Tropical Cyclones Around the World
Hurricane Recipe

NO HURRICANES CAN FORM (too close too the equator)

HURRICANES CAN FORM

HURRICANES CAN FORM
Hurricane recipe
What does a forecaster look at?
Into the Storm

- ~20 miles
- ~300-400 miles

Eye
Eyewall
Rainbands
### Categories

<table>
<thead>
<tr>
<th>Wind Speeds</th>
<th>Tropical Depression</th>
<th>Tropical Storm</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤38mph</td>
<td></td>
<td>39-73mph</td>
<td>One</td>
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<tr>
<td></td>
<td></td>
<td>74-95mph</td>
<td>Two</td>
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<td></td>
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<td>96-110mph</td>
<td>Three</td>
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<td>111-129mph</td>
<td>Four</td>
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<td>130-156mph</td>
<td>Five</td>
</tr>
<tr>
<td></td>
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<td>≥157mph</td>
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**Based only on sustained wind speeds in the eyewall**

Even weak hurricanes and tropical storms can be very destructive
However, Hurricane Andrew was a small storm but was devastating for Miami-Dade.
HURRICANE IRMA

Irma was a very large storm (the size of Texas before FL landfall), having impacts over the entire state.
The Atlantic Hurricane Season

Atlantic Tropical Cyclone Climatology (1851-2015)

Daily Average Number of Active Storms

- Tropical Storms
- Hurricanes
- Major Hurricanes

Graph showing the number of active storms from June 1 to November 30.
The forecast cone

“Forecast cone” contains the probable path of the storm center

Important notes:

A) The cone is 2/3 probability of the center falling in that region

B) The same sized cone is used for the whole season – uncertainty can vary from storm to storm

C) THIS IS NOT AN IMPACTS CONE – impacts extend far beyond the boundary of the cone
Making the cone

Error in track at 1 day out is 50 miles
Error increases with increasing length of time of forecast
Better forecasts (averaged over 5 years) = smaller error = a smaller cone!

Cone: 66% likelihood that the CENTER of the hurricane will fall in that region
Hurricane Hazards

- Storm Surge
- Wind
- Rain
- Tornadoes
- Waves/Rip Currents
Wind, Rain, and Waves
Tornadoes

• ~70% of landfalling hurricanes cause at least 1 tornado
• Most often occur in rainbands well away from the storm center
Storm surge

What is storm surge?

FACT:

• The #1 cause of deaths in hurricanes (49%)
Storm Surge

Brickell during Hurricane Irma (2017)
Hurricane Andrew (1992)
SLOSH Storm Surge Prediction Model
Sea Level Rise Scenarios
Baseline SLOSH Simulation
Sea Level Rise Scenario +1
Sea Level Rise Scenario +2
Sea Level Rise Scenario +3
Be prepared!

- Get bottled water
- Canned food
- Medicine
- First-aid kit
- Charged cell phone
- Flashlight
- Radio and extra batteries
- Fill bathtub with water
- Evacuate when told
How you can help!

- Reduce, reuse, recycle
- Reusable water bottles
- Bring reusable bags to the store
- Turn off the water while you brush your teeth
- Turn off the lights
- Don’t litter