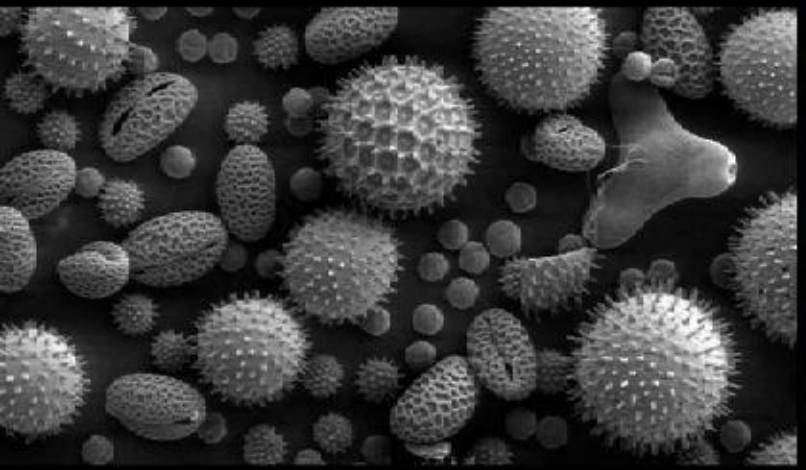

1
00:00:08,300 --> 00:00:04,170
[music]

2
00:00:08,320 --> 00:00:12,420
Narrator: New satellite data show that every year, 64 million tons of airborne particles

3
00:00:12,440 --> 00:00:16,520
arrive in North American airspace from foreign sources,

4
00:00:16,540 --> 00:00:20,600
almost as much those produced domestically.

5
00:00:20,620 --> 00:00:24,630
These particles are called aerosols, a broad term that includes particulate pollution,

6
00:00:24,650 --> 00:00:28,670
soot from fires, salt from the ocean, grains of pollen,

7
00:00:28,690 --> 00:00:32,690
volcanic ash, and dust from deserts.

8
00:00:32,710 --> 00:00:36,860
And as it turns out the vast majority of these imported aerosols are in the

9
00:00:36,880 --> 00:00:41,050
and arrive in North America via air currents over

10
00:00:41,070 --> 00:00:45,220
the Pacific Ocean.

11
00:00:45,240 --> 00:00:49,390
For years researchers have used increasingly powerful computer models to simulate the transport of

12
00:00:49,410 --> 00:00:53,560
aerosols around the globe. But we had no good way of measuring

13
00:00:53,580 --> 00:00:57,750

how much of this aerosol mass was produced at home and how much came from abroad,

14
00:00:57,770 --> 00:01:01,920
how much was pollution and how much was dust, or how high these particles

15
00:01:01,940 --> 00:01:06,060
were in the atmosphere, all important factors in assessing aerosols'

16
00:01:06,080 --> 00:01:10,150
impacts on air quality and Earth's climate.

17
00:01:10,170 --> 00:01:14,240
Now a new analysis of NASA satellite data has given us some surprising answers.

18
00:01:14,260 --> 00:01:18,320
Remer: The first was that half of the particles that are above North America

19
00:01:18,340 --> 00:01:22,400
come from someplace else. And that's a big number, half.

20
00:01:22,420 --> 00:01:26,440
I wasn't expecting anything like that. The second piece was

21
00:01:26,460 --> 00:01:30,480
that even though these particles are coming from someplace else, they come in high in the atmosphere.

22
00:01:30,500 --> 00:01:34,640
They're not on the ground, so we're not breathing them. And the third piece

23
00:01:34,660 --> 00:01:38,830
of the study I found really surprising, that most of it is dust

24
00:01:38,850 --> 00:01:43,010
and natural aerosol, not manmade aerosol. And again,

25
00:01:43,030 --> 00:01:47,190
that, that has implications for if you're trying to control how much

26
00:01:47,210 --> 00:01:51,360
pollution goes from one continent to the next, from one country to the next,

27
00:01:51,380 --> 00:01:55,530
even if you turned off all the industry everywhere else, we would

28
00:01:55,550 --> 00:01:59,680
still have all these foreign particles in our air shed above us

29
00:01:59,700 --> 00:02:03,820
because it’s, it’s natural. But as it turns out,

30
00:02:03,840 --> 00:02:07,950
we should still keep focused on our own pollution in order to

31
00:02:07,970 --> 00:02:12,100
keep our air healthy because the particles that come from other places come high.

32
00:02:12,120 --> 00:02:16,240
Narrator: Besides direct impacts on human health, we need to better understand how the

33
00:02:16,260 --> 00:02:20,300
movement of aerosols affect weather and climate.

34
00:02:20,320 --> 00:02:24,400
For example, some aerosols can change precipitation patterns by

35
00:02:24,420 --> 00:02:28,460
while other dust and soot particles can

36
00:02:28,480 --> 00:02:32,510
build up on snow surfaces and have local effects.

37
00:02:32,530 --> 00:02:36,550
Yu: That could make snow darker and

38
00:02:36,570 --> 00:02:40,720

easier to melt. So

39
00:02:40,740 --> 00:02:44,910
this could have a significant impact on the water supply

40
00:02:44,930 --> 00:02:49,080
of the Western U.S. Narrator: The imported aerosols

41
00:02:49,100 --> 00:02:53,260
primarily reflect sunlight, resulting in a cooler

42
00:02:53,280 --> 00:02:57,430
Earth-atmosphere system that partly compensates for the larger warming effect

43
00:02:57,450 --> 00:03:01,590
of greenhouse gases. Some imported aerosols actually like dust

44
00:03:01,610 --> 00:03:05,770
and soot absorb sunlight and heat the local atmosphere.

45
00:03:05,790 --> 00:03:09,920
Yu: This could change atmospheric circulations

46
00:03:09,940 --> 00:03:14,040
and it could have a significant impact on weather and climate.

47
00:03:14,060 --> 00:03:18,080
I think the take home message is

48
00:03:26,180 --> 00:03:30,220
So, that's my