EPISODE NINE:
FINAL APPROACH

1
00:00:01,390 --> 00:00:05,070
So, my heart is definitely racing. I don’t know about anyone else’s.

2
00:00:05,070 --> 00:00:08,100
This is the stuff nerds dream of.

3
00:00:08,100 --> 00:00:09,090
Ten seconds

4
00:00:09,090 --> 00:00:09,810
Nine

5
00:00:09,810 --> 00:00:10,980
Eight

6
00:00:10,980 --> 00:00:11,980
Seven

7
00:00:11,980 --> 00:00:12,870
Six

8
00:00:12,870 --> 00:00:14,400
- It’s gonna happen!-

9
00:00:14,400 --> 00:00:15,090
Four

10
00:00:15,090 --> 00:00:15,980
Three

11
00:00:15,980 --> 00:00:17,790
Two

12
00:00:20,450 --> 00:00:24,130
NASA Explorers

13
00:00:24,130 --> 00:00:26,530

Cryosphere

14
00:00:29,130 --> 00:00:32,450
Episode Nine: Final Approach

15
00:00:32,450 --> 00:00:34,260
That countdown you just heard?

16
00:00:34,260 --> 00:00:36,010
We'll get back to that in a minute.

17
00:00:36,010 --> 00:00:42,900
Last episode, we saw the epic launch of ICESat-2, NASA's newest state-of-the-art ice-observing satellite.

18
00:00:42,900 --> 00:00:47,070
But now that it's in orbit, the pressure to deliver results in on.

19
00:00:47,070 --> 00:00:53,320
Between launch and the first ground returns, it took seventeen or eighteen days or something like this.

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00:00:53,320 --> 00:00:55,920
You know, it's a time when you're quite nervous.

21
00:00:55,920 --> 00:00:59,660
Nine years ago, Dr. Thorsten Markus took over as the Lead Project Scientist

22
00:00:59,660 --> 00:01:03,810
for ICESat-2 during a time when the mission needed a champion.

23
00:01:03,810 --> 00:01:08,570
You start fighting for a mission, for over - for nine years now.

24
00:01:08,570 --> 00:01:12,880
So, when ICESat-2 was turned on for the first time, eighteen days after it was launched,

25
00:01:12,880 --> 00:01:19,110
only then would the science team know if the whole thing had worked. And it did

26
00:01:19,110 --> 00:01:22,710
First of all, it’s kind of emotional being here.

27
00:01:22,710 --> 00:01:26,150
ICESat-2 was in development for nine, ten years

28
00:01:26,150 --> 00:01:31,590
and, you know, as a project scientist, you live a mission, right?

29
00:01:31,590 --> 00:01:34,070
If it sounds like there’s a lot of noise in the background,

30
00:01:34,070 --> 00:01:38,750
that’s because Thorsten is being interviewed from a plane 1,500 feet in the air.

31
00:01:38,750 --> 00:01:43,970
IceBridge was tasked with the job of bridging the data between the end of ICESat’s mission

32
00:01:43,970 --> 00:01:48,810
and the beginning of ICESat-2 – about a nine-year difference.

33
00:01:48,810 --> 00:01:55,210
The goal is that it would run until ICESat-2 launched, and then have overlap with ICESat-2 as well

34
00:01:55,210 --> 00:01:59,550
so we can get a really long, well calibrated time series from IceBridge.

35
00:01:59,550 --> 00:02:02,630
As the Deputy Project Scientist for Operation IceBridge,

36
00:02:02,630 --> 00:02:06,840
Brooke works closely with Thorsten to make sure the two missions are syncing up.

37
00:02:06,840 --> 00:02:14,530
The timing was everything during that mission, which was a real challenge, because not only….

38
00:02:14,530 --> 00:02:18,950

Basically, what you need to take away is getting an airplane and a satellite in space

39
00:02:18,950 --> 00:02:26,870
to fly over the same flight path at the same time and collect matching data is really, really hard

40
00:02:26,870 --> 00:02:29,990
IceBridge was tasked with two objectives:

41
00:02:29,990 --> 00:02:35,690
Check the accuracy of ICESat-2's data over land ice and over sea ice.

