CALIFORNIA DEPARTMENT OF WATER RESOURCES

Tropical Systems, West Coast and Climate Change

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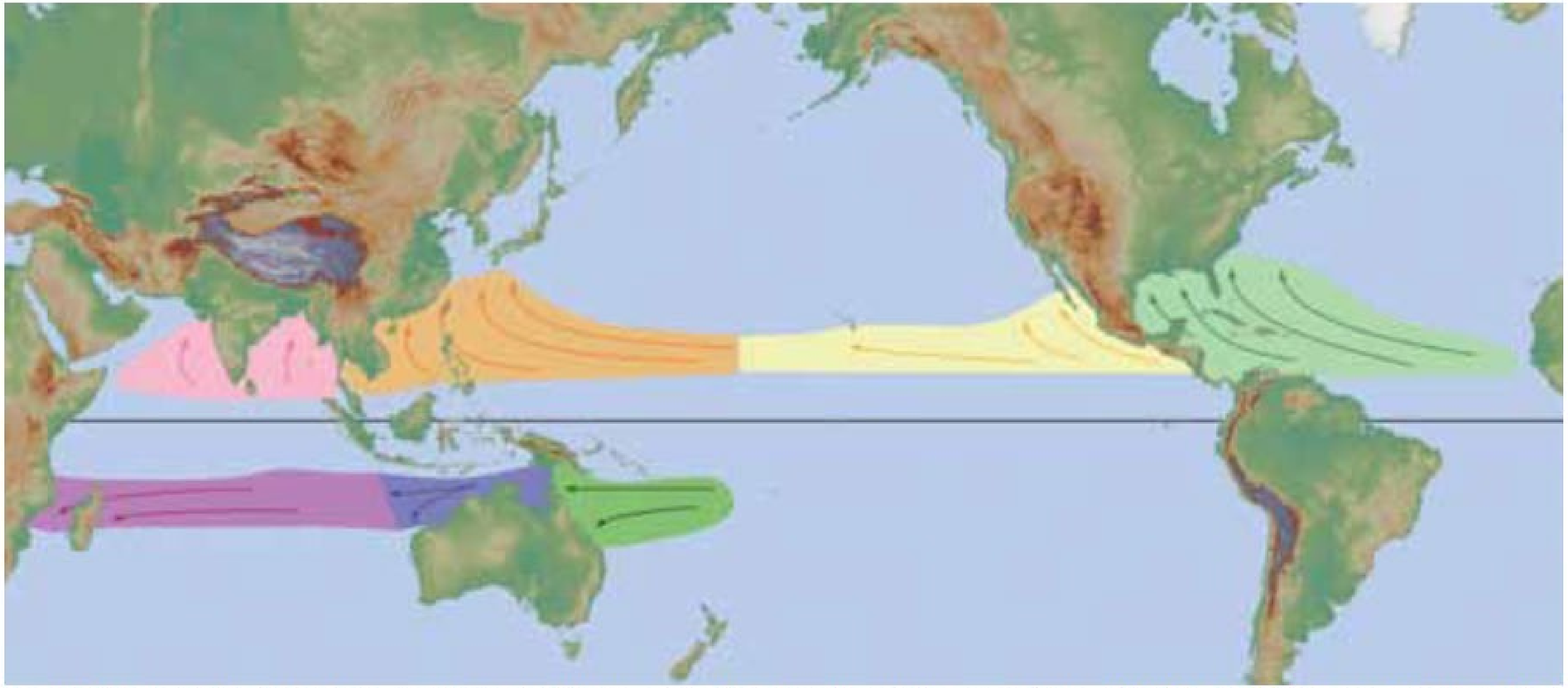
Tropical Systems Origins and Tracks



Tropical Cyclone formation regions with mean tracks (courtesy of the NWS JetStream Online School)

NWS JetStream Online School: JetStream | National Oceanic and Atmospheric Administration (noaa.gov)

