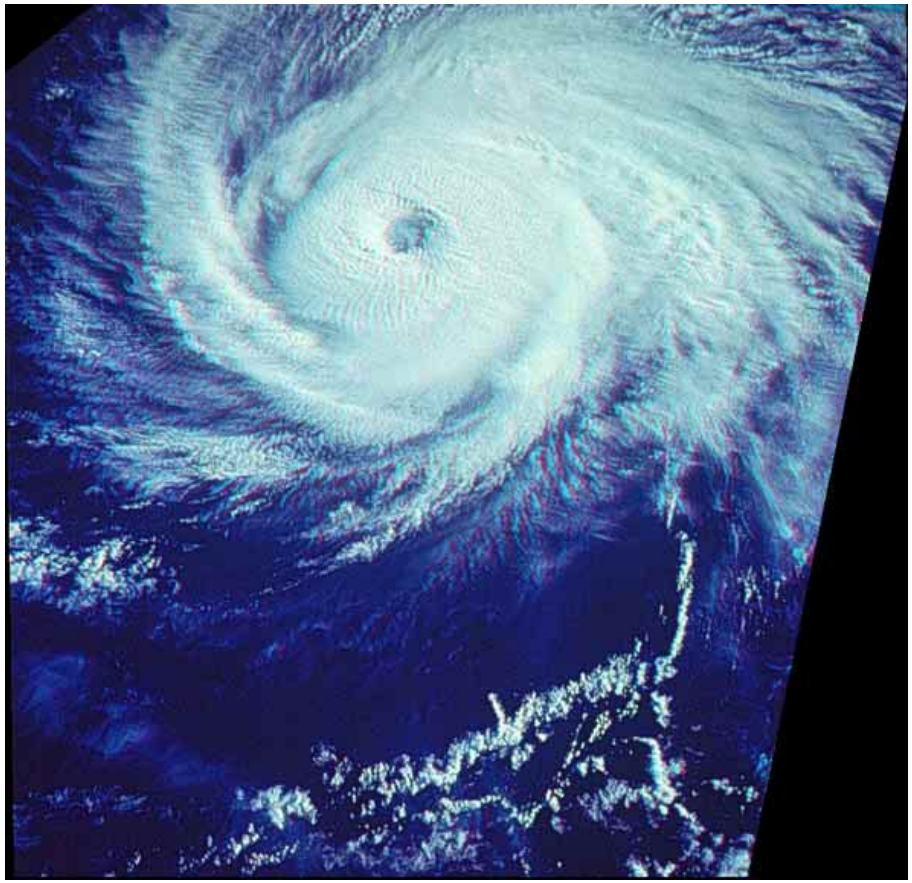
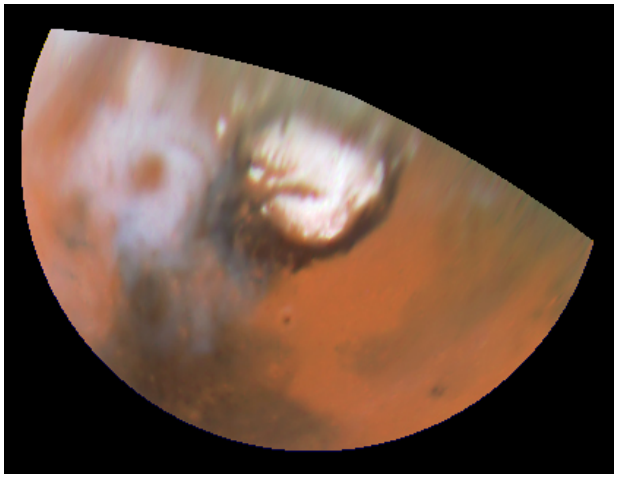
STORMS



Typhoon Odessa Western Pacific Ocean, Earth
Hurricanes are among the most powerful and most organized atmospheric systems on Earth. They form in tropical regions where warm ocean waters trigger local thunderstorm activity. Under the right circumstances, regional wind currents and the Earth's rotation can organize these storm systems (called waves) into large spiral systems. When sustained winds reach 119 kilometers per hour, a hurricane is born.

When observed by shuttle astronauts in August 1985, Typhoon Odessa was a mature and powerful storm with a tightly formed eye wall. Hurricane circulation forms a cylindrical wall of thunderstorms up to 100 kilometers wide near the center called the eye wall, which is the site of the most damaging winds. These storms create powerful updrafts that pull warm surface air into the hurricane, further feeding storm activity.

When the rising thunderclouds of the eye wall encounter the tropopause (at 13,500 meters), they are no longer buoyant and spread laterally. Some air flows downward into the center, dissipating clouds and forming the eye. Most of the air flows outward, however, forming a circular cloud deck over the hurricane called the cirroform anvil. Hurricanes can affect an area 600 kilometers wide. The general circulation in a hurricane is part of the mechanism that redistributes tropical heat from the ocean to the atmosphere and from the equator to the poles.
3-D Tour of the Solar System *©Lunar and Planetary Institute, 1997* ***use 3-D glasses to view image***



Storms on Mars

Astronomers using NASA's Hubble Space Telescope have discovered an enormous cyclonic storm system raging in the northern polar regions of the planet Mars. Slightly larger than the state of Texas, the storm is composed of water ice clouds like storm systems on Earth rather than dust typically found in martian storms. The storm is more than 1000 miles across, and the eye of the storm is nearly 200 miles in diameter. Apparently, this type of cyclonic circulation, though rare on Mars, must be related to specific climatic conditions unique to the planet's northern polar regions at this season. Similar storms, some comparable in size to the martian storm, have been seen in Earth's polar regions. On Earth these polar cyclones appear to be low pressure systems fueled by strong contrasts in oceanic vs. atmospheric temperatures. In some cases, winds within Earth's polar cyclones can reach hurricane force. This is an enhanced view of the martian storm centered on 65°N latitude, 85°W longitude. The image has been processed to bring out additional detail in the storm's spiral cloud structures.
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