

Comparison of long-term SST around the Korea using the datasets from JOIIS, Korean ocean data repository

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The IPCC (Intergovernmental Panel on Climate Change) announced in the 4th report (2007) that climate change represented by global warming is in progress, and suggested temperature, water temperature, and sea level rise as evidence of the progress of climate change.

In establishing a response policy to ocean change, it is fundamental to forecast the long-term trend of change.

The period of observation data for long-term changes in sea surface temperature on the Korean Peninsula provided by Papers published in Korea to date and the Korea Meteorological Agency is from 1968 to 2017.

This study identified the recent trend of surface water temperature changes in the waters of the Korean Peninsula and compared it with the upward tendency of surface water temperature data in the waters of the Korean Peninsula observed overseas.

The domestic data used for the study was the serial oceanographic observation data of KODC (Korea Oceanographic Data Center) of JOIIS Portal, which collects and provides research data observed in the Korean Peninsula and public data from domestic and foreign institutions.

In the case of Serial Oceanographic observation data, it is marine scientific data produced regularly and systematically in the sea area around the Korean Peninsula. From 1961 to the present, it is surveyed six times a year, and 17 items such as water temperature and salinity in the standard water layer are investigated.

For foreign data, NOAA's ERSST v5 (Extended Reconstructed Sea Surface Temperature) data were used.

The ERSST v5 (NOAA) data provided ssta values, whereas the Serial Oceanographic observation (KODC) data provided only water temperature, so [annual average - average Korean peninsula (16.9°C)] was calculated and anomaly was calculated and used for comparison.

As a result of the study, it was found that the annual average surface water temperature from 1968 to 2017 in the Serial Oceanographic observation(KODC) data increased at an increase rate of 0.025°C/year.

Comparing ERSST v5 data with Serial Oceanographic observation data, the average annual growth rate of surface seawater water temperature in ERSST v5 data between 1968 and 2017 was 0.02°C/year, showing a tendency similar to Jeongseon ocean observation data.

As a result of the analysis of the anomaly regime shift in serial oceanographic observation data, it was confirmed that the anomaly increased significantly from 1988.

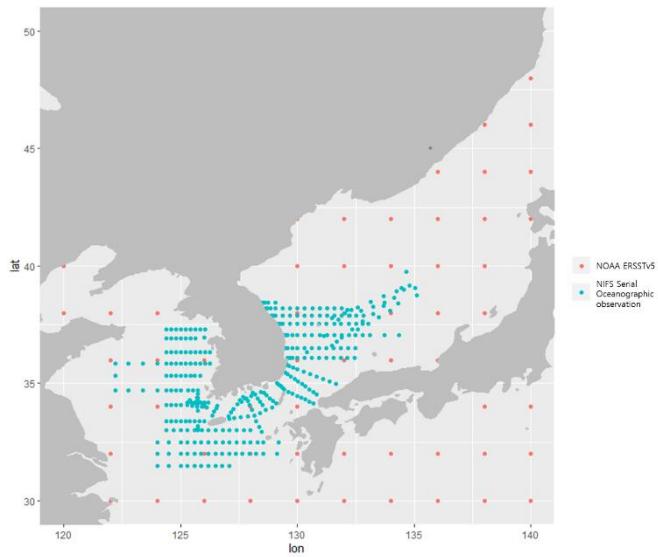


Figure 1 : NOAA ERSSTv5 & NIFS Serial Oceanographic observation station

NOAA ERSSTv5 & NIFS Serial Oceanographic observation SST anomaly Cooler or warmer than average(°C)

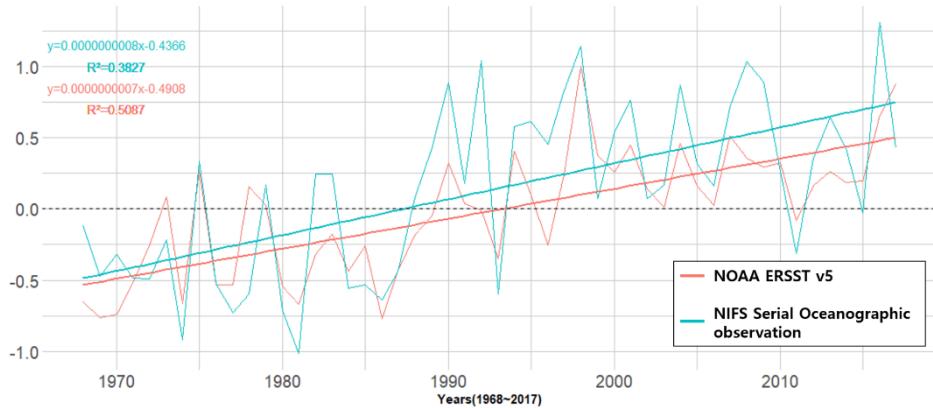


Figure 2 : NOAA ERSSTv5 & NIFS Serial Oceanographic observation SST anomaly

SST anomaly Cooler or warmer than average(°C)

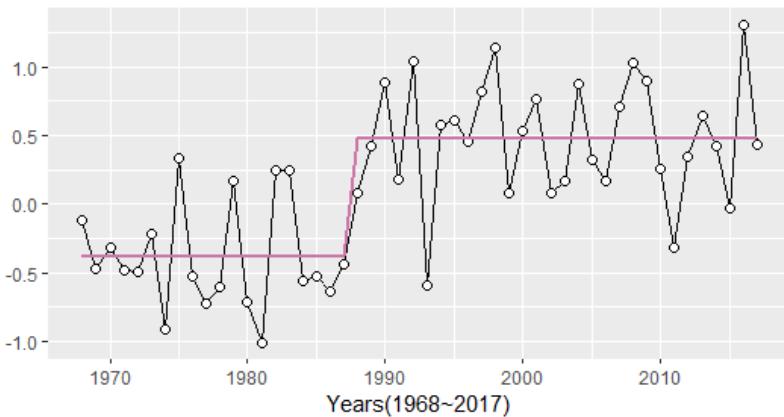


Figure 3: Serial Oceanographic observation SST anomaly regime shift analysis results