

Hurricane Ike

Lessons Learned

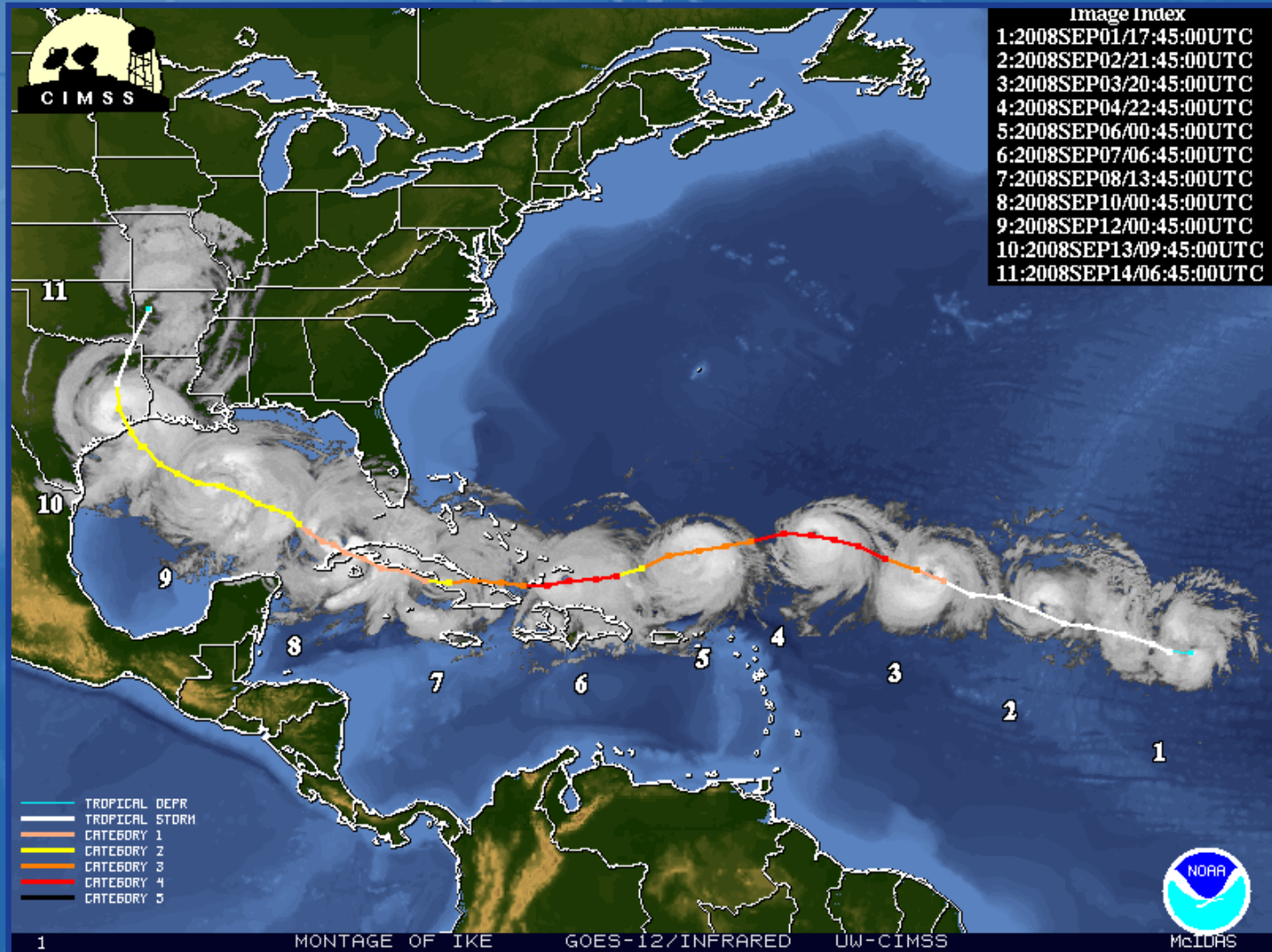
Jeff Lindner
Meteorologist
Harris County Flood Control District

December 11, 2008



www.hcfd.org

Montage of Ike



Hurricane Precursor to December Snow ?

