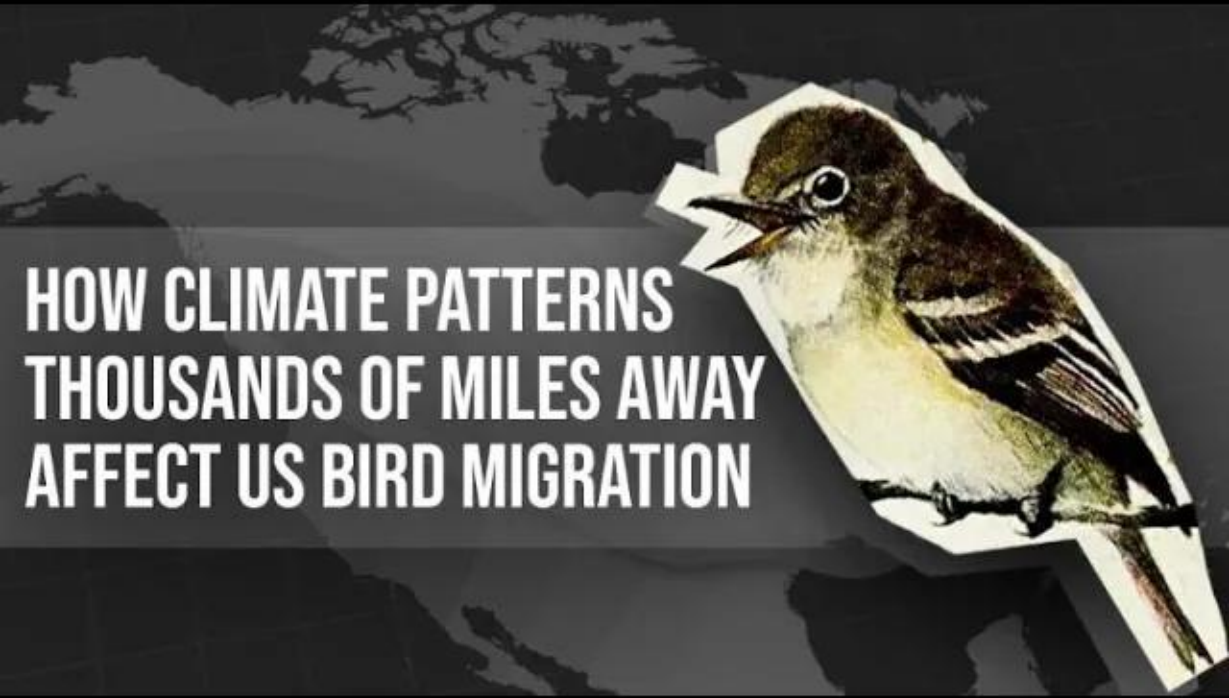
HOW CLIMATE PATTERNS
THOUSANDS OF MILES AWAY
AFFECT US BIRD MIGRATION

1
00:00:07,510 --> 00:00:05,510
in the united states a not so silent

2
00:00:09,830 --> 00:00:07,520
spring marks the arrival of several

3
00:00:12,950 --> 00:00:09,840
billion birds migrating northward from

4
00:00:15,430 --> 00:00:12,960
central and south america

5
00:00:18,550 --> 00:00:15,440
but curiously enough the exact timing of

6
00:00:20,310 --> 00:00:18,560
this journey varies each year

7
00:00:22,710 --> 00:00:20,320
so why is that

8
00:00:25,269 --> 00:00:22,720
the key to this mystery may not lie in

9
00:00:28,070 --> 00:00:25,279
looking at the traditional flyways but

10
00:00:30,550 --> 00:00:28,080
instead in radar climate models and a

11
00:00:33,030 --> 00:00:30,560
little bit of math at the global

12
00:00:35,910 --> 00:00:33,040
modeling and assimilation office we

13
00:00:37,590 --> 00:00:35,920

routinely produce a comprehensive

14
00:00:40,709 --> 00:00:37,600
climate data set

15
00:00:43,750 --> 00:00:40,719
by combining observations and models and

16
00:00:45,430 --> 00:00:43,760
these are freely available to the public

17
00:00:47,670 --> 00:00:45,440
this data can be used to explain the

18
00:00:49,590 --> 00:00:47,680
characteristics of ecosystems like bird

19
00:00:52,869 --> 00:00:49,600
migration patterns

20
00:00:55,110 --> 00:00:52,879
in fact by using a network of 143 noaa

21
00:00:58,630 --> 00:00:55,120
radar stations across the continental

22
00:01:00,229 --> 00:00:58,640
united states the team analyzed 23 years

23
00:01:02,470 --> 00:01:00,239
of data to see if they could group

24
00:01:04,070 --> 00:01:02,480
stations that had similar year-to-year

25
00:01:05,509 --> 00:01:04,080
variability in the migration

26
00:01:07,429 --> 00:01:05,519
observations

27
00:01:09,910 --> 00:01:07,439
and this is different from the concept

28
00:01:12,390 --> 00:01:09,920
of flyways this is specifically looking

29
00:01:13,990 --> 00:01:12,400
at which radar stations across the

30
00:01:16,870 --> 00:01:14,000
united states

31
00:01:20,630 --> 00:01:16,880
in what regions have a similar

32
00:01:22,469 --> 00:01:20,640
variability in bird migration timing

33
00:01:25,429 --> 00:01:22,479
