

# Introduction...

This preparedness guide explains thunderstorms and related hazards and suggests life-saving actions **YOU** can take. With this information,

**YOU** can recognize severe weather, develop a plan, and be ready to act when threatening weather approaches. Remember...your safety is up to **YOU!**

## Why Talk About Thunderstorms? They Produce...

### ■ Tornadoes...

- ✓ Cause an average of 70 fatalities and 1,500 injuries each year.
- ✓ Produce wind speeds in excess of 250 mph.
- ✓ Can be one mile wide and stay on the ground over 50 miles.

### ■ Lightning...

- ✓ Causes an average of 80 fatalities and 300 injuries each year.
- ✓ Occurs with all thunderstorms.

### ■ Strong Winds...

- ✓ Can exceed 100 mph.
- ✓ Can cause damage equal to a tornado.
- ✓ Can be extremely dangerous to aviation.

### ■ Flash Flooding...

- ✓ Is the #1 cause of deaths associated with thunderstorms...more than 140 fatalities each year.

### ■ Hail...

- ✓ Causes more than \$1 billion in crop and property damage each year.

## For More Information

Contact your local National Weather Service office, American Red Cross chapter, or the Federal Emergency Management Agency for a variety of weather-related brochures. Specific information on flash flooding can be found in the "Flash Floods and Floods...The Awesome Power" brochure (NOAA PA 92050). Brochures can be viewed and downloaded from the Internet at [www.nws.noaa.gov/om/brochures.shtml](http://www.nws.noaa.gov/om/brochures.shtml) Preparedness information can be obtained from the Federal Emergency Management Agency at [www.fema.gov/library/prepandprev.shtml](http://www.fema.gov/library/prepandprev.shtml) or the Red Cross at [www.redcross.org/services/disaster/keepsafe/](http://www.redcross.org/services/disaster/keepsafe/)

# Thunderstorms...

Thunderstorms affect relatively small areas when compared with hurricanes and winter storms. Despite their small size, ALL thunderstorms are dangerous! The typical thunderstorm is 15 miles in diameter and

lasts an average of 30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe.

**1,800 thunderstorms occur at any moment around the world. That's 16 million a year!**

## What Are Thunderstorms? What Causes Them?

■ The National Weather Service considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, winds of 58 mph or stronger, or a tornado.

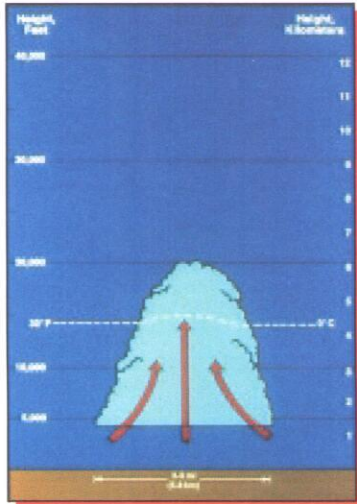
■ Every Thunderstorm Needs:

**Moisture** – to form clouds and rain.

**Unstable air** – warm air that can rise rapidly.

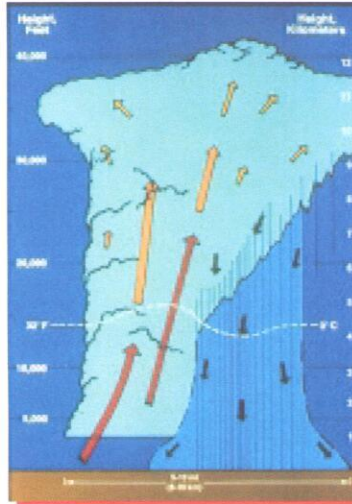
**Lift** – cold or warm fronts, sea breezes, mountains, or the sun's heat are capable of lifting air to help form thunderstorms.

## Life Cycle of a Thunderstorm



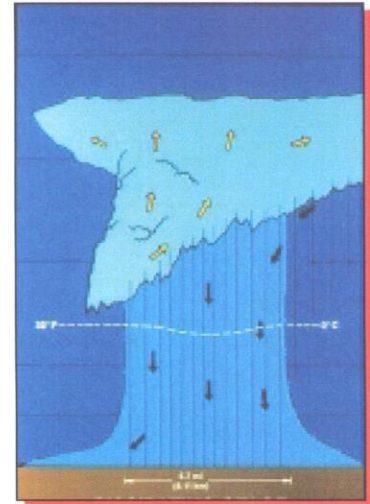
### Developing Stage

- Towering cumulus cloud indicates rising air.
- Usually little if any rain during this stage.
- Lasts about 10 minutes.
- Occasional lightning.



### Mature Stage

- Most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes.
- Storm occasionally has a black or dark green appearance.
- Lasts an average of 10 to 20 minutes but may last much longer in some storms.



### Dissipating Stage

- Rainfall decreases in intensity.
- Can still produce a burst of strong winds.
- Lightning remains a danger.

NOAA