JCOMM Expert Team on Sea Ice

Japan Member Report

March 2010

Introduction

1. The Japan Meteorological Agency (JMA) has been operationally monitoring sea ice conditions and providing sea ice information in the Sea of Okhotsk since 15th December 1970, in support of fishing, shipping and coastal and harbor activities. Current status of the information services is described in this report.

Operational sea ice information services

2. JMA operationally analyzes sea ice conditions in the Sea of Okhotsk every day from November to July. The analysis area includes the northern and western parts of the Sea of Japan, Bohai Sea, and the seas east of Kamchatka Peninsula.

3. Sea ice analysis charts are broadcast on radio facsimile twice a week (on Tuesday and Friday) from December to May. The charts show sea ice edges, four classes of sea ice concentration with a description of sea ice conditions and one week forecast in both Japanese and English.

4. Numerical sea ice prognosis charts which show the distribution and concentration of sea ice of two and seven days ahead are also broadcast on radio facsimile twice a week (on Wednesday and Saturday).

5. Daily sea ice analysis charts are available on the NEAR-GOOS Regional Real Time Data Base website with other oceanographic products (e.g. sea surface temperature analysis and sea surface height analysis).

6. JMA started the global sea ice analysis in March 2006. It provides boundary conditions for JMA's Numerical Weather Prediction Model and Climate Prediction Model.

Data sources

7. The sea ice analysis in the Sea of Okhotsk is made based on satellite remote sensing data provided by MTSAT, NOAA-17, NOAA-19, Terra/MODIS, Aqua/MODIS, Aqua/AMSR-E and RADARSAT. Visible observation data from the Japan Ministry of Defense (JMD) and Japan Coast

Guard (JCG) aircrafts, the Coast Guard ships, and four coastal meteorological stations are additionally used.

8. DMSP/SSM/I data are used for the global analysis.

Sea Ice prediction model

9. A numerical model to predict sea ice distributions was first utilized by JMA during the sea ice season in 1991. The JMA's model system provides 7-day forecasts of sea ice distributions in the southern part of the Sea of Okhotsk and the neighboring waters. The model contains physical processes of sea ice formation/melting and wind- and current-driven sea ice drift.

Future plan

10. We have developed algorism to calculate the sea ice motion vector in the Sea of Okhotsk. We plan to make the results publicly available as nowcast information on sea ice and use them as initial conditions for our numerical sea ice model.

References

Japan Meteorological Agency, 2007: Outline of the operational numerical weather prediction at the Japan Meteorological Agency.
Appendix to WMO numerical weather prediction progress report.