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Maggie Masetti: Hello, and welcome to the latest episode of Blueshift, the podcast from the Astrophysics Science Division at NASA's Goddard Space Flight Center. I'm Maggie Masetti. This week we're asking... when was the last time that you looked up at the night sky to get a look at the stars? Throughout history, humans have been interested in what they see in the sky. At first, it was just with our eyes. But we've gotten a lot better at it, or at least our tools have become more sophisticated.

Maggie: The entire year of 2009 is a celebration of astronomy, both past and present. The year has been declared the International Year of Astronomy and the whole world will be celebrating astronomy and how astronomy contributes to society and to culture. Later in this episode, I'll tell you how you can get involved with the International Year of Astronomy events in your own communities. So, why 2009? Well, it's the anniversary of a big event in astronomy. Four hundred years ago, Galileo looked at the sky with a very basic telescope and saw something fascinating. I'm sure most of you have at least heard of Galileo. He's a famous name in astronomy because of his many important contributions to the field. So in honor of his special anniversary... we actually lined up an interview with Galileo to talk to him about his many achievements.

Maggie: This year, we're celebrating some of the scientific work you did four centuries ago.

Galileo: Si. It's nice to be remembered.

Maggie: Many know your name and that you had something to do with astronomy. But most people don't seem to know what it was that you did. Could you help me quickly clear up some misconceptions?

Galileo: Of course.

Maggie: You proved that Earth revolved around the Sun.

Galileo: No, no, no. I didn't do that.

Maggie: You invented the telescope.

Galileo: Uh, no. I didn't do that, either.

Maggie: You determined the law of falling bodies by dropping balls of different masses off the Tower of Pisa.

Galileo: Oh, no, no! That's dangerous!

Maggie: You never did that?

Galileo: No, no, no. I rolled balls of different masses down small ramps and measured their speeds. I didn't have to climb stairs!

Maggie: Okay, well, you invented a thermometer.

Galileo: No, I ... Uh, si! Yes! Yes, I did that. I wanted to know how the density of water changed with temperature. But surely that's not what you're celebrating, huh?

Maggie: You improved the telescope.

Galileo: Yes, that I did. And such wonders it revealed to me! I heard about the Dutch invention of the spyglass - that's what I called it - oh, in, May 1609. Before the end of June I had made my own version. And I continued to improve it, make it more powerful.

Maggie: Weren't you the first to map the Moon using the telescope?

Galileo: This is not exactly correct. I was the first to publish my observations. But an Englishman, Thomas Harriot, made beautiful sketches in August 1609, several months before I turned my spyglass to the Moon.

Maggie: You discovered that the glow of the Milky Way arises from stars too faint to see with the naked eye.

Galileo: Yes. It holds stars so numerous as almost to surpass belief. Amazing, no?

Maggie: You discovered the moons of Jupiter.

Galileo: Si! Ah, and this must be what you're celebrating now!

Maggie: Tell me about that.

Galileo: Of course. On January 7, 1610, I turned the spyglass on Jupiter, which was then very bright. I saw a trio of little stars, all about the same brightness, beside it - a very memorable sight. I expected Jupiter, in its daily motion, would leave these little stars behind it, but no! The stars seemed to be carried around by the planet, but they themselves changed positions, sometimes to one side of the planet, sometimes to the other. Very peculiar. Then I found a fourth little star that behaved like the other three.

Maggie: By January 15, you had figured it out.

Galileo: Si! I thought: Santa cielo! These were four moons revolving around Jupiter.

Maggie: We call them the Galilean moons now.

Galileo: Ah, grazie! I called them the Medicean stars. I'm glad the name did not - eh, how do you Americans say it? - stick.

Maggie: Finding those moons was a big deal in 1610. Why?

Galileo: Up til then, people thought that Earth was the center of all motion in the Universe. Everything revolved around us, yes? Pffft. But the new moons, they showed that four things in the Universe revolved around Jupiter. There were at least two centers of cosmic motion, not just one. And if there can be two, why not more?

Maggie: This didn't prove Earth went around the Sun.

Galileo: No. But it proved easy to explain if one adopted the view of Copernicus, that Earth and the other planets are in motion around the Sun, just as moons circle around Earth and Jupiter.

Maggie: The discovery provided new ammunition for a Copernican cosmos?

Galileo: And many more cannonballs were needed before everyone was convinced. But Jupiter's four little moons - they made a big impression.

Maggie: Although Galileo is, well, unable to attend our International Year of Astronomy events, we will have so much going on, I'm sure you'll hardly miss him. One of the first big events this year will be the 100 Hours of Astronomy. It's going to be a worldwide event of astronomy-related activities, webcasts, telescope open houses, planetwalks, and more. One of the big goals of 100 Hours is to have as many people as possible look through a telescope just like Galileo did 400 years ago. It's going on April 2nd through April 5th, and people are planning special events all around the globe.

Maggie: Here at Goddard, we have a full schedule of events going on for 100 Hours. You can see a full schedule on our website, but they'll include special tours of NASA Goddard, a teacher night, a Planet Walk, hands-on activities, webcasts, star parties, a concert by a local a capella group, the Chromatics, a rocket launch... you get the idea. A few of these events require registration, so if you're interested, please visit our website for information about signing up! If you don't happen to live around Washington, DC, check out our site where we'll have links where you can find out what's happening in your area. And even if you can't make any of the official events, sometime in the next few weeks try to take a few minutes to look up at the sky and appreciate the view.

Maggie: For more information about 100 Hours events, or about this podcast, visit universe.nasa.gov/blueshift. Please feel free to leave us feedback on our website form and let us know how you're liking the podcast. Please join us again in a couple of weeks for another episode in which we bring another another piece of the Universe closer to you. This is Maggie Masetti for Blueshift.

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