

Sun-Earth Day Mission Highlights:

Interview with Jacob Heerikhuisen (IBEX)

[Troy Cline]

In 2012 the planet Venus will pass directly between the Sun and the Earth. This "Transit of Venus" won't occur again until the year Twenty-One-Seventeen.

[Sound clip]

My name is Troy Cline and welcome to Sun-Earth Day 2012: Shadows of the Sun.

[Music Transition]

Many of our NASA missions play an enormous part telling that incredible story: the story of our dynamic solar environment.

In this podcast, we'll continue our series about the IBEX mission with Jacob Heerikhuisen, an assistant professor at the University of Huntsville in Alabama. From an earlier podcast, you may remember that IBEX maps faint magnetic fields out in space by capturing images of neutral atoms that result from particle collisions along those magnetic fields. Scientists like Jacob use data from IBEX to make models of the processes occurring at the boundary of our Solar System.

To get started I asked Jacob to describe what IBEX data looks like?"

[Jacbo Heerikhuisen]

IBEX data looks like just maps of the sky. IBEX is looking at all different points in the sky and at every point it is taking measurements and stitches all these measurements together, to create a whole map of the sky. So that is the raw data of IBEX. It certainly isn't a picture in the classic sense. It looks at a different number of energy levels, energy bits. There are 11 of these different energies that IBEX is looking at and so at each energy level you have a whole map of the sky. We look for things in that data and it takes 6 months to produce a picture. What you see in this is like hills, basically. So you process this out it is like hills and valleys and where you have hills it means you have the stronger energetic neutral atoms emission from those regions and where you have valleys you have less emissions. So looking at different parts of the sky you can compare how much flux is there.

[Troy]

Much of Jacob's work focuses on transforming that data into models. So I asked Jacob, "What is modeling and how do scientists use it?"

[Jacbo Heerikhuisen]

Modeling from my point of view is when you take the equations of physics that you feel are typical to a particular region of space or the Earth or any system, you take those equations and you believe that those equations hold the key to the evolution of that region. What you then do is actually solve those equations, these are mathematical equations that you solve on a computer generally because these are very complicated things. It is those equations that I think of as the model and what you can do is to simulate reality by solving those equations. You generally need to set some boundary conditions or parameters around the regions you are interested in. By solving those equations you can then simulate reality and compare it to the data. With these underlying equations in a video game or any of these physics space games, racing car games, something like that, there is some underlying physics or equations and they are solved on a computer to simulate reality.

[Troy]

Towards the end of our interview I asked Jacob to tell me how he actually got interested in science. Who or what event created that first spark?

[Jacbo Heerikhuisen]

When I was young, just started elementary school, I was very interested in astronomy, things related to space. Mainly because of seeing things on television, documentary style that kind of presentation. My parents had some books; I used to like flipping through the pages even though I wasn't reading at all I was interested in what I was seeing. And originally I thought I wanted to be an astronaut. As I started to go through school I was always good at mathematics. Later I realized that mathematics was a very useful tool for doing physics. Physics really is my interest. Physics is interdependence on more than reality all that stuff in space and astronomy related. So I started to really get interested in that more than the astronaut side of it, I decided to get into the science side of it. In college and I took mathematics and physics and I still do math and physics.

[Troy]

We'd like to thank Jacob for taking the time to talk to us today, and we'll be keeping our eye out for new information IBEX might find along the solar system's boundary.

Here to tell you more about additional education resources on the IBEX website is Lindsay Bartolone, the Education and public outreach lead for the IBEX mission.

[Lindsay Bartolone]

Download and read the IBEX -The Edge of the Solar System Poster, to view an artist's depiction of the Heliosphere. On our website in the Student's Section we

have a series of Frequently Asked Questions and Answers about the IBEX mission and science.

[Troy]

You can find all of the information about this year's theme, "Shadows of the Sun", on Sun-Earth Day website at sunearthday.nasa.gov. We'll continue to populate that website the latest information about our upcoming programs, background resources, activities and registration information. With the help of our friends from the Solar Dynamics Observatory mission we've even include a new event based Google Map! One of our main goals is to help you join thousands of people in learning more about the Transit of Venus on June 5-6, 2012, and then again for a total solar eclipse on November 13-14, 2012. I'll share more with about those events in upcoming podcasts.

I hope you enjoyed this Sun-Earth Day Highlights podcast. Upcoming podcasts will include interviews with additional NASA scientists, astronomers, educators and media specialists from the award winning NASA Edge team!

Don't forget to 'like' us on Facebook and follow us on Twitter to join in on the discussion with our growing Sun-Earth Day community.

For all other details about the Sun-Earth Day program including information about our past SED themes be sure to visit our website at sunearthday.nasa.gov. While there, don't forget to register in order to receive Sun-Earth Day updates!

You can learn more about NASA by simply visiting www.nasa.gov .