Investigating large precipitation systems with GPM

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Estimating the causal effect of climate change variables on the spatial extent of precipitation events

Generating the GPM large systems dataset

Time period: 2014 - 2020
GPM precipitation features greater than 2500 km^2

(http://atmos.tamucc.edu/)

Exploring the data and relationship between variables

CAPE, TP, maximum height, size (number of pixels), volume of rain
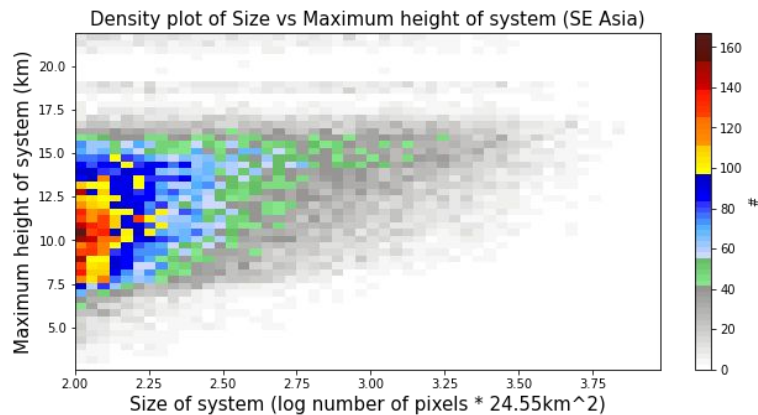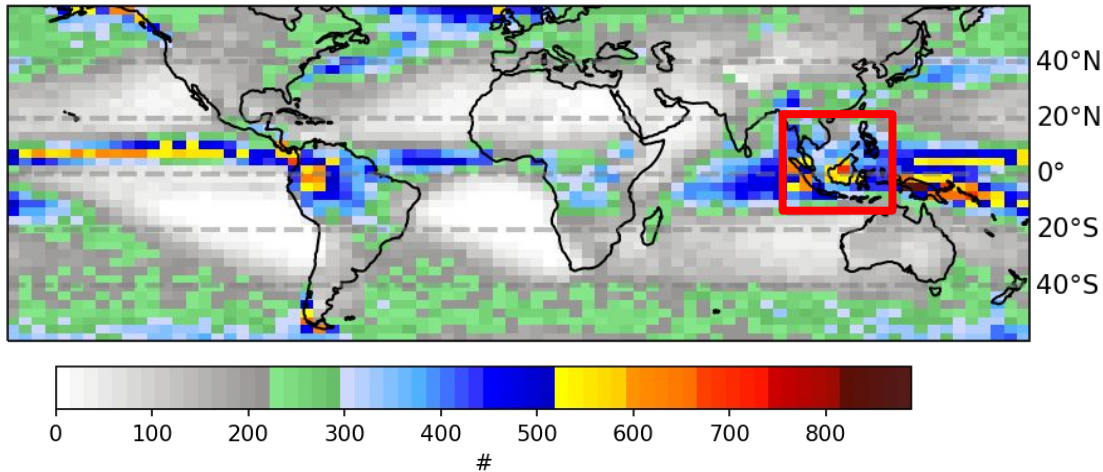
Tropics vs extra-tropics
Land vs Ocean

Selecting relevant variables + additional variables from ERA5

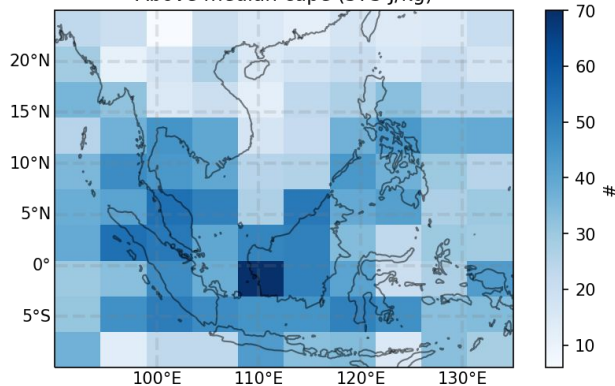**Building AI models to relate larger systems to large scale thermodynamic variables**

Applying AI models to climate model simulation results (e.g CMIP6)
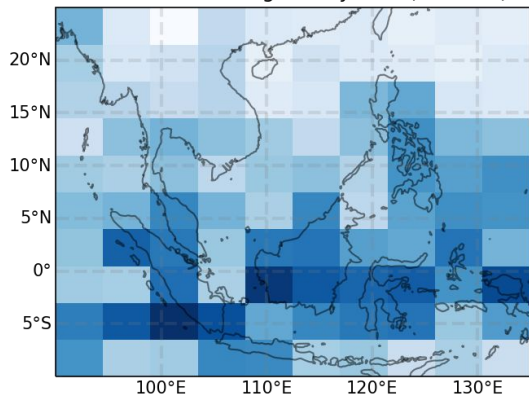
Projecting into future warming scenarios

Population of large precipitation systems from GPM 2014-2021