THE IMPACT OF SOIL AND SURFACE MOISTURE ON TROPICAL CYCLONE (TC) REINTENSIFICATION OVER LAND

Dr. Marshall Shepherd (University of Georgia), and Dr. Joe Santanello (NASA/GSFC)

Yoo, J., **J. A. Santanello, M. Shepherd**, S. Kumar, P. Lawston, and A. M. Thomas, (2020). **Quantification of the Land Surface and Brown Ocean Influence on Tropical Cyclone Intensification Over Land. Journal of Hydrometeorology**, JHM-D-19-0214.1. https://doi.org/10.1175/JHM-D-19-0214.1

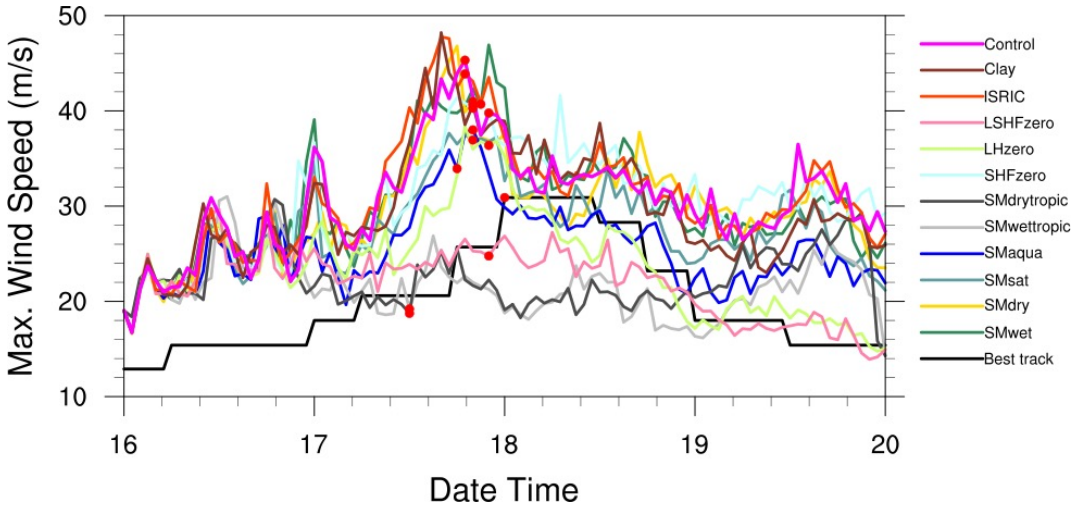

Figure 1: Time series of maximum wind speed during TC Kelvin landfall in 12 land/soil moisture perturbation experiments

Although land surface (e.g., soil moisture and texture) impacts on TC intensity likely operate in a continuum from largely to minimally influential (Fig.1), further in-depth analysis suggests that the intensification of TC Kelvin over land was more strongly related to atmospheric moisture advection (Fig.2) and the diurnal cycle of solar radiation (i.e., radiative cooling).

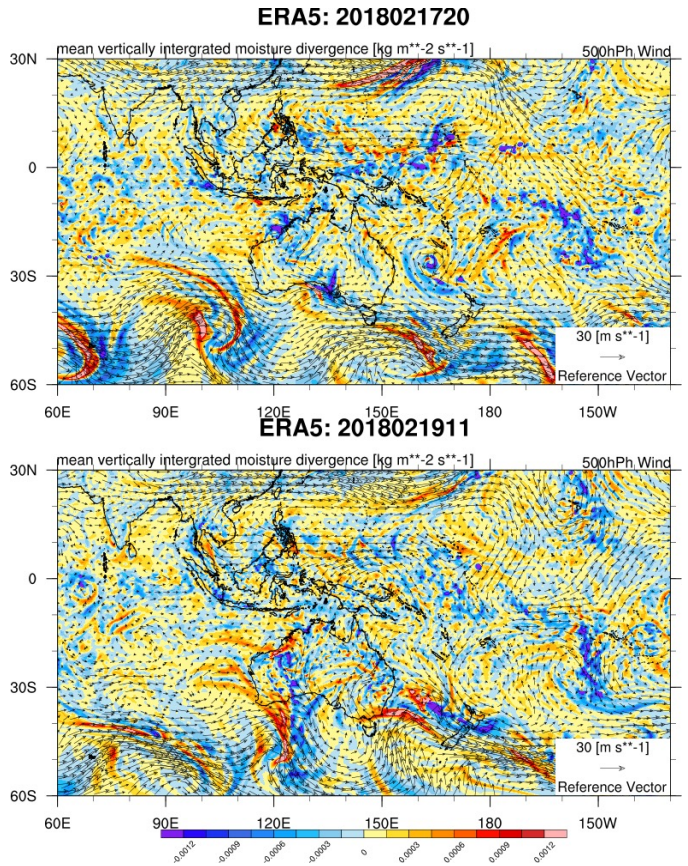

Figure 2: Atmospheric moisture advection during Kelvin depicted by vertically integrated moisture divergence with 500 hPa winds.

UNIVERSITY OF GEORGIA
NASA Goddard Space Flight Center