2008

**Hurricane Ike --- category 2 at Galveston
Snowfall: 1-3" on December 10th**

1989

**Hurricane Jerry and Chantal --- category 1 at Galveston
Snowfall: 1.7" at IAH on December 22**

1983

**Hurricane Alicia --- category 3 at Galveston
Snow and Ice December 22-26**

1961

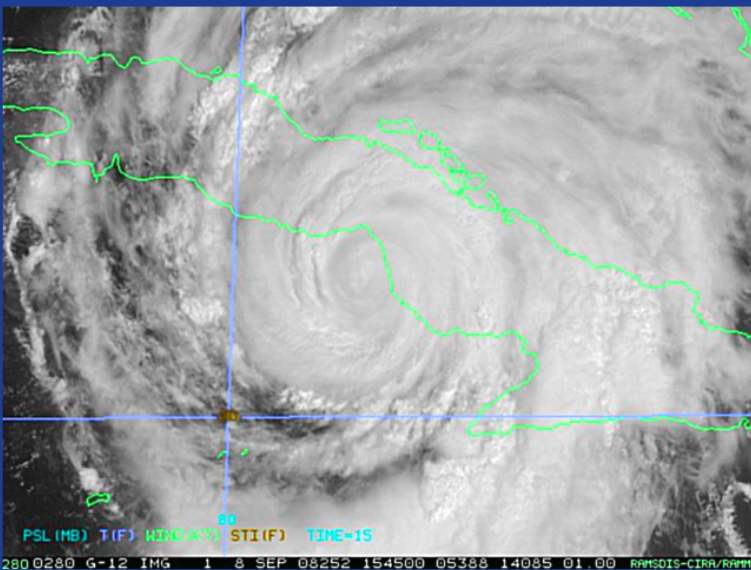
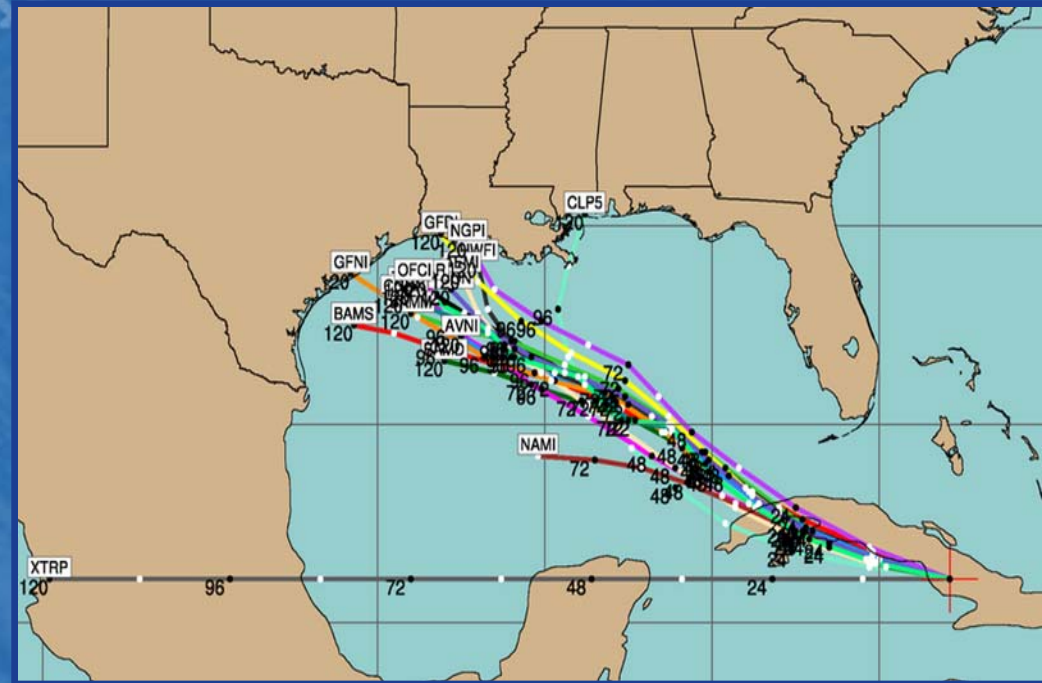
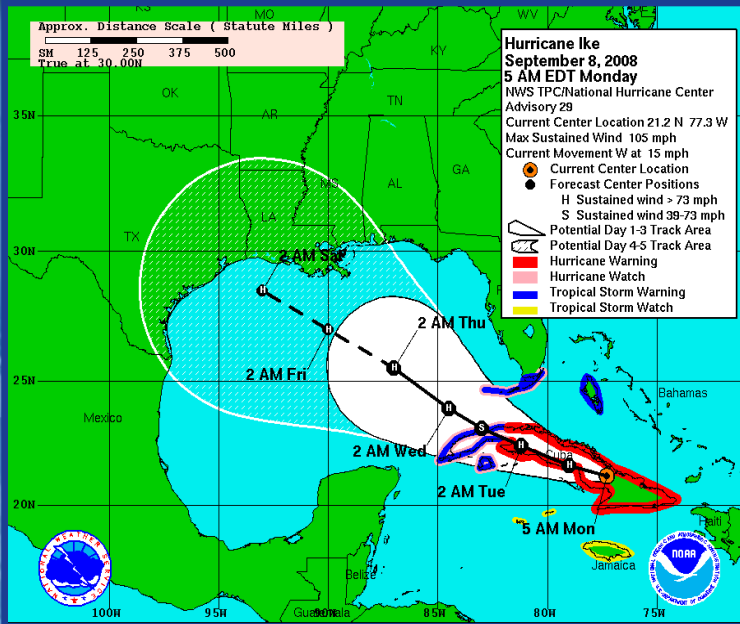
**Hurricane Carla --- category 4 at Port O Connor
Snowfall: Trace on December 13**

