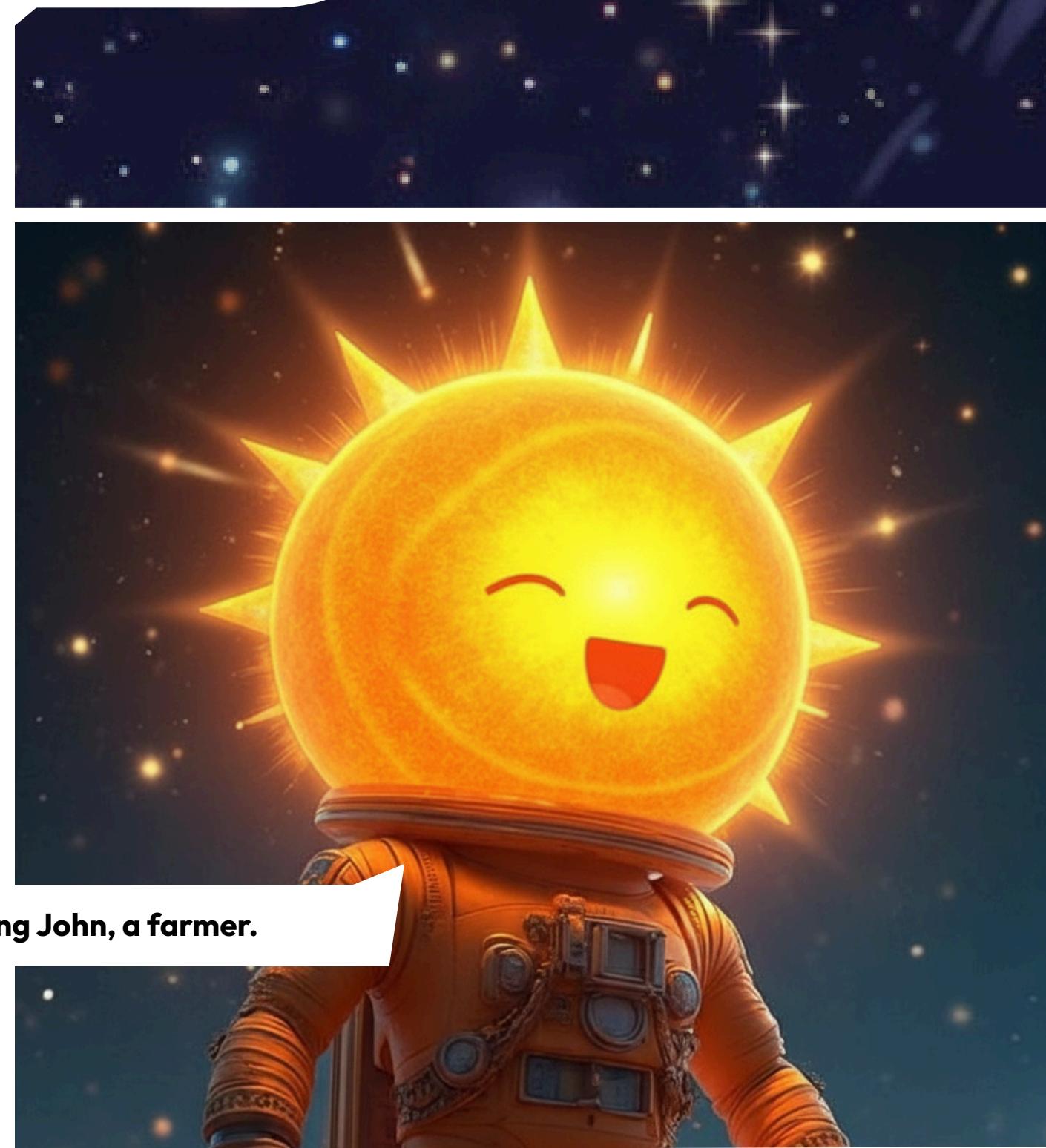




AstroSun and Space Weather



Hello, I'm Astro Sun, your guide on this journey through space and the stories connected by space weather.

