Cyclone Gonu (June 2007) formed in the south central Arabian Sea and tracked west-northwestward into the Straights of Hormuz, reaching a peak intensity of 145 knots and mean sea level pressure of 914mb before making a landfall in Iran. Tropical Cyclone like Gonu was an unusual one in the northern Indian Ocean basin and was the strongest on record. Most of the cyclones form in the region over the Bay of Bengal, east of India; those that take shape over the Arabian Sea, west of the Indian peninsula, tend to be small and fizzle out before coming ashore. Cyclone Gonu was a rare exception and caused a vast devastation in Oman and Iran. Numerous experiments were conducted with FORMOSAT-3/COSMIC (GPS radio occultation refractivity), Special Sensor Microwave Imager (precipitable water and near-surface oceanic wind speed), GTS, QuikSCAT, Bogus vortex and combination of these data sets for the analysis of Gonu and were assessed using an advanced Weather Research and Forecasting (WRF) model with three dimensional variational data assimilation (3DVAR) system to assimilate these observations. The model integration was carried for 96 h starting from 3 June 00UTC; the model initial and boundary conditions were taken from NCEP-NCAR AVN analysis. All the assimilations had a tendency of initial adjustment till 24-h integration. The control run (without assimilation) and QuikSCAT assimilation runs were close to the best track from 24 to 72 h, later both the tracks had an eastward tendency, whereas the assimilation of GPS RO data showed that the track is close to the observed track from 24 to 60 h, then a westward tendency of deviation from the best track for few hours. Rest of the assimilations like SSM/I, GTS, bogus vortex and combination of these data were comparable from 24 to 60 h and then a westward tendency from the best track. All the assimilation runs have better agreement with the observations in day 2 and day 3 compared to day 4, but only COSMIC RO data produces the track closest to the observation at day 4.

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