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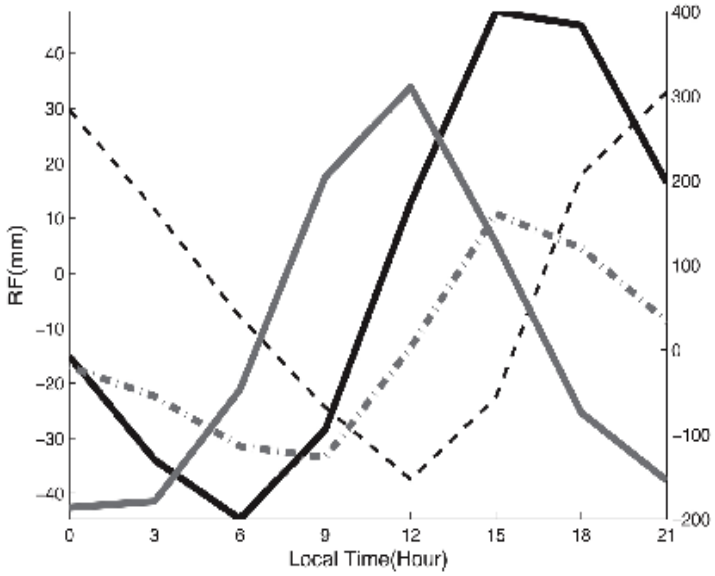

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Figure 1. The principal component scores corresponding to EOFs. NCEP10 (WRF model) is plotted in right-axis using gray solid (PC1) and gray dashed (PC2). TRMM 3B42 is plotted in left-axis using black solid (PC1) and black dashed (PC2).

- We evaluated the diurnal precipitation variability over the tropical maritime continent from both satellite observations and dynamically downscaled high-resolution (25-10km) simulations using the WRF model.
- The WRF model simulation captures the precipitation diurnal cycle well compared to TRMM 3B42 although the model overestimates the amplitude. The exaggerated precipitation amplitude over land by all the WRF simulation (with different convective schemes) indicates that mechanisms related to boundary layer transfer and convective lifting-condensation-precipitation are likely not well reproduced by the respective parameterization schemes. Convection permitting scales (≤4km) my be necessary in order to better diagnose and address these issues.
- The two leading EOF´s can explain most of the variation of diurnal precipitation. From the PC analysis, it is known that PC1 and PC2 both lead the TRMM 3B42 by about 3 hours over the maritime continent (Fig. 1). The exact casue for this mismatch in timing is not known but commonly described shortcomings that could contribute are underrepresentation of cloud development, lateral entrainment/detrainment rates in deep and shallow convection etc.