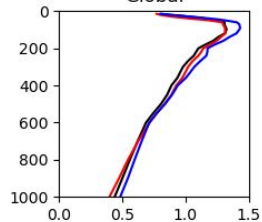
Temperature RMSD  
(JCOPE\_FGO01)  
Global

Salinity RMSD  
(JCOPE\_FGO01)  
Global

Normalized T. RMSD  
(JCOPE\_FGO01)  
Global

Normalized S. RMSD  
(JCOPE\_FGO01)  
Global

JCOPE-FGO





# ★ Discussions on the period of the forecast runs of OP OSEs

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- ◆ Originally recommended period of the forecast runs for OP OSEs
  - Jan. 2020 to Dec. 2020 (extension to Dec. 2022 is preferable)
- ◆ But most centers have not started the forecast runs yet.
- ◆ On the other hand, ECMWF have started the 10-day coupled prediction OSEs for Jun. 2021 to May 2022
- ◆ Suggestion for the new order of the priority for OP OSEs
  1. Analysis Runs for Jan. 2020 to Dec. 2020
  2. Extension of the analysis run to Dec. 2022
  3. Forecast runs for Jun. 2021 to May 2022
  4. Additional Forecast runs for Jan. 2020 to May. 2021 and for Jun. 2022 to Dec. 2022.

\*Other settings in the guideline (forecast length, frequency, etc.) are not changed.

Can you agree on this change?
- ◆ Tentative schedule
  - Execution of OP OSE forecast: until the end of 2024?
  - Execution of S2S OSE analysis: until the end of 2024?
- ◆ Data collection
  - We are now considering to use Dropbox for collecting the data from each centers. Is it OK?

# ★ Report on the 8<sup>th</sup> WMO Observation Impact Workshop

- ◆ 1 keynote talk, 3 oral talks, and 2 posters including SynObs introduction.
- ◆ Several other talks from the ocean communities.
- ◆ Workshop recommendation related to ocean observations
  - ✓ Sustain observations important for Coupled NWP and Earth System Prediction (ESP), including passive MW and IR, scatterometers, SARs and altimeters (SST, sea ice, sea level etc.)
  - ✓ Plan the follow-on mission for the research mission with large impacts (e.g., SWOT)
  - ✓ Sustain routine observations of the Ocean TS profiles (such as Argo network).
  - ✓ Enhance capability to measure the deep ocean ocean and ocean BGC (i.e., Argo extension)
  - ✓ **Continue on-going coordinated activities for observation impact assessment (incl. SynObs)**
  - ✓ Collaboration toward consistent metrics for ESP
  - ✓ Development for better use of observations (e.g., coupled use of ocean current and wind and exploring synergy between fixed buoys and gliders.)
  - ✓ Evaluate observation impacts through multiple methods
  - ✓ Evaluate observation impacts for S2S predictions and climate applications
  - ✓ Recommend that the WMO and other international organizations expand and sustainably fund ocean profiling observation systems (such as Argo).

# ★ OceanPredict 2024 Symposium

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- ◆ 18-22 Nov, UNESCO, Paris
- ◆ Abstract Submission Deadline: 17 Jun.
  
- ◆ Planned Presentations
  - Overall introduction of SynObs (Y. Fujii)
  - Introduction of early results of the flagship OSE multi-system analysis (S. Kido)
  - Other presentations from prediction centers are expected.
  
- ◆ SynObs In-person Event (Lunch meeting or Dinner?)



# ★ Communications

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☐ Frontiers in Marine Science Special Collection

- Manuscript Submission deadline: Jul. 1
- Accepted papers will be published online without waiting for other papers to be accepted.

☐ Y. Fujii plans to visit NASA/GMAO and NOAA/EMC and CPC to discuss on the flagship OSEs, as well as attending the NOAA's S2S meeting in 2-6 Sep.

<https://vlab.noaa.gov/web/osti-modeling/workshops/2024/s2s-workshop>

☐ Next Meeting: End of Sep.?

