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Supplement of

Interactions between trade wind clouds and local forcings over the Great Barrier Reef: a case study using convection-permitting simulations

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Supplementary

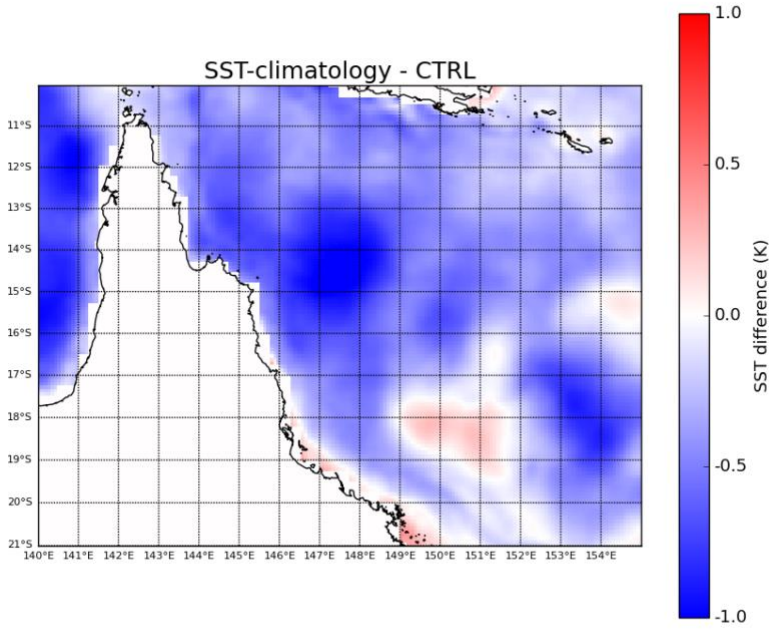

Figure S1: SST difference between experiment of SST-climatology and CTRL simulation. Climatological SST distribution is for April during the time period of 1998-2018. Areas in blue color indicate regions where SST in the SST-climatology simulation is cooler than CTRL simulation, and warmer than CTRL area is in red.

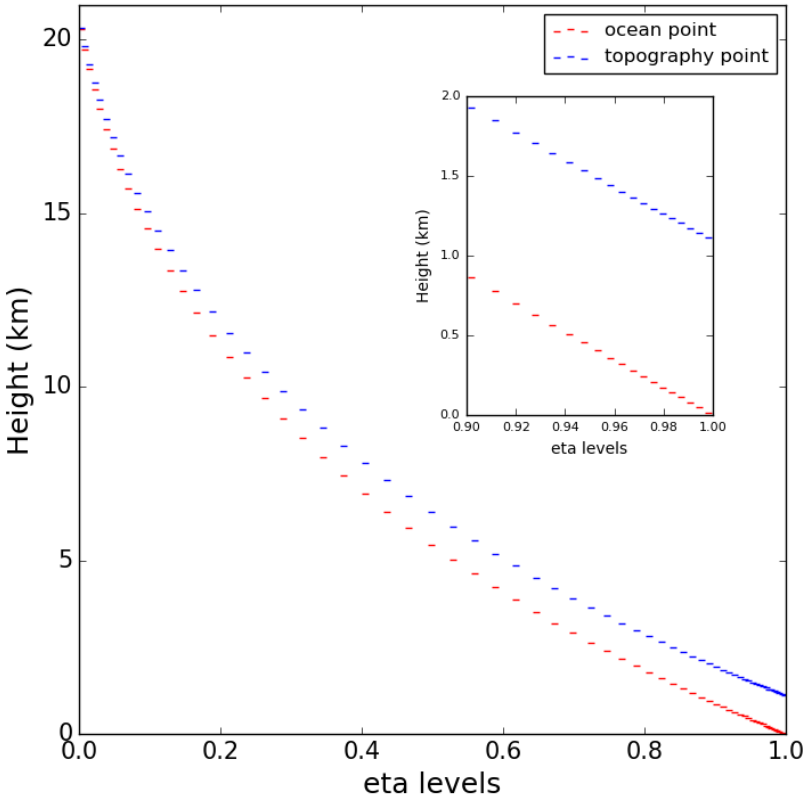

Figure S2: Examples of vertical eta levels structure for the 65-level configurations in the WRF model. Red color is for a grid point located in ocean area, and blue is for a grid point with topography.

