

A close-up photograph of an astronaut in a white space suit, smiling through the clear visor of the helmet. The astronaut's face is reflected in the visor. The background shows the Earth from space, with a bright sun in the upper right corner. The text 'DOWN TO EARTH' is overlaid in large white letters, with 'EPISODE 4' in smaller white letters to the right.

DOWN TO EARTH

EPISODE 4



Swimming in the Universe

1
00:00:00,506 --> 00:00:15,646
[Music]

2
00:00:16,146 --> 00:00:20,666
>> I've taught astronomy to Boy
Scouts for most of my adult life

3
00:00:20,666 --> 00:00:23,146
and know the summer stars,
in particular, like the back

4
00:00:23,146 --> 00:00:25,436
of my hand and I've
sought out --

5
00:00:25,436 --> 00:00:27,836
I've lived in the Mojave
Desert for eight years.

6
00:00:27,836 --> 00:00:31,536
And I would go away from the
lights there, even as meager

7
00:00:31,536 --> 00:00:35,556
as they might be, to lay on
top of a car and just swim,

8
00:00:35,556 --> 00:00:38,066
you know, in the universe.

9
00:00:38,066 --> 00:00:41,726
So I've always loved the
night sky and the stars and so

10
00:00:41,726 --> 00:00:43,226
on my very first shuttle flight,

11
00:00:43,286 --> 00:00:45,406
both my shuttle flights,

we took some time.

12

00:00:45,406 --> 00:00:49,746

I convinced my crew to turn off
all the light in the cockpit,

13

00:00:50,026 --> 00:00:51,966

let our eyes dark-adapt,

14

00:00:52,806 --> 00:00:55,246

and just sit there
perched in the windows.

15

00:00:55,246 --> 00:00:57,746

All of us were in different
windows and you could see --

16

00:00:57,746 --> 00:00:59,946

I mean, the Milky
Way is just stunning.

17

00:01:00,516 --> 00:01:02,616

[Music]

18

00:01:03,116 --> 00:01:06,056

Of course, the lights
don't flicker.

19

00:01:06,286 --> 00:01:09,086

They're steady because they're
not coming through the dust

20

00:01:09,316 --> 00:01:11,126

and coming through
the atmosphere.

21

00:01:11,446 --> 00:01:15,046

As you really adjust, you start
to sense the very subtle colors

22

00:01:15,046 --> 00:01:18,956

that are in the stars, a little
bit of reddish, a little bit

23

00:01:19,046 --> 00:01:22,776

of bluish, blue-white
and that was, you know,

24

00:01:22,916 --> 00:01:24,576

really neat for me to see.

25

00:01:25,156 --> 00:01:27,226

The space shuttle was
incredibly busy though,

26

00:01:27,226 --> 00:01:29,506

and you don't get much time
to look out the windows.

27

00:01:29,506 --> 00:01:31,126

It was having the downtime.

28

00:01:31,466 --> 00:01:32,846

So you work really hard.

29

00:01:32,846 --> 00:01:36,886

I mean, Monday through Friday
was a blur, working late,

30

00:01:36,956 --> 00:01:37,816

you're living at work.

31

00:01:37,816 --> 00:01:40,276

There is always more to do

32

00:01:40,276 --> 00:01:42,246

and then weekends
it slows down some.

33

00:01:42,306 --> 00:01:43,046

There is some work.

34

00:01:43,326 --> 00:01:46,826

You work out, have a video
conference with the family,

35

00:01:47,746 --> 00:01:49,856

but you do have some
time for some projects

36

00:01:49,856 --> 00:01:51,286

and for looking out the windows.

37

00:01:51,706 --> 00:01:54,586

And I really got into low-light
photography in particular.

38

00:01:54,746 --> 00:01:56,186

The cupola was fairly new.

39

00:01:56,546 --> 00:01:59,476

We had some fairly new
cameras, the D3 that was good

40

00:01:59,476 --> 00:02:00,986

at capturing low-light imagery.

41

00:02:01,556 --> 00:02:04,506

I was up there during the
last space shuttle mission.

42

00:02:04,656 --> 00:02:05,976

So it's just 135.

43

00:02:05,976 --> 00:02:07,776

Atlantis was docked
to the space station.

44

00:02:08,396 --> 00:02:10,696

And I grabbed Sandy Magnus,
a good friend of mine,

45

00:02:10,696 --> 00:02:13,226

and she was on that
crew and she had lived

46

00:02:13,226 --> 00:02:15,366

on the space station
a few years before

47

00:02:15,366 --> 00:02:18,056

but the cupola was new
since she was there.

48

00:02:18,056 --> 00:02:20,926

All they had was single windows
that looked straight down

49

00:02:20,926 --> 00:02:22,446

and there you're just
watching the earth go

50

00:02:22,506 --> 00:02:23,926

by at five miles a second.

51

00:02:24,256 --> 00:02:25,706

You haven't looked
out the cupola yet.

52

00:02:25,796 --> 00:02:26,726

Come on. Come with me.

53

00:02:26,866 --> 00:02:27,626

I've got so much to do.

54

00:02:27,626 --> 00:02:28,236

No, Sandy.

55

00:02:28,366 --> 00:02:29,586

You have got to see this.

56

00:02:30,216 --> 00:02:32,986

So we went in there and
cranked the shutters open

57

00:02:33,576 --> 00:02:36,666

and we were flying into
this astonishing aurora,

58

00:02:37,056 --> 00:02:39,346

aurora australis,
southern lights.

59

00:02:42,296 --> 00:02:46,336

This rippling, pulsing, river
of green that's down below us,

60

00:02:46,336 --> 00:02:50,326

the red that is stretching up to
our altitude, it's like [noise].

61

00:02:50,326 --> 00:02:52,346

It was just breathtaking.

62

00:02:52,946 --> 00:02:55,886

And I had not practiced any
low-light photography up to

63

00:02:55,886 --> 00:02:59,556

that point, but I knew right
then that I had to figure

64

00:02:59,556 --> 00:03:02,826

out how to capture this and
so I started working on that.

65

00:03:02,826 --> 00:03:05,936
I called the photography experts
on the ground and said okay,

66
00:03:06,626 --> 00:03:08,546
what are the settings I use
to get started with this?

67
00:03:08,546 --> 00:03:10,046
And part of it was experimental.

68
00:03:10,046 --> 00:03:12,026
I had to get close
and then start trying.

69
00:03:12,026 --> 00:03:14,806
I got some pictures
actually of Atlantis docked

70
00:03:14,866 --> 00:03:17,726
to the space station in
the night with a little bit

71
00:03:17,726 --> 00:03:20,556
of the green aurora
off to the side.

72
00:03:20,796 --> 00:03:23,966
And then I got a picture
of Atlantis' plasma trail

73
00:03:24,636 --> 00:03:27,316
as it came in over the Yucatan
heading toward its landing

74
00:03:27,586 --> 00:03:29,916
in Florida and it's
just fascinating.

75
00:03:30,666 --> 00:03:33,666

The more you look, the
more you start to see.

76

00:03:33,886 --> 00:03:36,816

You see the stars like you
have never seen them before.