

## **Diurnal Cycle of MCSs and Interactions with the MJO and Asian Monsoon over the Maritime Continent**

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There is no other place on Earth where convective processes are more important to global weather-climate than the Indo-Pacific Maritime Continent (MC). It hosts the strongest equatorial convective center that drives the global circulation and plays a pivotal role in the global weather-climate system. The ascending branch of the Walker circulation over the MC is a key factor affecting the MJO and Asian monsoon, and interacting with ENSO. The diurnal cycle in rainfall over the MC is 2-3 times larger than anywhere else in the tropics. While the solar cycle controls the triggering of new convection, the time of maximum coverage by rain and high clouds depends on the lifetime of mesoscale convective systems (MCSs) that evolve from triggered convection to its maturity (Houze et al. 1981). The large AM precipitation over the water may be a result of nighttime developing and propagating MCSs from the land forced by enhanced land breezes and orographic effects. MCSs can also initiate over the water in the afternoon with the diurnal maximum of SST and continue to grow into the night, then maximize in the early morning (Chen and Houze 1997). The two factors together may explain the diurnal amplitude in precipitation near the coast of the MC that is 2-3 times larger than anywhere else in the tropics (Yang and Slingo 2001). The strong PM convection over land may be a result of combined large diurnal heating over land and onshore moisture convergence by sea breezes. Major international field campaigns will be conducted from 2017-2019, which is known as the Years of the Maritime Continent (YMC). Recent results on the diurnal cycle of rainfall over the MC and a collaborative effort among scientists from Taiwan and the US to collect observations in the region will be discussed at the workshop.