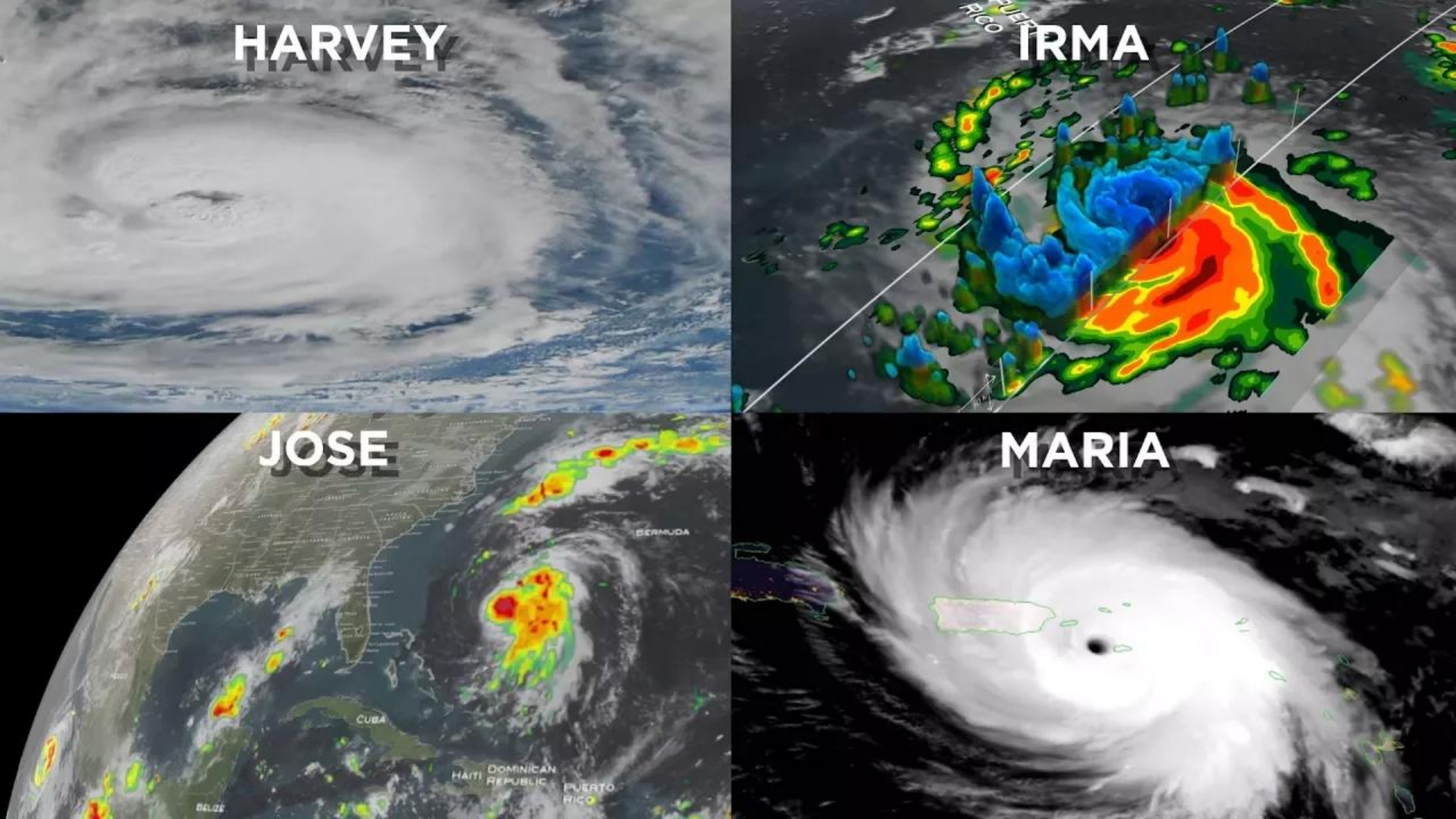
HARVEY
IRMA
JOSE
BERMUDA
CUBA
HAITI
DOMINICAN REPUBLIC
PUERTO RICO
BELIZE
MARIA

1
00:00:00,000 --> 00:00:02,190
Hurricane Harvey, Irma, and Maria

2
00:00:02,210 --> 00:00:04,300
wreaked havoc when they made landfall.

