

# Hurricane Basics and Preparedness

A photograph of a hurricane scene. In the foreground, the roof of a building is visible. In the middle ground, several palm trees are being blown by strong winds, their fronds horizontal. In the background, two tall streetlights are illuminated, their light glowing through the thick, grey fog or rain. The overall atmosphere is dark and stormy.

**Jim Weyman**

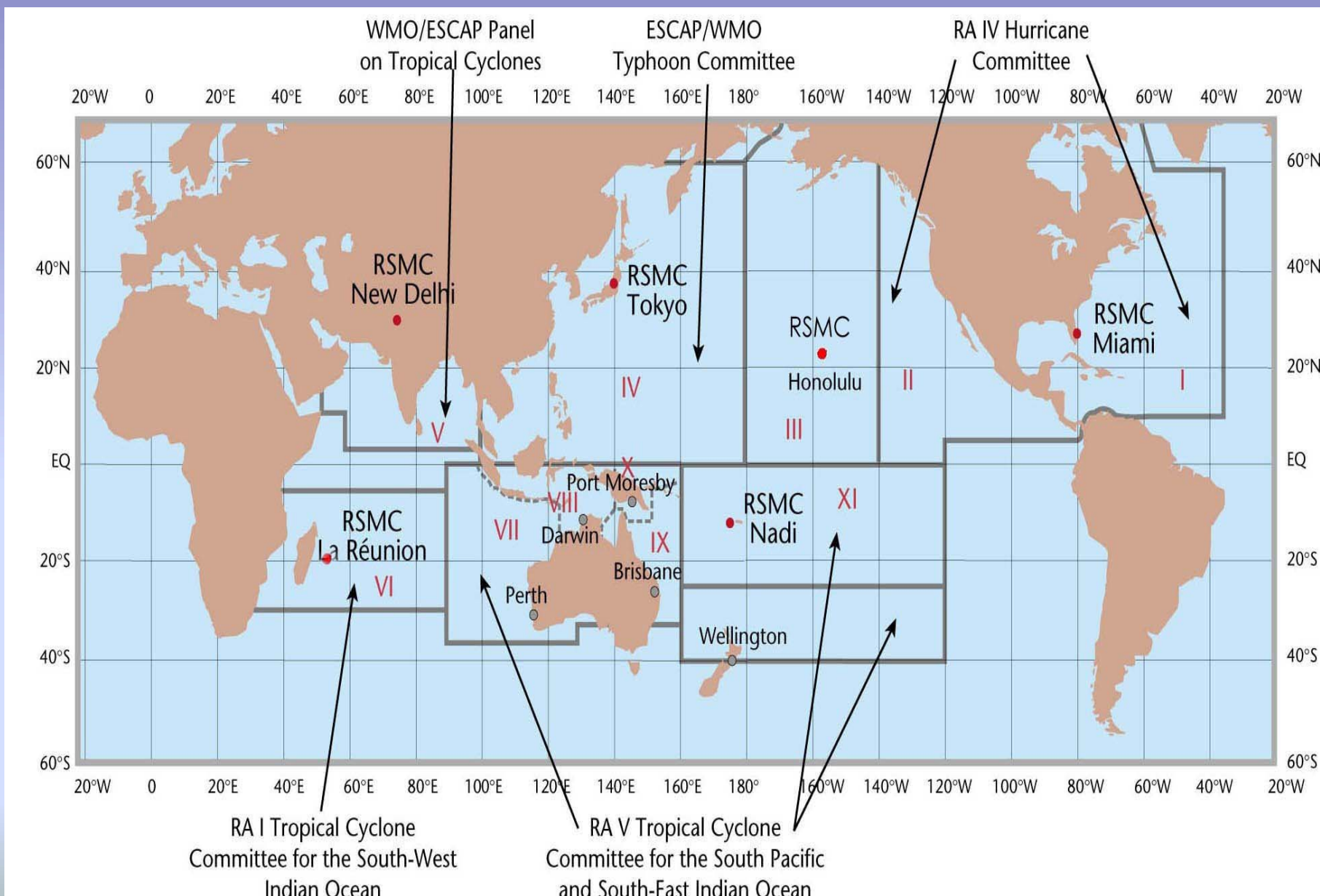
**Director, Central Pacific Hurricane Center**

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# United States Hurricane/Typhoon Centers

- National Hurricane Center, Miami Florida
- Central Pacific Hurricane Center Honolulu
- Joint Typhoon Warning Center (Military)







## National Weather Service Forecast Office

# Honolulu, HI

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"City, St" or Zip Code

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NOAA > NWS > WFO Honolulu

### Top News of the Day

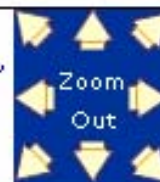
- 2005 Tropical Season Summary now available!
- Two Aviation Users Training Seminars to be held on the Big Island the first week of April.