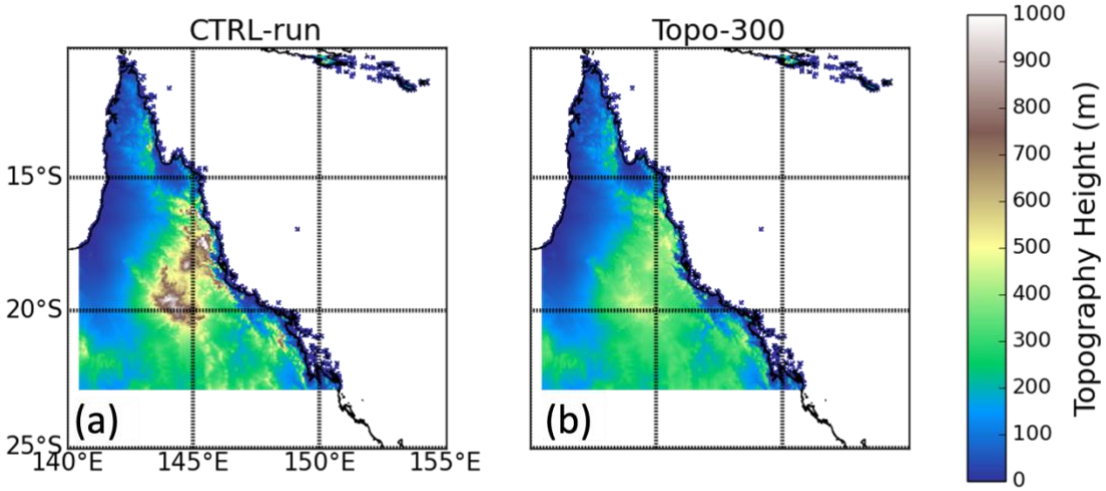

Figure S3: (a) The model topography for CTRL. (b) Modified topography for Topo300 experiment, where the topography above 300m is reduced by 75%.

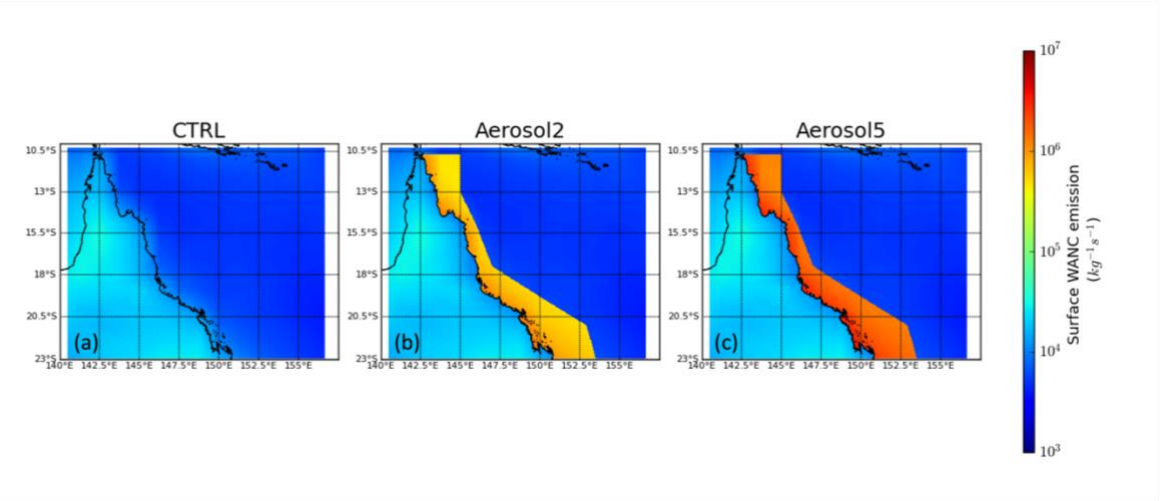

Figure S4: (a) Example of surface water-friendly aerosol number concentration emission (NWFA2D) applied in CTRL. (b) Modified NWFA2D from Aerosol2, where the NWFA2D within GBR is doubled. (c) Same as (b), but for Aerosol5, where a factor of five is applied over the GBR. Note that NWFA2D keeps unchanged throughout the evolution of simulation for all experiments.

