[MUSIC PLAYING]

**ANNA FREBEL:** Have you ever wondered how all the chemical elements are made? Then join me, as we are lifting all these data secrets to understand the cosmic origin of the chemical elements.

Astronomers collect data, and when you want to work with the older stars and you want to determine a comic chemical composition, you have to use the technique of spectroscopy.

Spectroscopy means that we split up the light into the rainbow colors. And because we are looking for stars with very weak absorption lines in the very end, we need to stretch out the light real bad to get to a data quality level that is sufficient for our work.

Now if you want to split up your light over so many colors, you really need a big glass, a big telescope in order to collect enough light that there is enough light, enough photons left over for every single color in the rainbow.

And I use the Magellan Telescope in Chile. It has a 6.5 meter mirror. And it's a beautiful telescope. And I like going observing, very much. But most people really can't understand what it means when I say, I go observing.

Well, what it means is I fly to Chile. The telescope is located in the Atacama Desert, 2,500 meters up. And one has to fly to Santiago first, and then to La Serena. And then from there, it's two hours with a car up into the mountains.

And then when you get there, you see the mountains. And you see a little telescope glistening in the sun. Actually, there are two telescopes there, the twin telescopes. I use mostly, just one of them. Sometimes I use the other one, too.

And one time, actually, I used them both. That was exciting, both at the same time. I had to run back and forth between the two to make sure that everything is working properly.

And what you have when you get there is that you have a beautiful mountain landscape. And, of course, at night, you have the beautiful dark sky above you. And the stars are so bright altogether when they make up the Milky Way, that actually, I used to walk outside and I didn't need to bring a flashlight. There was no moon, but the Milky Way ban in the Southern Hemisphere is so bright that you can just walk outside. You wouldn't run into a tree, or a car, or whatever.

And I could almost imagine that I would see the shadow from the Milky Way's light. I could have just imagined that, but the fact that I actually was in this position that I said, like, can I see my shadow from the night sky? That's just fantastic in itself.

So in the following, I want to show you a few videos that I have taken at the telescopes, to give you a little insight into what this observing means, and how we collect data. But I also want to share with you what the night sky looks like. Because it is just too beautiful, and words really can't describe it.