[weather.gov/hawaii](http://weather.gov/hawaii)

Click on the map below for the latest forecast.



Read watches,  
warnings &  
advisories.



Flash Flood Watch

Short Term  
Forecast



Last map update: Fri, Mar. 17, 2006 at 4:23:25 pm HST

The UVI for noon, Mar 18 in Honolulu is 9. This a very high exposure level.

Enter latitude/longitude pair in decimal degrees (i.e. 21.28 -157.83)

Latitude Longitude



National Weather Service

# Central Pacific Hurricane Center

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### Top News of the Day

- [May 21-27 is Hurricane Awareness Week.](#)
- [2005 Tropical Season Summary](#)

*Press refresh or reload for the latest information.*

This page was last loaded at 942 am HST May 11, 2006 (1942Z May 11, 2006)

### Central Pacific (140W to 180)

The Central Pacific Hurricane season runs from June 1 to November 30.

[Satellite Interpretation Message](#)

[Area Forecast Discussion](#)

### Western Pacific (West of 180)

**Monitored by the:**

[Joint Typhoon Warning Center](#)

[Japan Meteorological Agency](#)

### Eastern Pacific (East of 140W) [XML](#)

The Eastern Pacific Hurricane season runs from May 15 to November 30.

**Monitored by the [NHC](#)**

### Atlantic [XML](#)

The Atlantic Hurricane season runs from June 1 to November 30.

**Monitored by the [NHC](#)**

[weather.gov/cphc](http://weather.gov/cphc)

# Terminology

- **Tropical Cyclone:** Generic term for an organized system of clouds and thunderstorms with a defined circulation. Includes Tropical Depressions, Tropical Storms, and Hurricanes.
- **Tropical Depression:** Winds of 38 mph (33 knots) or less. A Tropical Depression is assigned an identification number and code letter to indicate the basin (e.g. “TD-01C” for TD-01 in the Central Pacific).

# Terminology

- **Tropical Storm:** Winds of 39 to 73 mph (34 to 63 knots). A Tropical Storm is assigned a name from a basin-specific list.
- **Hurricane:** An intense weather system with a well defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. In the western Pacific, hurricanes are called typhoons, and similar storms in the Indian Ocean are called cyclones.

# Saffir-Simpson Hurricane Scale

- Category 1 74-95 mph
- Category 2 96-110 mph
- Category 3 111-130 mph
- Category 4 131-155 mph
- Category 5 > 155 mph



