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## Unit 3: Hurricanes and Hazards

*Time: 50 minutes*

### INTRODUCTION

This unit reviews the basic meteorological aspects of hurricanes, identifies hazards associated with hurricanes, and looks at implications for hurricane planning.

### OBJECTIVES

At the conclusion of this unit, participants should be able to:

1. Explain the acronyms, terms, and definitions relevant to this unit;
2. Identify the hazards associated with tropical cyclones and hurricanes in their jurisdiction;
3. List the potential effects of a tropical cyclone and hurricane; and
4. Explain the precautions to be taken at each Tropical System Threat level.

### METHODOLOGY

The instructor will present information on tropical cyclones and hurricanes, and lead a discussion about the impact they have had in the participants' local jurisdiction.

**Unit 3: Objectives**

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At the conclusion of this unit, participants should be able to:

- ◆ Explain the acronyms, terms, and definitions relevant to this unit;
- ◆ Identify the hazards associated with tropical cyclones and hurricanes in their jurisdictions;
- ◆ List the potential effects of tropical cyclone threats and precautions;
- ◆ Explain the precautions to be taken at each Tropical Storm System Threat Level.

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*Visual 3-1*

Notes:

**Unit 3: Hurricanes and Hazards**

**Unit 3: Hurricanes and Hazards**

- ◆ Hazards
- ◆ Potential Effects of a Tropical Storm or Hazard
- ◆ Precautions for each Tropical Storm System Threat Level
- ◆ Activity 3:1—Assessing Hurricane Hazards
- ◆ Lessons Learned

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*Visual 3-2*

Notes:

### Unit 3: Hurricanes and Hazards (cont'd.)

**Hurricanes and Hazards**

- ◆ Average of 11 tropical storms each year; 6 of these become hurricanes, of which 2 become major hurricanes.
- ◆ About 5 hurricanes strike the U.S. coastline in an average 3-year period. These kill 50 to 100 people and cost billions in damages.

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**Visual 3-3**

Notes:

### Basics

**Tropical Storm Classifications**

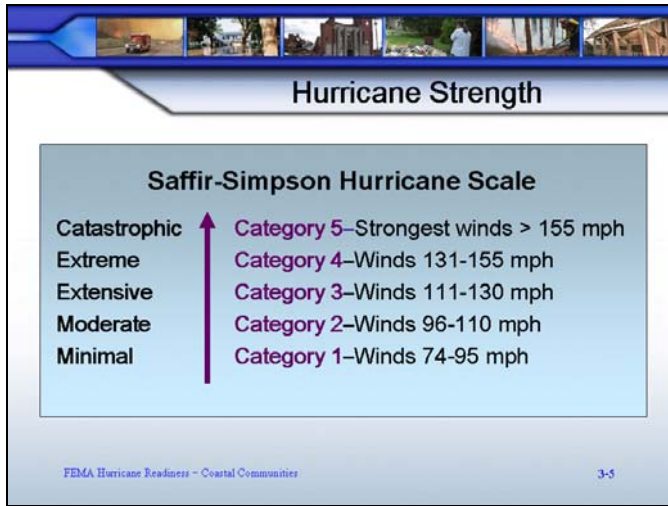
- ◆ Tropical Depression
- ◆ Tropical Storm
- ◆ Hurricane

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**Visual 3-4**

Notes:

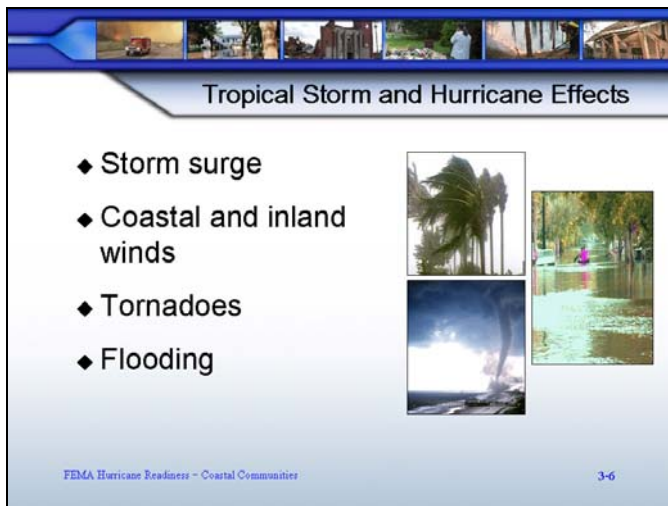
### Hurricane Strength



Visual 3-5

Notes:

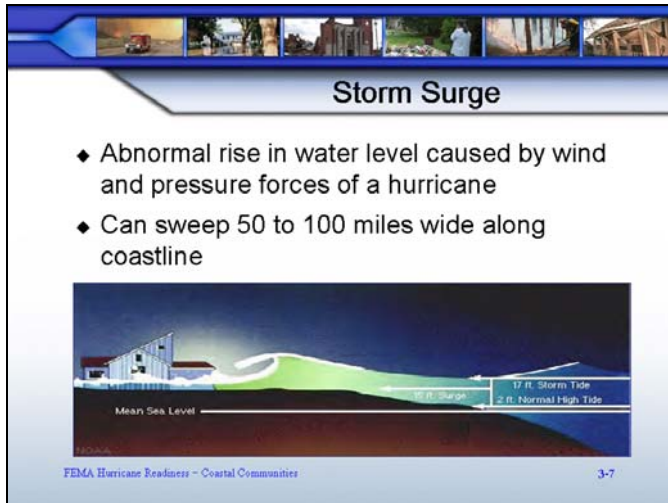
### Tropical Storm and Hurricane Effects



Visual 3-6


Notes:

