

### 4. Tropical Cyclone Wind Speed Probabilities

**Tropical Cyclone Wind Speed Probabilities**

- ◆ Probabilities of 34-, 50-, and/or 64-kt wind speeds (as appropriate) based on the official forecast track throughout the 120-hour forecast cycle
- ◆ These probabilities are based on the TPC/NHC's average track, intensity, and wind radii forecast errors

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**Visual 6-13**

Notes:

### WFO Hurricane Local Statements

**WFO Hurricane Local Statements**

Local WFOs analyze TPC/NHC products and issue Hurricane Local Statements (HLS), which contain:

- ◆ Lead statement
- ◆ Counties, parishes, or cities included in the HLS
- ◆ Watches and/or warnings in effect
- ◆ Recommended precautionary actions
- ◆ Storm surge and storm tide information
- ◆ Present winds and the expected time of onset of tropical storm or hurricane-force winds
- ◆ Tornado, flood, flash flood, rip current, beach erosion, and inland high wind potential
- ◆ The time of the next statement

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**Visual 6-14**

Notes:

### Inland Tropical Storm/Hurricane Watches and Warnings

**Inland Tropical Storm/Hurricane Watches and Warnings**

- ◆ Issued when a tropical storm is expected to remain at tropical storm/hurricane strength well inland
- ◆ Calls greater attention to the threat
- ◆ Issued when tropical storm/hurricane-force winds are anticipated beyond coastal areas—even though the actual occurrence, time, and location may be uncertain
- ◆ Wind fields from the tropical storm forecast/advisory will be used as guidance when preparing the watch

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Visual 6-15

Notes:

### Tracking Tropical Cyclone/Hurricane-Force Winds

**Tracking Tropical Storm/Hurricane-Force Winds**

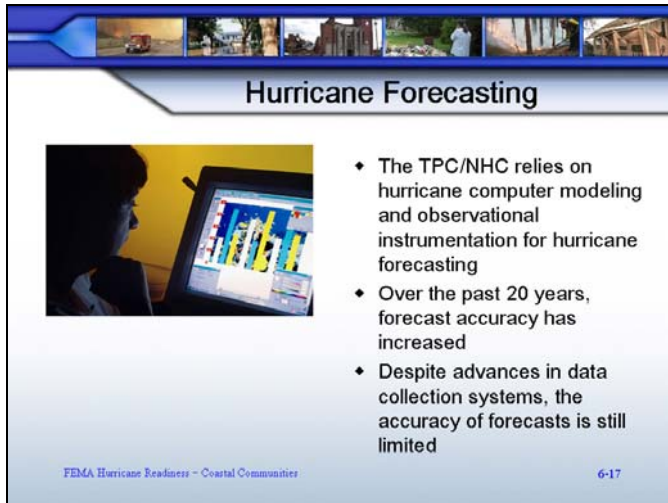
HURRICANE Inland Winds  
 SC81 23-01E  
 NHC Forecast  
 Wind South  
 40 58 75  
 92 109 127 mph

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Visual 6-16

Notes:

### Hurricane Forecasting



**Hurricane Forecasting**



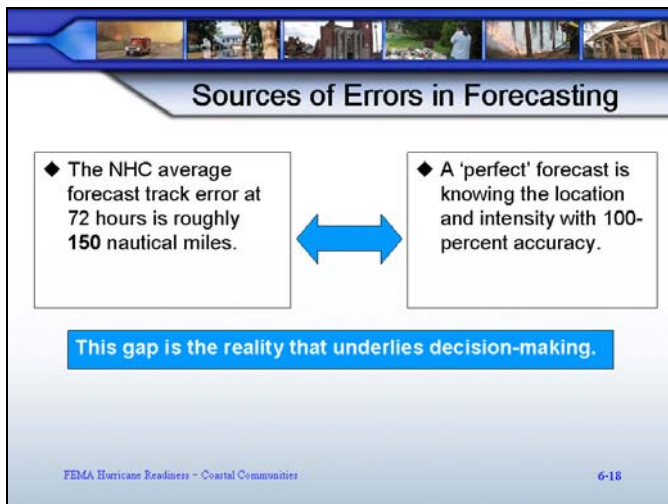
- ◆ The TPC/NHC relies on hurricane computer modeling and observational instrumentation for hurricane forecasting
- ◆ Over the past 20 years, forecast accuracy has increased
- ◆ Despite advances in data collection systems, the accuracy of forecasts is still limited

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Visual 6-17

Notes:

### Hurricane Forecasting (cont'd.)



**Sources of Errors in Forecasting**

◆ The NHC average forecast track error at 72 hours is roughly 150 nautical miles.

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◆ A 'perfect' forecast is knowing the location and intensity with 100-percent accuracy.

This gap is the reality that underlies decision-making.

