



## Analyzing Tropical Storm Pabuk (2019)

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Tropical cyclones (TCs) are of immediate concern due to their effect to society and due to uncertainties in their properties (formation mechanisms, path, frequency, strength) in the context of a changing climate. Last December 28, 2018, a tropical disturbance formed over South China Sea, taking up what was left from another tropical disturbance (tropical depression 35W) by December 30, 2018. It then intensified into tropical storm Pabuk by January 1, 2019 with a path heading for southern Thailand making it the first landfalling tropical storm since Linda in 1997.

In this work we use the Weather Research and Forecasting (WRF) model (version 3.7.1) to analyze the evolution of tropical storm Pabuk. Initial and boundary conditions were utilized from the NCEP GDAS/FNL 0.25 Degree Global Tropospheric Analyses and Forecast Grids dataset. We also used Kain-Fritsch cumulus parameterization scheme and spectral nudging in the simulations.

Results showed that initially, tropical storm Pabuk had difficulty intensifying due a high vertical wind shear environment. However, by January 3, 2019, as it entered the Gulf of Thailand, the vertical wind shear was weaker making the tropical storm more intense even trying to form an eye. It made landfall on January 4, 2019 over the province of Nakhon Si Thammarat, southern Thailand, where interactions with the topography weakened it into a tropical low. It exited the southern Thailand peninsula then re-curved towards Myanmar.

Analyzing individual tropical cyclones, such as tropical storm Pabuk, allows us to enhance our knowledge of tropical cyclone formation and intensification. It also gives us a chance to add-on to our database of tropical cyclone characteristics and behavior that can be used in forecasting future storms.