

When the moon and sun line up, look out below

By Scientific American, adapted by Newsela staff on 03.27.15

Word Count **587**



An aerial view as a high tide submerges a narrow causeway leading to the Mont Saint-Michel abbey, on France's northern coast, March 21, 2015. A supertide turned France's famed Mont Saint-Michel into an island, delighting thousands of visitors who came to see the rare phenomenon. The so-called "tide of the century" actually happens every 18 years. Photo: Associated Press

A huge flood of water surrounded a 1,000-year-old French town over the weekend. The flood was called a supertide. Photos of the supertide were all over the Internet.

The town that the supertide surrounded is famous for its abbey. An abbey is a home for religious men called monks. The abbey is usually surrounded by some water, but only a little. Sheep generally are all around the town, not water.

The flood of water was almost 46 feet high. Thousands of people came to watch the water surround Mont Saint-Michel, the tiny town around the abbey. People usually can only get to Mont Saint-Michel by one bridge. That bridge was under the water.

Supertide Was Right On Schedule

Most news stories did not explain why there was a supertide. Some mentioned the sun or the moon. Some said the sun and the moon were lined up. Other articles talked about the eclipse that occurred the same day. An eclipse happens when the moon is between the sun and the Earth.

Many called the March 20-21 event the “tide of the century.” But this tide happens every 18 years, not every 100. It last happened in March 1997. The next one will be in March 2033.

Sun And Moon Team Up

So what caused the supertide? The “March” in the dates is an important clue. Tides happen because of the pull of gravity from the moon. The sun’s gravity matters too, but it has less pull. When the sun and moon are lined up with the Earth, their combined pull is strongest. This causes what are called spring tides. They occur twice every month, but are often greatest in March and September, during the spring and autumn equinoxes.

This year the moon and sun lined up exactly. This caused Saturday’s eclipse. “If we see a solar eclipse there will be a spring tide,” said Hal Needham. He is a scientist who studies weather at Louisiana State University.

That explains why the highest tides happen in March. But why do they happen every 18 years? This gets trickier. The best explanation comes from Britain's Met Office, which reports weather.

Moon Plays An Important Role

Experts at the Met said that some spring tides are higher than others. It happens because tides are high when the moon is closest to the Earth. That force becomes stronger when the moon is also directly over the equator. It becomes even stronger still if both the sun and the moon are directly over the equator, the group said. The sun is above the equator around March 21 or in September. The moon travels around the Earth in an orbit. The orbit takes it above and below the equator over a period of 27 days.

The Met said that there are very large spring tides when all these things happen at once. The moon is closest to the Earth and is over the equator about once every 4 1/2 years.

We get a supertide when three things happen: The moon and sun line up; they are right over the equator; and the moon is closest to Earth.

There Can Be Hurricanes Too

However, Needham said, weather can matter more than anything. He pointed out Hurricane Sandy in the area around New York City, and Hurricane Katrina in New Orleans. One 18-year supertide might be higher than another. It depends on whether winds are pushing water up against a coastline. Lower-than-normal pressure in the air around the Earth can cause the sea to rise higher.

Quiz

- 1 Choose the main reason why the photos of the supertide were all over the Internet.
 - (A) The town flooded by the supertide is 1,000 years old.
 - (B) A famous abbey is located in the town.
 - (C) The bridge to the town was under water.
 - (D) The supertide was almost 46 feet high and made the town an island.

- 2 Choose the information that should be included in a summary of the article concerning the formation of supertides.
 - (A) One 18-year supertide might be higher than another.
 - (B) Storms like Hurricane Sandy and Katrina can effect high tides.
 - (C) Winds can push water up against a coastline.
 - (D) The effect of weather can cause tides to become supertides.

- 3 Experts from Britain were asked to explain why the highest tides occur every 18 years. These experts would NOT agree with which one of the following statements?
 - (A) The moon's gravity plays a role in creating supertides.
 - (B) The supertides occur every century, or 100 years.
 - (C) The sun and moon need to line up with the Earth over the equator to create supertides.
 - (D) March and September are important months for supertides.

- 4 Choose the paragraph from the section "Sun And Moon Team Up" with a description of an event that caused this supertide.

Answer Key

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Paragraph 6:

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