Hsu, W.-C., K. Kikuchi, H. Annamalai, and K. J. Richards, 2022: Assessing the representation of ISO-related ocean forcing in the tropics in atmospheric reanalyses. *J. Meteor. Soc. Japan*, **100**, 415-435. https://doi.org/10.2151/jmsj.2022-020

Plain Language Summary: The intraseasonal oscillation (ISO) is planetary-scale eastward propagating convective cloud clusters in the tropics with a period of about 30 to 90 days. To simulate and understand the ISO and the associated ocean responses, by using ocean models, realistic forcing data are required. By comparing three of the newest reanalysis datasets (ERA5, ERA-interim (ERAi), and JRA55), we show that they all have the common problem of underestimating rainfall related to ISO, while ERA5 shows the smallest bias. Our results suggest ERA5 as a relatively better forcing.

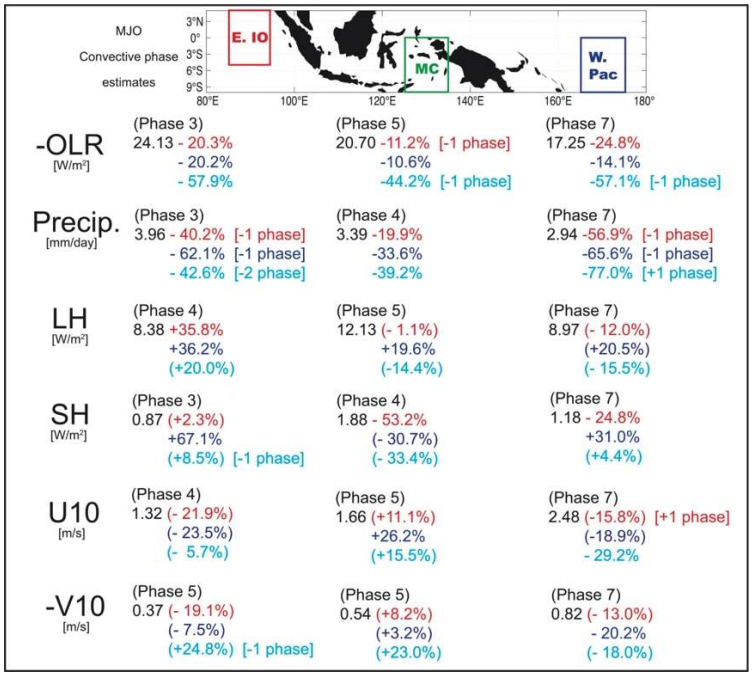

Figure 1. Biases of MJO convective-phase related intraseasonal values of air-sea variables from ERA5 (in red), ERAi (in blue), and JRA55 (in light blue) in the eastern Indian Ocean (left panel), maritime continent (middle panel), and western Pacific Ocean (right panel). All the percentages (biases) are compared to the observational values (show in black numbers). Phase biases (positive represents the reanalysis lagging the observation) in each reanalysis (compared to observation) are shown in brackets following the percentage biases.

- The representation of ISO-related surface variables in three reanalyses were quantitatively assessed.
- JRA55 underestimates the outgoing longwave radiation by ~40 to 60% related to ISO.
- All the three reanalyses show large biases in ISO-related precipitation, while the biases in other ISO-associated variables are region- and season-dependent.
- ERA5 is shown as a relatively better ocean model forcing for ISO studies, since ERAi shows larger biases in magnitude while JRA55 shows larger phase biases of ISO-related variables.