The Pacific Ocean reference dataset: SeHyD
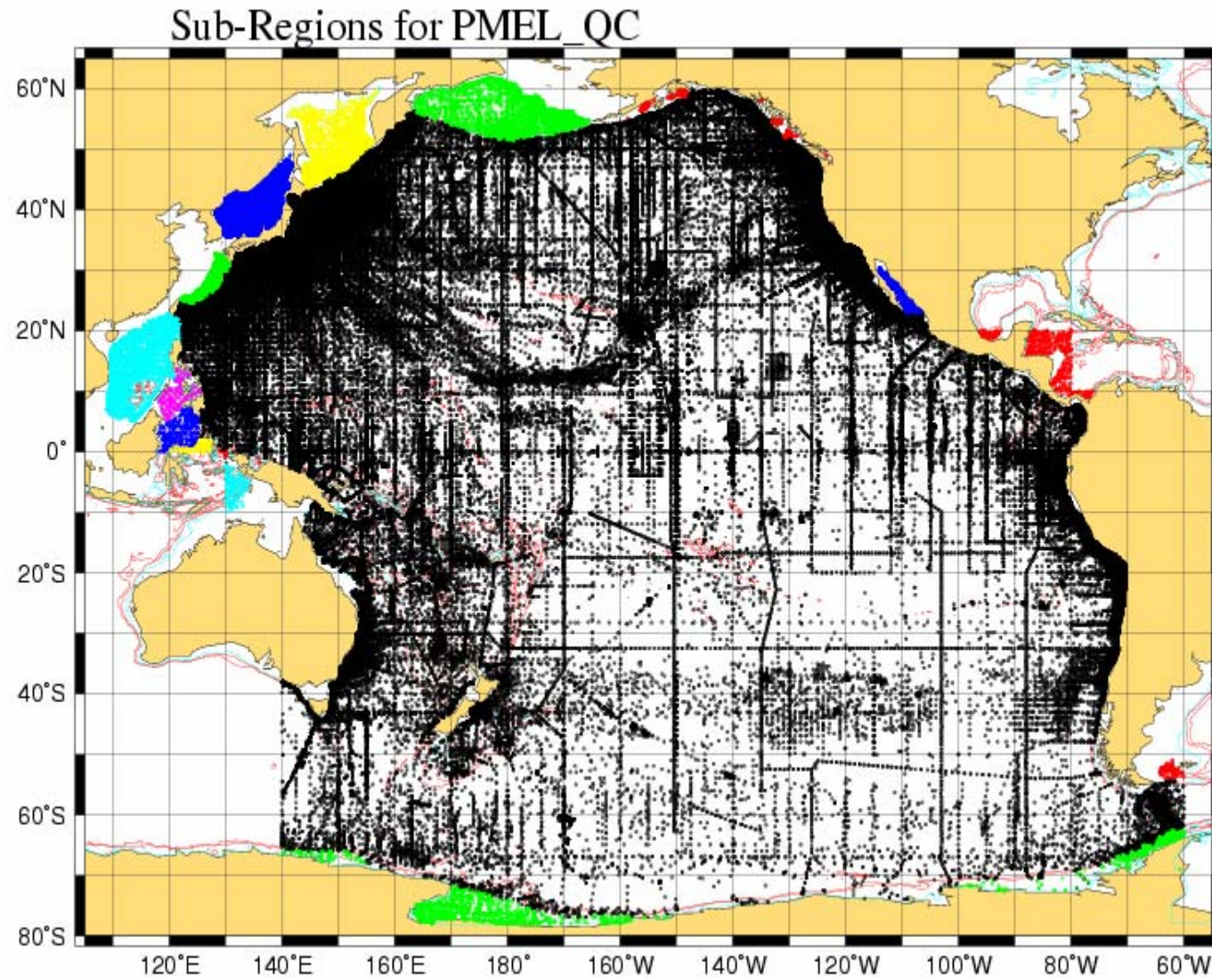
Taiyo Kobayashi

&

Shinya Minato
(JAMSTEC)

