REPORT OF THE CHAIRPERSON OF SESSION IV: REGIONAL AND MESOSCALE APPLICATIONS

Chairperson: J. Xu

Four papers are presented in this session.

“A case study of hourly AMV assimilation with JMA-MSM” was presented by Kumabe on behalf of Sato. JMA did case study about impact of hourly AMVs on mesoscale NWP model with 4D-Var assimilation. With hourly AMVs, the prediction of rainfall was improved with better upper level feature prediction. It was concluded that the hourly AMVs have a potential to improve mesoscale analysis and prediction.

“Signal of dissipation of a very severe tropical cyclone through AMVs over India region” presented by Mahajan indicated prime importance of satellite derived AMVs in improving forecast of disastrous tropical cyclone systems over the India ocean. In the vicinity of tropical cyclone, cyclonic vorticity at 850 hPa and anticyclonic vorticity at 200 hPa were revealed by AMVs. The replacement of anticyclonic vorticity by the cyclonic one at 200 hPa gave a signal of dissipation of tropical cyclone 2-3 days in advance prior to hitting the west coast of India.

“Use of satellite wind vectors in the Italian weather service numerical weather prediction system: Current status and perspectives” presented by Bonavita reported the use of satellite wind products in the Italian weather service regional 3D-Var data assimilation system. At present, two types of satellite wind data are ingested: surface wind from QuikScat and AMVs from Meteosat-5/7. The paper describes assimilation methodology, use of the EUMETSAT MPEF quality indicator (QI) and wind observation error statistics. Impact of both types of data shows consistent improvements in forecast quality, especially from Meteosat-5/7 AMVs.

“Assimilation of satellite derived winds in mesoscale forecast over Hawaii” presented by Cherubini assessed impact of AMVs from geostationary satellites on mesoscale forecasts over the central Pacific region. The satellite wind assimilation is carried out on the 27 km resolution domain in vicinity of a subtropical cyclone. MM5 was run with three two way nested domain (27, 9 and 3 km), with the innermost domain moving with the subtropical cyclone. The AMV data assimilation increased the cyclonic zonal wind shear and improved the prediction of the cyclone, particularly its movement.

The presented papers supported the positive impact of AMVs in improving mesoscale numerical weather forecasts, and indicated the action of AMVs at revealing observational facts in the data sparse ocean area.