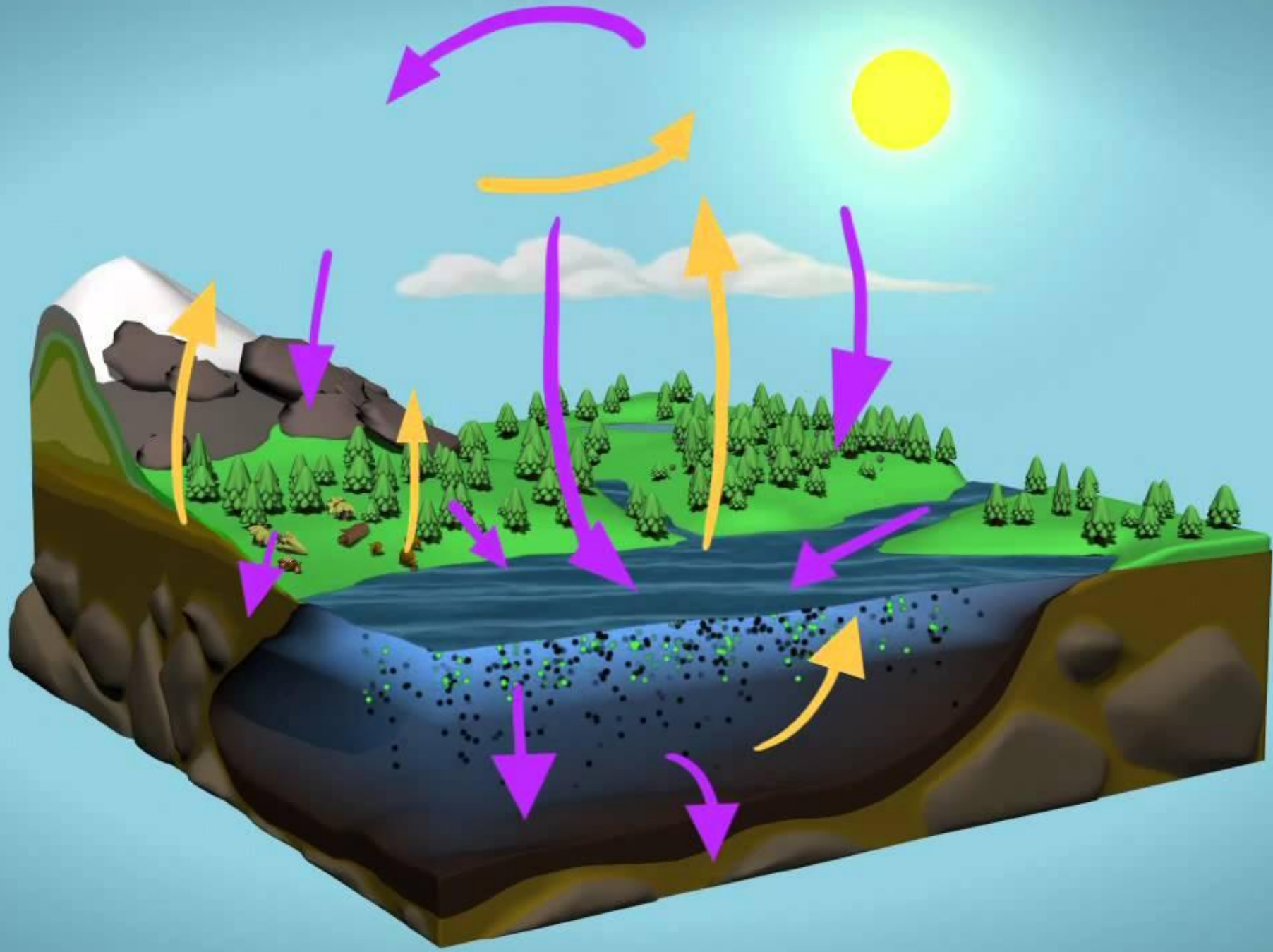

1
00:00:13,390 --> 00:00:10,420
since instrumental measurements began in

2
00:00:16,390 --> 00:00:13,400
the 1880s the past decade is officially

3
00:00:19,029 --> 00:00:16,400
the warmest on record previous research

4
00:00:21,550 --> 00:00:19,039
suggested that in the 1980s and 90s

5
00:00:24,460 --> 00:00:21,560
warmer temperatures and higher levels of

6
00:00:26,829 --> 00:00:24,470
precipitation factors associated with

7
00:00:30,310 --> 00:00:26,839
climate change were generally good for

8
00:00:34,960 --> 00:00:30,320
plant growth but it is possible we've

9
00:00:36,729 --> 00:00:34,970
had too much of a good thing an updated

10
00:00:39,160 --> 00:00:36,739
analysis published this week in the

11
00:00:41,410 --> 00:00:39,170
journal Science indicates that as

12
00:00:43,150 --> 00:00:41,420
temperatures have continued to rise the

13
00:00:45,910 --> 00:00:43,160

benefits to plant growth are now

14
00:00:48,430 --> 00:00:45,920
overwhelmed by longer and more frequent

15
00:00:50,980 --> 00:00:48,440
droughts scientists from the University

16
00:00:53,650 --> 00:00:50,990
of Montana investigated global net

17
00:00:55,390 --> 00:00:53,660
primary production of land plants using

18
00:00:58,360 --> 00:00:55,400
satellite data from the past three

19
00:01:00,910 --> 00:00:58,370
decades an instrument on NASA's Terra

20
00:01:03,220 --> 00:01:00,920
satellite provides insight as to whether

21
00:01:06,190 --> 00:01:03,230
plants are actually benefiting from a

22
00:01:07,690 --> 00:01:06,200
changing climate high-resolution data

23
00:01:11,319 --> 00:01:07,700
from the moderate resolution imaging

24
00:01:13,660 --> 00:01:11,329
spectroradiometer or modus indicate a

25
00:01:17,109 --> 00:01:13,670
net decrease in primary production from

26
00:01:21,429 --> 00:01:17,119
2000 through 2009 as compared to the

27
00:01:23,380 --> 00:01:21,439
previous two decades primary production

28
00:01:25,770 --> 00:01:23,390
is a measure of plant growth and the

29
00:01:28,330 --> 00:01:25,780
first step in the carbon cycle carbon

30
00:01:31,179 --> 00:01:28,340
enters the atmosphere from a variety of

31
00:01:34,300 --> 00:01:31,189
sources including deforestation fossil

32
00:01:36,489 --> 00:01:34,310
fuel-burning and wildfires plants absorb

33
00:01:39,160 --> 00:01:36,499
carbon from the atmosphere and use it to

34
00:01:42,010 --> 00:01:39,170
grow as they continue to grow they pull

35
00:01:44,050 --> 00:01:42,020
down more carbon and slow the increasing

36
00:01:46,929 --> 00:01:44,060
concentration of carbon dioxide in the

