
NASA
EPISODE TWO:
FOLLOW THAT PLUME!

1
00:00:01,270 --> 00:00:05,460
This mobile laboratory has been deployed for a very specific reason.

2
00:00:05,460 --> 00:00:08,310
The Shady Fire is burning nearby,

3
00:00:08,310 --> 00:00:15,160
and this team is gathering data that you can only get at night.

4
00:00:16,330 --> 00:00:20,550
NASA Explorers

5
00:00:21,530 --> 00:00:22,460
Episode Two

6
00:00:22,460 --> 00:00:25,000
Follow That Plume!

7
00:00:25,000 --> 00:00:27,330
Fires

8
00:00:28,710 --> 00:00:32,420
Over the next several weeks NASA and NOAA are teaming up

9
00:00:32,420 --> 00:00:36,920
in the field to studying smoke from wildfires and agricultural burning.

10
00:00:36,920 --> 00:00:42,170
Here’s what 24 hours looks like in the life of these fire chasers.

11
00:00:42,170 --> 00:00:45,130
The team’s been keeping a close eye on the Shady Fire,

12
00:00:45,130 --> 00:00:49,620
burning just four hours northeast of the base of operations.

13
00:00:49,620 --> 00:00:50,390

Gowen Field, Idaho Air National Guard

14
00:00:50,390 --> 00:00:54,770
After several days of watching the fire grow, the forecasting team decides

15
00:00:54,770 --> 00:00:59,150
to deploy the mobile laboratory and the NASA and NOAA planes.

16
00:00:59,150 --> 00:01:02,320
The ground crew and pilots are already preparing the plane

17
00:01:02,320 --> 00:01:05,970
by the time the forecasters give their daily briefing.

18
00:01:05,970 --> 00:01:09,600
The more we learn about smoke, the better we'll understand health.

19
00:01:09,600 --> 00:01:11,980
My name is Amber Soja and

20
00:01:11,980 --> 00:01:16,700
my role here is to determine what fires we should target.

21
00:01:17,260 --> 00:01:24,850
Smoke is related to respiratory illness, heart attacks and even death.

22
00:01:24,850 --> 00:01:28,000
For some of our scientists, understanding pollution

23
00:01:28,000 --> 00:01:30,960
has defined the course of their life’s work.

24
00:01:31,460 --> 00:01:33,410
I’m a physical chemist

25
00:01:33,410 --> 00:01:40,610
but I’m also from what 60 Minutes called the most polluted city in America - Anniston, Alabama.

26
00:01:40,610 --> 00:01:43,380
When the opportunity came along to do this type of work,

27
00:01:43,380 --> 00:01:45,850
I really resonated with it.

28
00:01:45,850 --> 00:01:50,380
Dr. Bruce Anderson is the Langley Aerosol Research Group Lead,

29
00:01:50,380 --> 00:01:54,630
and a seasoned veteran when it comes to doing fieldwork in remote places.

30
00:01:54,630 --> 00:02:02,030
By 3pm, both the NASA DC-8 and the Mobile Laboratory are about ready to go.

31
00:02:02,030 --> 00:02:06,200
Bruce and his team begin with a five hour drive to reach the fire.

32
00:02:06,200 --> 00:02:08,230
We'll catch up with them later.

33
00:02:08,230 --> 00:02:12,480
While the ground crew, pilots and safety techs prepare for what will

34
00:02:12,480 --> 00:02:16,740
likely be six hours of flying through smoke plume after smoke plume,

35
00:02:16,740 --> 00:02:22,110
the scientists ready their instruments to capture data from the notorious Shady Fire.

36
00:02:24,010 --> 00:02:28,050
Thirty minutes into the flight and the team has already reached the fire.

37
00:02:28,050 --> 00:02:30,380
Here's where the work begins.

38
00:02:30,380 --> 00:02:37,080

These flights are rare opportunities for scientists, so not a moment is wasted.

39
00:02:38,380 --> 00:02:42,940
I think that studying fire and chemistry,

40
00:02:42,940 --> 00:02:47,340
it only comes together when you have a diverse team of scientists

41
00:02:47,340 --> 00:02:51,850
As the sun starts to set, the plume is harder for the pilots to see

42
00:02:51,850 --> 00:02:56,760
and around 10pm, the plane heads home after a successful flight.

43
00:02:56,760 --> 00:03:02,520
Smoke sinks lower to the ground at night and sometimes accumulates in valleys

44
00:03:02,520 --> 00:03:06,620
which is exactly where Bruce and his team are waiting for it.

45
00:03:08,330 --> 00:03:13,610
We'll set out, drive up there, find a place to position the van

46
00:03:13,610 --> 00:03:19,120
then start cranking up instruments. I takes about a half hour to an hour

47
00:03:19,120 --> 00:03:21,740
to get everything running and calibrated.

48
00:03:21,740 --> 00:03:27,570
It's a guaranteed bad night's sleep, but you know, you can tolerate anything for a day or two.

49
00:03:27,570 --> 00:03:32,570
This team of five scientists will be up almost every half hour checking measurements,

50
00:03:32,570 --> 00:03:35,380
replacing filters and at one point,

51
00:03:35,380 --> 00:03:39,450
repositioning the van to capture emissions more effectively.

52
00:03:39,990 --> 00:03:46,420
It’s a long, cold night, but eventually it’s dawn and time to head back to town.

53
00:03:46,420 --> 00:03:51,240
By 7:30, the forecasters have already been awake for at least two hours

54
00:03:51,240 --> 00:03:54,630
selecting which fires the science team should target that day

55
00:03:54,630 --> 00:03:58,600
- including a scheduled return to the Shady Fire.

56
00:03:58,600 --> 00:04:02,690
In about two hours, the plane will be bustling with scientists

57
00:04:02,690 --> 00:04:06,750
preparing their instruments for the day’s flight

58
00:04:06,750 --> 00:04:10,390
and the whole cycle will start all over again.

59
00:04:14,550 --> 00:04:16,620
On the next episode of NASA Explorers

60
00:04:17,830 --> 00:04:23,720
I feel like the work that I do, the knowledge that I’m trying to pull together