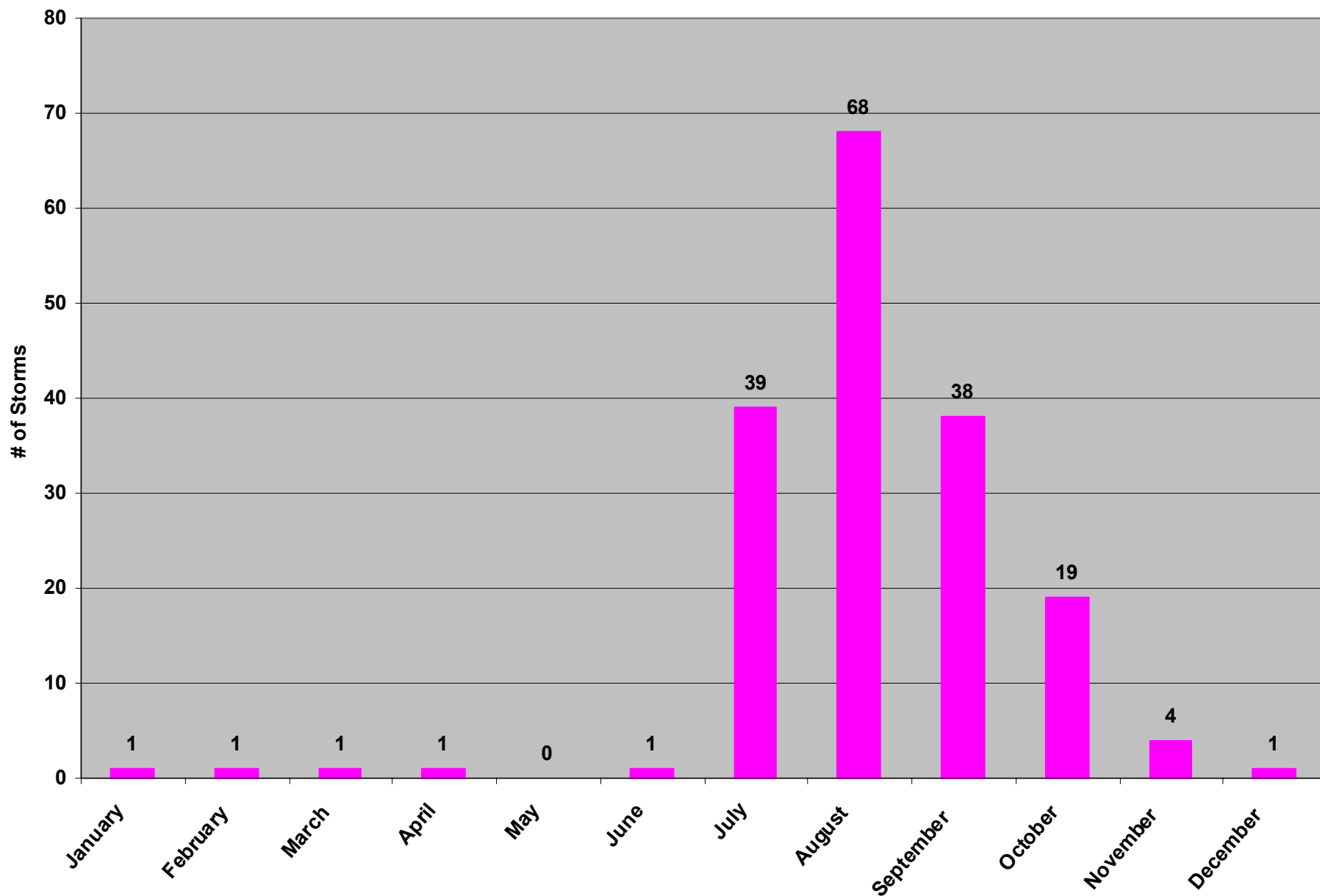
# Tropical Cyclone Season

- Season: June 1 to November 30
- Central Pacific Average/Year:
  - 1.4 Hurricanes
  - 1.6 Tropical Storms
  - 1.4 Tropical Depressions
  - 4.4 Tropical Cyclones

# Watches and Warnings

- Hurricane/Tropical Storm Watch:  
Hurricane/Tropical Storm conditions are possible within 36 hours
- Hurricane/Tropical Storm Warning:  
Hurricane/Tropical Storm condition are expected within 24 hours

