Possible contribution of JMA and MRI for the Real-Time Multi-ORA

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★Contribution of JMA through data providing

- ✓ JMA has been participating the real-time multi-ORA project since the beginning (March 2014.) as a data provider.

- ✓ JMA provides monthly means of the 3-dimensional temperature, the ocean heat content, and the depth of 20ºC isotherms in the operational global ocean data assimilation system every month currently.

- ✓ The system was replaced by a new version in this June. JMA provides data of the new system currently.

- ✓ JMA will serve other variables in the system if it will definitely bring benefits to the operation of seasonal forecasting.

- ✓ If there is no direct benefit to the seasonal forecasting, MRI will subtract the requested variables from the system and provides it for the data process center.
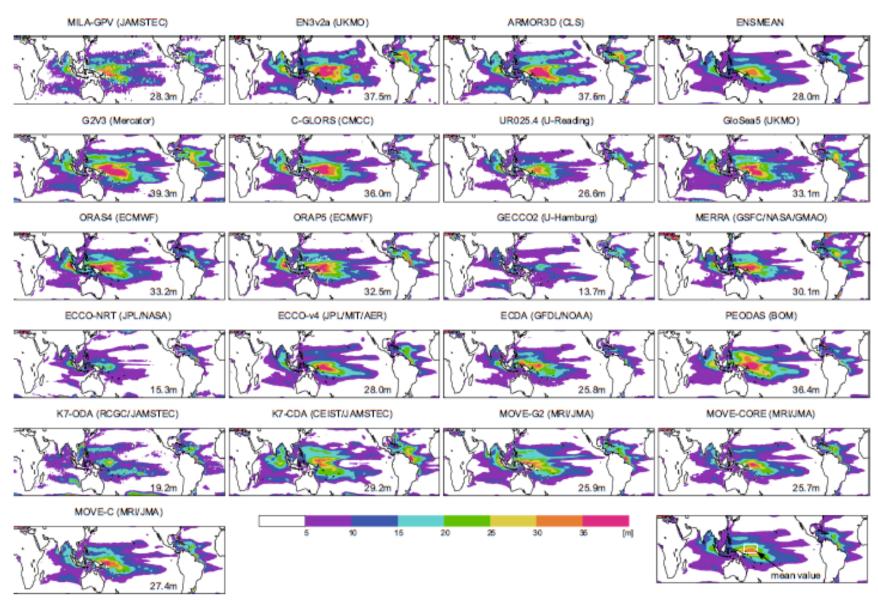
★JMA cannot contribute as a processing center

✓ JMA has discussed the possibility of contributing to the project as a data processing center of flux data.

✓ However, JMA has decided to give up the contribution unfortunately because of the shortage of human and financial resources.

★Proposal of another option

- ✓ It is possible to perform of the intercomparison of the real-time multi-ORA data as a part of my academic grant.
- ✓ The purpose of the grant is to evaluate impacts of tropical Pacific Observing System (TPOS) (especially Argo and TAO/TRITON) in ocean data assimilation systems.
- ✓ Considering the purpose and my interest, I would like to compare mixed layer depth, barrier layer thickness, and their relevant fields (including SST, SSS, and near-surface zonal currents) in the tropical Pacific, if possible.
- ✓ The results will be open on a web-page with passwords. (It is difficult to full-open the data.)
- ✓ The comparison will be stopped when the grant is ended (March, 2018.)
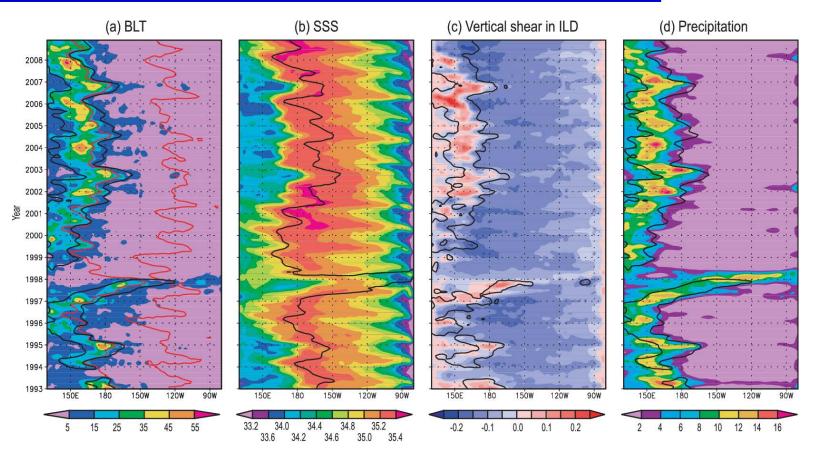
I am not sure if this proposal is suitable for the project, or if data providing centers can provide the data for the proposal.

★Example 1: the horizontal BLT field

From Toyoda et al., 2015, ClimDyn

★ Example 2: Hovmoller Diagram of BLT

From Fujii et al. 2012, PAGEOPH

✓ It may be also possible to examine the impacts of observation data density from the spreads among ORA systems.

★Purpose of the Real-Time Multi-ORA project

✓ **For the operational forecasters:** They can know the uncertainty of the analysis fields in their assimilation system when they make forecasts.

✓ **For the observation system:** It enables us to perform a timely evaluation of observing systems.

✓ **For the climate monitoring:** It can enable us to issue reliable climate indices from multi-model ensembles in which errors of each models are canceled.

We should consider these purposes for the extension of the current real-time multi-ORA project.

But the processing centers needs their own **(strong!!)** motivations for processing the result.