1
00:00:08,210 --> 00:00:04,100
[music]

2
00:00:08,230 --> 00:00:12,390
Of all of the instruments in NASA's

3
00:00:12,410 --> 00:00:16,570
Earth Observing System, MODIS has proven to be one of the most versatile,

4
00:00:16,590 --> 00:00:20,760
producing both groundbreaking science and compelling images.

5
00:00:20,780 --> 00:00:24,910
The Moderate-resolution Imaging Spectroradiometer,

6
00:00:24,930 --> 00:00:29,020
on both the Aqua and Terra satellites, has changed the way we look

7
00:00:29,040 --> 00:00:33,090
at our atmosphere, oceans, and land.

8
00:00:33,110 --> 00:00:37,190
KING: MODIS increased the wavelength range, covered more

9
00:00:37,210 --> 00:00:41,300
physical properties of the environment that it could monitor,

10
00:00:41,320 --> 00:00:45,370
it measured them down to as small as 250 meters, the size of a couple of football fields,

11
00:00:45,390 --> 00:00:49,410
in size. And had many more spectral bands to

12
00:00:49,430 --> 00:00:53,460
study more aspects of ocean biology, of the land,

13
00:00:53,480 --> 00:00:57,640

fires, and it was a very technological

14
00:00:57,660 --> 00:01:01,820
advance.  And for a long time

15
00:01:01,840 --> 00:01:06,000
in the EOS community, it was referred to

16
00:01:06,020 --> 00:01:10,170
as the quintessential instrument of the EOS because it did more things for more people,

17
00:01:10,190 --> 00:01:14,350
more disciplines than any other single instrument.

18
00:01:14,370 --> 00:01:18,540
NARRATION: The study of clouds is, not surprisingly, incredibly important for understanding

19
00:01:18,560 --> 00:01:22,720
weather and climate. And until MODIS came along,

20
00:01:22,740 --> 00:01:26,890
it was commonly accepted that at any given time the Earth was about 50 percent covered by clouds.

21
00:01:26,910 --> 00:01:31,060
But data from the instrument showed that cloud cover

22
00:01:31,080 --> 00:01:35,230
was actually closer to 70%.

23
00:01:35,250 --> 00:01:39,320
MODIS can also measure the temperature and height of clouds, and differentiate

24
00:01:39,340 --> 00:01:43,410
between clouds composed of liquid water, a¬nd those made of ice.

25
00:01:43,430 --> 00:01:47,490
MODIS also monitors the world’s oceans, measuring sea surface

26
00:01:47,510 --> 00:01:51,590
temperature, ocean color and clarity, and the basis of the

27
00:01:51,610 --> 00:01:55,620
marine food chain, phytoplankton.

28
00:01:55,640 --> 00:01:59,650
KING: MODIS has done a very good job of getting this biological signature.

29
00:01:59,670 --> 00:02:03,830
Chlorophyll A, which follows phytoplankton, ocean currents.

30
00:02:03,850 --> 00:02:08,010
You can see the seasonal variation

31
00:02:08,030 --> 00:02:12,180
due to El Niño and other things where the biological productivity of the ocean.

32
00:02:12,200 --> 00:02:16,300
This is important because this biological photosynthesis

33
00:02:16,320 --> 00:02:20,480
takes carbon dioxide out, produces oxygen as part of photosynthesis,

34
00:02:20,500 --> 00:02:24,700
and so it is a sink for carbon that we, Man, put in the atmosphere.

35
00:02:24,720 --> 00:02:28,890
NARRATION: MODIS also looks at the land, monitoring fires,

36
00:02:28,910 --> 00:02:33,020
land use change, and various measures of the Earth’s plant life.

37
00:02:33,040 --> 00:02:37,140
KING: So it’s been used for a long time to monitor

38
00:02:37,160 --> 00:02:41,310

the growth of vegetation, the seasonal cycle, and how that

39
00:02:41,330 --> 00:02:45,470
year-to-year, whether it’s due to droughts, associated with El Niño

40
00:02:45,490 --> 00:02:49,530
or the spread of the Sahara, but it’s a very good index to monitor.

41
00:02:49,550 --> 00:02:53,660
NARRATION: The versatility of MODIS,

42
00:02:53,680 --> 00:02:57,710
as it measures land, sea, and air, contributes to the wealth of information