Calculation of Regional QC ranges of temperature and salinity for Korean waters

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Establishment work of quality control procedures for the ocean data produced by a variety of national research projects was conducted in order to set up a national ocean data sharing system. Because 12 data items are being collected during the concerning projects, we set up 12 QC procedures for physical, chemical, biological and geological ocean data items(Table 1). At first, we prepared draft version of QC procedures after analyzing existing international and domestic QC methods. The proposed procedures were reviewed and revised by experts in the filed of oceanography. The QC procedure for temperature and salinity data was set up by referring the manuals published by GTSPP (Global Temperature and Salinity Profile Programme), ARGO and IOOS QARTOD (Quality Assurance of Real Time Ocean Data). It consists of 16 QC tests applicable for vertical profile data and time series data obtained in real-time mode and delay mode. Three regional range tests to inspect annual, seasonal and monthly variations were included in the procedure and three programs were developed to provide regional ranges to data managers. The programs can calculate upper limit and lower limit of temperature and salinity at depth from 0 to 1550m by using statistical data of World Ocean Atlas 2013 (WOA13) released by NOAA National Centers for Environmental Information (NCEI). When users input location, time (season or month) and depth to the programs, they extract mean, standard deviation and number of data from WOA13 data set and calculate regional ranges with three standard deviations. They display regional ranges calculated by statistical data of 3 kind of grid systems (5° grid, 1° grid and 0.25° grid) and finally provide recommendation ranges (Fig. 1). Users can use different range from suggested range if users know well the regional characteristics of the area, because it is known that the sparse data can cause bias of the statistic data in some areas around Korean peninsula. It is possible to provide better regional QC range if the experts who know well Korean waters examine data carefully and use more precise data. It is planed to produce new statistical data and regional range by analyzing unpublished new data and reanalyzing existing data.

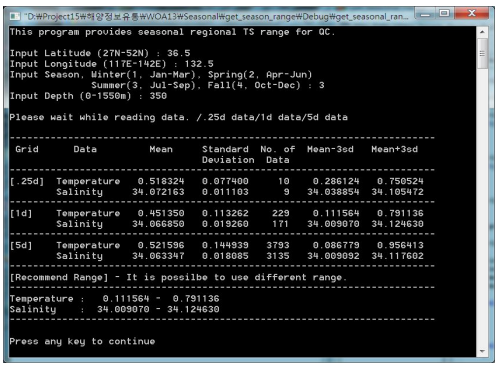

Fig. 1 Program to calculate seasonal regional QC range

Part	Data Item
Physical	TS, ADCP, Wave
Chemical	DO, CO_2, Nutrient
Biological	Phytoplankton, Algae, Fish
Geological	Surface Sediment, Core Sediment, Shallow Seismic Wave

Table 1. Data items for QC procedure