42
00:02:35,690 --> 00:02:41,160
They were able to lock in the land ice data fairly early in the mission. But the sea ice data…

43
00:02:41,160 --> 00:02:43,520
It was really tricky. We waited day after day.

44
00:02:43,520 --> 00:02:45,650
Do we fly the sea ice? It's still on our list.

45
00:02:45,650 --> 00:02:57,270
Six. Five. Four. Three. Two. One. Mark on the overpass! Zero four three five three five zulu.

46
00:02:57,270 --> 00:02:58,460
Here's what just happened:

47
00:02:58,460 --> 00:03:06,560
A plane 1,500 feet up and a satellite 308 miles up measured the same sea ice at the same time

48
00:03:06,560 --> 00:03:14,520
This moment finally linked veteran mission Operation IceBridge's data to that of its new sister mission, ICESat-

49
00:03:14,520 --> 00:03:20,340
- two projects that, until now, were separate for nearly ten years.

50
00:03:20,340 --> 00:03:27,200
It's a very satisfying feeling, because you do something that is meaningful in the bigger picture.

51
00:03:27,200 --> 00:03:31,210
And yeah, that’s very satisfying.

52
00:03:31,210 --> 00:03:33,800
Our search for knowledge doesn’t end here.

53
00:03:33,800 --> 00:03:39,310
GRACE-FO and ICESat-2, the two satellite missions that launched this year,

54
00:03:39,310 --> 00:03:44,250
will continue to bring in incredible data for the foreseeable future.

55
00:03:44,250 --> 00:03:47,510
The steady drumbeat of campaigns in the field goes on.

56
00:03:47,510 --> 00:03:52,570
But most of all, the people who look for answers will never stop searching.

57
00:03:52,570 --> 00:03:57,000
And from our perspective, it’s pretty clear why:

58
00:03:58,140 --> 00:04:01,790
What is your favorite planet in the solar system?

59
00:04:01,790 --> 00:04:04,490
My favorite planet is Earth.

60
00:04:04,490 --> 00:04:07,830
What? Earth…Really?

61
00:04:07,830 --> 00:04:09,410
The Earth! Obviously.

62
00:04:11,090 --> 00:04:14,000
My favorite planet in the solar system?

63
00:04:14,000 --> 00:04:17,880

Earth! Right? We live on it. It’s a really important one.

64
00:04:17,880 --> 00:04:20,340
My favorite planet is Earth!

65
00:04:22,010 --> 00:04:22,610
Yeah, so -

66
00:04:22,610 --> 00:04:24,060
Why?

67
00:04:24,060 --> 00:04:28,000
When you look out at the other planets, they’re absolutely fascinating.

68
00:04:28,000 --> 00:04:31,990
They’ve got all sorts of interesting systems going on. They’ve got dust storms.

69
00:04:31,990 --> 00:04:37,300
But then when you’re on another planet looking back at Earth, I mean, it’s just incredible.

70
00:04:37,300 --> 00:04:45,350
Whenever you go in different places, it looks so different, so amazing, it’s just…I love the planet Earth.

71
00:04:45,350 --> 00:04:48,640
It’s just a very special planet. This is our home.

72
00:04:48,640 --> 00:04:53,220
We’ve seen things far beyond the solar system.

73
00:04:53,220 --> 00:05:02,680
But even with all that, even with the amazing things we’ve seen, one of the most amazing is the Earth itself.

74
00:05:06,810 --> 00:05:04,430
It’s gotta be Earth.

75
00:05:06,810 --> 00:05:08,970
It’s gotta be here. I like the polar regions of here.

76
00:05:08,970 --> 00:05:11,680
Of Earth. Yeah, sorry. It’s very boring.

77
00:05:12,720 --> 00:05:12,260
Earth is good.

78
00:05:12,720 --> 00:05:14,060
We live here. It sustains our life.

79
00:05:14,060 --> 00:05:15,640
I’m not going to turn my back on it.

80
00:05:15,640 --> 00:05:17,760
[Laughing]

81
00:05:17,760 --> 00:05:22,180
It’s got water, it’s got ice, it’s got vegetation.

82
00:05:22,180 --> 00:05:30,610
I mean it’s just, it’s rich with life. And so studying Earth is a very, very rewarding career.