Anomalous Transport Rocket EXperiment

1
00:00:08,140 --> 00:00:04,050
Bell Tone

2
00:00:08,160 --> 00:00:12,310
(Music) Narrator: The jet stream

3
00:00:12,330 --> 00:00:16,400
may be the best known high altitude air current, but it is not the only one.

4
00:00:16,420 --> 00:00:20,460
Measurements from the last sixty years and observations of the movement of

5
00:00:20,480 --> 00:00:24,480
space shuttle exhaust, indicate that there is a region between 62

6
00:00:24,500 --> 00:00:28,530
and 68 miles up that experiences wind speeds of 200 to 300

7
00:00:28,550 --> 00:00:32,620
miles per hour. At that altitude--right on the official boundary

8
00:00:32,640 --> 00:00:36,640
of space--it is extremely hard to measure the wind, because the atmosphere is so

9
00:00:36,660 --> 00:00:40,690
thin. It is also high enough that only powerful rockets are capable

10
00:00:40,710 --> 00:00:44,750
of reaching it. The ATREX, or Anomalous Transport Rocket

11
00:00:44,770 --> 00:00:48,770
EXperiment, mission is launching to study this ultra-high altitude wind

12
00:00:48,790 --> 00:00:52,820
over the eastern seaboard of the U.S. It will consist of five

13
00:00:52,840 --> 00:00:56,910

rockets, launched within minutes of each other from the Wallops Flight Facility in

14
00:00:56,930 --> 00:01:00,950
Virginia. As each rocket rises above fifty miles

15
00:01:00,970 --> 00:01:05,010
it will release a chemical tracer into the upper atmosphere, dispersed over a horizontal

16
00:01:05,030 --> 00:01:09,100
range that extends approximately 340 miles east, southeast

17
00:01:09,120 --> 00:01:13,180
from Wallops. The tracer is trimethylaluminium,

18
00:01:13,200 --> 00:01:17,180
which glows when it reacts with oxygen. The products of this reaction are

19
00:01:17,200 --> 00:01:21,240
aluminium oxide, carbon dioxide, and water vapor all of which are found in the

20
00:01:21,260 --> 00:01:25,350
atmosphere. Cameras positioned in North Carolina and New Jersey will

21
00:01:25,370 --> 00:01:29,400
watch for the glowing trails, which will reveal the wind's direction and speed.

22
00:01:29,420 --> 00:01:33,490
Understanding the patterns and causes of this wind will help NASA and private

23
00:01:33,510 --> 00:01:37,520
corporations with future high altitude/low orbit missions.

24
00:01:37,540 --> 00:01:41,600
It is possible to have five rockets for one mission because ATREX is

25
00:01:41,620 --> 00:01:45,630
using sounding rockets. Sounding rockets are small powerful rockets

26
00:01:45,650 --> 00:01:49,800
that usually carry a payload up and then back down to Earth.

27
00:01:49,820 --> 00:01:53,920
They can't carry much weight but this makes them far less expensive and a good

28
00:01:53,940 --> 00:01:57,940
way to make observations at the edge of space.

29
00:01:57,960 --> 00:02:01,980
Music