The Development of Hurricane Sandy

NOVA Cloud Lab

1. TROPICAL DEPRESSION | OCTOBER 22, 2012

- *A cluster of thunderstorms is centered around a low-pressure area*
- *Powerful thunderstorms called "hot towers" are near the center (14 km high)*

2. SANDY GETS HER NAME | OCTOBER 23, 2012

- *TD 18 becomes tropical storm Sandy, its clouds reach high into the troposphere with cloud-top temperatures as cold as -52℃*

- *Big storms spin counterclockwise in the Northern hemisphere and clockwise in the Southern hemisphere due to the Coriolis effect, which causes fluids to curve as they travel on or above Earth*

3. SANDY BECOMES A HURRICANE | OCTOBER 24–25, 2012

- *Clusters of rain southeast of center have rainfall rates of 5+cm/h*
- *As the storm gains energy from warm tropical waters, it increases from a category 1 to a category 2 storm with winds of 177 kph, 50 cm of rain falling on the Dominican Republic and Haiti, and over 50 deaths from flooding and mudslides*
- *On 10/25, the storm is 660 km across*

4. A "FRANKENSTORM" IS BORN | OCTOBER 26, 2012

- *The storm merges with a cold front coming from the west, creating a "Frankenstorm" which is predicted to lead to heavy rainfall and tropical storm force winds over the mid-Atlantic and New England*

5. RIDING THE GULF STREAM | OCTOBER 28, 2012

- *Due to the cold front from the west, Sandy does not make landfall over the Carolinas; it stays over the ocean, gaining energy*

- *The gulf stream is a circulating current that brings warm water from the Gulf of Mexico up the Atlantic. At this time, the water near the surface is 5˚ warmer than normal.*

6. LEFT TURN | OCTOBER 29, 2012

- *425 miles from New York, it has the energy of 5 Hiroshima bombs*
- *High pressure from the North Atlantic blocks the storm*
- *The jet stream is not moving west to east as usual and pushes the storm west back over land*
- *The megastorm covers 4.7 million square kilometers from the mid-Atlantic to the Ohio Valley and into New England and Canada*

7. LANDFALL | OCTOBER 29, 2012

- *Just before landfall, wind speeds are above 95 kph*
- *The storm surge occurs with a higher than normal tide, with the shape of Long Island Sound concentrating the waves, submerging the entire town of Breezy Point, NJ*
- *Parts of New York and New Jersey are under 14 ft of water (they are 25 ft above sea level)*

8. THE STORM WINDS DOWN | OCTOBER 31, 2012

- *Centered over western Pennsylvania, the storm has dropped in intensity but is affecting hundreds of thousands of square miles*

- *Ships are on land, houses are off their foundations, more than 8 million people are without power, the Jersey shore is wiped out and 8 counties are disaster areas*

- *A warmer planet may be increasing the intensity of powerful storms*