1
00:00:09,890 --> 00:00:08,089
hi my name is tom trager and i'm a high

2
00:00:11,060 --> 00:00:09,900
school or sciences teacher we're

3
00:00:13,580 --> 00:00:11,070
currently learning about climate change

4
00:00:15,680 --> 00:00:13,590
in my class climate change is part of a

5
00:00:17,150 --> 00:00:15,690
complex process we learn the carbon is

6
00:00:20,179 --> 00:00:17,160
naturally released into the atmosphere

7
00:00:22,370 --> 00:00:20,189
and then absorb over again and again and

8
00:00:24,650 --> 00:00:22,380
we also learn how human activity can

9
00:00:26,509 --> 00:00:24,660
upset this down I'm finding that the

10
00:00:29,210 --> 00:00:26,519
more I teach my students about climate

11
00:00:31,939 --> 00:00:29,220
change the more questions they have why

12
00:00:35,569 --> 00:00:31,949
is carbon dioxide so important carbon

13
00:00:37,819 --> 00:00:35,579

dioxide is a major greenhouse gas and is

14
00:00:40,220 --> 00:00:37,829
argued to be a leading contributor to

15
00:00:42,709 --> 00:00:40,230
global climate change and it's primarily

16
00:00:44,510 --> 00:00:42,719
coming from human activities some of

17
00:00:45,910 --> 00:00:44,520
those human activities that are emitting

18
00:00:48,529 --> 00:00:45,920
carbon dioxide into our atmosphere

19
00:00:51,200 --> 00:00:48,539
include the burning of fossil fuels

20
00:00:53,119 --> 00:00:51,210
because of this we've been building up

21
00:00:55,130 --> 00:00:53,129
the concentrations of this gas in our

22
00:00:58,220 --> 00:00:55,140
atmosphere very very rapidly over the

23
00:01:00,139 --> 00:00:58,230
last 50 or so years how much carbon

24
00:01:03,070 --> 00:01:00,149
dioxide are we actually putting into the

25
00:01:05,600 --> 00:01:03,080
atmosphere every year human activity is

26
00:01:08,780 --> 00:01:05,610
responsible for approximately eight

27
00:01:11,719 --> 00:01:08,790
billion metric tons of carbon being

28
00:01:14,539 --> 00:01:11,729
released into the atmosphere just what

29
00:01:17,660 --> 00:01:14,549
is a metric ton of carbon one ton of

30
00:01:21,289 --> 00:01:17,670
carbon would be the equivalent of say a

31
00:01:24,109 --> 00:01:21,299
small convertible sports car okay now

32
00:01:26,899 --> 00:01:24,119
eight billion of those are put into the

33
00:01:29,510 --> 00:01:26,909
atmosphere every year that's more than

34
00:01:32,300 --> 00:01:29,520
one sports car or one ton of carbon

35
00:01:34,640 --> 00:01:32,310
being put into the atmosphere for every

36
00:01:38,499 --> 00:01:34,650
man woman and child living on the earth

37
00:01:41,060 --> 00:01:38,509
today so where is all that carbon going

38
00:01:42,980 --> 00:01:41,070

approximately half of the carbon dioxide

39
00:01:45,620 --> 00:01:42,990
that's emitted by human activities

40
00:01:48,170 --> 00:01:45,630
remains in the atmosphere the other half

41
00:01:51,380 --> 00:01:48,180
of that carbon dioxide is disappearing

42
00:01:53,780 --> 00:01:51,390
it's being absorbed by the oceans and by

43
00:01:57,350 --> 00:01:53,790
the terrestrial biosphere but we don't

44
00:01:58,639 --> 00:01:57,360
know where it's being absorbed how are

45
00:02:01,160 --> 00:01:58,649
you gonna figure out where all that

46
00:02:03,740 --> 00:02:01,170
carbon dioxide is going the orbiting

47
00:02:05,870 --> 00:02:03,750
carbon Observatory is really NASA's

48
00:02:07,760 --> 00:02:05,880
first truly dedicated mission for

49
00:02:10,190 --> 00:02:07,770
measuring co2 in the atmosphere

50
00:02:12,140 --> 00:02:10,200
the satellite then will allow us to find

51
00:02:13,790 --> 00:02:12,150
out where the carbon dioxide is coming

52
00:02:16,009 --> 00:02:13,800
from where it's being produced and

53
00:02:18,199 --> 00:02:16,019
emitted into the atmosphere and where

54
00:02:20,780 --> 00:02:18,209
it's being reabsorbed into land plants

55
00:02:23,570 --> 00:02:20,790
and into the oceans the satellite brings

56
00:02:26,839 --> 00:02:23,580
back hundreds of thousands of

57
00:02:29,360 --> 00:02:26,849
measurements per day and so by making so

58
00:02:31,699 --> 00:02:29,370
many more measurements over much more of

59
00:02:34,039 --> 00:02:31,709
the surface of the earth we can increase

60
00:02:37,190 --> 00:02:34,049
our understanding just by overwhelming

61
00:02:38,960 --> 00:02:37,200
the problem with more data well why is

62
00:02:40,819 --> 00:02:38,970
it important that we know exactly where

63
00:02:42,740 --> 00:02:40,829

all the carbon dioxide is going one of

64
00:02:44,839 --> 00:02:42,750
the fundamental goals for the orbiting

65
00:02:47,900 --> 00:02:44,849
carbon Observatory is to obtain the

66
00:02:50,120 --> 00:02:47,910
necessary information and data so that

67
00:02:51,650 --> 00:02:50,130
policymakers not just here in the United

68
00:02:53,990 --> 00:02:51,660
States but throughout the world can make

69
00:02:56,270 --> 00:02:54,000
better informed decisions bo co

70
00:02:58,880 --> 00:02:56,280
measurements could give us an indication

71
00:03:00,979 --> 00:02:58,890
of how much longer we can burn fossil

72
00:03:03,800 --> 00:03:00,989
fuels at the rate that we're bringing

73
00:03:06,289 --> 00:03:03,810
them now how much more co2 we can add to

74
00:03:08,360 --> 00:03:06,299
our atmosphere before it does produce

75
00:03:10,580 --> 00:03:08,370
climate changes that are unacceptable

76
00:03:13,520 --> 00:03:10,590
but we need the measurements that

77
00:03:15,949 --> 00:03:13,530
spacecraft like ocl will make in order

78
00:03:18,620 --> 00:03:15,959
to understand the processes controlling

79
00:03:20,420 --> 00:03:18,630
the rate of buildup of carbon dioxide in

80
00:03:23,270 --> 00:03:20,430
our atmosphere so that we can understand