The Use of Doppler Radar Observations at NCEP

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The entire WSR-88D (Weather Surveillance Radar -1988 Doppler) radar network is upgraded with dual-polarization technology recently. The National Centers for Environmental Prediction has developed the capability of real-time accessing and processing radar data with dual-pol variables. Radar data quality control is enhanced by utilizing dual-pol variables to identify meteorological echoes and non-meteorological echoes. The data quality of radar reflectivity and radial wind are improved by more accurately removing non-meteorological echoes.

After quality control, the radial winds from WSR-88D network are directly analyzed by NCEP grid-point statistic interpolation (GSI) analysis system and assimilated in operational NDAS (North american model Data Assimilation System). The cloud analysis package developed by Global Systems Division (GSD) is modified and used to analyze reflectivity with NCEP's forecast model background. The radar radial winds together with reflectivity are assimilated every three hours in NDAS parallel. The parallel test from Feb, 23 2013 to April, 23 2013 shows the precipitation forecast score is improved. The impact of radial wind and reflectivity on the analysis and forecast will be further examined in spring storm season.