Area: Dividing into sub-regions


Sub-Regions for PMEL_QC

After examining characteristics of local water-masses, the historical profiles in all marginal seas are excluded from the open Pacific dataset.
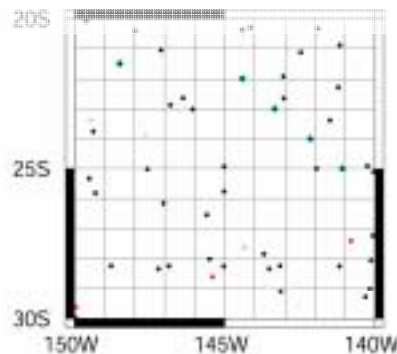
Data quality-control: Removal of bad (suspicious) data

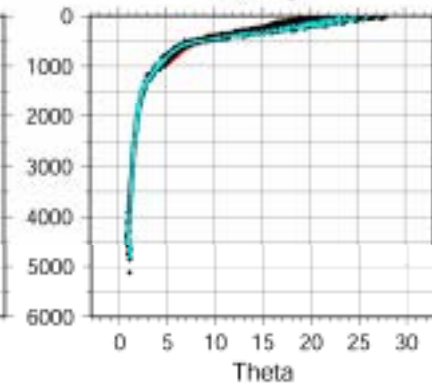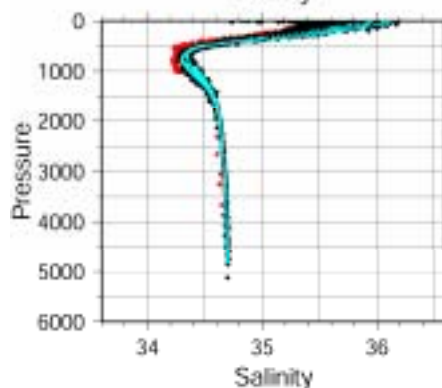All source data (black and red) have passed all quality-checks by NODC. However, some suspicious data (red) are found, which should be removed from the reference.
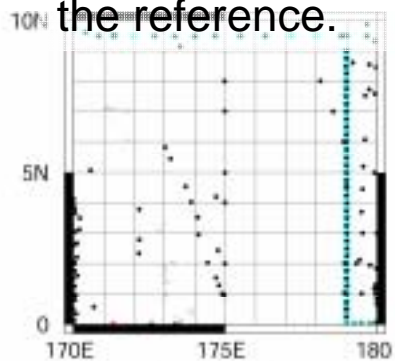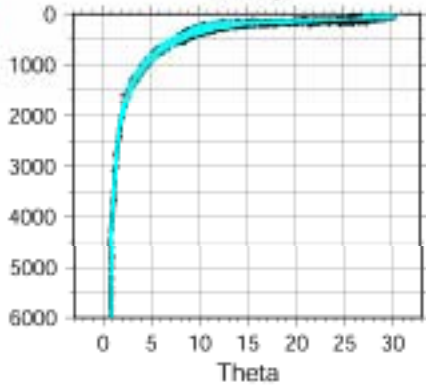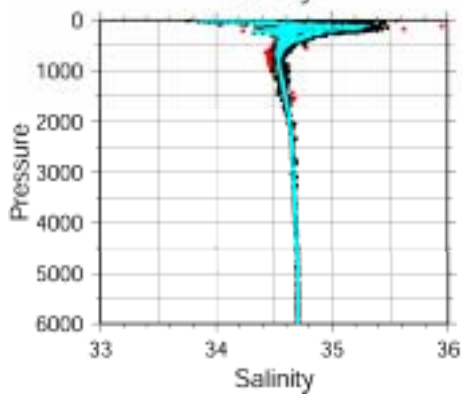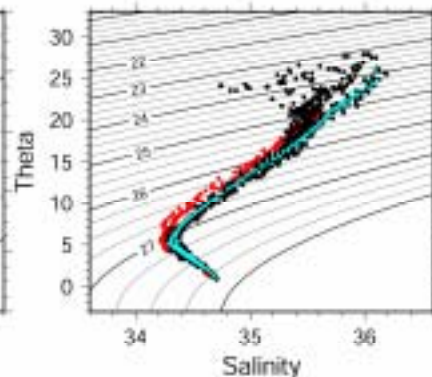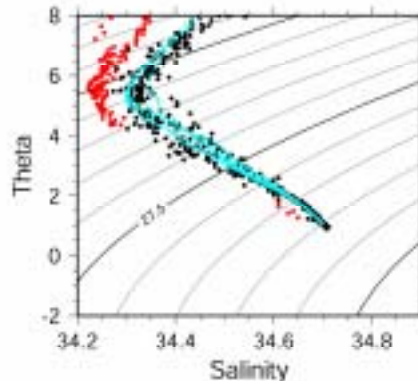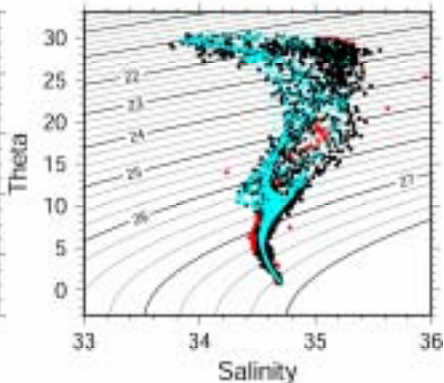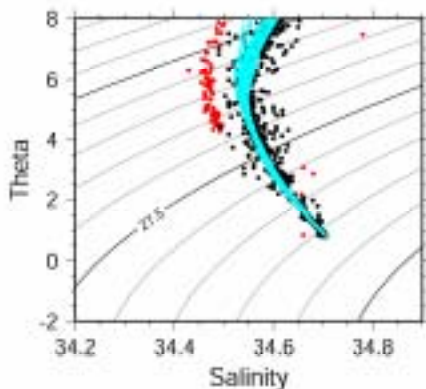
Temperature Inversion Problem