1929

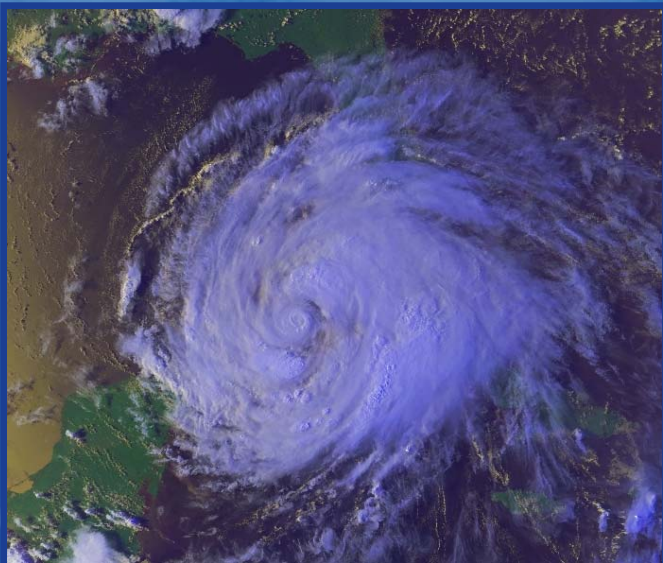
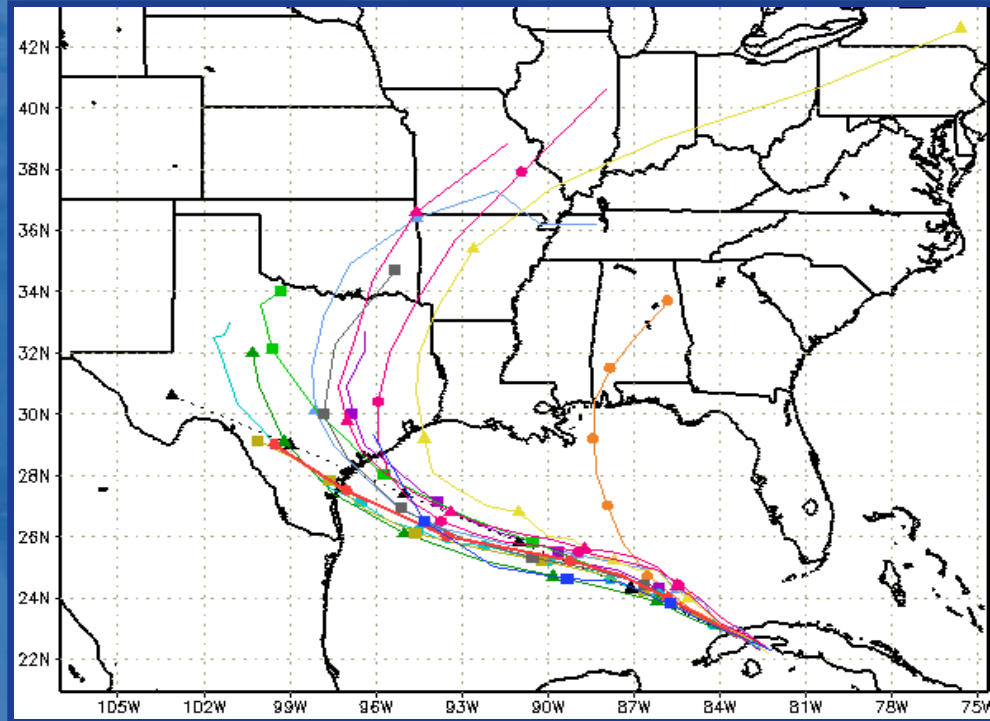
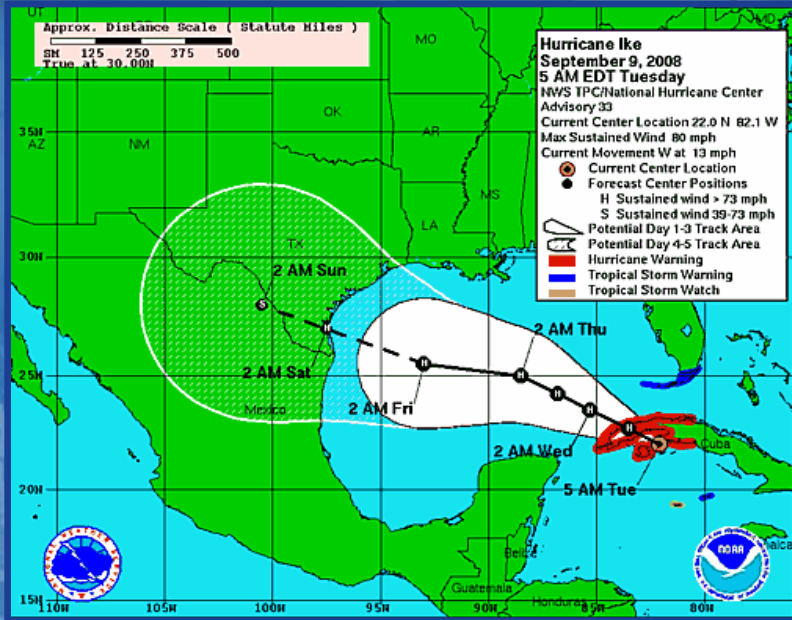
**Hurricane --- category 1 at Port O Connor
Snowfall: 2.5" on December 21-22**