## Central Pacific Tropical Cyclones 1971 - 2005



# Can the Next BIG One Hit Hawai'i

## YES!!

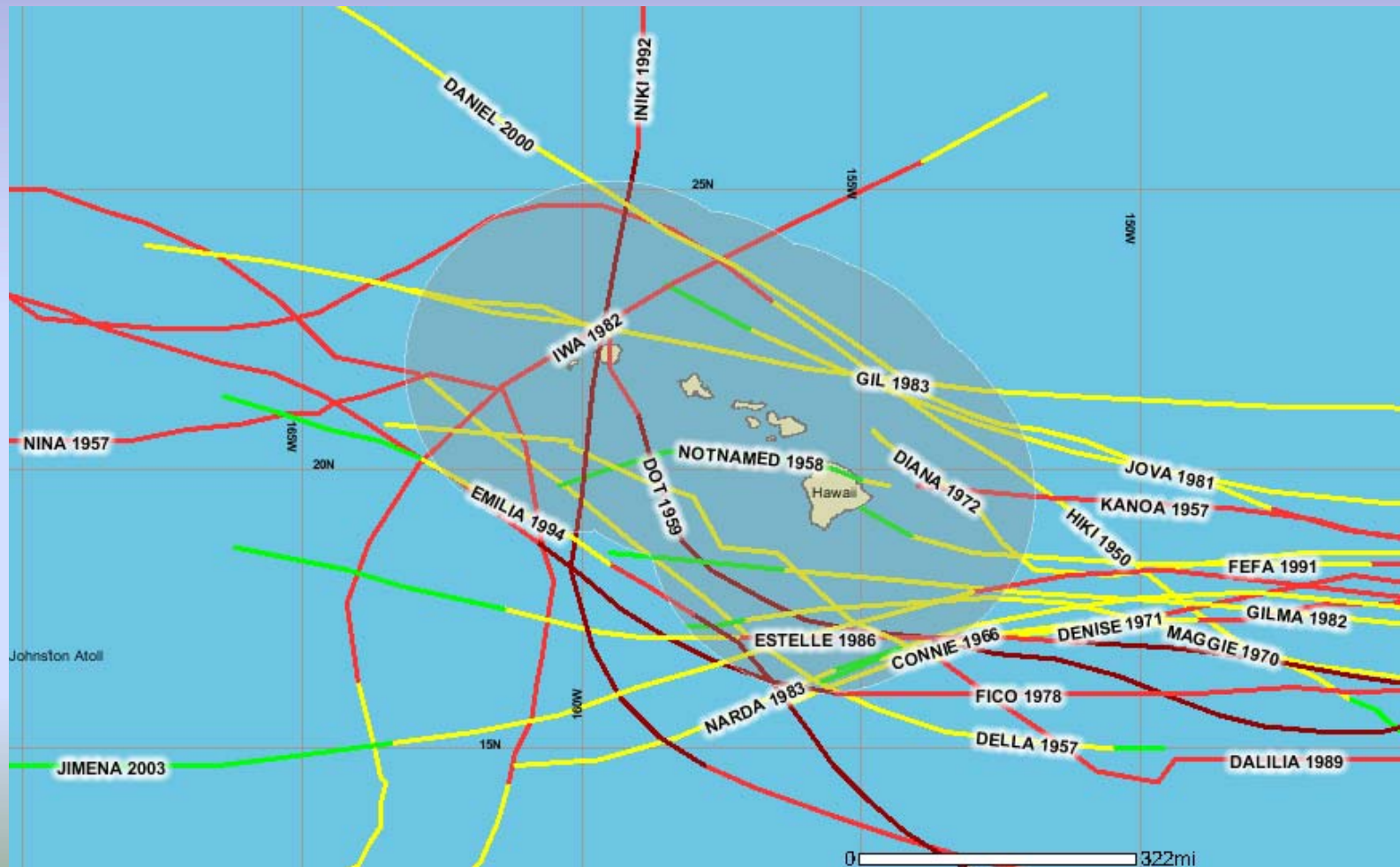
- Kohala Cyclone      August 1871
  - Estimated Category 3
- Nina      November 29 – December 7, 1957
  - Category 2
- Dot      August 1 – 8, 1959
  - Category 3
- Iwa      November 19 – 24, 1982
  - Minimum Category 2
- Iniki      September 6 – 13, 1992
  - Category 3



# **Can the Next BIG One Hit Hawai'i YES!!**

- Misconception: No Category 5s could exist in Central Pacific – 3 occurred in 1994
- Misconception: The Big Island is Protected by Mountains – Category 3 in August 1871
- ALL Islands at Equal Risk

