

Observation Impacts in ACCESS-C Models

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The quality of the forecasts from the Bureau's convection-permitting ACCESS-C models is dependent on the use of observations. The impact comes both from direct assimilation into the ACCESS-C model hourly, providing the most accurate initial conditions for forecasts, and indirectly via assimilation into the global model ACCESS-G, which provides lateral boundary conditions (LBCs) for the ACCESS-C domains. We examined the impact of satellite observations in ACCESS-C via observing system data denial experiments (DDEs) in the Sydney and Darwin domains. We show the impact of satellite observations on global model forecast skill over the Australian region, giving a guide to which observations are most influential to the quality of the LBCs. The observations directly assimilated into ACCESS-C include radiosonde and aircraft observations, surface observations, Doppler radar winds, and satellite data including infrared and microwave sounders (sensitive to temperature and moisture profiles), atmospheric motion vector (AMV) upper air winds, scatterometer surface winds and ground-based Global Navigation System Satellite (GNSS) measurements sensitive to water vapour. ACCESS-G uses a wider range of satellite observations. We find the pattern of impact in ACCESS-C DDEs appears to vary seasonally and is also domain dependent. This has consequences for the expected pattern of performance over the larger ACCESS-A domain. The poster also shows impact results for the Australian region from satellite DDEs using the Met Office global model, which is similar to ACCESS-G. The impacts from satellite sounders are stronger in the Australian region than over the globe as a whole, confirming their influence on our local weather predictions.