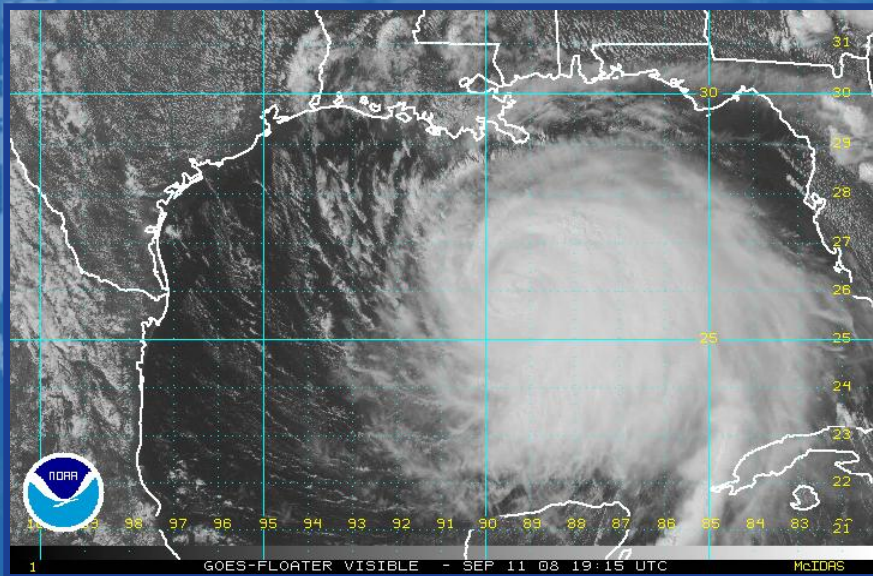
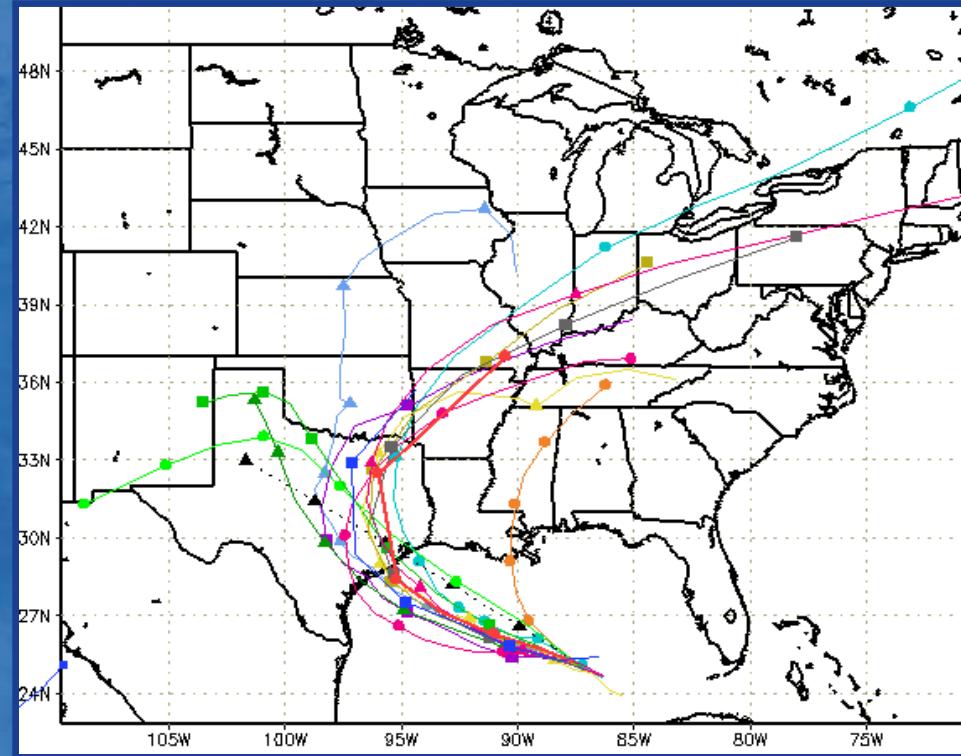
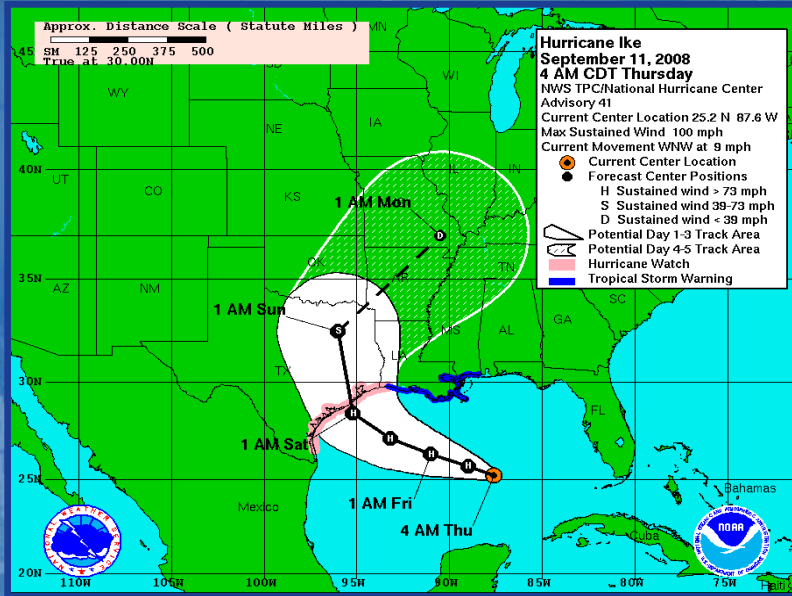
Monday 9/08/08 4:00 am



