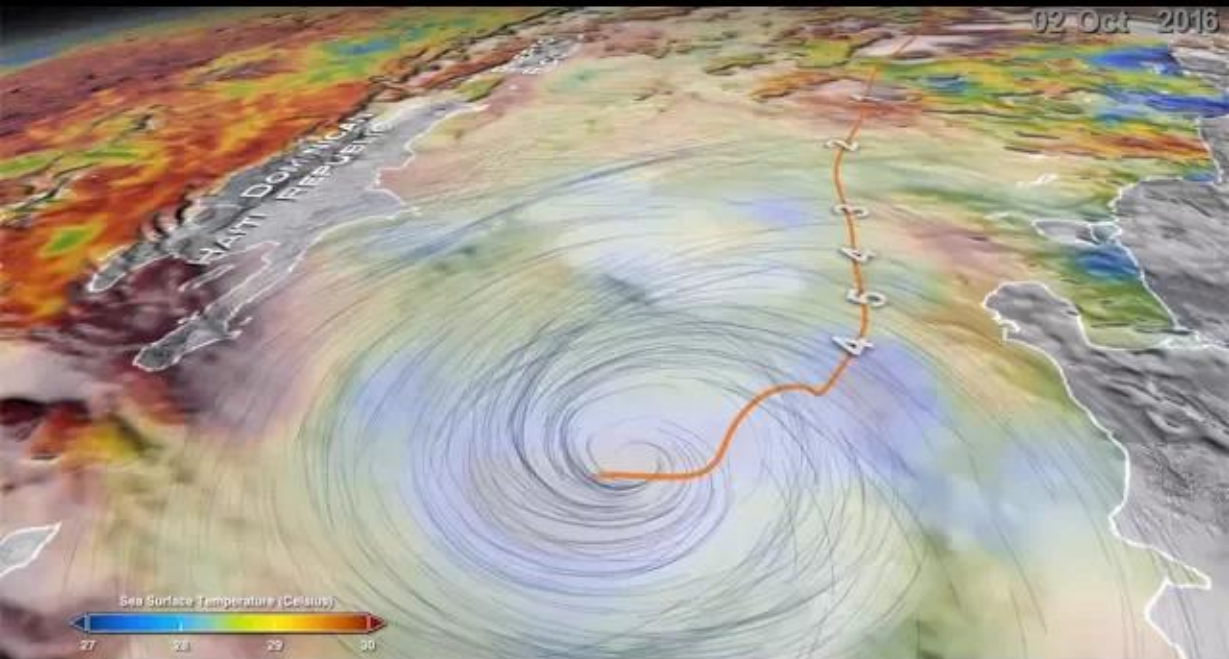


02 Oct 2016



1  
00:00:00,070 --> 00:00:04,140  
Hurricane Matthew

2  
00:00:04,160 --> 00:00:08,200  
was the first Category 5 Atlantic hurricane in almost ten years.

3  
00:00:08,220 --> 00:00:12,300  
Its torrential rains and winds caused significant damage and loss of life,

4  
00:00:12,320 --> 00:00:16,410  
as it coursed through the Caribbean and up along the southern U.S. coast.

5  
00:00:16,430 --> 00:00:20,580  
NASA researchers use a combination of satellite

6  
00:00:20,600 --> 00:00:24,710  
observations and computer models to recreate a multidimensional picture

7  
00:00:24,730 --> 00:00:28,900  
of the hurricane in order to study the complex atmospheric interactions.

8  
00:00:28,920 --> 00:00:33,090  
Starting on September 29th,

9  
00:00:33,110 --> 00:00:37,150  
2016, Matthew strengthened from a Category 1 to a Category 5

10  
00:00:37,170 --> 00:00:41,270  
hurricane in less than 24 hours with winds reaching 160 miles per hour.

11  
00:00:41,290 --> 00:00:45,370  
By combining overpasses by the Global Precipitation

12  
00:00:45,390 --> 00:00:49,490  
Measurement Core Observatory satellite with those of other GPM partner

13  
00:00:49,510 --> 00:00:53,670

satellites, the half-hourly IMERG precipitation product tracked

14

00:00:53,690 --> 00:00:57,860

the intensification of Hurricane Matthew.

15

00:00:57,880 --> 00:01:02,050

At peak intensity, Matthew's rainfall showed a massive region of heavy rain

16

00:01:02,070 --> 00:01:06,160

just north of the eye. Using the radar data from the GPM Core

17

00:01:06,180 --> 00:01:10,300

Observatory allowed us to slice through the storm to see this feature, as well

18

00:01:10,320 --> 00:01:14,430

as the expected snow and ice high atop the hurricane.

19

00:01:14,450 --> 00:01:18,600

As the hurricane's movement shifted from westward to northward, Matthew paused.

20

00:01:18,620 --> 00:01:22,750

The persistent surface winds swirling counterclockwise created drag

21

00:01:22,770 --> 00:01:26,950

that pushed the warm surface waters away from the eye's location.

22

00:01:26,970 --> 00:01:31,160

As a result, the cooler ocean water upwelled, raising it to

23

00:01:31,180 --> 00:01:35,300

the surface. However, the upwelling did not last long and the cooler water sank

24

00:01:35,320 --> 00:01:39,480

and warmer water moved back in as Matthew headed toward Haiti.

25

00:01:39,500 --> 00:01:43,650

Winds around Matthew accentuated heavy

26

00:01:43,670 --> 00:01:47,650

rainfall, drenching Haiti and the Dominican Republic on the windward side

27

00:01:47,670 --> 00:01:51,860

of the mountains.

28

00:01:51,880 --> 00:01:56,070

As Matthew moved northward

29

00:01:56,090 --> 00:02:00,150

an eyewall replacement cycle was visible. The GPM Core

30

00:02:00,170 --> 00:02:04,260

satellite observed the concentric eyewalls as the tighter, more intense inner eyewall

31

00:02:04,280 --> 00:02:08,320

was replaced by a new, broader eye.

32

00:02:08,340 --> 00:02:12,430

As Hurricane Matthew approached Florida and

33

00:02:12,450 --> 00:02:16,570

hugged the coast, heavy rains saturated the soil.

34

00:02:16,590 --> 00:02:20,720

On October 8th, Matthew approached North Carolina,

35

00:02:20,740 --> 00:02:24,920

which was already battered by previous thunderstorms. The addition

36

00:02:24,940 --> 00:02:29,110

of Matthew's rainfall and storm surge created significant flooding.

37

00:02:29,130 --> 00:02:33,170

The GPM Core Observatory satellite captured one final pass

38

00:02:33,190 --> 00:02:37,290

of a Category 2 Hurricane Matthew. No longer driven

39

00:02:37,310 --> 00:02:41,430

by the heavy convective clouds around its center, Matthew underwent

40

00:02:41,450 --> 00:02:45,570

extratropical transition on October 9th. The hurricane moved out into the

41

00:02:45,590 --> 00:02:49,690

Atlantic before dissipating completely.

42

00:02:49,710 --> 00:02:53,860

Combining model and observed data from multiple sensors is a powerful tool

43

00:02:53,880 --> 00:02:58,080

for better analyzing hurricanes and can provide clues to how future storms