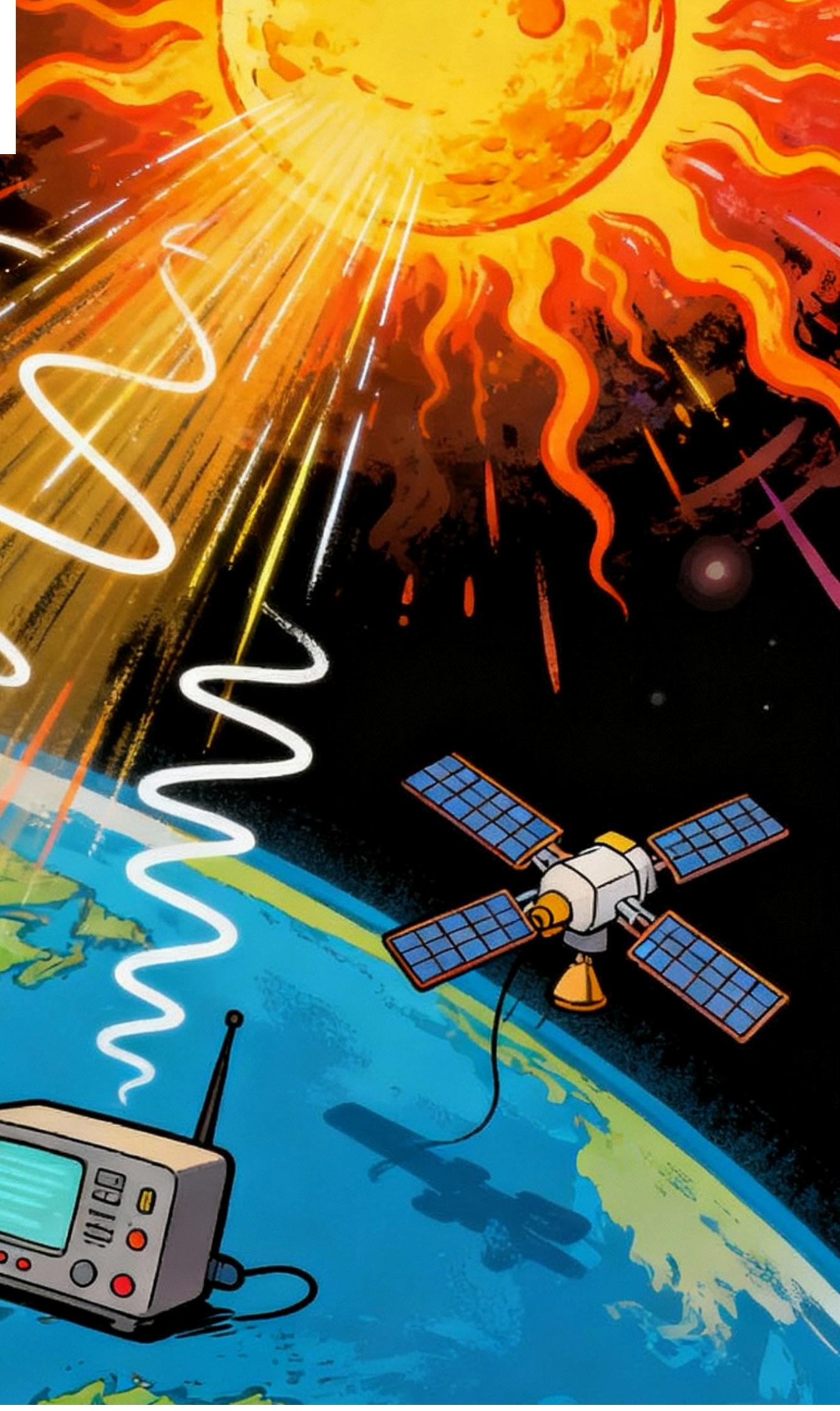


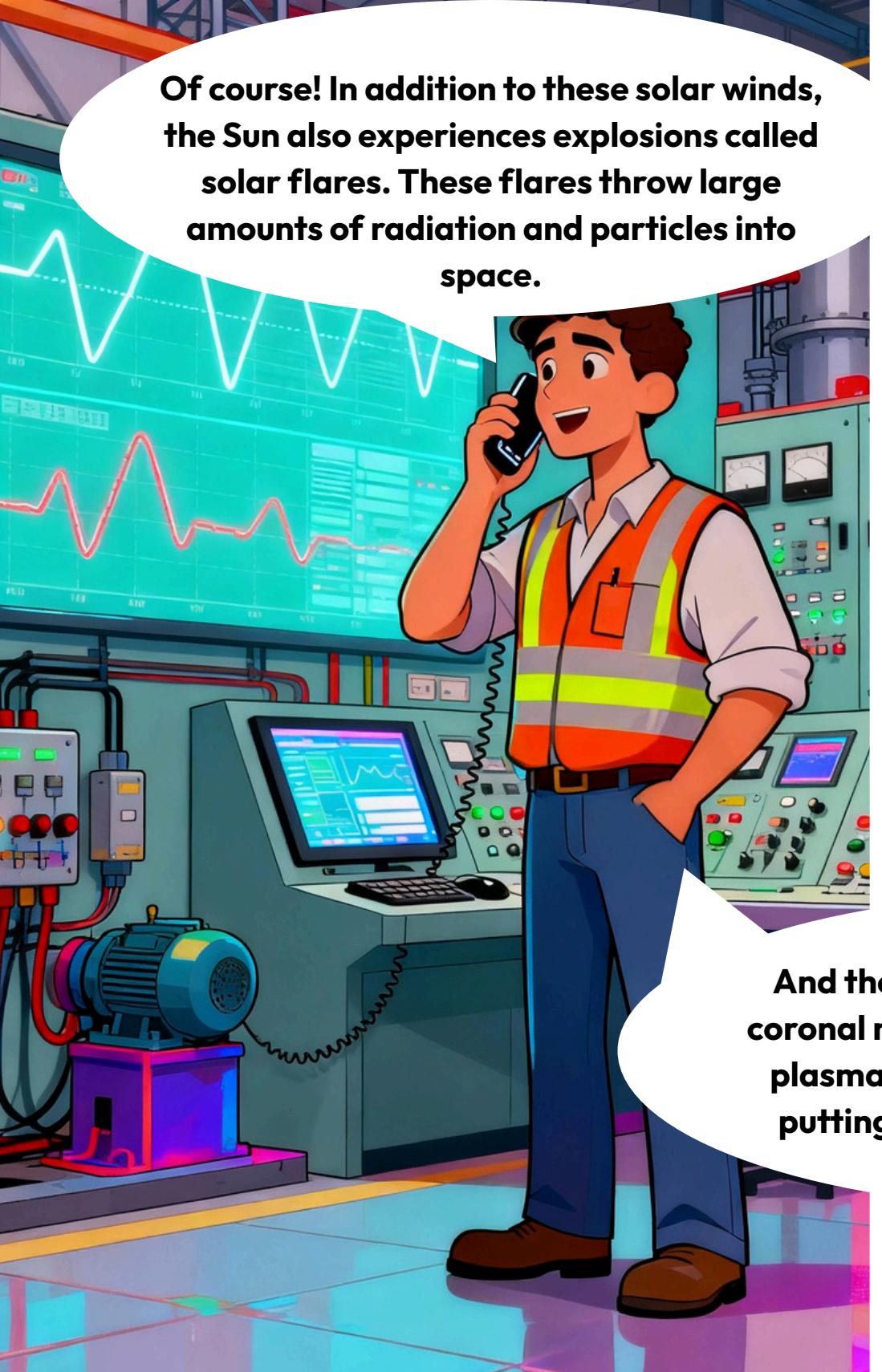
Let's start by meeting John, a farmer.