Climatology of East Pacific Hurricanes

- Average 15 named storms per year
- About half (8) become hurricanes
- About half of those (4) become major hurricanes
- Season from mid-May to the end of November
- First named storm usually in June; first major hurricane mid-July

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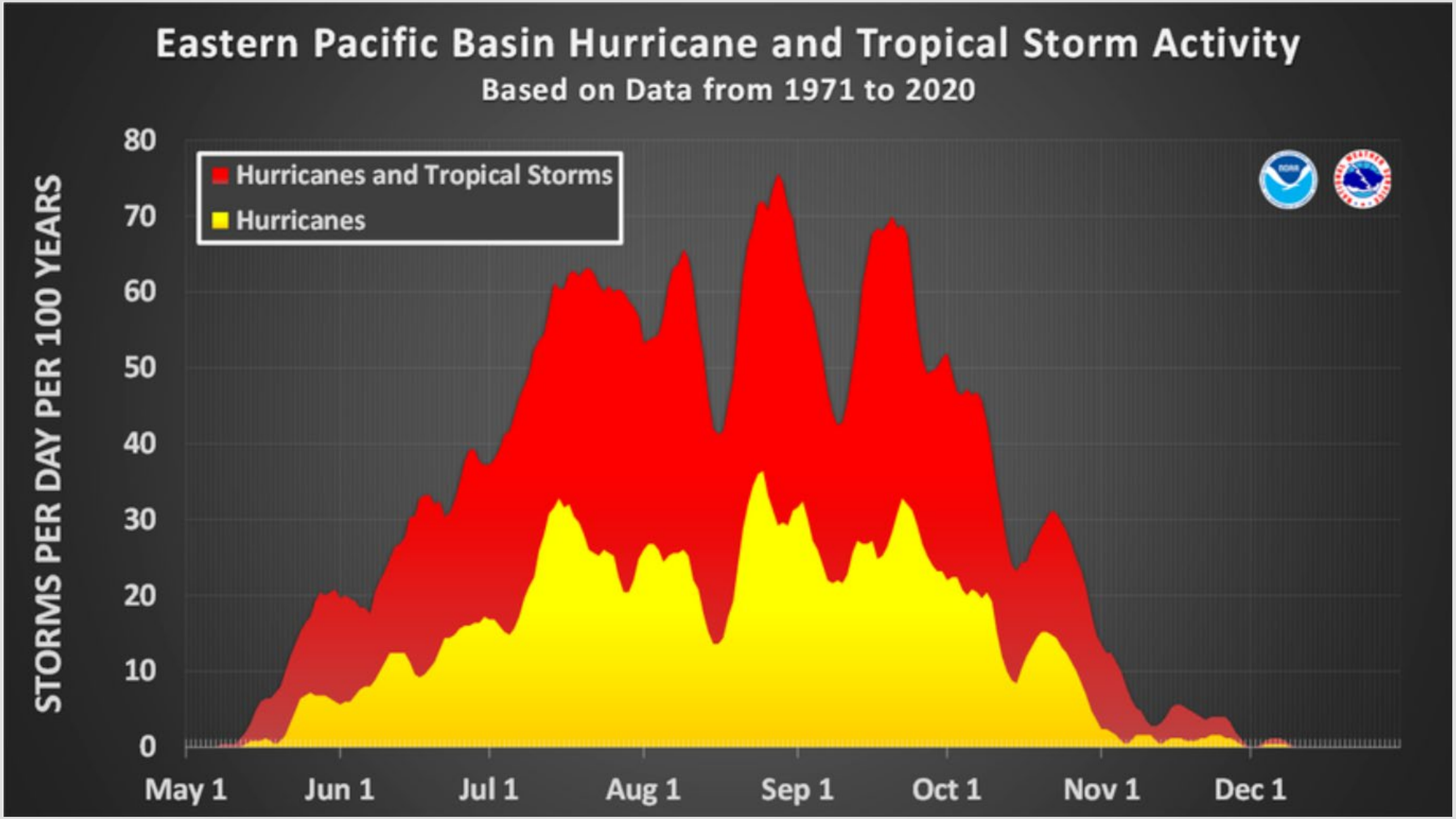
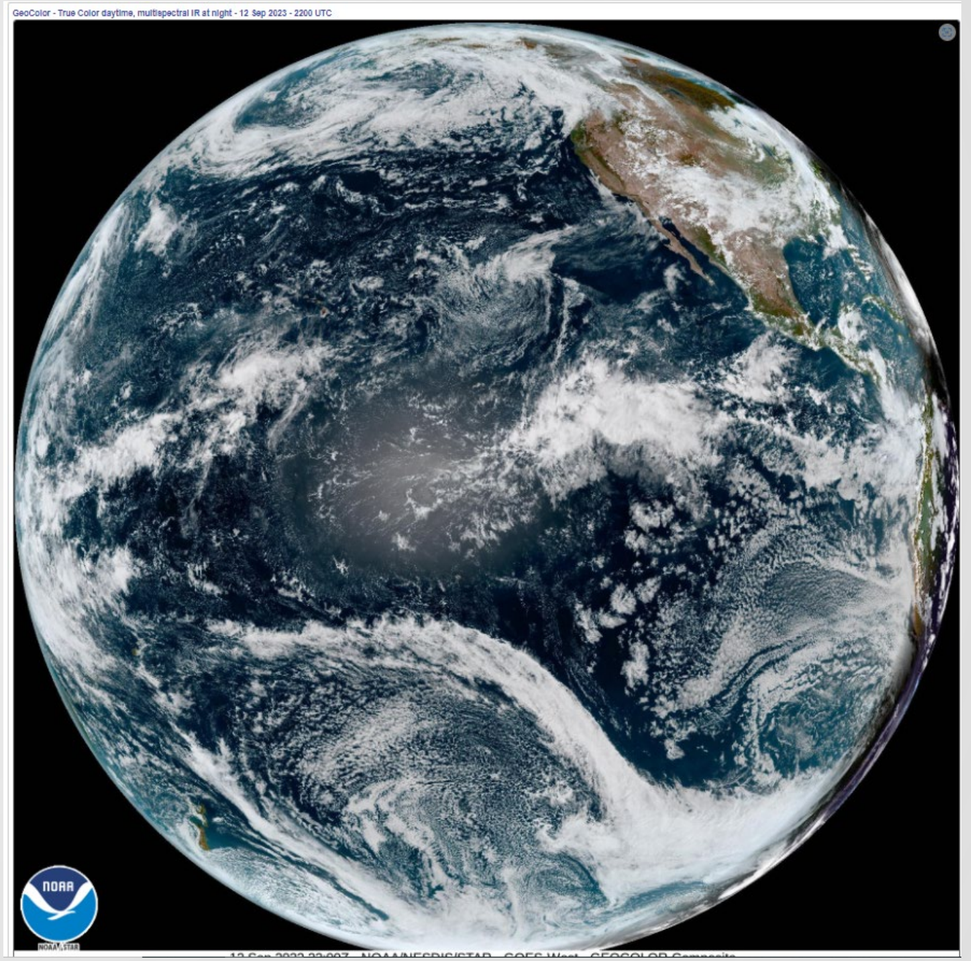
Source: NOAA National Hurricane Center