# Tropical Cyclones within 175 nm of Hawaii 1950-2005





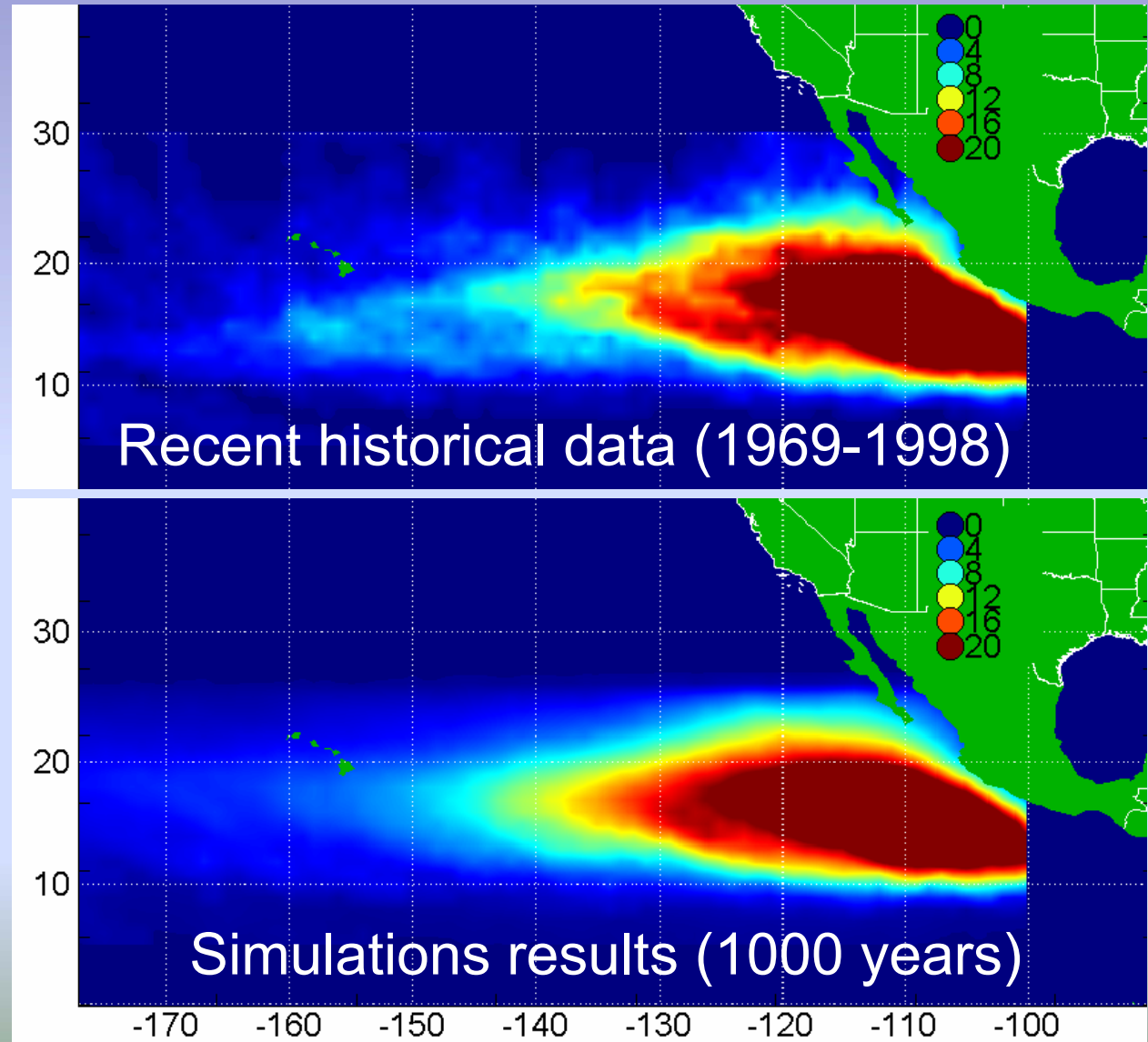
Probabilities (Based Upon Limited Data): Contours show number of times in 10 years a tropical storm (winds greater than 38 mph) or hurricane passes within 85 Miles of a site

### Central Pacific Historical Tendency

1. Many storms go south of Hawaii
2. Some move in from east and go northwest
3. Some form in Central Pacific
4. Some make a sharp turn north while retaining stronger intensity