37
00:01:49,440 --> 00:01:46,939
air it is important for scientists to

38
00:01:51,910 --> 00:01:49,450

monitor changes of primary production as

39
00:01:54,069 --> 00:01:51,920
changes in plant growth affect the

40
00:01:58,149 --> 00:01:54,079
balance of carbon between the atmosphere

41
00:02:00,520 --> 00:01:58,159
and terrestrial ecosystems this

42
00:02:02,109 --> 00:02:00,530
visualization represents the amount of

43
00:02:04,629 --> 00:02:02,119
carbon that was removed from the

44
00:02:07,330 --> 00:02:04,639
atmosphere by plants during the warmest

45
00:02:09,969 --> 00:02:07,340
decade on record an increase in primary

46
00:02:11,800 --> 00:02:09,979
production as indicated in green tells

47
00:02:13,860 --> 00:02:11,810
us that plants are removing carbon

48
00:02:16,449 --> 00:02:13,870
dioxide faster than they usually do

49
00:02:18,740 --> 00:02:16,459
while a decrease in primary production

50
00:02:21,550 --> 00:02:18,750
in red means that carbon died

51
00:02:24,080 --> 00:02:21,560
oxide is being removed more slowly

52
00:02:26,330 --> 00:02:24,090
higher temperatures led to longer

53
00:02:28,040 --> 00:02:26,340
growing seasons and increased amounts of

54
00:02:30,560 --> 00:02:28,050
water and sunlight in the northern

55
00:02:33,230 --> 00:02:30,570
hemisphere causing a net increase in

56
00:02:35,360 --> 00:02:33,240
atmospheric primary production but it

57
00:02:37,100 --> 00:02:35,370
was not enough to offset the decrease in

58
00:02:39,260 --> 00:02:37,110
carbon absorption in the southern

59
00:02:42,260 --> 00:02:39,270
hemisphere leading to more carbon

60
00:02:44,270 --> 00:02:42,270
dioxide in the atmosphere Africa for

61
00:02:47,750 --> 00:02:44,280
instance suffered a severe drought in

62
00:02:49,820 --> 00:02:47,760
2005 crops suffered major losses and

63
00:02:51,710 --> 00:02:49,830

with less green vegetation to fix the

64
00:02:54,350 --> 00:02:51,720
carbon there was more of it left in the

65
00:02:56,840 --> 00:02:54,360
atmosphere the planet as a whole

66
00:02:59,690 --> 00:02:56,850
experienced a net decrease in primary

67
00:03:02,990 --> 00:02:59,700
production over the past ten years but

68
00:03:05,030 --> 00:03:03,000
it was a modest decrease this research

69
00:03:08,180 --> 00:03:05,040
reinforces the idea that climate

70
00:03:10,190 --> 00:03:08,190
variability is complex with increasing

71
00:03:12,890 --> 00:03:10,200
demands on our natural resources of

72
00:03:15,680 --> 00:03:12,900
growing population and expansion of

73
00:03:18,140 --> 00:03:15,690
biofuel production it is critical to