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Visual 6-18

Notes:

### Three Main Sources of Errors

**Three Main Sources of Errors**

- ◆ Methods of observation:
  - Satellite
  - Reconnaissance
  - Radar
- ◆ Inaccuracies in the observations or insufficient numbers of observations
- ◆ Incomplete understanding of the physics of the hurricane and the atmosphere in which it is embedded

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**Visual 6-19**

Notes:

### Inaccuracies in Observations

**Inaccuracies in Observations**

- ◆ Having enough observations to supply data for the computer models is a problem, especially over the ocean
- ◆ Observational tools take measurements in different ways, and all of them have different accuracies
- ◆ The forecaster must determine, out of all these measurements and computer runs, which ones best represent the storm
- ◆ Forecasters must also be concerned about rapid changes that take place between model runs

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**Visual 6-20**

Notes:

### Probabilities and Margins of Error

**Probabilities and Margins of Error**

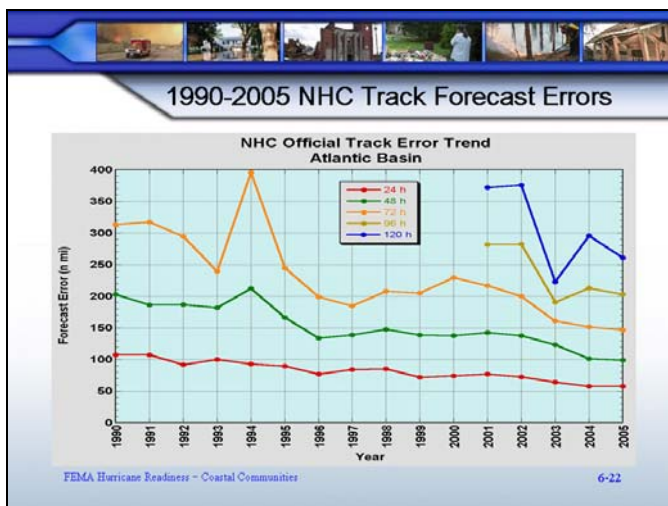
- ◆ Plan for a hurricane one category higher than is currently forecast
- ◆ Prepare in advance to take action in case the track shifts suddenly or the storm's speed increases

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Visual 6-21

Notes:

### Errors in Forecasting Hurricane Track



Visual 6-22

Notes:

### Track Errors and Evacuation Decisions

**Track Errors and Evacuation Decisions**

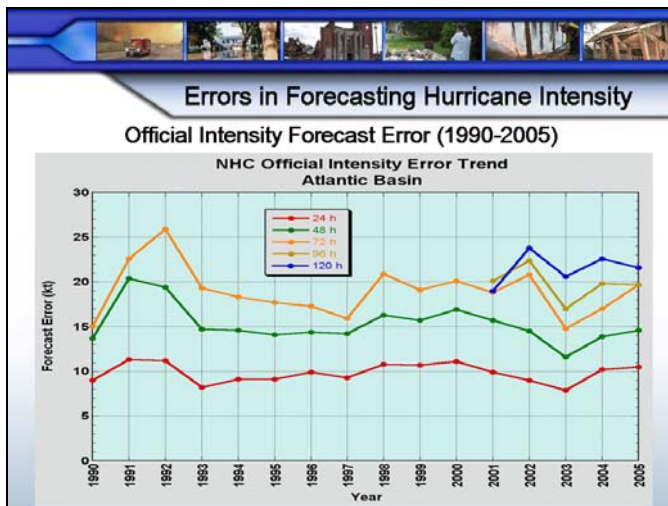
- ◆ You must make the decision to evacuate knowing about track errors – about 60 n mi at 24 hours (2-yr running average 2004-2005)
- ◆ Hurricane conditions typically affect a swath of about 125 statute miles wide. Watches and warnings are usually issued for 300 miles of coastline
- ◆ Costs of evacuations and loss of life are weighed against errors in forecasting to decide on a course of action

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Visual 6-23

Notes:

### Errors in Forecasting Hurricane Intensity



Visual 6-24

Notes:

### HURREVAC as a Forecasting Display Tool

**HURREVAC: A Forecast Tracking Tool**

HURREVAC uses the TPC/NHC advisory package to graphically show the:

- ◆ Hurricane's track
- ◆ Forecast track errors
- ◆ Strike probabilities
- ◆ Wind fields

When combined with HS information, HURREVAC provides data for making an evacuation decision.

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*Visual 6-25*

Notes:

### Activity 6:1—Preparedness and Evacuation Planning

**Activity 6:1—Preparedness and Evacuation Planning**

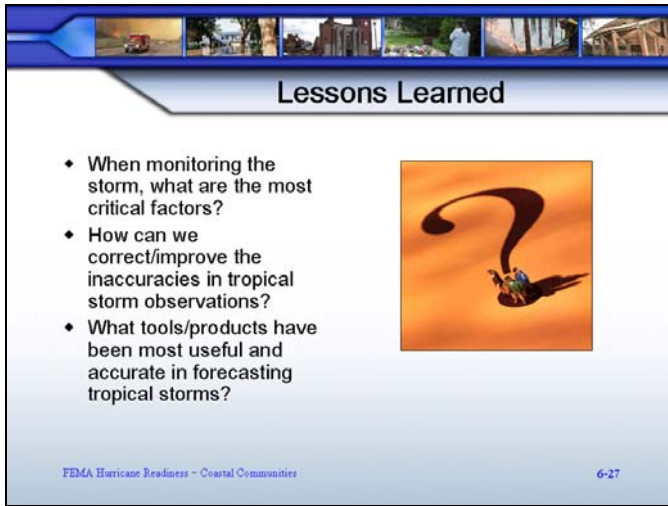
- ◆ Using local materials, review and interpret a series of advisory releases and HURREVAC data to determine the potential of tropical storm or hurricane

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*Visual 6-26*


Notes:

### Lessons Learned



**Lessons Learned**

- ◆ When monitoring the storm, what are the most critical factors?
- ◆ How can we correct/improve the inaccuracies in tropical storm observations?
- ◆ What tools/products have been most useful and accurate in forecasting tropical storms?



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**Visual 6-27**

### Notes:




<b>Transition to Unit 7: Evacuation Decision Considerations</b>	<b>Notes:</b>