### Monte Carlo Simulations

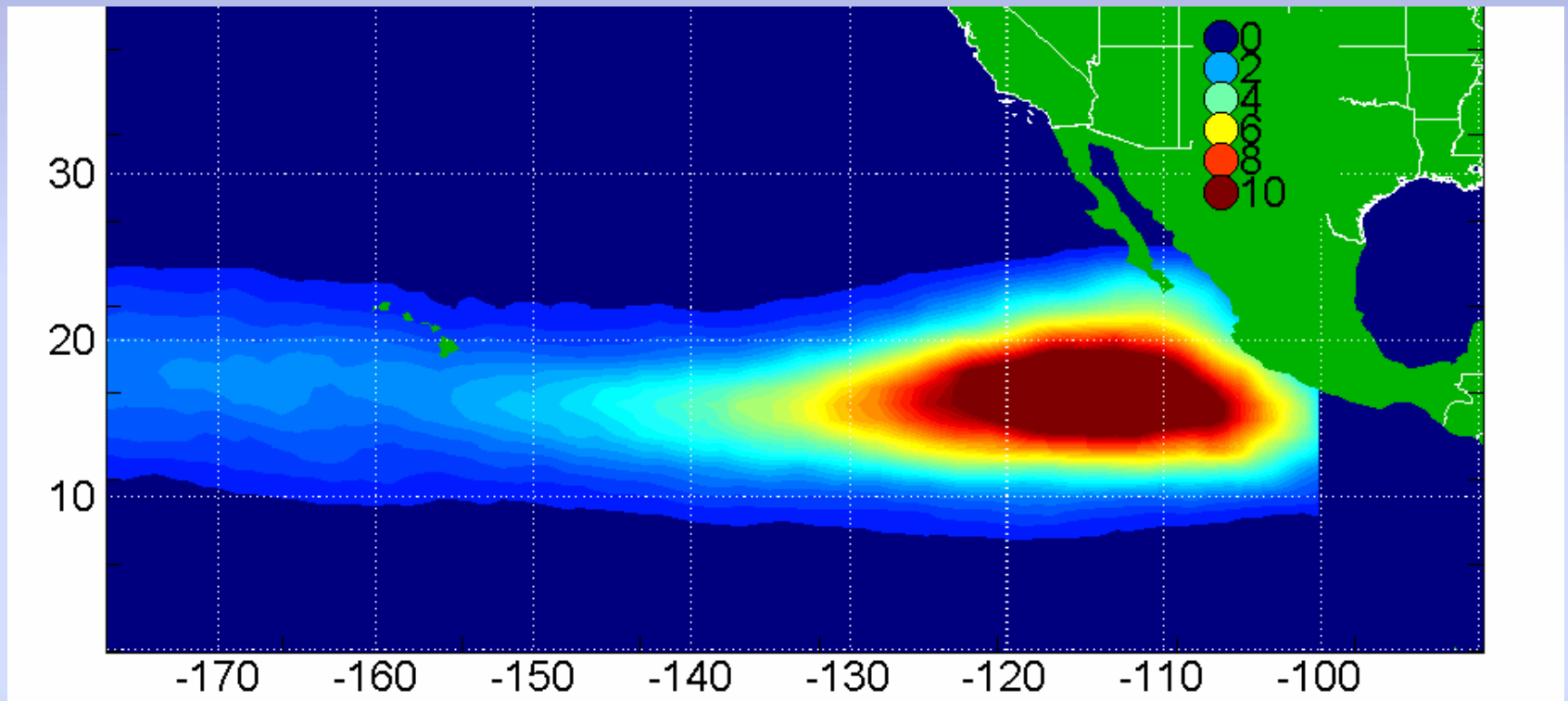
1. Randomly chosen storm origins (year, month, initial direction) per historical tendency
2. Simulations then track each storm across the Pacific using different variables





# Hurricane Frequencies Based on 1000 Years of Simulations for the East and Central Pacific Region (But based upon a limited data)

Contours show number of times a hurricane (Winds greater than 73 mph) passes within 85 Miles per 10 years.





