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1
00:00:00,080 --> 00:00:04,200
So we're here in Praia da Vitória in the Azore

2
00:00:04,200 --> 00:00:08,400
Islands. That's on a latitude that's about the same as Washington

3
00:00:08,400 --> 00:00:12,540
D.C. The other day we flew all the way from Ascension Island, which is about

4
00:00:12,540 --> 00:00:16,720
500 miles south of the equator, up here

5
00:00:16,720 --> 00:00:20,770
to Praia da Vitória. Now when we did that, we crossed from the Southern

6
00:00:20,770 --> 00:00:24,920
Hemisphere into the Northern hemisphere. And in fact we crossed from the southern

7
00:00:24,920 --> 00:00:29,110
climate into the northern climate. So the flight was

8
00:00:29,110 --> 00:00:33,290
very interesting because on the Southern Hemisphere we

9
00:00:33,290 --> 00:00:37,450
flew through a lot of biomass burning plumes, which were coming out of Africa,

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00:00:37,450 --> 00:00:41,540
and with our instrument we can measure the dust particles and the biomass

11
00:00:41,540 --> 00:00:45,700
burning particles. And then we crossed the equator and then we

12
00:00:45,700 --> 00:00:49,840
flew in this big huge Saharan dust plume coming out of

13
00:00:49,840 --> 00:00:53,960

Africa traveling across the Atlantic ocean. Mineral dust is about half of

14
00:00:53,960 --> 00:00:58,150
the globally emitted aerosol mass per year, and we got the chance

15
00:00:58,150 --> 00:01:02,290
to measure all those dust particles and this will allow us to understand

16
00:01:02,290 --> 00:01:06,500
the interaction of the dust particles with the climate.

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00:01:06,500 --> 00:01:10,510
Yeah, I think it's quite exciting to have this data and look at this.. So for the U.S. it's really important because, o

18
00:01:10,510 --> 00:01:14,600
start, just around Africa in the Atlantic

19
00:01:14,600 --> 00:01:18,610
ocean, they move across the Atlantic. So the dry air

20
00:01:18,610 --> 00:01:22,750
and the dust getting wrapped into these hurricanes, they impact hurricanes.

21
00:01:22,750 --> 00:01:26,860
So you're measurements are really really important for understanding this critical

22
00:01:26,860 --> 00:01:30,880
science topic for people in the U.S.

23
00:01:30,880 --> 00:01:35,020
Yesterday we flew from Lajes on the island of Terceira, which is the eastern

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00:01:35,020 --> 00:01:39,200
most island of the Azores. And we flew up over the Greenland ice sheet

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00:01:39,200 --> 00:01:43,410
as far north as we could and did a profile over

26
00:01:43,410 --> 00:01:47,530
a measurement site called Eureka, which is about 85 degrees north.

27
00:01:47,530 --> 00:01:51,710
Profiled down and then back in to Kangerlussuaq in Greenland.

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00:01:51,710 --> 00:01:55,740
We're on the western edge about midway down the island,

29
00:01:55,740 --> 00:01:59,930
and behind me is the Russell glacier, which is fed by the

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00:01:59,930 --> 00:02:04,020
Greenland ice sheet, which is a huge source of water

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00:02:04,020 --> 00:02:08,100
to the oceans when this melts. If glaciers are over water,

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00:02:08,100 --> 00:02:12,240
they generally don't have any effect on sea level rise. But a glacier like this

33
00:02:12,240 --> 00:02:16,370
that's on the land will have a huge effect on sea level rise. It's been

34
00:02:16,370 --> 00:02:20,490
estimated that 80,000 gallons a day

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00:02:20,490 --> 00:02:24,600
comes out of these glaciers. On yesterday's flight,

36
00:02:24,600 --> 00:02:28,710
we saw really high concentrations of CO and a lot of

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00:02:28,710 --> 00:02:32,760
biomass burning from all the fires in Siberia. Eventually

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00:02:32,760 --> 00:02:36,820

that biomass burning emissions, like black carbon,

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00:02:36,820 --> 00:02:40,890
they'll be deposited onto the Greenland ice sheet and here

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00:02:40,890 --> 00:02:45,010
here you can see a lot of the black debris that forms from that,

41
00:02:45,010 --> 00:02:49,140
which actually makes it start to thaw out a lot quicker because of the dark

42
00:02:49,140 --> 00:02:53,340
color that absorbs extra heat.

43
00:02:57,470 --> 00:03:01,540
We're here at the end of the ATom-1 deployment.

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00:03:01,540 --> 00:03:05,640
For our last two flights we flew from Kangerlussuaq

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00:03:05,640 --> 00:03:09,710
in Greenland down to Minneapolis. And then we flew from Minneapolis

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00:03:09,710 --> 00:03:13,820
back to Palmdale. So on the flight from Kangerlussuaq, we actually saw quite

47
00:03:13,820 --> 00:03:17,950
a lot of methane as we flew over the Hudson Bay Lowlands, and then we also

48
00:03:17,950 --> 00:03:22,050
saw a lot of methane as we arrived in to do a low approach over Park

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00:03:22,050 --> 00:03:26,100
Falls, Wisconsin. The Hudson Bay Lowands are the largest source of natural

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00:03:26,100 --> 00:03:30,140
methane on the North American continent, so I shouldn't have been too surprised.

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00:03:30,140 --> 00:03:34,170
Wisconsin has quite a lot of agriculture, and there's a lot of

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00:03:34,170 --> 00:03:38,320
methane that comes from agricultural sources. So in the last flight

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00:03:38,320 --> 00:03:42,410
we found a lot of biomass burning aerosols again.

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00:03:42,410 --> 00:03:46,550
We have seen it during the whole campaign. So biomass burning is a big source for aerosols and gases

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00:03:46,550 --> 00:03:50,750
and with the climate warming up there is predictions showing that the number of fires

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00:03:50,750 --> 00:03:54,820
might go up. So is the tie-up at the end of ATom.

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00:03:54,820 --> 00:03:58,890
As you can see we actually have a completely empty aircraft. All

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00:03:58,890 --> 00:04:02,930
of the bigwigs and senior scientists have gone home, so it's just the

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00:04:02,930 --> 00:04:07,110
instrument people who are still here. But we've managed to get everything off in I think

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00:04:07,110 --> 00:04:11,140
record time, two days. It took us two weeks or more? I think it took us four weeks

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00:04:11,140 --> 00:04:15,200
to get everything in and it's really hard to believe that it took us less than

62
00:04:15,200 --> 00:04:19,340
two days to get everything out. So we will see you all again in December