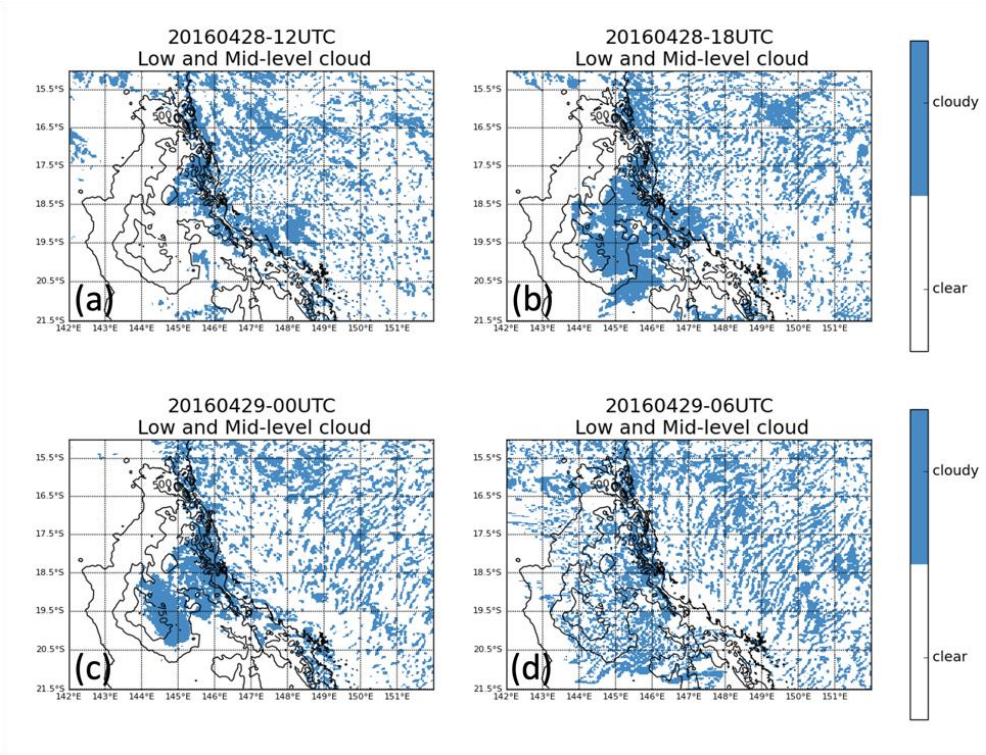

Figure S5: Examples of simulated cloud fields from 3km resolution with CTRL at (a) 12UTC 28, (b) 18UTC 28, (c) 00UTC 29, and (d) 06UTC 29 April 2016.

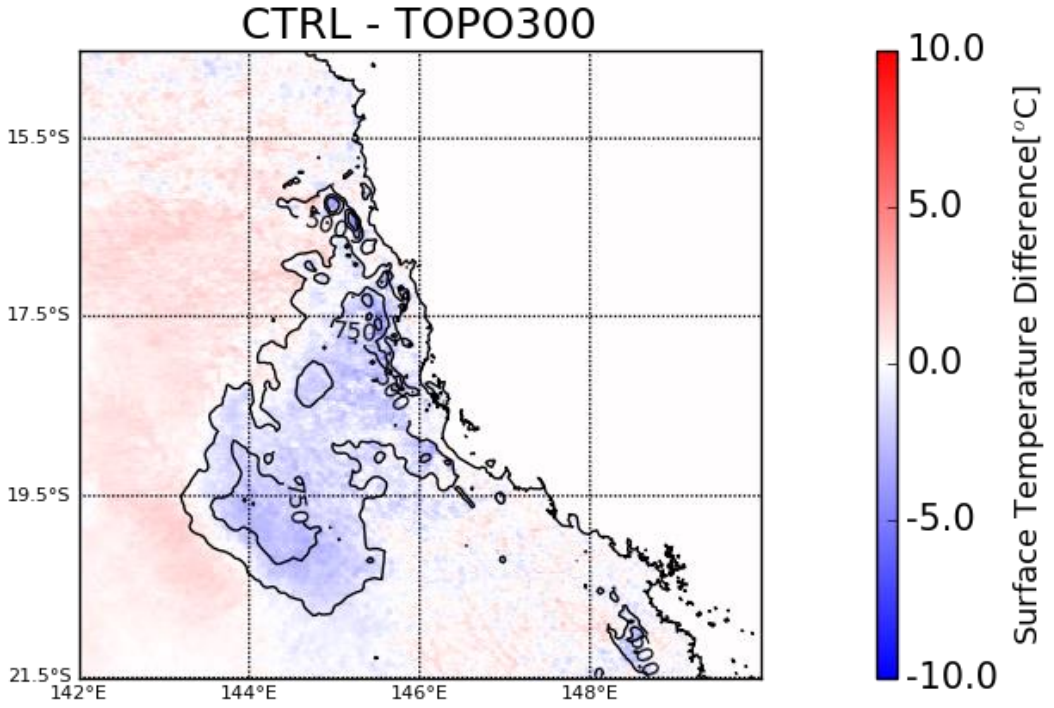

Figure S6: Differences of simulated surface temperature between CTRL and Topo300. Black contours show the topography from 500 to 1500 m with 250 m interval.