Distribution of Tmax

To prepare the reference dataset for WJO method, it is the most important to know the characteristics of Tmax, especially its depth, in the target regions.
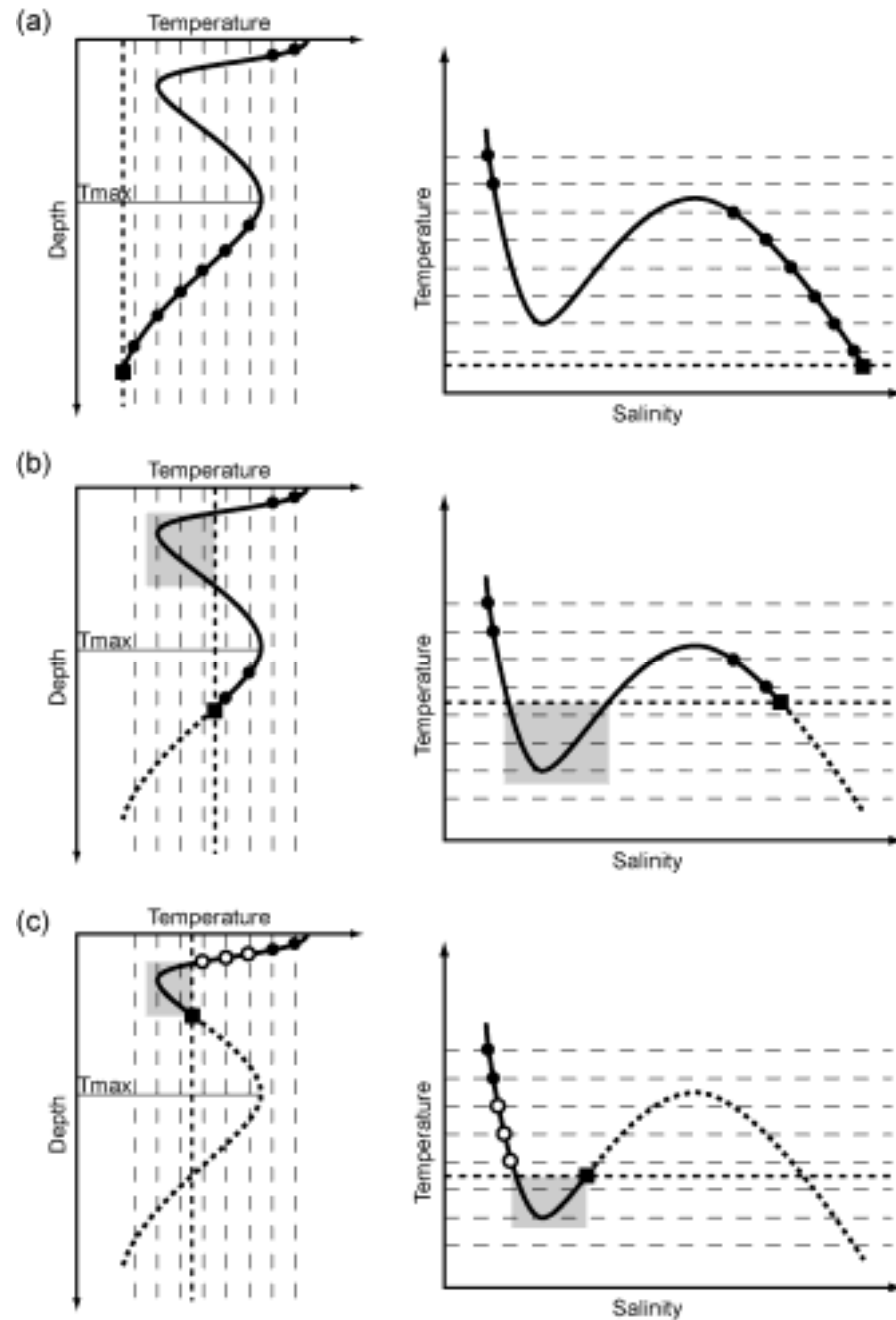
Right: schematic figures explaining the Temperature Inversion Problem.

