

[intro music]

**Maggie Masetti:** Hello, and welcome to Blueshift, the podcast brought to you from NASA's Goddard Space Flight Center. This is our February the 17th 2009 edition, and I'm Maggie Masetti, your host. We try to bring the universe closer to you in each of our episodes, but we aren't alone in doing this. We have lots of help from services like Google Sky and World-Wide Telescope, which allow you to call up the whole universe on your home computer. But do you ever wonder where they get all these images from? Do they launch their own telescopes to take these images, or do they use existing data? That's what we'll hear about today when we talk with Tom McGlynn, an astronomer here at Goddard, and the creator of SkyView. SkyView is essentially a virtual observatory that allows a user, which could be anyone from a professional astronomer to an interested amateur on their home computer, to view any part of the sky at wavelengths ranging from radio to gamma rays. SkyView's capability comes from it being essentially a repository of astronomical data from many different missions and surveys. Now, here's Tom to tell us a little bit more about how SkyView came to be.

**Tom McGlynn:** I realized that there were all these all-sky surveys that were coming on-line, and they were being placed in lots of different archives, and they all had very difficult, customized mechanisms for getting access to them. And I said it would really be great if there was one place you could go, and say I'm interested in this position on the sky, and get an image of it, not just in the optical, but in gamma rays, or in radio data, or ultraviolet data, and be able to compare what the sky looks like in all different wavelengths. SkyView has data ranging from 30 megahertz in the radio all the way up to the EGRET data, I think it's a range of something like 18 orders of magnitude in frequency. The goal of SkyView has always been to make it possible to get to the data in a standard way. The goal is to get the data to the people. With SkyView for example, if you want to get ROSAT data, which is an X-ray survey, you just go in, click on ROSAT, and put in your position, and now you have instantly an X-ray image of the sky. We've done about 3 1/2 million requests last year, so that's actually 3 1/2 million images generated. There's a total of close to 20 terabytes of astronomical data that is queryable through SkyView.

**Maggie:** All you need to explore astronomical objects with SkyView is a Web browser. However there are other ways now to access SkyView's data archive. Remember we mentioned Google Sky and World-Wide Telescope at the beginning of this podcast? Well, guess what? SkyView's huge database has been used as the backend to both of them. Using World-Wide Telescope or Google Sky as the interface, your computer can function as a virtual telescope, allowing you to view all sorts of astronomical data on your computer screen. Here's Tom again to tell us how SkyView has been integrated into both of these services.

**Tom:** Something over 15 or 20 of the surveys available in World-Wide Telescope are gotten through SkyView, and we are working with Google Sky to provide many of the data sets for them as well. Google and World-Wide Telescope do an incredible job of providing a user interface to data. You can zoom around and pan and really, it's just fascinating to just play with those tools. But they have to get the data into a standardized format first to actually be able to use it. And SkyView helps them bridge that link. So we take the data from the actual imagery, and we can actually transform it into any format that Google Sky or World-Wide Telescope would like to use as their inputs.

**Maggie:** Tom told us about some of the other applications and uses of SkyView, some of them a little bit unusual.

**Tom:** We have data from the Near-Earth Asteroid Tracking System which is, I think it's now 700,000 images that were taken with the specific purpose of trying to find asteroids that are going to destroy the Earth. And they didn't find any yet. If you're taking an astronomy course and you hear about an object, you can go in and you can take a look. And one of the things I find fascinating in SkyView is to just look at large regions of the sky in different wavebands. The universe looks very different when you look at it in the infrared sky as when you look at it in the X-ray sky, as when you look at it in the optical. And there's actually just these beautiful pictures that you can see. There's structure in all of these wavebands, so you might be seeing the gas in our galaxy. One of the real joys in working with SkyView is just the ability to play.

**Maggie:** So SKyView really helps to bring the universe home to people. It's like picking up an atlas and seeing this whole compendium of images. Without SkyView that would be a lot harder, and it would take you a lot more effort to go and find them.

**Tom:** There is no service that has the... There's services that provide individual surveys, but there are essentially no services which provide everything, again with this enormous wavelength coverage. And all using exactly the same interface. It's really just, type "position", "survey", click on the survey, and you're done.

**Maggie:** SkyView really is a one-stop shop for people wanting to look at data from a lot of different surveys in a lot of different wavelengths. In this era of modern astronomy, the universe is just a click away on your computer screen. We've really come a long way in 400 years, which makes me wonder what Galileo would have thought of this if he were here today. If you'd like to try SkyView, check out our web site at [universe.nasa.gov/blueshift](http://universe.nasa.gov/blueshift), and we'll have information for you on where to find it. Feel free to drop us a line on our feedback form, and let us know if you're enjoying the new

format of our podcast. You can also feel free to let us know what you'd like to hear about next time. Please join us again in a couple of weeks for another episode, in which we bring another piece of the universe closer to you. This is Maggie Masetti for Blueshift.

[music]