### Storm Surge



**Storm Surge**

- ◆ Abnormal rise in water level caused by wind and pressure forces of a hurricane
- ◆ Can sweep 50 to 100 miles wide along coastline



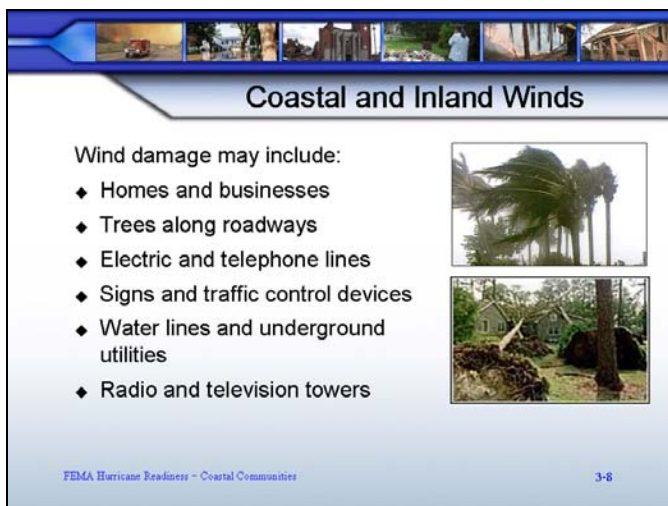
Mean Sea Level  
17 ft. Storm Tide  
2 ft. Normal High Tide

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Visual 3-7

Notes:


### Coastal and Inland Winds



**Coastal and Inland Winds**

Wind damage may include:

- ◆ Homes and businesses
- ◆ Trees along roadways
- ◆ Electric and telephone lines
- ◆ Signs and traffic control devices
- ◆ Water lines and underground utilities
- ◆ Radio and television towers



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Visual 3-8


Notes:

### Tornadoes

**Tornadoes**

Tornadoes with hurricanes:

- ◆ Nearly 60% of hurricanes that made landfall (1948 to 1986) spawned at least one tornado
- ◆ Although tornadoes associated with hurricanes are relatively weak and short-lived, they can cause serious damage



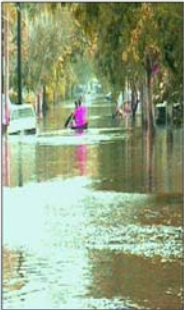
FEMA Hurricane Readiness - Coastal Communities 3-9

**Visual 3-9**

Notes:

### Flooding

**Flooding**



- ◆ Hurricanes typically can produce 6 to 12 inches of rain...or more!
- ◆ Inland flooding has been the primary cause of tropical cyclone-related fatalities over the past 30 years
- ◆ The risk from flooding depends on a number of factors:
  - Storm speed
  - Storm interactions with other weather systems
  - Terrain
  - Ground saturation

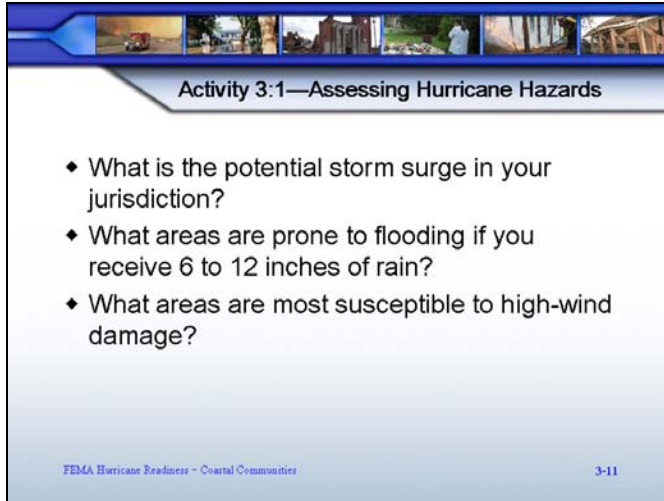
FEMA Hurricane Readiness - Coastal Communities 3-10

**Visual 3-10**

Notes:



### Activity 3:1—Assessing Hurricane Hazards



Activity 3:1—Assessing Hurricane Hazards

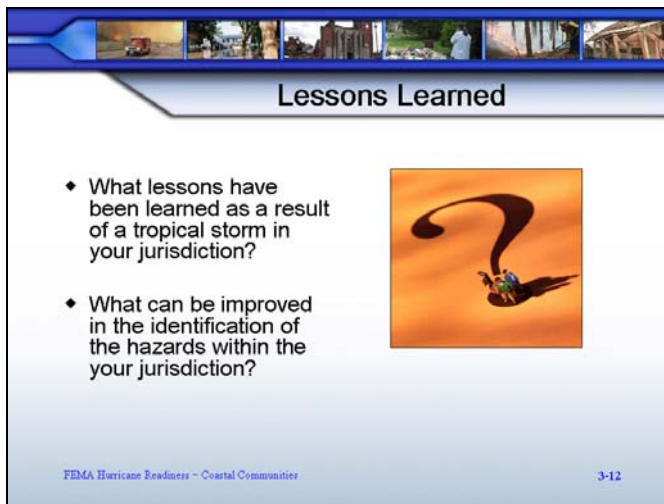
- ◆ What is the potential storm surge in your jurisdiction?
- ◆ What areas are prone to flooding if you receive 6 to 12 inches of rain?
- ◆ What areas are most susceptible to high-wind damage?

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Visual 3-11


Notes:

### Lessons Learned



Lessons Learned

- ◆ What lessons have been learned as a result of a tropical storm in your jurisdiction?
- ◆ What can be improved in the identification of the hazards within the your jurisdiction?



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Visual 3-12

Notes: