Masunaga, H., 2015: Assessment of a satellite-based atmospheric budget analysis method using CINDY2011/DYNAMO/AMIE and TOGA COARE sounding array data. *J. Meteor. Soc. Japan*, **93A**, 21-40.
https://doi.org/10.2151/jmsj.2015-032

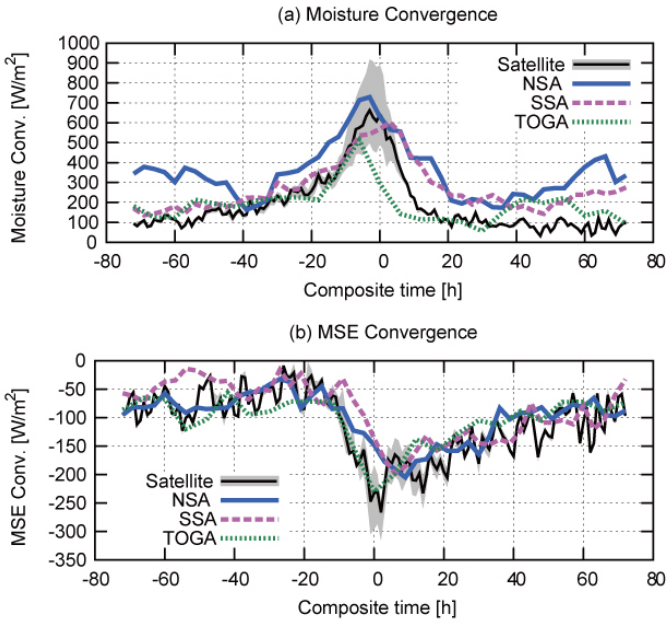

Fig. 1 (a) Composite time series of vertically integrated moisture convergence [W m^{-2}] from the CINDY/DYNAMO NSA (blue solid), CINDY/DYNAMO SSA (magenta dashed), TOGA COARE IFA (green dotted), and satellite estimates (black curve with gray shade). The width of the gray shade shows a range of large-scale domain diameters being varied from 400 km to 800 km, while the control analysis (600 km) is indicated by black line. Only the ensemble mean is plotted for the sounding array composites. (b) As (a) but for MSE convergence.

- A satellite-based method of moisture and thermal budget analysis is examined in comparison with sounding array observations from CINDY2011/DYNAMO/ AMIE and TOGA COARE.
- The satellite analysis is found to quantitatively reproduce the statistical behaviors of large-scale mean vertical motion, moisture convergence, and moist static energy (MSE) convergence as observed from the sounding arrays (Fig. 1), although individual convective events are heavily spread around the ensemble mean of moisture and MSE convergences in composite space.
- The convective events are broken down into “developing”, “off-centered”, and “passing-by” classes using geostationary infrared measurements in attempt to sort out irrelevant samples that are not representative of convective dynamics. All the three composite classes show qualitatively similar evolutions except for the amplitude of variability, with genuine developing events being greatest in amplitude and passing-by disturbances being weakest.