1
00:00:00,030 --> 00:00:04,040
Field: So when we look at a global picture of fire, you can see fire everywhere

2
00:00:04,060 --> 00:00:08,060
on all continents. And at some level they're similar

3
00:00:08,080 --> 00:00:12,110
in that it's vegetation that's burning, but the drivers of those can be

4
00:00:12,130 --> 00:00:16,150
very different. In North America, for example,

5
00:00:16,170 --> 00:00:20,180
fires can be started by lightning, by natural factors, by

6
00:00:20,200 --> 00:00:24,230
people, often accidentally, and the explosive fires

7
00:00:24,250 --> 00:00:28,240
there that we see on TV are driven by the variability

8
00:00:28,260 --> 00:00:32,290
in the weather, so high winds at the surface for example. In other

9
00:00:32,310 --> 00:00:36,320
areas, in South America for example, wind-driven fires are less

10
00:00:36,340 --> 00:00:40,450
of an issue. It's primarily related to the land use. So

11
00:00:40,470 --> 00:00:44,470
using fire for land clearing and land preparation.

12
00:00:44,490 --> 00:00:48,530
In those cases, it's getting an accurate picture of the overall dryness

13
00:00:48,550 --> 00:00:52,560

of that area.
VO: NASA has a long history of monitoring fire

14
00:00:52,580 --> 00:00:56,620
and smoke using different satellites in the Earth Observing System. Data from the

15
00:00:56,640 --> 00:01:00,720
Global Precipitation Measurement mission, or GPM, and other satellites and

16
00:01:00,740 --> 00:01:04,760
models gives us information on rainfall, temperature and land cover, which

17
00:01:04,780 --> 00:01:08,790
in turn, create a more complete picture of a vegetation fire starting and spreading.

18
00:01:08,810 --> 00:01:12,850
That's the thinking behind the Global Fire Weather Database, the first

19
00:01:12,870 --> 00:01:16,900
globally consistent fire weather dataset for fire researchers and managers.

20
00:01:16,920 --> 00:01:20,970
Field: So the Global Fire Weather Database is designed to get at the

21
00:01:20,990 --> 00:01:25,030
underlying conditions that drive those fires. Really focused

22
00:01:25,050 --> 00:01:29,110
on the meteorological aspect and to be used alongside some

23
00:01:29,130 --> 00:01:33,140
of the other risk factors. As we learn how to make use of the

24
00:01:33,160 --> 00:01:37,180
satellite data in driving these calculations, from GPM in particular,

25
00:01:37,200 --> 00:01:41,200
that can translate into actual operational products used, for example,

26
00:01:41,220 --> 00:01:45,230
by the meteorological services in different countries

27
00:01:45,250 --> 00:01:49,280
for their localized fire weather products.

28
00:01:49,300 --> 00:01:53,310
A good example is in Indonesia, which has a very serious fire problem.

29
00:01:53,330 --> 00:01:57,350
It's all related to land clearing, and one issue there

30
00:01:57,370 --> 00:02:01,460
is that it's happening in very remote regions. And in those places

31
00:02:01,480 --> 00:02:05,490
there's very little data. It's not a data-rich environment, and so you're limited

32
00:02:05,510 --> 00:02:09,510
by the accuracy of the picture you can get.

33
00:02:09,530 --> 00:02:13,560
So in that case, when we use calculations based on GPM data,

34
00:02:13,580 --> 00:02:17,610
it fills in all of those gaps. And we've seen that over

35
00:02:17,630 --> 00:02:21,650
the past couple of years for some of its severe fire episodes

36
00:02:21,670 --> 00:02:25,680
that we get a much better picture of where the dry regions are compared

37
00:02:25,700 --> 00:02:29,730
to where it's very rainy. And those can be very close together

38

00:02:29,750 --> 00:02:33,820
because of how localized rainfall can be in the tropics.

39
00:02:33,840 --> 00:02:37,870
VO: Far away from the tropics, the Global Fire Weather Database is used

40
00:02:37,890 --> 00:02:41,940
to assess risk in Canada. In 2017, abnormally

41
00:02:41,960 --> 00:02:46,010
hot and dry weather, combined with stressed forests, led to severe

42
00:02:46,030 --> 00:02:50,090
fires throughout British Columbia. Through July and August, stretches of high

43
00:02:50,110 --> 00:02:54,130
fire risk in the interior led to periods of extreme fire behavior

44
00:02:54,150 --> 00:02:58,180
and the highest annual recorded burned area for the province.

45
00:02:58,200 --> 00:03:02,210
The impact from these fires isn't just on the ground. Plumes of smoke

46
00:03:02,230 --> 00:03:06,260
can travel and pollute the air beyond the source.
Field: In some cases we

47
00:03:06,280 --> 00:03:10,290
can see smoke plumes from Northern Canada transported over the

48
00:03:10,310 --> 00:03:14,320
Atlantic and arriving in Europe. In the most extreme cases, when

49
00:03:14,340 --> 00:03:18,350
those fires are really hot, the smoke from those fires can be

50
00:03:18,370 --> 00:03:22,390

ejected directly into the lower stratosphere.

51
00:03:22,410 --> 00:03:26,440
It's like a small volcano. And then can persist in

52
00:03:26,460 --> 00:03:30,500
the lower stratosphere for months.
VO: Fire weather data based on satellites like