Assessment of marine weather forecasts over the Indian sector of Southern Ocean

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Abstract: The Southern Ocean (SO) is one of the important regions where significant processes and feedbacks of the Earth's climate take place. Expeditions to the SO provide useful data for improving global weather/climate simulations and understanding many processes. Some of the uncertainties in these weather/climate models arise during the first few days of simulation/forecast and do not grow much further. NCMRWF issued real-time five day weather forecasts of mean sea level pressure, surface winds, winds at 500 hPa & 850 hPa and rainfall, daily to NCAOR to provide guidance for their expedition to Indian sector of SO during the austral summer of 2014ï 2015. Evaluation of the skill of these forecasts indicates possible error growth in the atmospheric model at shorter time scales. The error growth is assessed using the model analysis/reanalysis, satellite data and observations made during the expedition. The observed variability of sub-seasonal rainfall associated with mid-latitude systems is seen to exhibit eastward propagations and are well reproduced in the model forecasts. All cyclonic disturbances including the sub-polar lows and tropical cyclones that occurred during this period were well captured in the model forecasts. Overall, this model performs reasonably well over the Indian sector of the SO in medium range time scale.
Keywords: Southern ocean; Numerical weather prediction; Westerly winds; Sub ï seasonal rainfall variability; Sub polar low pressure systems