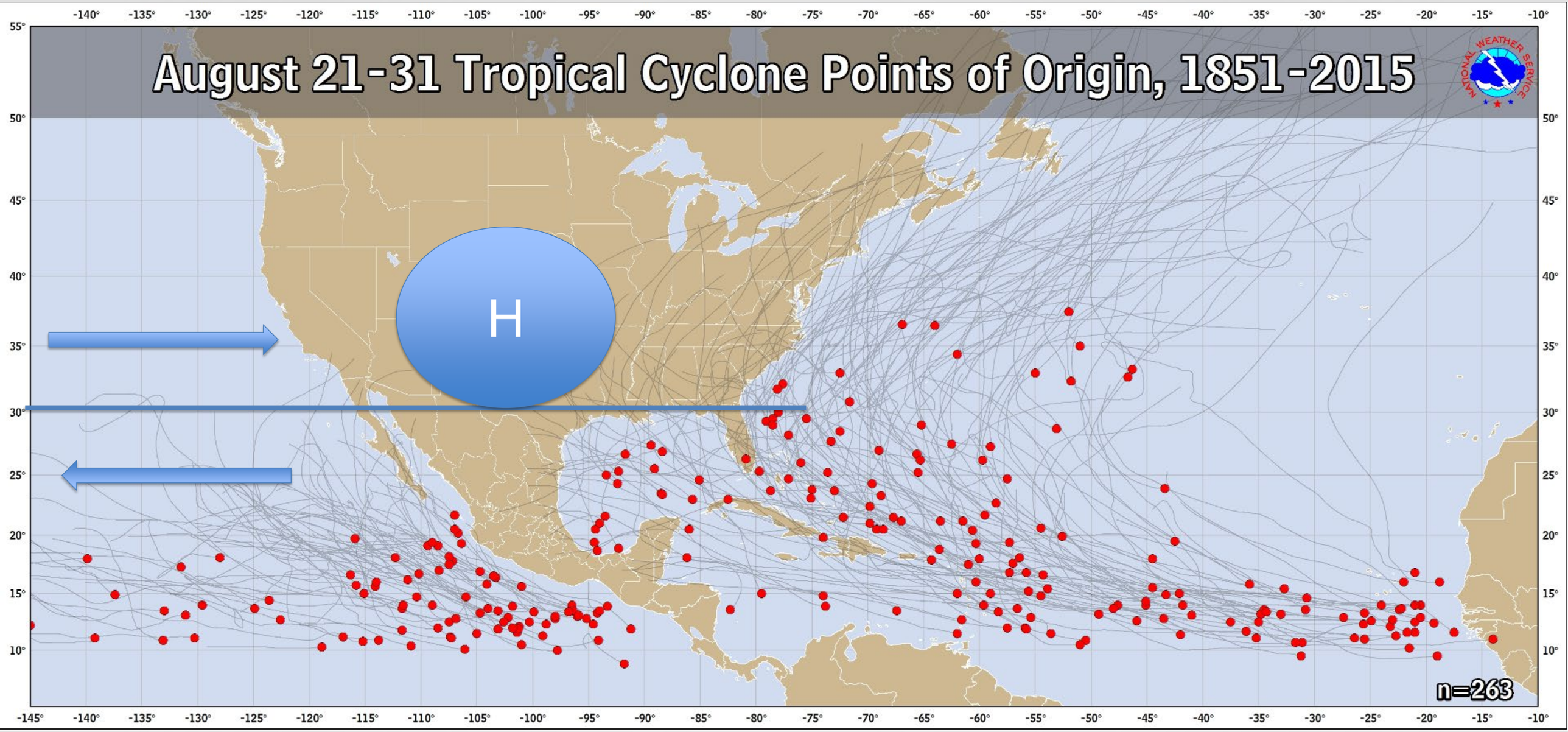


Source: NOAA National Hurricane Center

Drivers of Tropical System Evolution

- Ocean
  - Sea Surface Temperature
  - Ocean Heat Content
- Atmosphere
  - Tropical Waves
  - Steering Winds
  - Atmospheric Moisture




August 21-31 Tropical Cyclone Points of Origin, 1851-2015
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Building the Water Year

- Fall (October/November)
  - Precipitation Onset
  - Temperature Anomaly
  - Soil Moisture State with Snowpack Initiation
- Winter (December/January/February)
  - Wet/Dry
  - Notable Anomalies
- Spring (March/April/May)
  - Late-Season Bailout or Early Shutoff?
  - Peak Snowpack Timing and Magnitude
- Summer (June/July/August/September)
  - Drying Pace and Scale
  - Heat Events
  - Tropical Activity
- Multi-Year Prediction – What about next year?

Climate Change: How much different will the next decade be?