3
00:00:04,320 --> 00:00:07,120
They were all categorized as major hurricanes,

4
00:00:07,140 --> 00:00:12,300
but part of what made them so dangerous was how they rapidly intensified before moving inland.

5
00:00:12,320 --> 00:00:16,210
When hurricanes intensify a large amount in a short period,

6
00:00:16,230 --> 00:00:19,290
scientists call this process rapid intensification.

7
00:00:19,310 --> 00:00:24,500
This is the hardest aspect of a storm to forecast and it can be most critical to people’s lives.

8
00:00:24,520 --> 00:00:27,890
While any hurricane can threaten lives and cause damage

9
00:00:27,910 --> 00:00:30,740
with storm surges, floods, and extreme winds,

10
00:00:30,760 --> 00:00:34,810
a rapidly intensifying hurricane can greatly increase these risks

11
00:00:34,830 --> 00:00:38,570
while giving populations limited time to prepare and evacuate.

12
00:00:38,590 --> 00:00:43,030
Rapid intensification occurs when a hurricane’s maximum sustained winds

13
00:00:43,050 --> 00:00:49,280

increase at least 35 miles per hour in 24 hours and often results in major hurricanes.

14
00:00:49,300 --> 00:00:53,530
The latest Atlantic storm to rapidly intensify was Hurricane Maria,

15
00:00:53,550 --> 00:00:58,860
which developed from a Category 1 to a Category 5 hurricane in less than 18 hours.

16
00:00:58,880 --> 00:01:03,560
In the past few decades, forecasting errors for tracking hurricanes have decreased.

17
00:01:03,580 --> 00:01:07,440
While intensity forecast errors have shown recent improvement,

18
00:01:07,460 --> 00:01:11,850
significant errors can still occur because of rapidly intensifying storms.

19
00:01:11,870 --> 00:01:18,090
There are, however, clues to a rapidly intensifying hurricane that can be seen from NASA satellites.

20
00:01:18,110 --> 00:01:22,580
Scientists say ocean water needs to be warm - 80 Degrees Fahrenheit or higher.

21
00:01:22,600 --> 00:01:25,130
There also needs to be low vertical wind shear,

22
00:01:25,150 --> 00:01:27,780
meaning winds that don’t change much with altitude,

23
00:01:27,800 --> 00:01:31,840
so that the central part of the storm doesn’t get tilted over or ripped apart.

24
00:01:31,860 --> 00:01:35,530
A key indicator of a potentially rapidly intensifying storm

25
00:01:35,550 --> 00:01:39,410
storm is a symmetrical, deep ring of precipitation surrounding the eye.

26
00:01:39,430 --> 00:01:44,300
Rapidly intensifying storms typically occur up to twice in a hurricane season.

27
00:01:44,320 --> 00:01:48,350
But in 2017, we have seen four storms rapidly intensify

28
00:01:48,370 --> 00:01:52,910
and scientists attribute this to warmer ocean waters and favorable winds.

29
00:01:52,930 --> 00:01:56,660
But these key ingredients don’t always lead to rapid intensification

30
00:01:56,680 --> 00:01:59,090
-- proving that it’s a much more complex problem.

31
00:01:59,110 --> 00:02:05,460
Researchers say there are many small-scale processes, such as those associated with deep thunderstorms,

32
00:02:05,480 --> 00:02:08,570
that influence how strong a hurricane becomes.

33
00:02:08,590 --> 00:02:11,780
Satellites such as NASA’s Global Precipitation Measurement Mission