Tuesday 9/09/08 4:00 am



Thursday 9/11/08 4:00 am

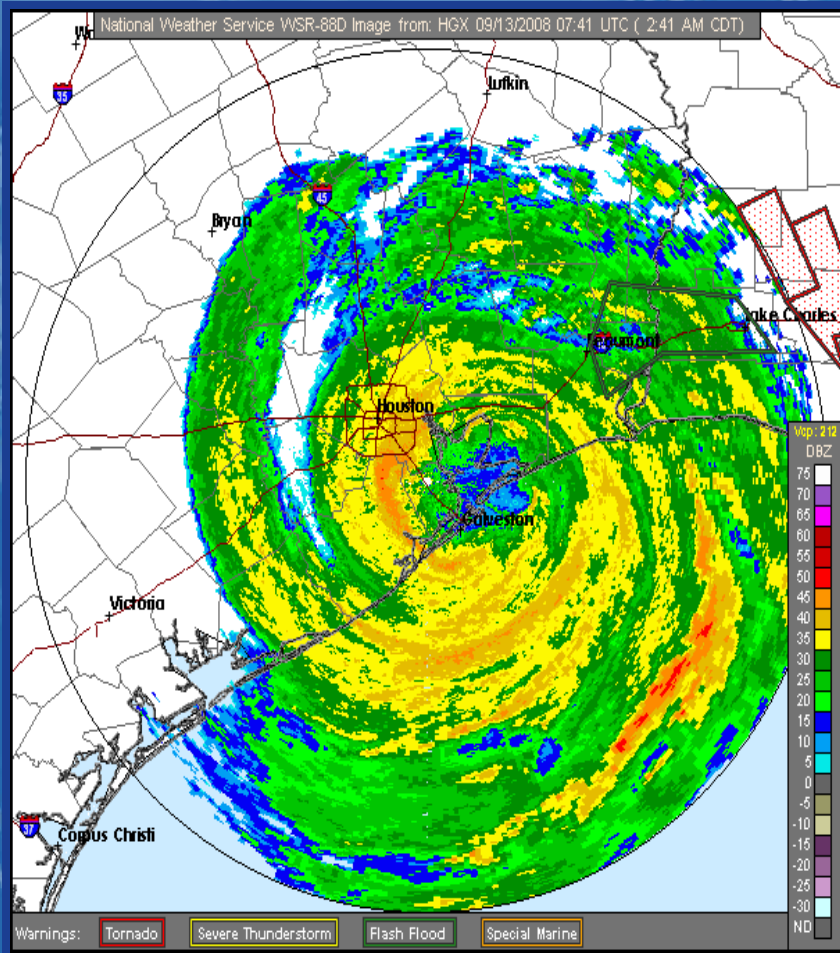


Friday Morning - Storm Surge Onsets

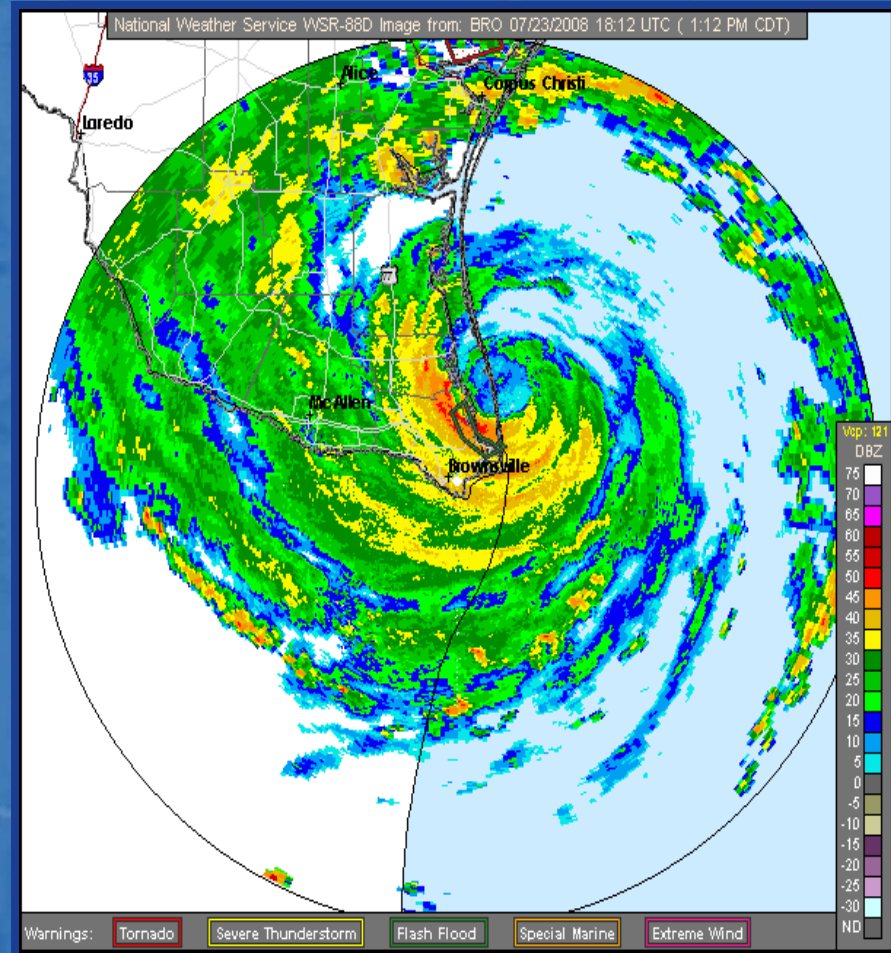


