



1
00:00:00,001 --> 00:00:01,936
[Fire Crackling]

2
00:00:01,936 --> 00:00:10,428
[onscreen text] Tracking Amazon Deforestation

3
00:00:10,428 --> 00:00:14,648
[Music]

4
00:00:14,648 --> 00:00:21,122
[Doug Morton] The Amazon is the largest tropical rainforest
in the world. At over six million square kilometers\h\h

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00:00:21,122 --> 00:00:26,811
the Amazon basin and the tropical forests that\h
it holds, are about the same size as the entire\h\h

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00:00:26,811 --> 00:00:32,483
continental United States. Home to millions\h
of people and tens of thousands of species.\h\h

7
00:00:33,267 --> 00:00:40,458
Landsat is NASA's longest-running record of our\h
changing planet. Data have been taken from Landsat\h\h

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00:00:40,458 --> 00:00:47,181
satellites since 1972, and that allows us to\h
go back in time over several very important\h\h

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00:00:47,181 --> 00:00:54,055
decades. The Landsat archive is perfectly timed\h
to capture many different waves of colonization\h\h

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00:00:54,055 --> 00:00:55,139
across the Amazon.\h

11
00:00:55,439 --> 00:00:59,910
[Tasso Azevedo] It's very powerful in\hthis sense
because it's not just an image.

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00:00:59,910 --> 00:01:06,951
It's actually a bunch of information. What happens with Landsat is that it has several bands which

13
00:01:06,951 --> 00:01:12,723
have specific information. So pixel by pixel you have at least seven pieces of information that

14
00:01:12,723 --> 00:01:19,914
can be combined in different ways to see different things. So if you are interested to see vegetation

15
00:01:19,914 --> 00:01:24,235
there is one combination that you make that can give you more information about vegetation.

16
00:01:25,319 --> 00:01:31,642
[Doug] Landsat satellite data are the most important source we have about how much deforestation

17
00:01:31,642 --> 00:01:38,282
happens each year across the Amazon. 40 years ago we see small-scale deforestation creating

18
00:01:38,282 --> 00:01:43,320
roads that look like fish bones into the forest. But by the middle of the Landsat record, we see

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00:01:43,320 --> 00:01:49,410
large-scale commodity production taking hold. So today's deforestation across the Amazon frontier

20
00:01:49,410 --> 00:01:55,399
isn't a single-family, it's tractors and bulldozers clearing large swaths of rainforest to make room

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00:01:55,399 --> 00:02:01,972
for industrial-scale cattle ranching and crops. So far the amount of area that's

22
00:02:01,972 --> 00:02:08,629
been deforested in the Brazilian Amazon alone is
equivalent to the size of the state of California.

23
00:02:09,830 --> 00:02:16,153
Deforestation in the Amazon happens with
fire. Today's deforestation looks like the

24
00:02:16,153 --> 00:02:21,909
large-scale clearing of swathes of rainforest,
using heavy machinery; and then the land is burned

25
00:02:22,526 --> 00:02:27,531
and burned again to remove all of the tropical
trees and timber.

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00:02:29,300 --> 00:02:36,974
If we think about the size of a soccer field, we think about deforestation
in those same size categories. So deforestation

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00:02:36,974 --> 00:02:42,096
in the early part of the Landsat record might
have been numbered in a single soccer field.

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00:02:42,096 --> 00:02:47,985
Today's deforestation happens in
tens if not hundreds of soccer fields.

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00:02:50,404 --> 00:02:53,607
The value of the Landsat archive is that we have

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00:02:53,607 --> 00:02:59,213
a long-term memory of the changes that
have occurred across the Amazon frontier.

31
00:03:04,051 --> 00:03:09,657
And the MapBiomas record of land cover
across the Amazon is an excellent example.

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00:03:11,825 --> 00:03:19,266

[Tasso] So MapBiomass is a network, formed by NGOs that works with science universities and startups\h\h

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00:03:19,266 --> 00:03:26,457

in technology. Our mission is to map and monitor\h everything that is related to land cover, land use\h\h

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00:03:26,457 --> 00:03:34,715

in Brazil, always with a historical perspective. Because back in '75, 0.5% of deforestation,\h\h

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00:03:34,715 --> 00:03:40,554

less than one percent. In '88 was 5% and now we are getting close to 20%

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00:03:40,554 --> 00:03:46,560

of deforestation in the Amazon. You know between\h 20% and 25% what the science is saying that it's\h\h

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00:03:46,560 --> 00:03:54,068

maybe the point of no return. And that's very fast,\h right? 40-45 years to lose 20% of the Amazon.\h

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00:03:54,919 --> 00:04:01,558

So we could precisely identify how many events of\h deforestation happen in Brazil, or what's the size,\h\h

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00:04:01,558 --> 00:04:05,796

who is responsible, what is the piece of land\h that is there, if they have an authorization\h\h

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00:04:05,796 --> 00:04:13,470

or not. And we find out that over 99% of all the\h deforestation that happened in Brazil in 2019,\h\h

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00:04:13,470 --> 00:04:19,310

it was illegal. It's really kind of a striking\h information that make us to move and say, "Okay we\h\h

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00:04:19,310 --> 00:04:25,716

can't accept, we just simply can't accept that we\h
live on a place where the illegality is actually\h\h

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00:04:25,716 --> 00:04:30,754

the norm." Right? So this is like the type of thing\h
that we want to kind of use the remote sensing\h\h

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00:04:30,754 --> 00:04:36,277

data to kind of shake in the decision-making\h
process of the different agencies in the public\h\h

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00:04:36,277 --> 00:04:41,548

and in the private sector. To make better decisions\h
for what we call the stewardship of the management\h\h

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00:04:41,548 --> 00:04:45,219

of our natural resources which are crucial for all\h
reasons in Brazil.

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00:04:46,737 --> 00:04:49,590

The advantage of Landsat.

First, it's free. \h\h

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00:04:49,590 --> 00:04:56,263

That's absolutely crucial for us. Second, is\hthat
there's no other sensor, not even with lower\h\h

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00:04:56,263 --> 00:05:02,186

resolution, or high resolution, that will have a\h
history consistent over the time for 35 years\h\h

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00:05:02,186 --> 00:05:03,771

of image available.\h

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00:05:03,771 --> 00:05:08,942

So, if you really want to have\ha long history
of understanding of any process in the Earth,

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00:05:08,942 --> 00:05:10,828

Landsat is where you should go.

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00:05:10,911 --> 00:05:14,732

[Doug] Without Landsat we would not have the record we have today,

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00:05:14,732 --> 00:05:20,421

about deforestation, and changing agriculture across a vast and important biome.

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00:05:21,355 --> 00:05:27,678

We anticipate the launch next year of Landsat 9, which will carry on the legacy of this data record,

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00:05:27,678 --> 00:05:33,450

allows us to go back in time, and understand how our planet has changed over 40 years.

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00:05:33,450 --> 00:05:37,338

[Music]