



1
00:00:07,510 --> 00:00:05,990
Earth's oceans are wide-reaching and

2
00:00:10,730 --> 00:00:07,520
teeming with life

3
00:00:12,530 --> 00:00:10,740
one microscopic aquatic organism plays a

4
00:00:16,220 --> 00:00:12,540
major role in making life on Earth

5
00:00:18,769 --> 00:00:16,230
possible phytoplankton if it weren't for

6
00:00:21,409 --> 00:00:18,779
phytoplankton the earth as we know it

7
00:00:23,900 --> 00:00:21,419
would probably not be able to exist life

8
00:00:26,659 --> 00:00:23,910
on this planet pretty much depends upon

9
00:00:28,670 --> 00:00:26,669
phytoplankton light and the presence of

10
00:00:32,030 --> 00:00:28,680
nutrients in the surface waters make

11
00:00:34,400 --> 00:00:32,040
phytoplankton growth possible physical

12
00:00:36,110 --> 00:00:34,410
processes like ocean circulation and

13
00:00:39,099 --> 00:00:36,120

upwelling help to regulate the

14

00:00:41,840 --> 00:00:39,109

distribution and abundance of the plants

15

00:00:43,970 --> 00:00:41,850

for the last decade scientists have used

16

00:00:45,740 --> 00:00:43,980

satellite measurements of ocean color to

17

00:00:48,020 --> 00:00:45,750

determine the global distribution of

18

00:00:51,169 --> 00:00:48,030

phytoplankton and to begin to link its

19

00:00:52,939 --> 00:00:51,179

variability to environmental factors the

20

00:00:55,489 --> 00:00:52,949

beauty of studying the oceans from space

21

00:00:58,419 --> 00:00:55,499

in a consistent way that satellites

22

00:01:01,459 --> 00:00:58,429

allow us to do is that you can study

23

00:01:04,009 --> 00:01:01,469

phenomena both on different time and

24

00:01:06,440 --> 00:01:04,019

different space scales using data from

25

00:01:08,090 --> 00:01:06,450

an instrument called seawifs researchers

26

00:01:10,490 --> 00:01:08,100

observe that both natural and

27

00:01:12,410 --> 00:01:10,500

human-induced events caused levels of

28

00:01:16,039 --> 00:01:12,420

phytoplankton to shift from their usual

29

00:01:18,260 --> 00:01:16,049

rhythms under certain conditions

30

00:01:20,270 --> 00:01:18,270

excessive phytoplankton growth can

31

00:01:23,179 --> 00:01:20,280

result in an area known as a dead zone

32

00:01:25,249 --> 00:01:23,189

dead zones form when big blooms of

33

00:01:27,740 --> 00:01:25,259

phytoplankton at the surface trigger

34

00:01:29,590 --> 00:01:27,750

large quantities of organic matter which

35

00:01:32,209 --> 00:01:29,600

then sink to the bottom

36

00:01:34,819 --> 00:01:32,219

bacteria break down the organic material

37

00:01:37,670 --> 00:01:34,829

releasing carbon dioxide but absorbing

38

00:01:39,980 --> 00:01:37,680

oxygen as they work most marine

39

00:01:42,560 --> 00:01:39,990

organisms need oxygen for survival and

40

00:01:44,139 --> 00:01:42,570

dead zones prove fatal for many aquatic

41

00:01:47,149 --> 00:01:44,149

species

42

00:01:49,690 --> 00:01:47,159

many human activities on land trigger

43

00:01:52,010 --> 00:01:49,700

the seasonal appearance of dead zones

44

00:01:54,169 --> 00:01:52,020

fertilizers runoff lawns and farmland

45

00:01:56,300 --> 00:01:54,179

they seep into the network of rivers and

46

00:01:58,490 --> 00:01:56,310

streams that comprise a local watershed

47

00:02:01,399 --> 00:01:58,500

and provide a jolt of nutrients to

48

00:02:03,109 --> 00:02:01,409

phytoplankton that edge the shore the

49

00:02:05,480 --> 00:02:03,119

Mississippi River watershed drains

50

00:02:08,690 --> 00:02:05,490

directly into the Gulf of Mexico where

51
00:02:10,729 --> 00:02:08,700
dead zones frequently occur satellites

52
00:02:12,380 --> 00:02:10,739
cannot actually see dead zones but they

53
00:02:14,240 --> 00:02:12,390
can monitor the distribution and

54
00:02:15,890 --> 00:02:14,250
abundance of phytoplankton including

55
00:02:19,759 --> 00:02:15,900
conditions that may lead to phenomena

56
00:02:21,800 --> 00:02:19,769
like dead zones there is no question

57
00:02:24,050 --> 00:02:21,810
that the earth is changing in the

58
00:02:26,420 --> 00:02:24,060
decades since its launch seawifs has

59
00:02:28,759 --> 00:02:26,430
enabled us for the first time to monitor

60
00:02:31,940 --> 00:02:28,769
the biological consequences of that

61
00:02:34,220 --> 00:02:31,950
change to see how human activity and how