



1
00:00:13,619 --> 00:00:10,980
the world has changed the world's

2
00:00:19,140 --> 00:00:13,629
climate is changing global warming is

3
00:00:24,689 --> 00:00:19,150
real the polar regions matter and they

4
00:00:27,179 --> 00:00:24,699
matter a lot changes that happen due to

5
00:00:29,460 --> 00:00:27,189
natural consequences as well as human

6
00:00:30,779 --> 00:00:29,470
cross lines can be reflected in the

7
00:00:33,540 --> 00:00:30,789
polar regions much more quickly than

8
00:00:38,369 --> 00:00:33,550
they would say in the breadbasket of the

9
00:00:42,569 --> 00:00:38,379
United States glaciers are retreating

10
00:00:46,799 --> 00:00:42,579
and see Isis is shrinking and permafrost

11
00:00:49,229 --> 00:00:46,809
is melting the polar regions of Earth

12
00:00:51,240 --> 00:00:49,239
are kind of like the canary in the

13
00:01:01,830 --> 00:00:51,250

coalmine of what's happening to our

14

00:01:07,719 --> 00:01:04,600

it takes a catalyst an impetus sometimes

15

00:01:09,370 --> 00:01:07,729

to organize all the ideas together in

16

00:01:11,859 --> 00:01:09,380

link things and those linkages are where

17

00:01:17,200 --> 00:01:11,869

we make the road if you will paradigm

18

00:01:19,149 --> 00:01:17,210

busting discoveries you need to look at

19

00:01:22,570 --> 00:01:19,159

the macro scale you need perspective

20

00:01:24,730 --> 00:01:22,580

need contact you look at the ice in its

21

00:01:34,060 --> 00:01:24,740

entirety and the only way you can do

22

00:01:36,760 --> 00:01:34,070

that is from space with satellites when

23

00:01:38,770 --> 00:01:36,770

you look at a satellite data set and you

24

00:01:41,499 --> 00:01:38,780

see something you see the ice streams

25

00:01:43,510 --> 00:01:41,509

which are these large rivers vice in

26

00:01:45,690 --> 00:01:43,520

satellite imagery but see it in a way

27

00:01:50,529 --> 00:01:45,700

that nobody else has ever recognized

28

00:01:53,050 --> 00:01:50,539

that's just a crystallizing moment we've

29

00:01:55,630 --> 00:01:53,060

revolutionized our understanding of how

30

00:01:58,790 --> 00:01:55,640

ice sheets behaviour as the conventional

31

00:02:02,120 --> 00:01:58,800

thinking was well I shoots a big thing

32

00:02:04,310 --> 00:02:02,130

and it takes centuries thousands of

33

00:02:07,550 --> 00:02:04,320

years even for changes in today's

34

00:02:11,750 --> 00:02:07,560

climate to affect ice sheets but change

35

00:02:13,910 --> 00:02:11,760

today is showing up in ice sheets almost

36

00:02:17,420 --> 00:02:13,920

immediately we're seeing from space

37

00:02:20,660 --> 00:02:17,430

glaciers accelerating for seeing rapid

38

00:02:24,010 --> 00:02:20,670

and catastrophic break up of large ice

39

00:02:27,950 --> 00:02:24,020

shelves there for thousands 10,000 years

40

00:02:32,000 --> 00:02:27,960

just instant almost responses to changes

41

00:02:34,820 --> 00:02:32,010

in today's climate I think during ipy it

42

00:02:37,130 --> 00:02:34,830

gives us an opportunity to explain to

43

00:02:39,110 --> 00:02:37,140

people why those changes matter to them

44

00:02:41,300 --> 00:02:39,120

it's not just a signal that the climate

45

00:02:43,190 --> 00:02:41,310

is changing but the fact that those

46

00:02:48,830 --> 00:02:43,200

things are happening affect them

47

00:02:50,660 --> 00:02:48,840

directly and NASA isn't isn't going to

48

00:02:54,930 --> 00:02:50,670

confine itself to exploring the polar

49

00:03:01,540 --> 00:02:58,690

in 2008 during the IP why NASA will land

50

00:03:03,670 --> 00:03:01,550

the Phoenix Mars Polar Lander right near

51
00:03:06,730 --> 00:03:03,680
the edge of the ice sheet that makes up

52
00:03:09,010 --> 00:03:06,740
the nose in ice cap of Mars and Phoenix

53
00:03:11,380 --> 00:03:09,020
will be the first ever lander to Mars

54
00:03:13,870 --> 00:03:11,390
that will actively investigate what's in

55
00:03:19,960 --> 00:03:13,880
the water frozen his ice up in these

56
00:03:20,980 --> 00:03:19,970
regions in 2008 during the IP why NASA

57
00:03:23,860 --> 00:03:20,990
will launch the lunar reconnaissance

58
00:03:26,680 --> 00:03:23,870
orbiter and this vehicle will explore in

59
00:03:28,810 --> 00:03:26,690
earnest using remote sensing proposal

60
00:03:30,970 --> 00:03:28,820
moon relate them back to our earth polls

61
00:03:33,730 --> 00:03:30,980
even to the poles of Mars and open that

62
00:03:36,070 --> 00:03:33,740
frontier will you open for human

63
00:03:45,730 --> 00:03:36,080

presence and eventually sustain human

64

00:03:48,850 --> 00:03:45,740

presence my hope is that during ipy

65

00:03:52,580 --> 00:03:48,860

people will recognize their stewardship

66

00:03:55,970 --> 00:03:52,590

role as inhabitants of this planet

67

00:03:58,520 --> 00:03:55,980

climate change the atmosphere the

68

00:04:00,020 --> 00:03:58,530

hydrosphere cryosphere it's all about

69

00:04:02,600 --> 00:04:00,030

these things working together to solve

70

00:04:04,309 --> 00:04:02,610

problems how does our earth work how can

71

00:04:06,140 --> 00:04:04,319

we predict what's going to happen to it

72

00:04:12,400 --> 00:04:06,150

how can we understand the force things

73

00:04:24,930 --> 00:04:16,509

and so I think polar science will will