
FLOODS
TOO MUCH
LANDSLIDES

1
00:00:00,020 --> 00:00:04,070
[Music, rain]

2
00:00:04,090 --> 00:00:08,100
[rain]
Dalia: GPM will help us to understand

3
00:00:08,120 --> 00:00:12,260
precipitation extremes. And this is everything from too much rainfall, such as

4
00:00:12,280 --> 00:00:16,430
flooding in India or Southeast Asia, to too little rainfall

5
00:00:16,450 --> 00:00:20,520
such as drought in the U.S. Southwest.

6
00:00:20,540 --> 00:00:24,670
[music]

7
00:00:24,690 --> 00:00:28,810
Eric: There's about one major flood a day

8
00:00:28,830 --> 00:00:32,920
someplace in the world, so it's not as if it's a rare event.

9
00:00:37,100 --> 00:00:33,040
[rain falling, thunder]

10
00:00:37,120 --> 00:00:41,190
the in situ data, the gauges, and the measured

11
00:00:41,210 --> 00:00:45,250
precipitation just isn't available.

12
00:00:45,270 --> 00:00:49,300
To predict floods you need to have the data in near real-time.

13

00:00:49,320 --> 00:00:53,320
And so the satellites are

14
00:00:53,340 --> 00:00:57,510
about the only way--GPM is about the only way--

15
00:00:57,530 --> 00:01:01,570
that this is going to happen. And so we're going to use GPM

16
00:01:01,590 --> 00:01:05,720
rainfall retrievals to go do analyses, do flood forecasting,

17
00:01:05,740 --> 00:01:09,890
and bring climate services,

18
00:01:09,910 --> 00:01:14,050
bring information, to users in these areas.

19
00:01:14,070 --> 00:01:18,240
[music]
Dalia: Landslides happen all over the world

20
00:01:18,260 --> 00:01:22,340
in nearly every country, and they cause more economic damage and more fatalities than

21
00:01:22,360 --> 00:01:26,490
people generally think. [rocks falling] The large

22
00:01:26,510 --> 00:01:30,590
majority of landslides around the world are triggered by intense or prolonged rainfall.

23
00:01:30,610 --> 00:01:34,640
[rain falling]
A landslide is a general

24
00:01:34,660 --> 00:01:38,690
term, often used for mudslides, debris flows, rock falls,

25

00:01:38,710 --> 00:01:42,720
and usually it's just a mass of rock, earth, and dirt

26
00:01:42,740 --> 00:01:46,770
basically moving down a hillslope. Typical

27
00:01:46,790 --> 00:01:50,870
landslide studies are done at the local scale and they use gauge data. Now this is a problem

28
00:01:50,890 --> 00:01:55,050
in areas of topography where we don't have gauges or radar, in particular

29
00:01:55,070 --> 00:01:59,220
in developing areas where we don't have any information. So satellite data

30
00:01:59,240 --> 00:02:03,410
is really important for understanding where and when this intense rainfall might happen

31
00:02:03,430 --> 00:02:07,570
that could trigger landslides.

32
00:02:19,940 --> 00:02:11,660
[music]

33
00:02:19,960 --> 00:02:23,960
we deal with drought on a regular basis. It tends to be cyclic.

34
00:02:23,980 --> 00:02:28,050
We'll get two or three dry years and we'll get a few wet years. If somebody

35
00:02:28,070 --> 00:02:32,140
could predict when the dry ones are coming, we'd be a lot better off.

36
00:02:32,160 --> 00:02:36,190
A lot of our water here comes in snow

37
00:02:36,210 --> 00:02:40,240
It accumulates up in the mountains in the wintertime, runs off

38
00:02:40,260 --> 00:02:44,410
in the spring, and that's we use for irrigation in the western U.S.

39
00:02:44,430 --> 00:02:48,600
Wade: Agricultural drought is defined as a lack of

40
00:02:48,620 --> 00:02:52,770
water within the top meter of soil

41
00:02:52,790 --> 00:02:56,940
for adequate crop functionalities, adequate

42
00:02:56,960 --> 00:03:01,120
crop productivity.

43
00:03:01,140 --> 00:03:05,280
And if you're talking about agricultural drought,

44
00:03:05,300 --> 00:03:09,470
probably the biggest error source is the quality of

45
00:03:09,490 --> 00:03:13,650
the precipitation information that you have available. If you have good precipitation

46
00:03:13,670 --> 00:03:17,810
information, you can do a very good job of characterizing drought and often its

47
00:03:17,830 --> 00:03:21,940
subsequent impact on agricultural productivity.

48
00:03:21,960 --> 00:03:26,080
Tom: We do work in research in

49
00:03:26,100 --> 00:03:30,200
determining the water needs of crops and what the impacts on crops are

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00:03:30,220 --> 00:03:34,290
if you don't have enough water. We're doing this because we

51
00:03:34,310 --> 00:03:38,380
realize that in the western U.S. there will likely be less water available

52
00:03:38,400 --> 00:03:42,440
in the future than there has been in the past, and the farmers need to know how

53
00:03:42,460 --> 00:03:46,490
to respond to that decreasing water supply.

54
00:03:46,510 --> 00:03:50,530
Certainly when we're looking nationwide, the better prediction we have of how much

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00:03:50,550 --> 00:03:54,600
rain we've been getting and how much is likely to come in the near future

56
00:03:54,620 --> 00:03:58,770
is very, very important. To the extent that we can predict that with satellites,

57
00:03:58,790 --> 00:04:02,800
it's really beneficial.

58
00:04:02,820 --> 00:04:06,930
This isn't just a U.S. problem; it's a global problem.

59
00:04:06,950 --> 00:04:11,010
Many countries of the world are facing the same kind of issues

60
00:04:11,030 --> 00:04:15,070
that we are. And so we expect this information to be able to be used

61
00:04:15,090 --> 00:04:19,190
in the east and the western U.S. and globally.
Dalia: We

62
00:04:19,210 --> 00:04:23,260

need accurate and timely rainfall information to understand disasters like

63
00:04:23,280 --> 00:04:27,330
floods, droughts, and landslides. GPM's global

64
00:04:27,350 --> 00:04:31,380
rainfall data will help us to better understand and model these types of disasters

65
00:04:31,400 --> 00:04:35,400
around the world.
[Music, whoosh]