Hurricane Ike vs. Hurricane Dolly

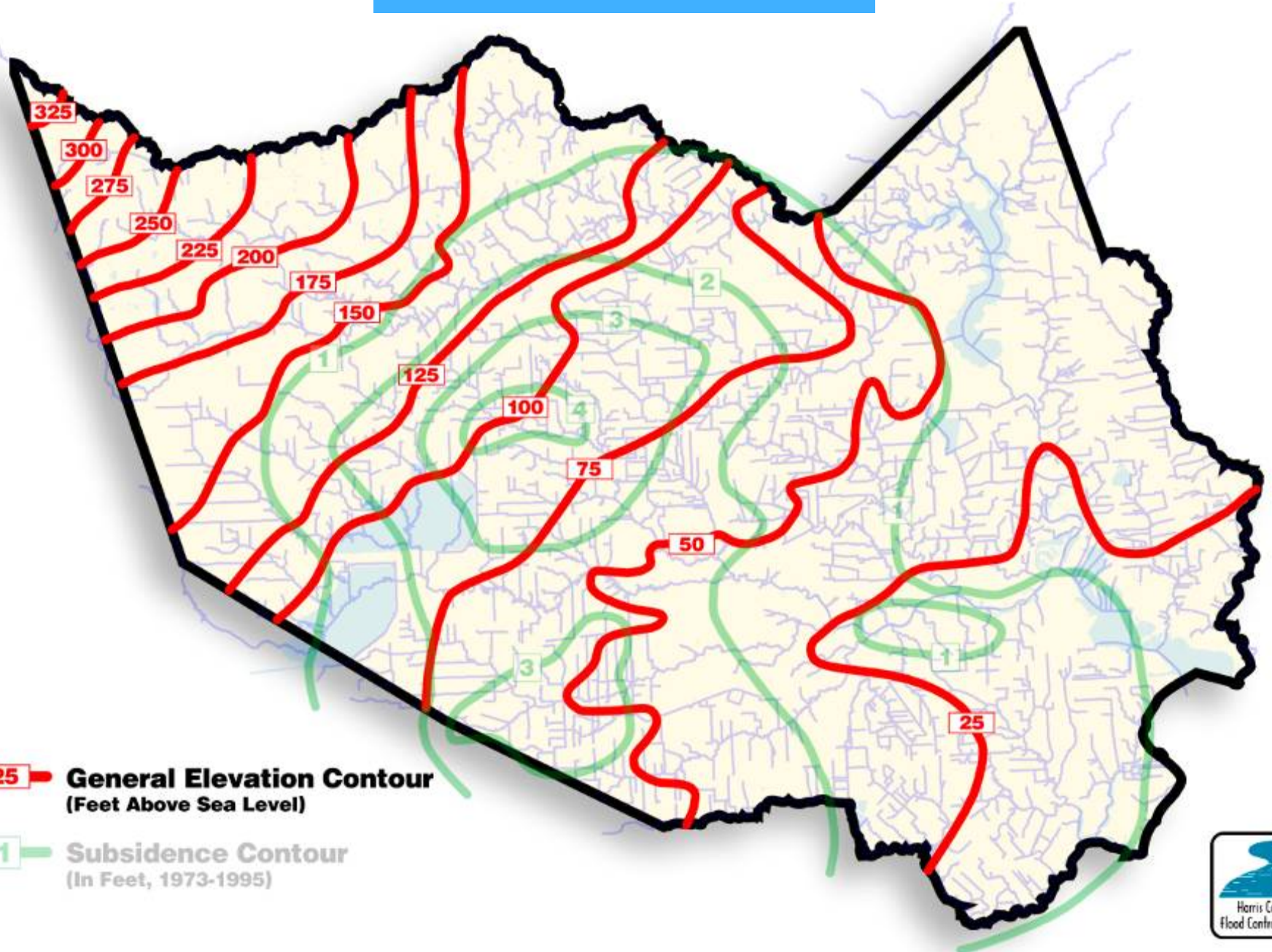
Hurricane force winds: 125 miles
Sustained winds: 110mph
Storm Surge: 11-17 ft