Charles, my tractor's GPS suddenly stopped working! The harvest is almost lost. What could be happening?

John already knows a little: the Sun sometimes sends out solar winds—charged particles thrown out with great force—that disrupt electronics here on Earth.





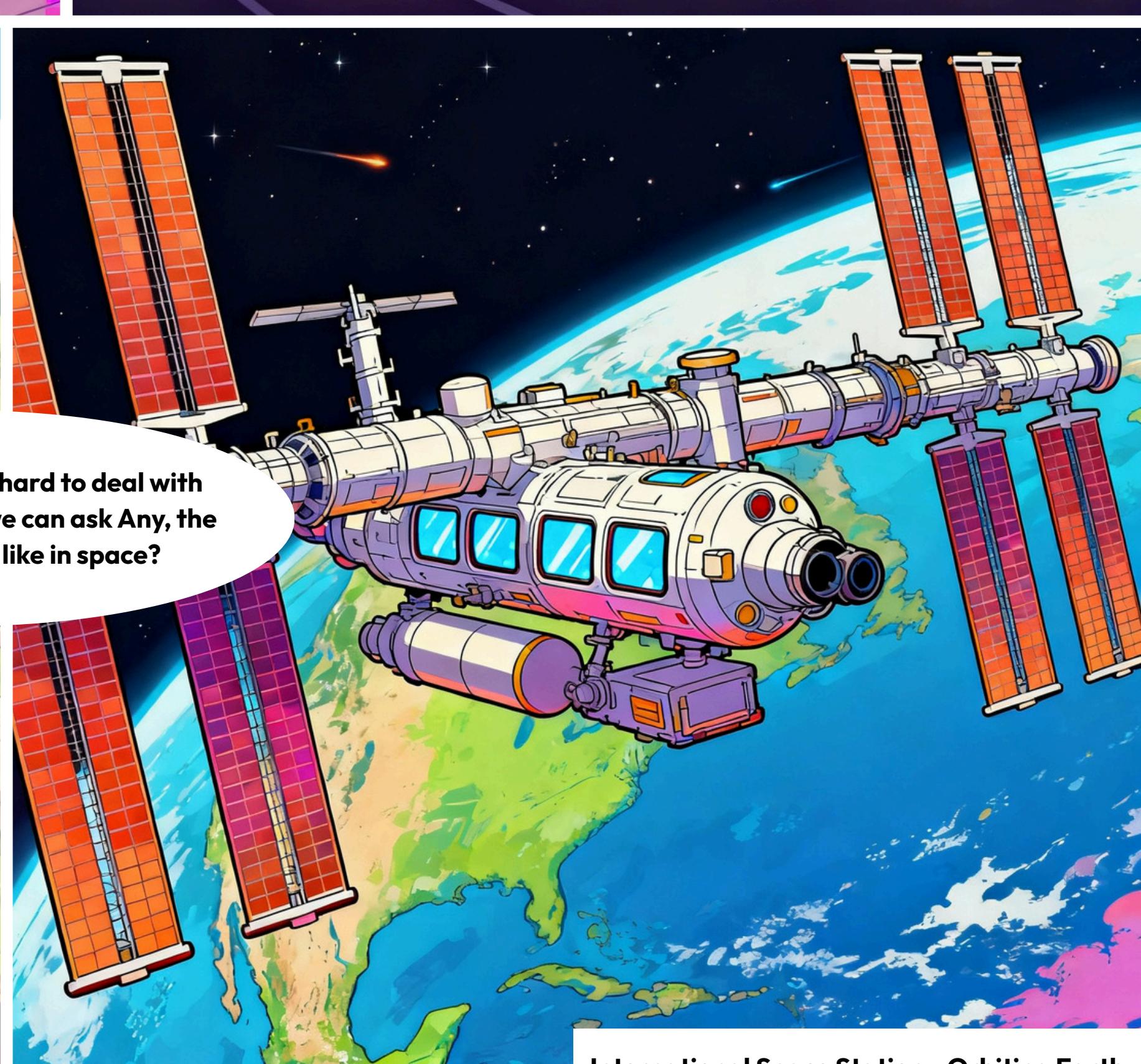
Of course! In addition to these solar winds, the Sun also experiences explosions called solar flares. These flares throw large amounts of radiation and particles into space.



