Geophysical Research Abstracts
Vol. 17, EGU2015-621, 2015
EGU General Assembly 2015
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# The importance of wind-flux feedbacks during the November CINDY-DYNAMO MJO event

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High-resolution, large-domain cloud resolving model (CRM) simulations probing the importance of wind-flux feedbacks to Madden-Julian Oscillation (MJO) convection are performed for the November 2011 CINDY-DYNAMO MJO event. The work is motivated by observational analysis from RAMA buoys in the Indian Ocean and TRMM precipitation retrievals that show a positive correlation between MJO precipitation and wind-induced surface fluxes, especially latent heat fluxes, during and beyond the CINDY-DYNAMO time period. Simulations are done using Colorado State University's Regional Atmospheric Modeling System (RAMS). The domain setup is oceanic and spans 1000 km x 1000 km with 1.5 km horizontal resolution and 65 stretched vertical levels centered on the location of Gan Island – one of the major CINDY-DYNAMO observation points. The model is initialized with ECMWF reanalysis and Aqua MODIS sea surface temperatures. Nudging from ECMWF reanalysis is applied at the domain periphery to encourage realistic evolution of MJO convection. The control experiment is run for the entire month of November so both suppressed and active, as well as, transitional phases of the MJO are modeled. In the control experiment, wind-induced surface fluxes are activated through the surface bulk aerodynamic formula and allowed to evolve organically. Sensitivity experiments are done by restarting the control run one week into the simulation and controlling the wind-induced flux feedbacks. In one sensitivity experiment, wind-induced surface flux feedbacks are completely denied, while in another experiment the winds are kept constant at the control simulations mean surface wind speed. The evolution of convection, especially on the mesoscale, is compared between the control and sensitivity simulations.