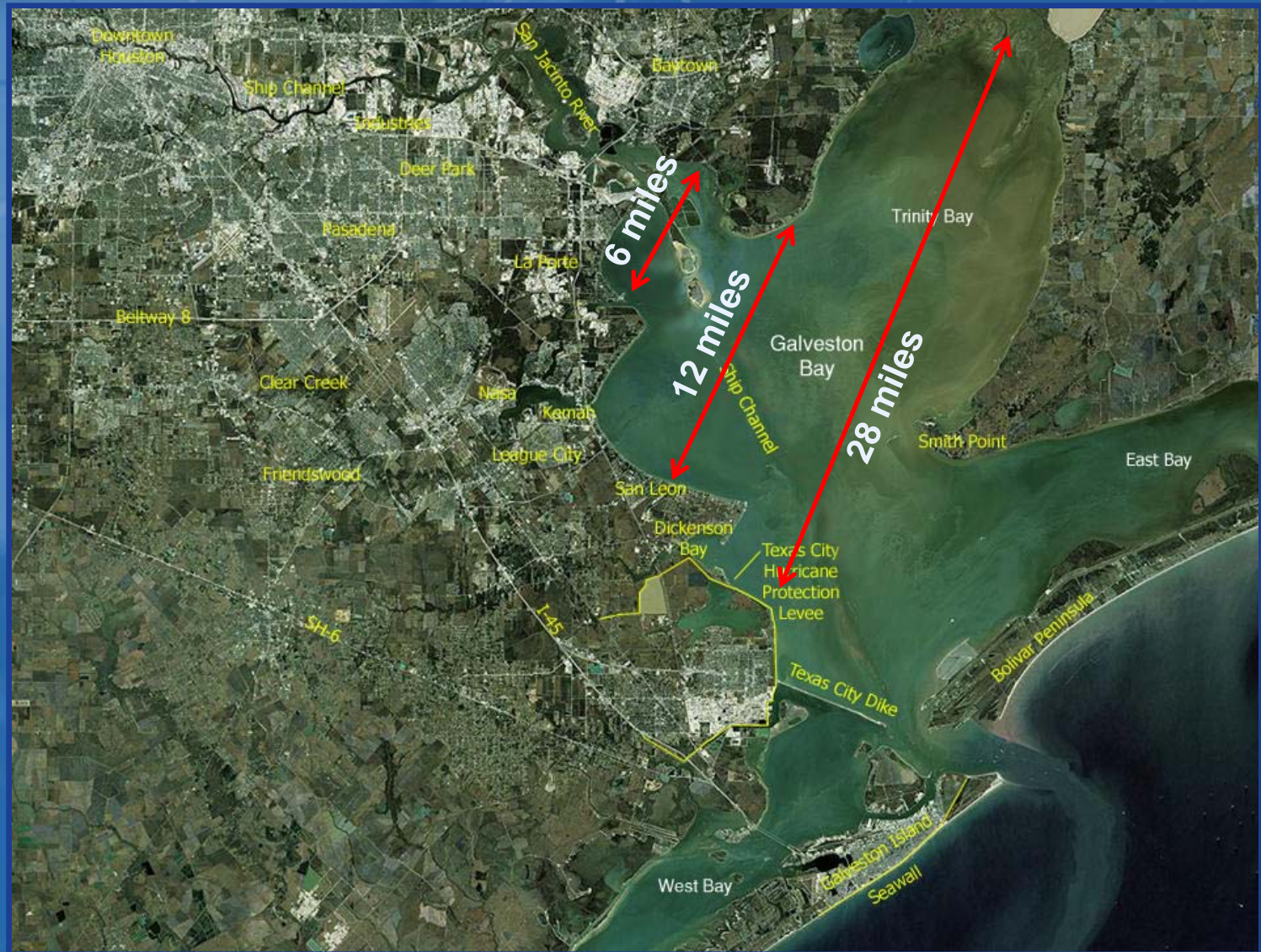
Hurricane force winds: 25 miles
Sustained winds: 100mph
Storm Surge: 4-6 ft