And there's also a phenomenon called a coronal mass ejection — a massive cloud of plasma that can hit Earth at high speed, putting pressure on our magnetic field.



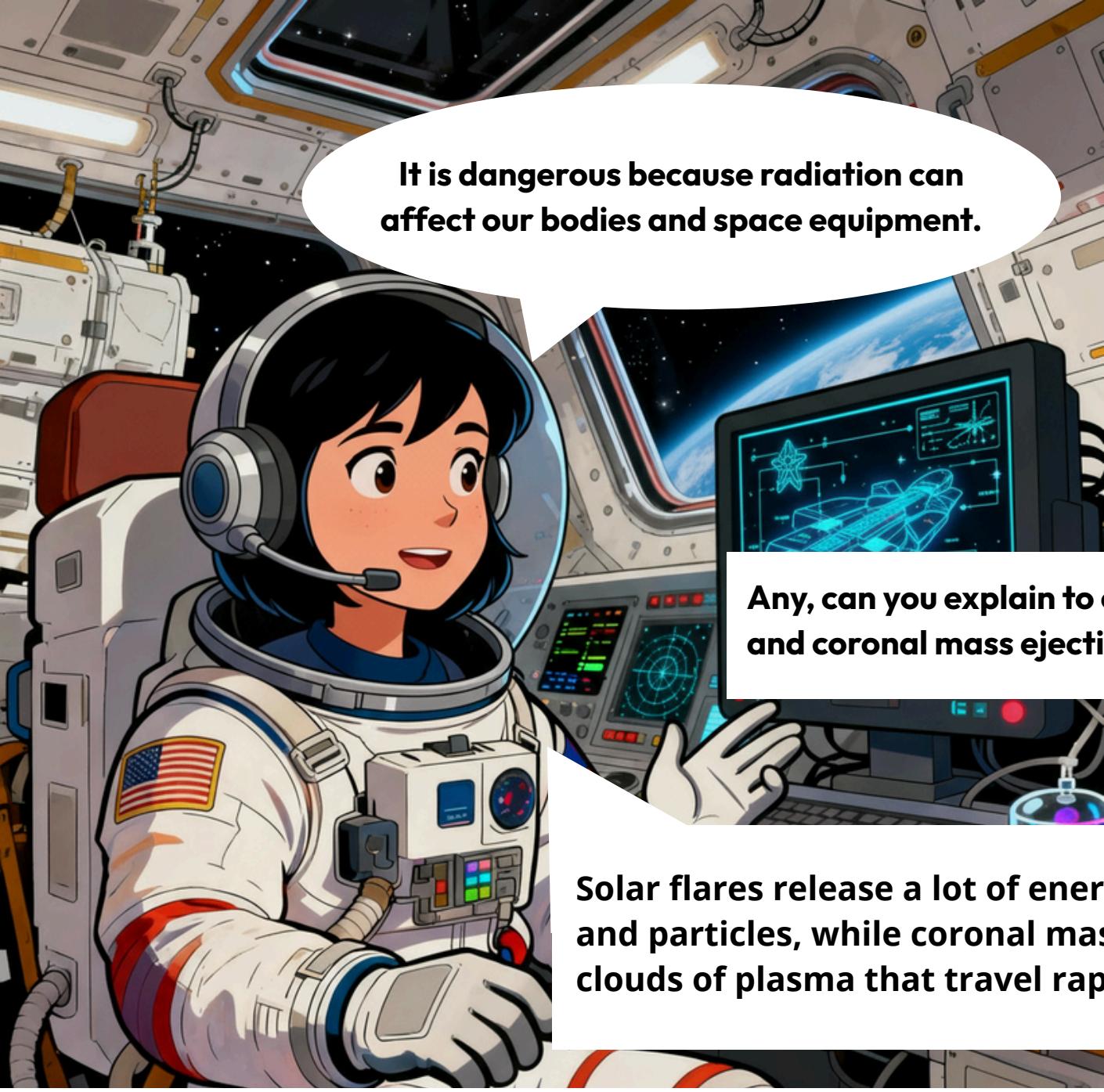
Amazing! I imagine it's hard to deal with that up there... Maybe we can ask Any, the astronaut, what it's like in space?



