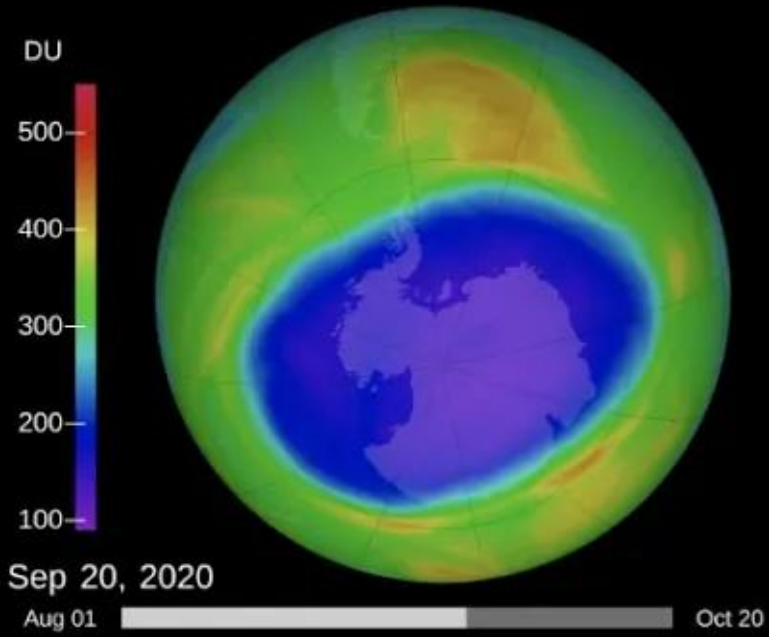
DU
500
400
300
200
100
Sep 20, 2020
Aug 01
Oct 20

1
00:00:06,070 --> 00:00:03,030
on september 20th the antarctic ozone

2
00:00:07,990 --> 00:00:06,080
hole reached an extent of 24.8 million

3
00:00:12,390 --> 00:00:08,000
square kilometers

4
00:00:15,350 --> 00:00:12,400
2020 was the 12th largest hole on record

5
00:00:17,910 --> 00:00:15,360
in 2019 the peak extent was the second

6
00:00:19,670 --> 00:00:17,920
smallest hole on record but this dark

7
00:00:21,429 --> 00:00:19,680
contrast doesn't mean the hole is

8
00:00:24,870 --> 00:00:21,439
worsening

9
00:00:26,790 --> 00:00:24,880
that's where weather patterns come in

10
00:00:29,750 --> 00:00:26,800
colder temperatures are one of the

11
00:00:31,910 --> 00:00:29,760
factors that activate ozone depletion

12
00:00:33,990 --> 00:00:31,920
which means that weather patterns play a

13
00:00:36,229 --> 00:00:34,000

vital role in determining the ozone

14
00:00:38,630 --> 00:00:36,239
hole's extent each year

15
00:00:40,869 --> 00:00:38,640
the antarctic ozone hole peaks during

16
00:00:42,950 --> 00:00:40,879
the southern hemisphere's late winter

17
00:00:44,790 --> 00:00:42,960
when temperatures are at a low and the

18
00:00:47,350 --> 00:00:44,800
sun's rays return

19
00:00:49,910 --> 00:00:47,360
the 2020 ozone hole was exceptionally

20
00:00:52,310 --> 00:00:49,920
large due to a stable and cold antarctic

21
00:00:54,229 --> 00:00:52,320
vortex the stratospheric low pressure

22
00:00:56,229 --> 00:00:54,239
system that flows clockwise in the

23
00:00:58,470 --> 00:00:56,239
atmosphere above antarctica

24
00:01:00,310 --> 00:00:58,480
it's there that the colder conditions

25
00:01:02,389 --> 00:01:00,320
help support formation of polar

26
00:01:04,390 --> 00:01:02,399
stratosphere clouds whose cloud

27
00:01:06,710 --> 00:01:04,400
particles activate ozone layer

28
00:01:08,149 --> 00:01:06,720
destroying forms of chlorine and bromine

29
00:01:12,710 --> 00:01:08,159
compounds

30
00:01:14,230 --> 00:01:12,720
production and used to be found in

31
00:01:16,230 --> 00:01:14,240
things like aerosol sprays and

32
00:01:18,630 --> 00:01:16,240
refrigerants

33
00:01:25,590 --> 00:01:18,640
unfortunately it took years to realize

34
00:01:29,590 --> 00:01:27,590
if chemically active forms of chlorine

35
00:01:31,670 --> 00:01:29,600
and bromine are present and there are

36
00:01:34,390 --> 00:01:31,680
both cold enough temperatures and sun

37
00:01:36,230 --> 00:01:34,400
rays a reaction occurs on the surfaces

38
00:01:38,950 --> 00:01:36,240

of cloud particles that form in cold

39
00:01:41,429 --> 00:01:38,960
stratospheric layers leading ultimately

40
00:01:43,270 --> 00:01:41,439
to runaway reactions that destroy ozone

41
00:01:45,190 --> 00:01:43,280
molecules

42
00:01:47,190 --> 00:01:45,200
the antarctic ozone hole was first

43
00:01:50,310 --> 00:01:47,200
discovered by researchers at the british

44
00:01:53,270 --> 00:01:50,320
antarctic survey in 1985.

45
00:01:55,190 --> 00:01:53,280
just a few years later in 1987 the

46
00:01:57,670 --> 00:01:55,200
international community signed the

47
00:01:59,830 --> 00:01:57,680
montreal protocol on substances that

48
00:02:01,990 --> 00:01:59,840
deplete the ozone layer

49
00:02:04,550 --> 00:02:02,000
countries as small as the vatican and as

50
00:02:05,990 --> 00:02:04,560
far as north korea signed the deal

51
00:02:09,350 --> 00:02:06,000
regulating the consumption and

52
00:02:11,990 --> 00:02:09,360
production of ozone-depleting compounds

53
00:02:14,470 --> 00:02:12,000
since 2000 human-made ozone-depleting

54
00:02:15,830 --> 00:02:14,480
substances have slowly declined but

55
00:02:17,990 --> 00:02:15,840
remain high enough to produce

56
00:02:20,390 --> 00:02:18,000
significant ozone loss

57
00:02:22,949 --> 00:02:20,400
these compounds have lifetimes of more

58
00:02:24,550 --> 00:02:22,959
than 50 years which is why we're still

59
00:02:26,070 --> 00:02:24,560
seeing their effects on the environment

60
00:02:27,990 --> 00:02:26,080
today

61
00:02:30,630 --> 00:02:28,000
the ozone hole over antarctica is

62
00:02:32,790 --> 00:02:30,640
expected to gradually become less severe

63
00:02:33,910 --> 00:02:32,800

as chlorofluorocarbons continue to

64
00:02:36,229 --> 00:02:33,920
decline

65
00:02:38,790 --> 00:02:36,239
and because of scientifically supported

66
00:02:40,790 --> 00:02:38,800
international action scientists expect

67
00:02:48,590 --> 00:02:40,800
the antarctic ozone to recover back to