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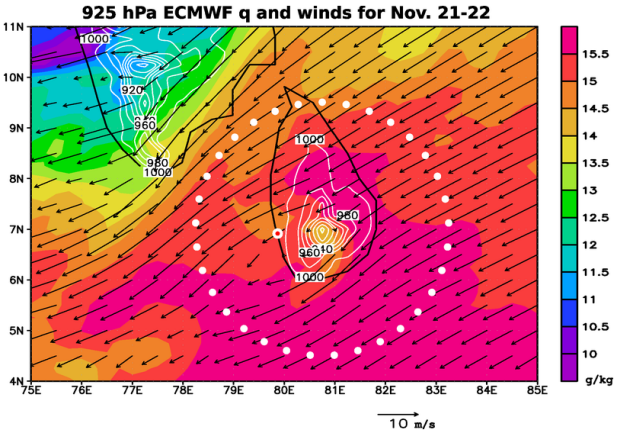
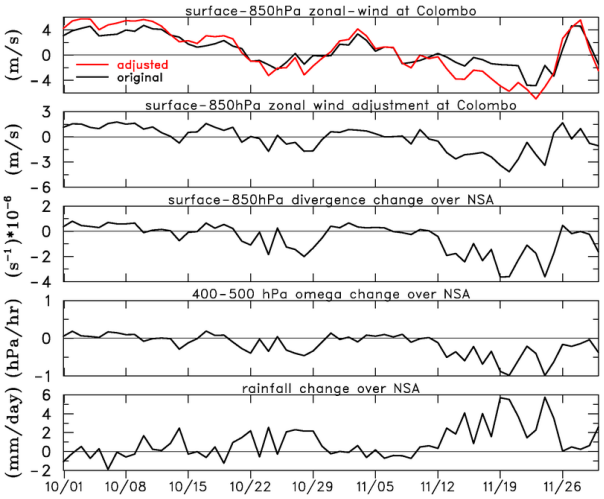


← **Figure 1.** ECMWF operational analysis of water vapor mixing ratio q and winds at 925 hPa for 21-22 November 2011 showing flow blocking around topographic features (light white labeled contours). Wind scale is shown below plot and scale for q to right of plot. Ring of white circles shows 2.5° sampling radius for ECMWF fields used in the adjustment procedure. Red filled white circle shows location of Colombo sounding site.



←**Figure 2**. Time series of the impact of adjusted Colombo winds on various fields and analyses: (top panel) original (black) and adjusted (red) zonal-winds at Colombo averaged from surface to 850 hPa layer, (second panel) low-level zonal-wind adjustment (adjusted - original), (third panel) NSA-averaged low-level divergence change due to wind adjustment, (fourth panel) NSA-averaged mid-level vertical motion change due to wind adjustment, (bottom panel) NSA-averaged Q_2 budget-derived rainfall change due to wind adjustment.

- During the Dynamics of the MJO (DYNAMO) field campaign in 2011, 258 upper-air soundings were launched at Colombo, Sri Lanka as part of the enhanced northern sounding array (NSA) of the experiment. These soundings were affected at low levels by the diurnal heating of this large island and by flow blocking due to elevated terrain (> 2 km) to the east of the Colombo site. Because of the large spacing between sounding sites, these small-scale island effects are aliased onto the larger scale impacting analyses and atmospheric budgets over the DYNAMO NSA.
- To mitigate these local island effects on the large-scale budgets, a procedure was designed which used low-level ECMWF-analyzed fields in the vicinity of Sri Lanka (i.e., a 2.5° sampling radius from center of topographic feature seen in Fig. 2) to estimate open-ocean conditions at Colombo's location as if the island were not present. These "unperturbed" ECMWF fields at low-levels were then merged with the observed Colombo soundings below 700 hPa.
- Results indicate a beneficial impact of using these adjusted fields on several aspects of the budget analyses (e.g., higher temporal correlations of budget-derived rainfall to independent estimates, elimination of negative budget rainfall during build-up phase of November MJO event, etc.).