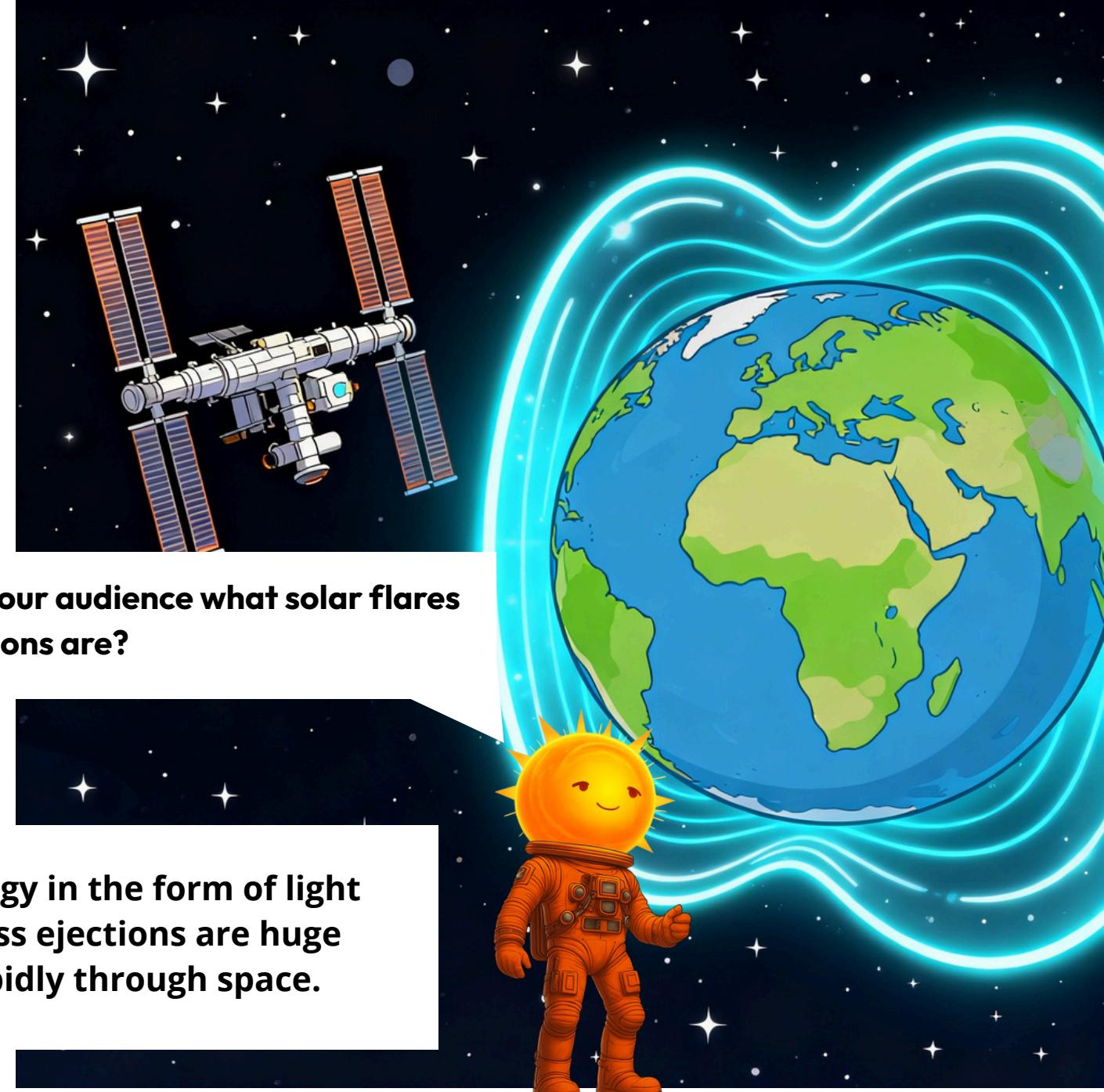
International Space Station - Orbiting Earth



Hey everyone, how are you? Here on the ISS, when a solar storm hits, our sensors detect intense bursts of radiation.



It is dangerous because radiation can affect our bodies and space equipment.



