



Weather Or Not

Thanks to satellites, weather mapping is becoming more precise. Weather maps provide a forecast for an area and give scientists enough information to predict climate changes on a global scale. Check out how weather maps tell the real story—both the present and the future—in these three cases.

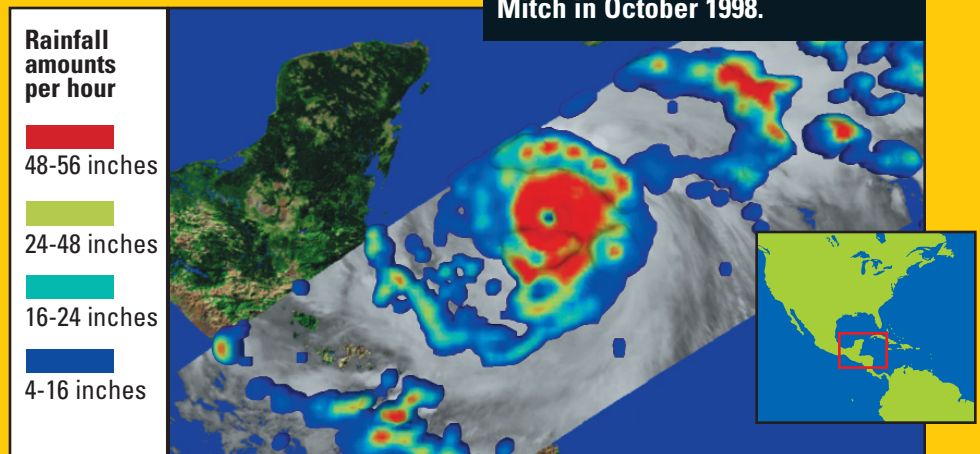
EYE OF THE STORM

Hurricanes do damage with high winds and extensive rainfall. This leads to flooding, which can mean disaster for people living in the region. Hurricane Mitch devastated rural areas of Central America in October 1998, taking thousands of lives.

Satellites can keep an eye on dangerous rainfall levels by measuring different types of energy in storm

clouds. Infrared, or visible light, readings during storms match up to rainfall measurements on the ground. This could be a lifesaver in underdeveloped areas. Satellite maps can help warn residents in rural communities of flash floods so they can coordinate evacuation efforts.

A satellite image shows the areas of heaviest rainfall from Hurricane Mitch in October 1998.