Tmax in Tropical and Subtropical regions:
- Suspicious data
- Data in Mixed Layer

Maximum depth

800dbar (in the open Pacific)

Maximum depth
~ 1000dbar
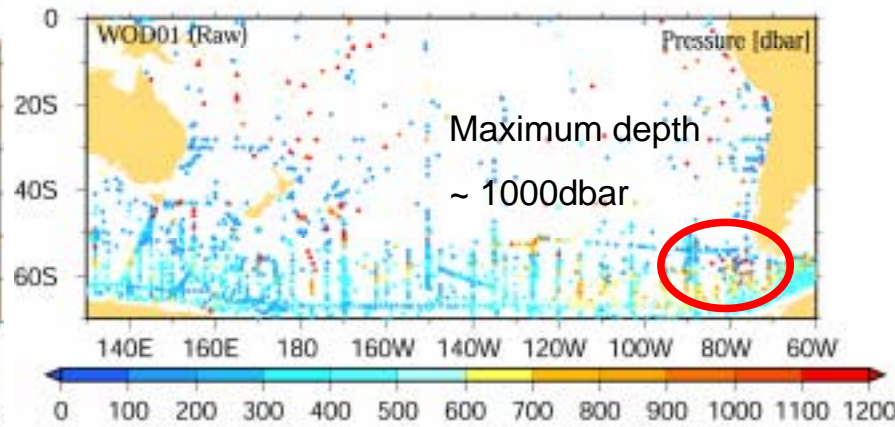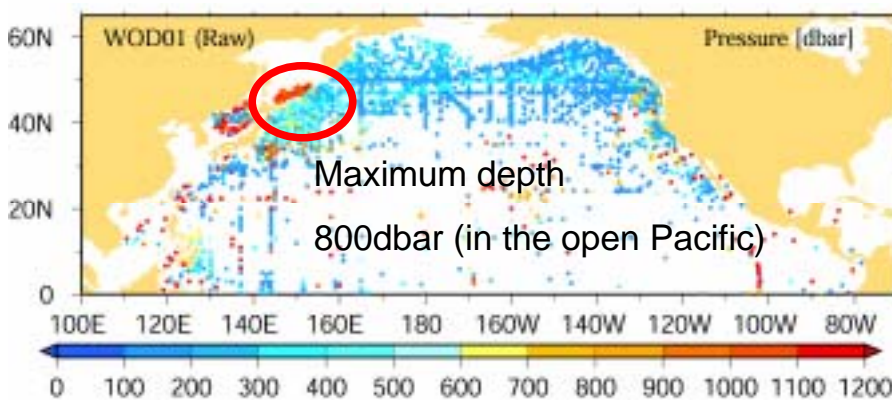
Considering water-mass characteristics in the Pacific Ocean….

