

Yokoi, S., and A. H. Sobel, 2015: Intraseasonal variability and seasonal march of the moist static energy budget over the eastern Maritime Continent during CINDY2011/DYNAMO. *J. Meteor. Soc. Japan*, **93A**, 81-100.

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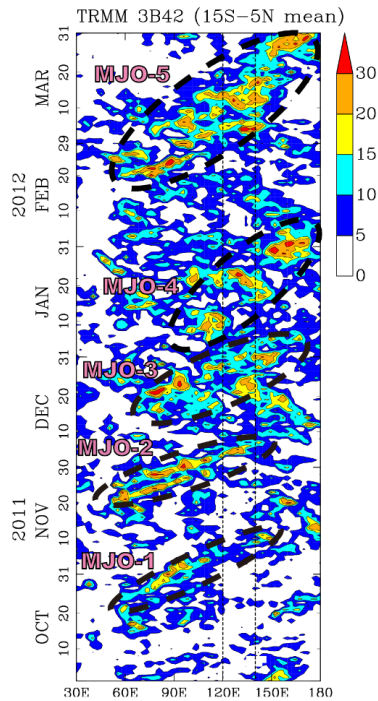


Figure 1: Longitude–time cross section of daily–mean TRMM 3B42 precipitation [mm day^{-1}] averaged over 15°S – 5°N . Thin vertical dashed lines indicate location of the study area. Ellipses with bold dashed line enclose five MJO events.

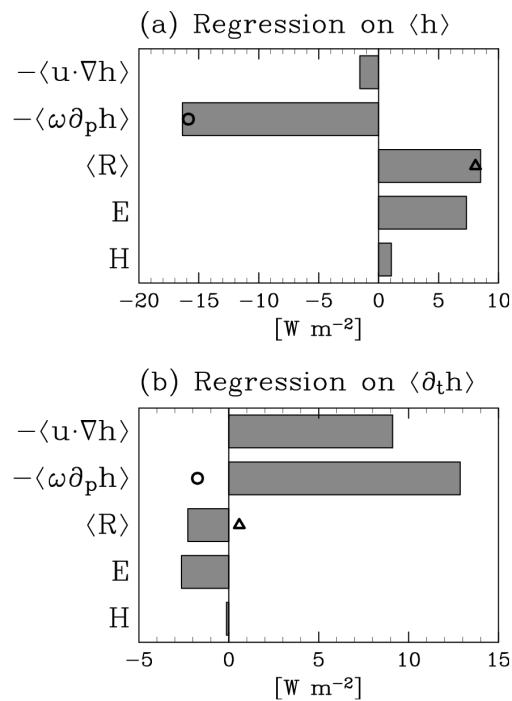


Figure 2. Regression coefficients of the column-integrated MSE budget terms on (a) column-integrated MSE and (b) its tendency over the study area. The terms are column-integrated MSE horizontal advection ($-\langle \mathbf{u} \cdot \nabla h \rangle$) and vertical advection ($-\langle \omega \partial_p h \rangle$), column-integrated radiative heating ($\langle R \rangle$), and surface latent and sensible heat fluxes (E and H). Circles represent the coefficients of the vertical advection parameterized using the assumption of constant NGMS, while triangles represent the coefficients of radiative heating parameterized using its statistical relationship with column water vapor.

- Column-integrated moist static energy (MSE) budget analyses reveal that surface heat fluxes and atmospheric radiative heating contribute to the maintenance of the amplitude of the MSE anomaly associated with five Madden-Julian Oscillation (MJO) events passing over the eastern Maritime Continent, the study area.
- The MSE vertical advection, along with the horizontal advection, contributes to the phase progression of the MSE anomaly, which is mainly due to the lower-tropospheric descent after the precipitation and MSE maxima, presumably associated with rain re-evaporation.
- Assumption of constant normalized gross moist stability (NGMS) implies an underestimate of the contributing effect of the MSE vertical advection on the phase progression.