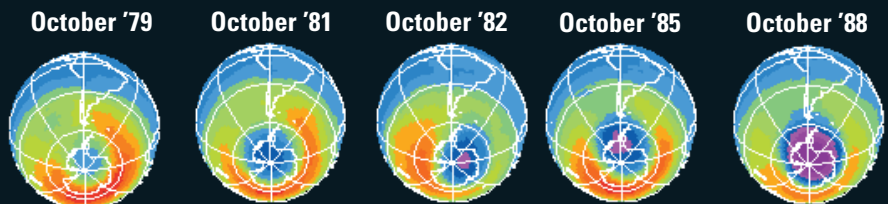


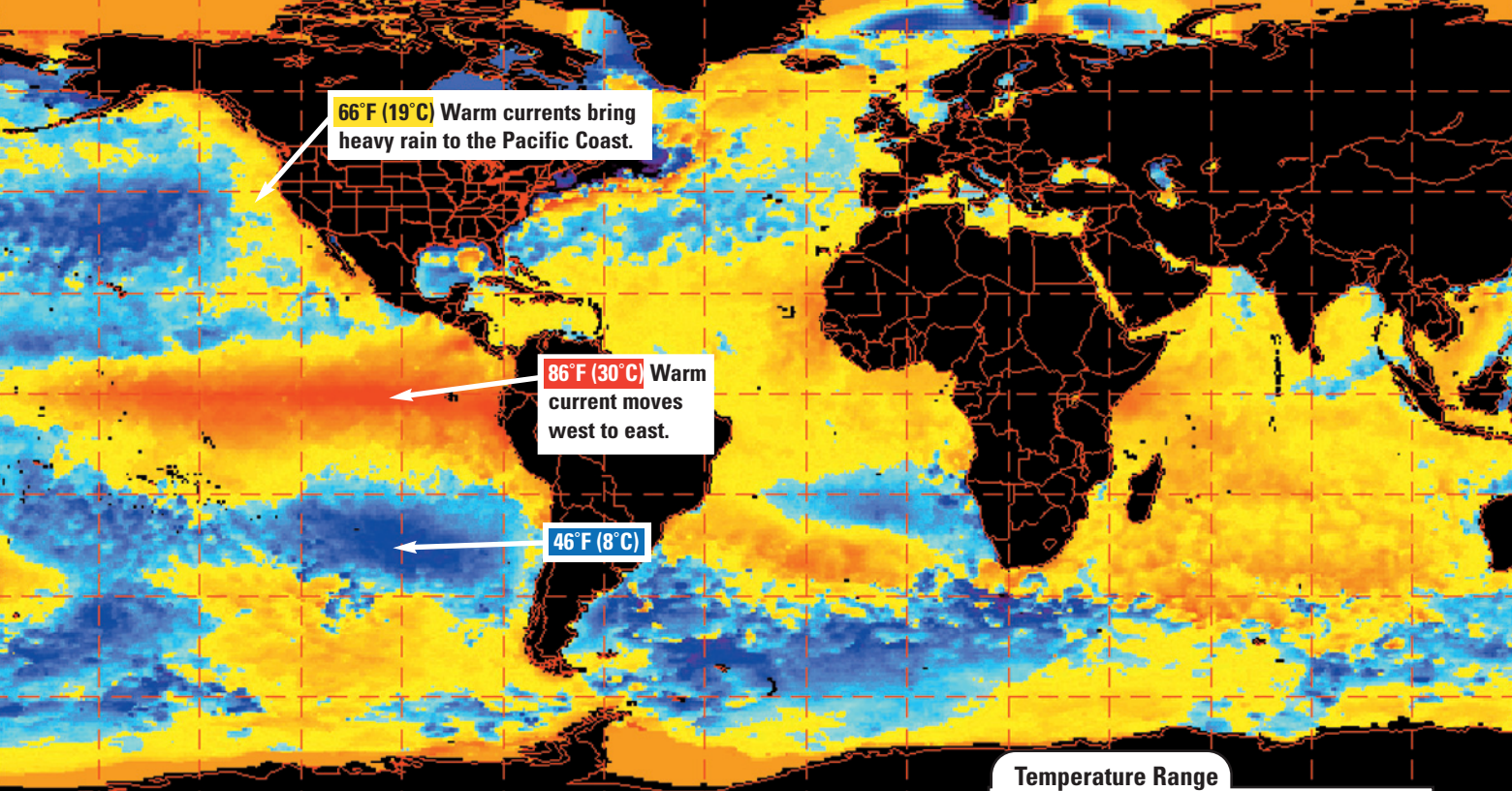
Over Exposure

The earth's ozone is the only atmospheric gas that can absorb large quantities of ultraviolet radiation from the Sun, so it protects the planet from deadly

solar rays. Scientists study Earth's ozone layer with the Total Ozone Mapping Spectrometer, or TOMS, which is hooked up to a satellite. Computers use TOMS data and color-coding to map ozone concentrations around the world.

The maps of the South Pole at right show a hole in the ozone layer above Antarctica and how it has changed over time. Compare the maps with the scale. What do the color patterns since October 1979 tell you about the ozone hole over Antarctica?











66°F (19°C) Warm currents bring heavy rain to the Pacific Coast.

86°F (30°C) Warm current moves west to east.

46°F (8°C)

Temperature Range

	86°F (30°C)		59°F (15°C)
	71°F (27°C)		51°F (11°C)
	66°F (19°C)		46°F (8°C)

WATCHING EL NIÑO

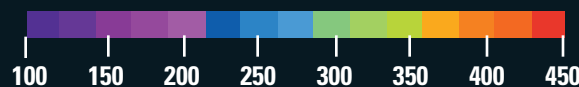
When water temperatures in the Pacific Ocean change drastically, scientists know El Niño is on its way. This weather event occurs about every seven years, starting as a current of warm water off the west coast of South America. It brings above-average rainfall and severe storms, winds, and flooding to countries around the world.

The U.S. Climate Diagnostics Center uses weather maps to get a handle on when El Niño is next approaching. Higher temperatures in the Midwest, Alaska, and Canada and below-average temperatures in the southeastern U.S. are an early indication. The weather map above, made in 1998, illustrates how the current spreads in the Pacific Ocean. Satellites create such maps using multi-spectral scanning, or MSS, which picks up radiation data to show different temperatures on the earth's surface. Weather maps show this data in patterns of color.

Activity

The colors on this scale represent the ozone's different levels of thickness: Purple and violet indicate greater UV exposure.

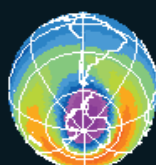
Dobson Spectrometer scale



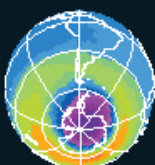
October '90



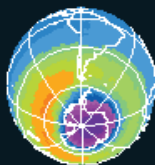
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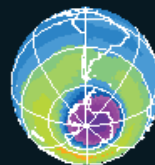
October '94



October '96



October '97



FOLLOW THE FRONTS Collect weather maps from *USA Today* for one week. What information is on all of the maps? Is there information you think should be added to the map to make more sense? Is there a connection between front lines and mountains? Between front lines and oceans? Would the map make more sense if mountains and rivers were not included?