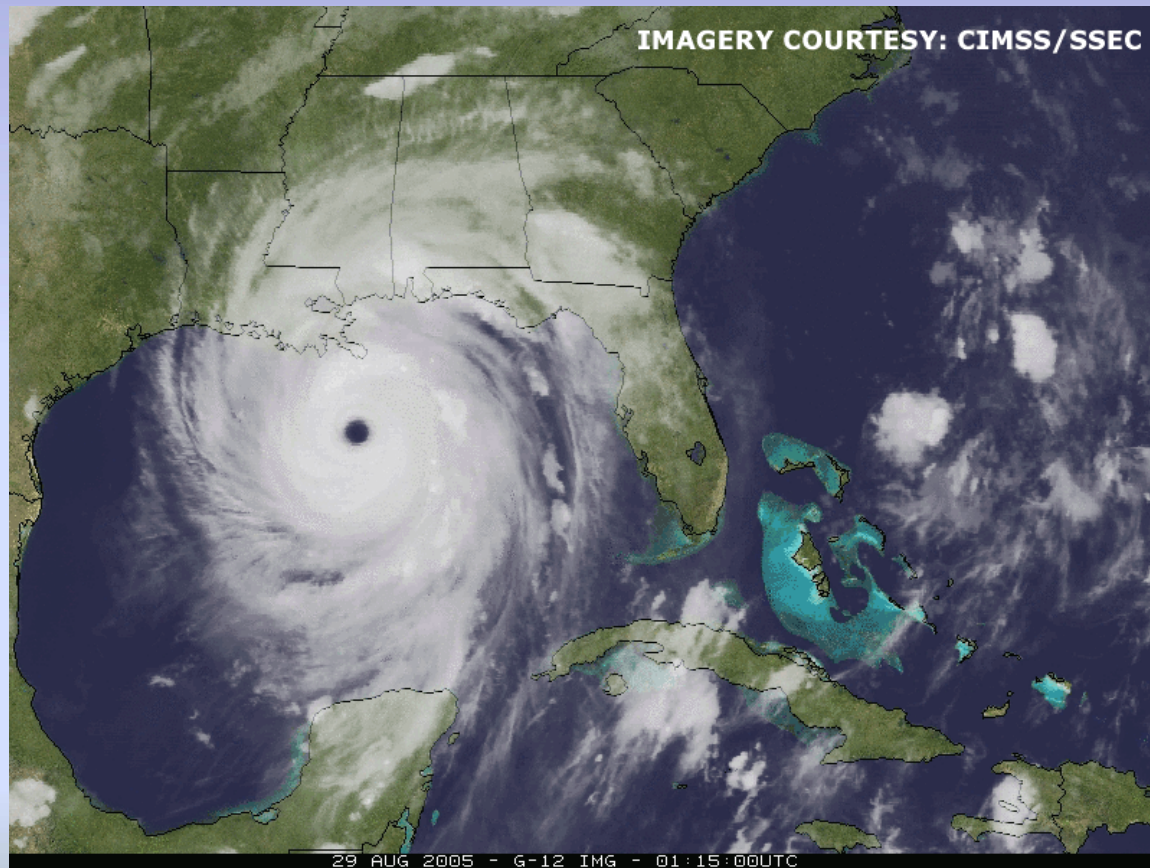
# Hurricane Annual Odds of Occurrence by Saffir Simpson Category

Hurricane Category	Sustained Wind	3 –sec. Peak Gust	Anywhere in Hawaii	Any one County**
1	74 to 94 mph	82 to 108	1 in 25	1 in 60-120
2	94 to 110 mph	108 to 130	1 in 50	1 in 135-335
3 or 4	110 to 155 mph	130 to 191	1 in 75	1 in 200-500
Any Hurricane	Greater than 74 mph	Greater than 82	1 in 15	1 in 35-75

**\*\* All Counties Are at Equal Risk Over an Extended Time Period**

[www.martinchock.com](http://www.martinchock.com)

# Imagine Oahu is New Orleans



# Hurricane Threat

## Triple Threat

- Storm Surge and High Surf – Can Occur from Close and Distant Hurricanes
- High Winds – In past 40 mph winds toppled telephone poles and ripped off roofs
  - Enhanced by Terrain
- Heavy Rains – Can Occur from Weak Depressions and Hurricanes
  - Flash flooding also terrain enhanced

# Storm Surge and High Surf





# Downtown Honolulu??



# Government Preparations

- Federal (including Military), State, and County Government Agencies Have Plans and Exercise Them Yearly at All Levels
- Hurricane Makani Pahili Exercise
- Executive Level Exercises
- Coordination Calls
- Hurricane Daniel – 2000 and 2006

# Are You Prepared??

- Misconception: As soon as a hurricane passes – Government comes to rescue
- Most likely will be on your own for 5 to 7 Days
- Are you prepared for this CRITICAL 5-7 Days

# Plans – Family, Individual and Businesses

- Every individual/family needs a plan
- Every business needs a plan
- If your employees don't have individual/family plans -- your business plan will fail



# Family Disaster Plan

- Gather information about hazards
- Meet with your family to create a plan
  - Evacuate? Stay with friends/relatives? Go to a shelter?
  - Know if you are in a high risk or evacuation zone
  - Know where nearest shelters are
  - Know where to put your boat
- American Red Cross Website

<http://www.redcross.org/services/disaster>

# Well Before the Storm

- Practice and update/maintain your plan
- Put together a survival kit
  - Water, batteries, canned food, flashlight, radio, first aid kit
- Take Steps to Mitigate Damage to Your House (Roof, Windows, Other Openings)
- Trim back dead trees and limbs

# Outlook

- It's Coming!
- Are You Ready??
- Are You Going to be A Victim or Survivor??
- Action Needed - NOW