
EPISODE ONE:
THE BIG THAW

1
00:00:03,230 --> 00:00:04,570
Here at the end of the Earth

2
00:00:04,570 --> 00:00:08,260
it still feels like a place for raw exploration and adventure.

3
00:00:09,570 --> 00:00:12,880
It’s vast in all directions and ground zero for some of the

4
00:00:12,880 --> 00:00:15,120
biggest questions we have about the climate.

5
00:00:16,570 --> 00:00:20,150
But when we decided to make a series about the frozen places on Earth,

6
00:00:20,150 --> 00:00:24,020
we knew there would be one hurdle we’d need to jump over first:

7
00:00:24,620 --> 00:00:27,790
What is the cryosphere?

8
00:00:27,790 --> 00:00:29,320
The what?

9
00:00:29,320 --> 00:00:30,190
Ummm

10
00:00:30,190 --> 00:00:32,250
Oooh

11
00:00:32,250 --> 00:00:35,530
I don't know - I have no idea

12
00:00:35,530 --> 00:00:40,270
While I'm aware of the cryosphere, I don't actually know what it is

13
00:00:40,270 --> 00:00:44,540

It has something to do with ice

14
00:00:44,540 --> 00:00:47,300
Alright, that's all I got

15
00:00:47,300 --> 00:00:49,780
How do you get people acquainted with the cryosphere

16
00:00:49,780 --> 00:00:52,240
when most of us don’t know what it is?

17
00:01:03,060 --> 00:01:07,200
NASA Explorers

18
00:01:07,200 --> 00:01:08,530
Introducing Season One

19
00:01:11,650 --> 00:01:16,310
CRYOSPHERE

20
00:01:23,230 --> 00:01:25,940
The Big Thaw

21
00:01:25,940 --> 00:01:27,710
Episode One

22
00:01:28,880 --> 00:01:33,000
Washington, D.C.

23
00:01:33,000 --> 00:01:36,960
Hey, so here we are in Washington, D.C standing on the roof of NASA Headquarters.

24
00:01:36,960 --> 00:01:40,170
That’s the capitol building right behind me and what Headquarters does

25
00:01:40,170 --> 00:01:43,140
is kinda serve as the focal point to connect the dots.

26
00:01:43,140 --> 00:01:48,710
That’s Dr. Tom Wagner- NASA’s Cryospheric Program Scientist at Headquarters.

27
00:01:48,710 --> 00:01:54,040
In short – Tom is responsible for making sure NASA knows what the current status of the cryosphere is.

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00:01:54,040 --> 00:01:57,800
The cryosphere is everything from the snow that falls by your house

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00:01:57,800 --> 00:02:03,620
to the icy reaches of the Himalayas to the big, big, big ice sheets of Antarctica

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00:02:03,620 --> 00:02:07,290
all the way at the south pole and also the frozen ground of the Arctic,

31
00:02:07,290 --> 00:02:10,800
and even some of that frozen ground that’s currently under the ocean.

32
00:02:11,350 --> 00:02:14,010
If you had to break it down, you’d have a mix of

33
00:02:14,010 --> 00:02:14,880
Sea ice

34
00:02:14,880 --> 00:02:16,210
Snow cover

35
00:02:16,210 --> 00:02:17,120
Permafrost

36
00:02:17,120 --> 00:02:18,210
Ice sheets

37
00:02:18,210 --> 00:02:19,640
and Glaciers

38
00:02:23,530 --> 00:02:26,000

Right now, our best predictions are that sea levels

39
00:02:26,000 --> 00:02:29,510
will rise anywhere from one to three feet in the next hundred years.

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00:02:29,510 --> 00:02:33,970
Three feet of sea level rise has the potential to displace about a hundred million people,

41
00:02:33,970 --> 00:02:36,550
which is a lot of people that need to find new homes.

42
00:02:37,380 --> 00:02:40,690
Our current reality places us at a near tipping point.

43
00:02:40,690 --> 00:02:44,400
And the cryosphere is playing a huge part in that delicate balance.

44
00:02:45,130 --> 00:02:48,230
So, one of the things people don’t know about NASA is that we study the Earth

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00:02:48,230 --> 00:02:51,860
and we’ve been doing that since NASA’s inception back in the 1950s.

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00:02:51,860 --> 00:02:55,340
And we study the frozen part of the Earth in a variety of ways.

47
00:02:56,140 --> 00:02:57,640
Missions like SnowEx,

48
00:02:57,640 --> 00:02:59,520
Airborne Snow Observatory

49
00:02:59,520 --> 00:03:00,730
Oceans Meting Greenland

50
00:03:00,730 --> 00:03:01,840
Operation IceBridge

51
00:03:01,840 --> 00:03:03,670
Arctic – Boreal Vulnerability Experiment

52
00:03:03,670 --> 00:03:06,470
and countless other labs and individual researchers

53
00:03:06,470 --> 00:03:09,760
stand at the forefront of monitoring the cryosphere.

54
00:03:10,840 --> 00:03:14,000
But this year was a particularly big year.

55
00:03:14,000 --> 00:03:20,050
3...2...1...and liftoff

56
00:03:20,050 --> 00:03:24,810
of GRACE Follow On continuing the legacy of the GRACE mission

57
00:03:24,810 --> 00:03:28,940
of tracking the movement of water across our planet.

58
00:03:31,150 --> 00:03:34,850
Two state-of-the-art satellite missions are being launched in a single year

59
00:03:34,850 --> 00:03:38,980
as part of a major attempt to understand Earth’s frozen places.

60
00:03:41,030 --> 00:03:43,680
Our scientists are answering hard questions

61
00:03:43,680 --> 00:03:45,250
sharing stories from the field,

62
00:03:45,250 --> 00:03:50,030
and giving their best predictions for what we can expect of a warming world.

63
00:03:54,500 --> 00:03:57,400

We’re taking you with us as we follow NASA explorers

64
00:03:57,400 --> 00:03:59,310
on their journey to the frozen ends of the Earth

65
00:03:59,310 --> 00:04:05,520
as they study our rapidly changing world from satellites, planes and boots on the ground.

66
00:04:14,420 --> 00:04:10,680
CRYOSPHERE

67
00:04:15,700 --> 00:04:18,080
What we can do really well from orbit is

68
00:04:18,080 --> 00:04:21,580
we can tell when a surface of land is covered in snow

69
00:04:21,580 --> 00:04:24,870
What's tricky is though, how thick is that snow