The following profiles should be stored in the Pacific reference dataset:
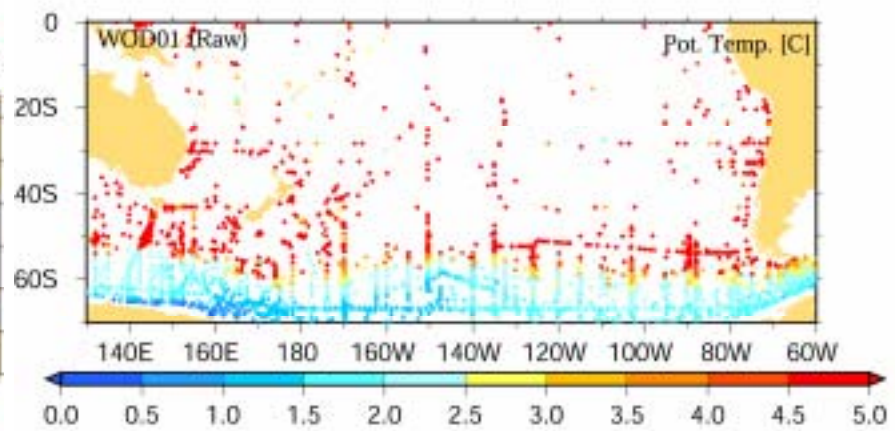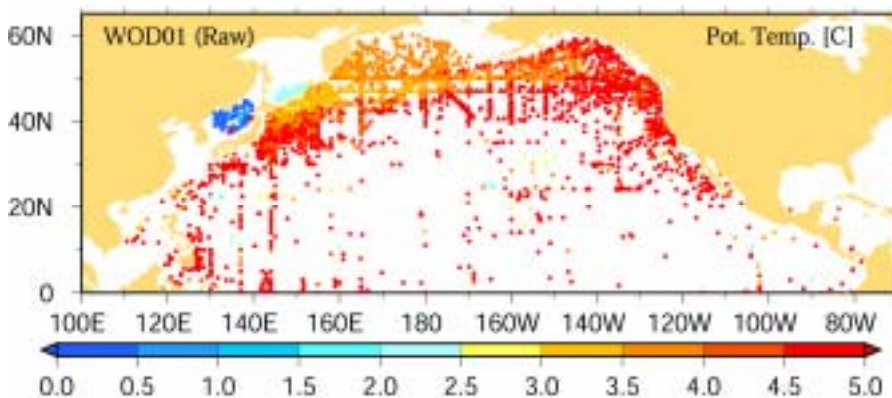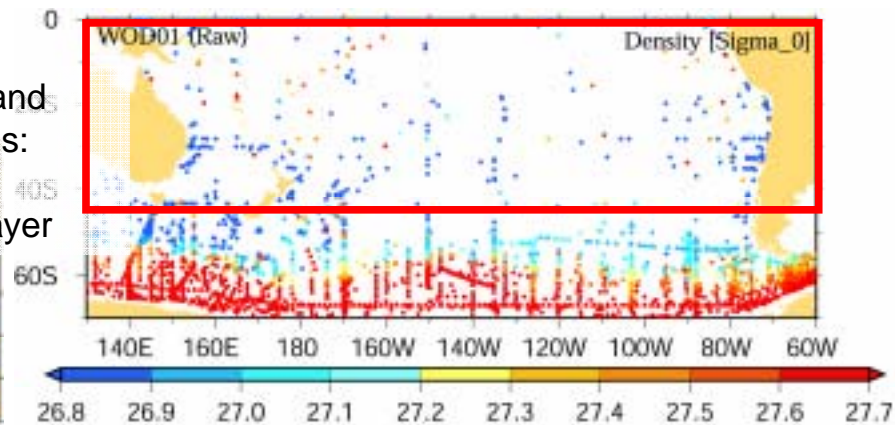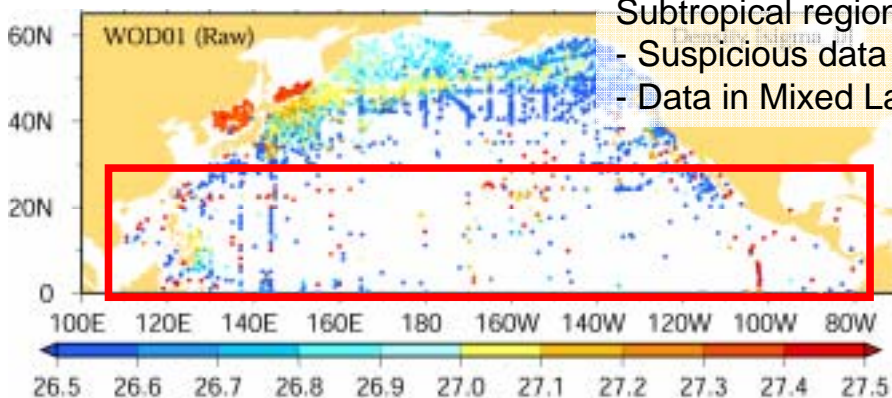
- The deepest measurement of the profile exceeds 1000dbar to avoid T inversion problem.