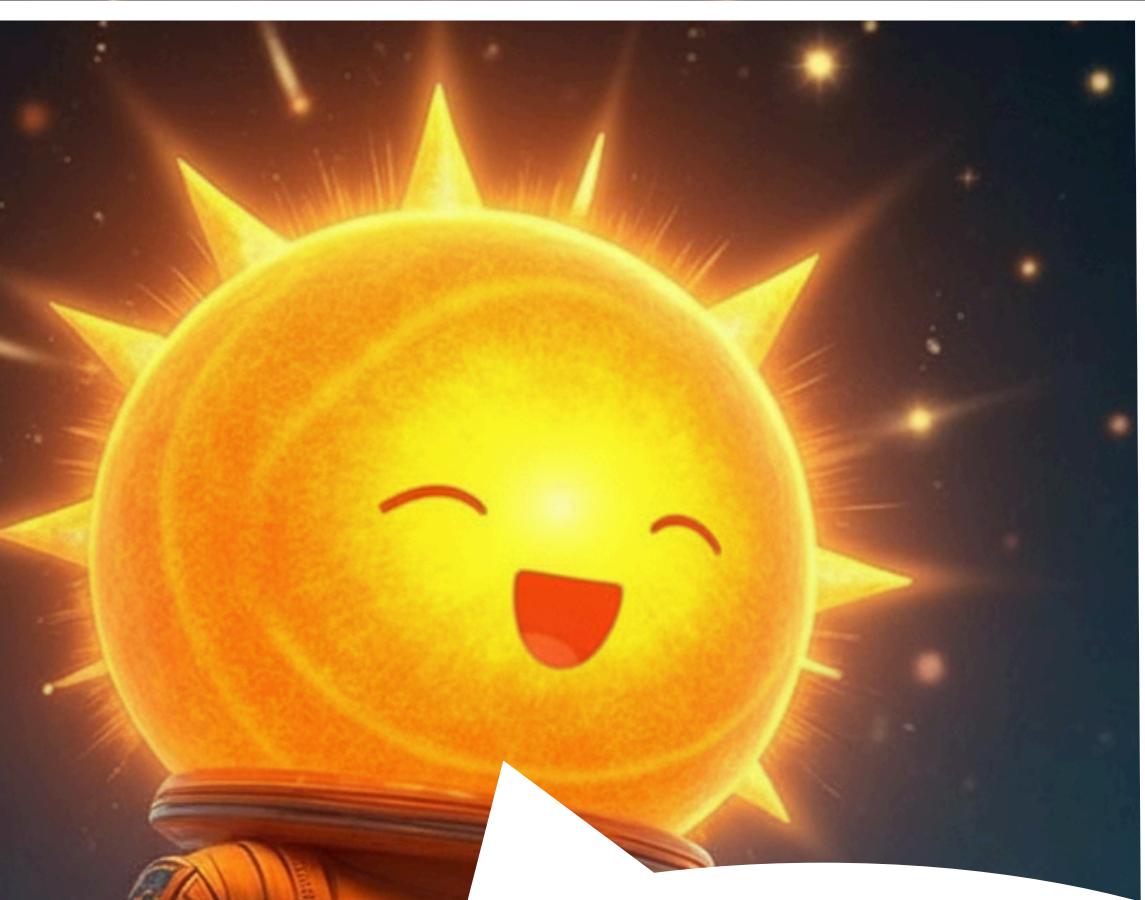
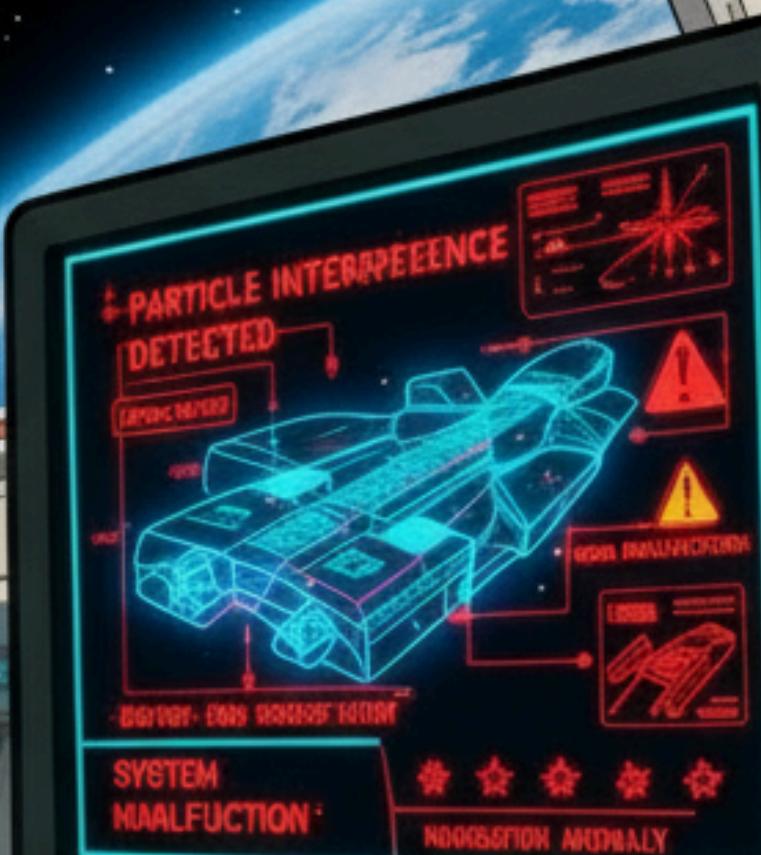
Any, can you explain to our audience what solar flares and coronal mass ejections are?



