Pyrocumulus (pyroCu): A cumulus formed by a rising thermal from a fire, or enhanced by buoyant plume emissions from an industrial combustion process.

Pyrocumulonimbus (pyroCb): An extreme manifestation of a pyrocumulus cloud, generated by the heat of a wildfire, that often rises to the upper troposphere or lower stratosphere.

**Characteristics:** Lightning, thunder, hail or a fibrous or diffuse upper portion.

**Overview of the Mallard Fire**

- **May 8, 2018 to May 29, 2018:** Initiation of fire to containment
- **Size:** 30,566 hectares (75,530 acres)
- **May 11, 2018:** Fire produced pyroCb, which later became a severe thunderstorm.

**Synoptic Setup**

- **May 11, 2018 12z Sounding**
- **May 11, 2018 00z Sounding**

**Radar Reflectivity (dBZ) and GOES-16 Fire Temperature**

- **Dewpoint (shaded), Surface Pressure (black contour), and Surface Relative Humidity (brown dashed contour)**
- **850mb Heights (white contour), 850mb Temps (shaded) and Winds (green barbs)**
- **500mb Heights (black contour), 500mb Temps (red dashed) and Winds (barbs and shaded)**

**Results**

- **Lightning Jumps:**
  - 60 total Earth Networks Total Lightning Network (ENTLN) flashes at 2334Z
  - 53 total ENTLN flashes at 2342Z

- **Storm Reports:**
  - Quarter size (1 inch) hail one mile north of Wheeler, Texas at 0006Z
  - 62 mph wind speed three miles north of Putnam, Oklahoma at 0220Z

**National Weather Service Messaging**

- **0700z SPC Fire Outlook**
- **1430z SPC Categorical Outlooks**
- **SPC Mesoscale Discussion**

**Pictures**