- The number of measurements of the profile is 15 or more for preferable interpolation.

- Profiles in (some of) the marginal seas should be removed from the dataset.

Data distribution

by change of data
selection criteria

Profiles through Criteria (WOD01)

Black: 1500dbar/19Lev
Red : 1000dbar/15Lev
Cyan : 500dbar/11Lev

30N

45S
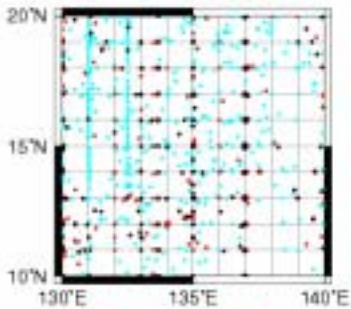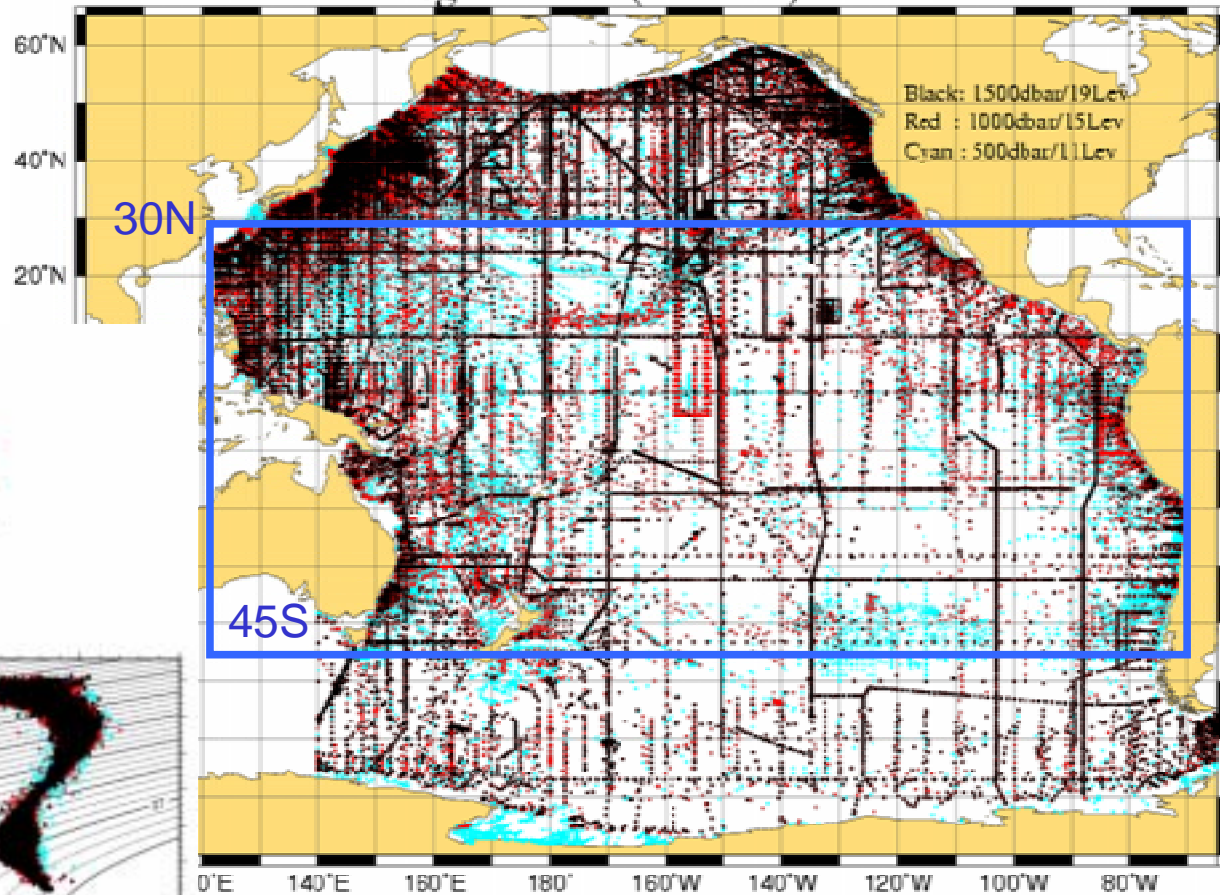
500dbar/11Lev
1000dbar/15Lev
1500dbar/19Lev
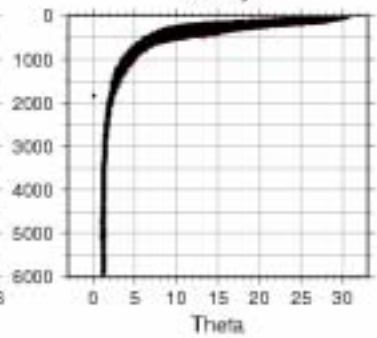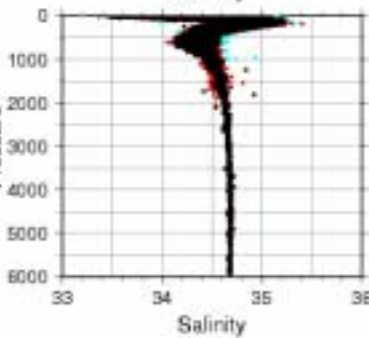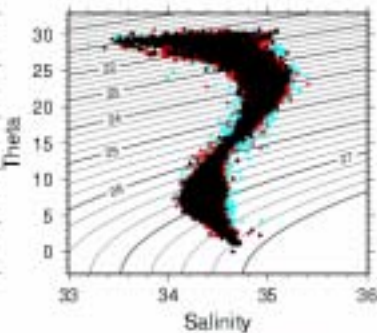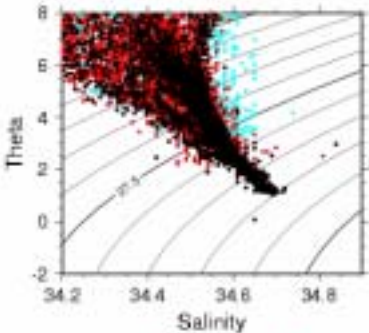
In the tropical/subtropical regions (without T inversion), more profiles can be used for the reference. (future plan)

But, it is necessary to conduct more severe quality-control for profiles.

Future plans related to SeHyD ….

- To enhance the calibration performance by increasing the historical data with relaxed criteria, especially in the tropical/subtropical regions.

- To conduct some quality-control of historical profiles (above 1000m).

- To develop the reference datasets for the Japan Sea and the South China Sea.
    - The reference for the Bering Sea will be prepared by PMEL.
    - The quality control of the float salinity obtained in the Okhotsk Sea is very difficulties by using the current QC system (Kobayashi thinks that it is impossible), because Tmax spreads at the depth deeper than 1000m there.

T. Kobayashi will be present at Phase-II. If you have some questions, please ask him then.