Solar flares release a lot of energy in the form of light and particles, while coronal mass ejections are huge clouds of plasma that travel rapidly through space.



When these particles reach Earth, they interact with the magnetic field, which protects our planet, but can cause disturbances if the pressure is high.



The station's protection is vital. Without it, solar storms could pose serious health risks to astronauts and even damage expensive equipment essential to life in space.



To learn about the more beautiful side of these storms, I would like to introduce Professor Lucas, who studies the Northern Lights





When the ionosphere is disturbed, radio signals can be blocked or altered, causing failures in important communications for planes, ships and emergency services.



After the storm passed, I was able to reestablish contact and spoke with Professor Marcos, who studies space weather in Brazil on the EMBRACE project.



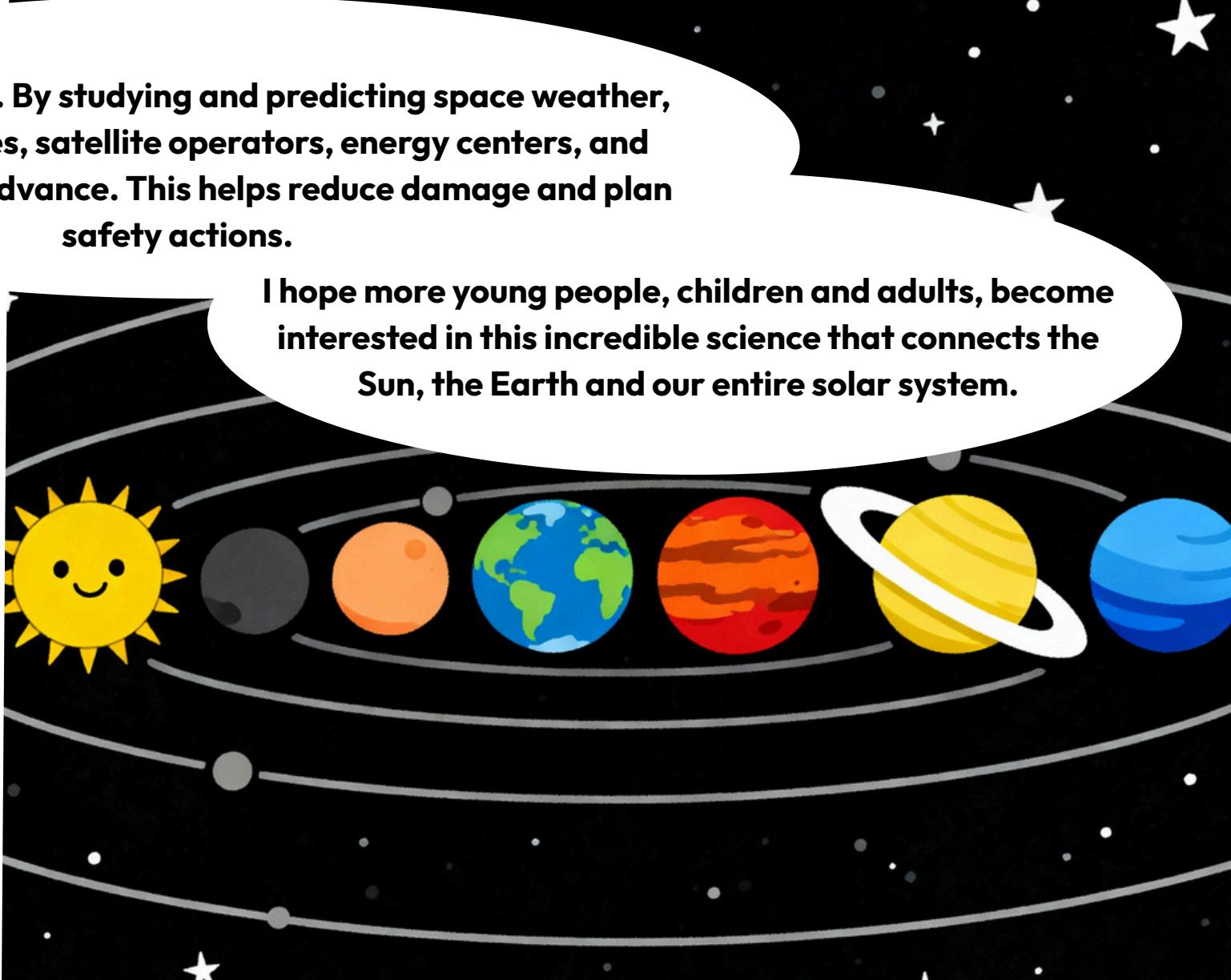
Space weather is the set of events that occur on the Sun and their effects on space and Earth, such as solar storms, solar winds, and coronal mass ejections. These events vary within a cycle of approximately 11 years.