what they found is that the u.s can be

34
00:01:27,350 --> 00:01:25,439
divided into two regions east and west

35
00:01:29,350 --> 00:01:27,360
each with its own specific pattern of

36
00:01:30,630 --> 00:01:29,360
variability of migratory bird arrival

37
00:01:31,429 --> 00:01:30,640
times

38
00:01:33,350 --> 00:01:31,439

so

39
00:01:35,429 --> 00:01:33,360
now that we have divided the continental

40
00:01:38,230 --> 00:01:35,439
united states into two regions

41
00:01:41,190 --> 00:01:38,240
we can look at each region specifically

42
00:01:43,190 --> 00:01:41,200
and understand the climatic drivers of

43
00:01:45,030 --> 00:01:43,200
each region

44
00:01:48,230 --> 00:01:45,040
the team found that the behavior of

45
00:01:51,350 --> 00:01:48,240
rossby waves huge waves of high latitude

46
00:01:53,510 --> 00:01:51,360
westerly winds was a major influence for

47
00:01:54,950 --> 00:01:53,520
bird migrations in the east

48
00:01:56,469 --> 00:01:54,960
as raspy waves are triggered

49
00:01:59,350 --> 00:01:56,479
particularly those in the tropical

50
00:02:00,870 --> 00:01:59,360
pacific they influence climate patterns

51
00:02:02,870 --> 00:02:00,880
and bring warm temperatures to the

52
00:02:04,709 --> 00:02:02,880
eastern united states which in turn

53
00:02:07,190 --> 00:02:04,719
correlates with earlier arrivals of

54
00:02:08,790 --> 00:02:07,200
migratory birds in that region

55
00:02:10,469 --> 00:02:08,800
cold temperatures have the opposite

56
00:02:12,869 --> 00:02:10,479
effect

57
00:02:14,630 --> 00:02:12,879
variations in the west however seem to

58
00:02:16,550 --> 00:02:14,640
be linked to more regional climate

59
00:02:19,190 --> 00:02:16,560
conditions such as sea surface

60
00:02:21,430 --> 00:02:19,200
temperatures of adjacent waters

61
00:02:24,390 --> 00:02:21,440
in this study we try to highlight the

62
00:02:26,550 --> 00:02:24,400
fact that we can use our data for

63
00:02:28,630 --> 00:02:26,560

applications that would bridge climate

64
00:02:30,790 --> 00:02:28,640
science with other disciplines

65
00:02:33,270 --> 00:02:30,800
the team hopes that future research will

66
00:02:35,270 --> 00:02:33,280
build upon this study to help us better

67
00:02:40,010 --> 00:02:35,280
understand how changes in the climate