Ground Elevation



Wind Fetch Distances



Surge and Waves - Shoreacres



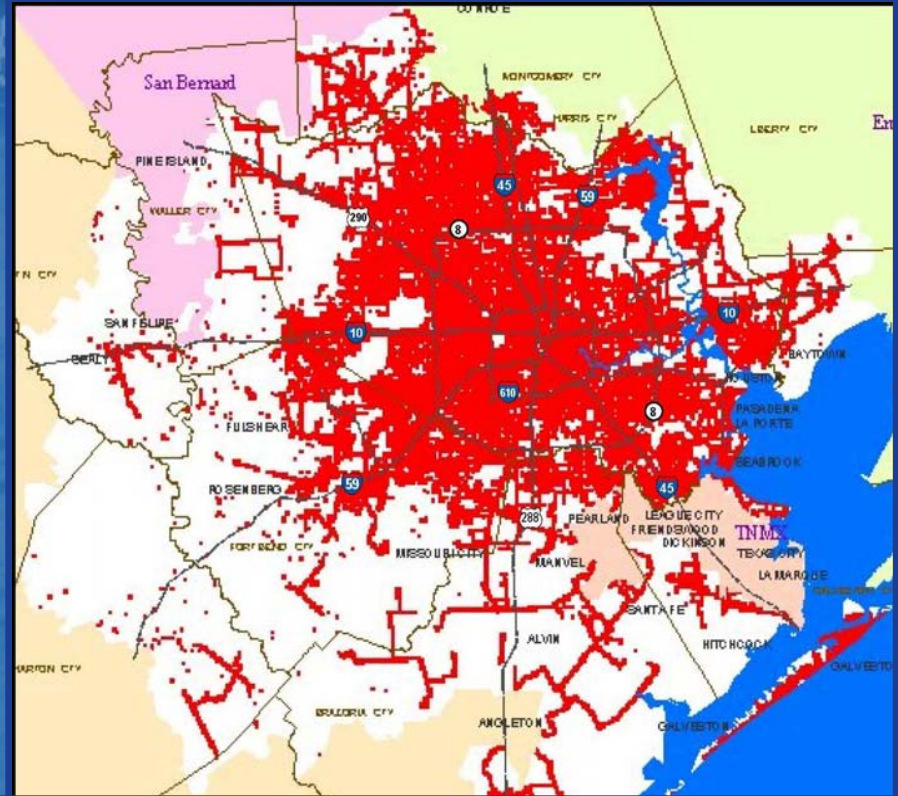
Surge and Waves – Bacliff and San Leon



Power Outages 9/13/08 1100am

CenterPoint: 2.1 Million (91%)

Entergy: 392,000 (99%)



HCFCD Activation

Activated 23 days



Monday Morning 9-15-08



Harris County Flood Control District Recovery

Fuel



Power



Food



Harris County Flood Control District Response

ALERT Damage



Channel HWMs



House Counts



Surge HWMs

TRWD Fuel and Food Delivery



Building Fire



HCFCFD Lessons Learned

- **Educate all employees of expected recovery tasks**
- **Essential personnel duties and expectations**
- **Command and control – NIMS**
- **Hurricane preparation and recovery plan**
- **Back up generator is for back up**
- **Fuel supply is a critical weakness**
- **Food supplies – who you will feed**
- **Drill and plan**



Ike Experience

- **Widespread excessive events can rapidly overwhelm**
- **Knowledge of watershed responses to rainfall was beneficial—lack of ALERT data**
- **Damage assessments (difficult)**
- **Handling of storm surge flooding in statements (HLS)**

- **Understanding of storm surge and its danger**
 - **Saffir-Simpson Scale**
- **Track uncertainty and error cone**
 - **Black Line**





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