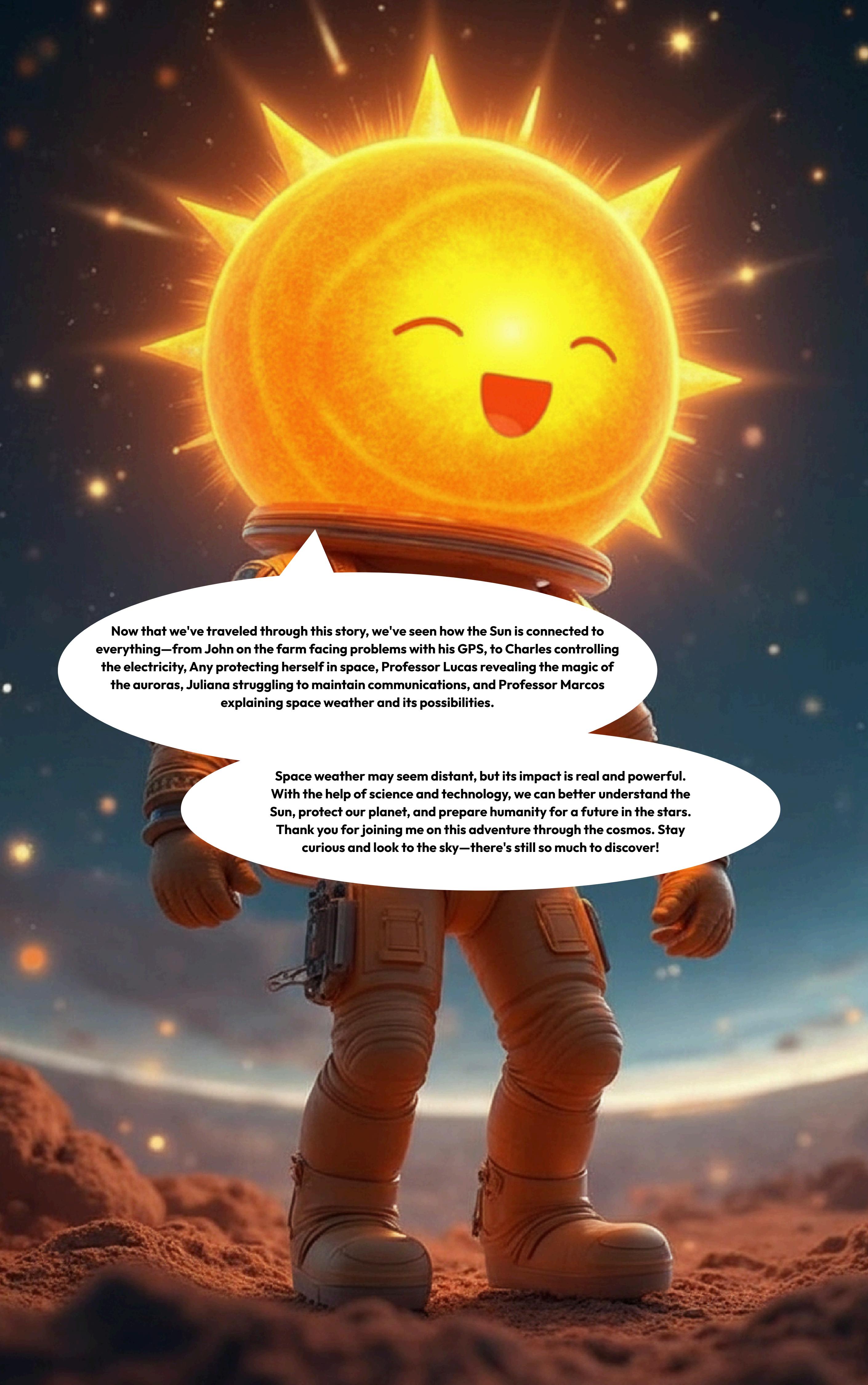
Professor Marcos, how can we use this knowledge to protect people and technologies?



Great question, Any. By studying and predicting space weather, we can alert airlines, satellite operators, energy centers, and even astronauts in advance. This helps reduce damage and plan safety actions.



I hope more young people, children and adults, become interested in this incredible science that connects the Sun, the Earth and our entire solar system.



Now that we've traveled through this story, we've seen how the Sun is connected to everything—from John on the farm facing problems with his GPS, to Charles controlling the electricity, Any protecting herself in space, Professor Lucas revealing the magic of the auroras, Juliana struggling to maintain communications, and Professor Marcos explaining space weather and its possibilities.

Space weather may seem distant, but its impact is real and powerful. With the help of science and technology, we can better understand the Sun, protect our planet, and prepare humanity for a future in the stars. Thank you for joining me on this adventure through the cosmos. Stay curious and look to the sky—there's still so much to discover!

