**Input**

**Weather Patterns**
Daily time series of weather patterns. Weights of the weather patterns are shown in figures S1, S2.

**Sea surface temperatures**
Daily time series of SSTs averaged over the main development region (10°N-20°N 90°W-20°W), see figure S6.

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**Emulator Components**

**Storm formations**
Probability of:
- Weather
- Weather on the two days before

**Storm Duration**
Probability distribution function depending on:
- Weather

**Storm intensities**
Probability distribution function depending on:
- Weather
- SST in the MDR
- Intensity on the day before

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**Emulator**
for each day in season:
if new storm emerges:
estimate storm duration
for each active storm:
estimate max. wind speed

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**Output**
A list of storms with daily storm intensities for each day and each storm.