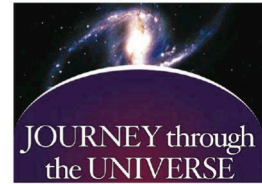




Visiting Researcher Profile



Dr. Jeff Goldstein

Center Director
Astrophysicist
National Center for Earth and Space Science Education

Research Specialty: Planetary atmospheric dynamics

Bio

Dr. Jeff Goldstein is an astrophysicist and the Center Director for the National Center for Earth and Space Science Education. Dr. Goldstein attended the Bronx High School of Science, and received his B.A. in physics from the City University of New York in 1980. He received his M.S. in 1987 and Ph.D. in 1989 in astronomy and astrophysics from the University of Pennsylvania, where he also received the Sigma Xi Outstanding Ph.D. Thesis Award. Dr. Goldstein's planetary science research includes the development of new laser techniques for the measurement of wind fields in the atmospheres of other planets. His research has produced the first direct measurement of the global winds above the clouds on Venus, and the first measurement of the global winds on Mars. As a program director, Jeff oversees *Journey through the Universe*, which takes entire communities to the frontiers of exploration; and the Center's activities in support of NASA's MESSENGER spacecraft mission to Mercury, which includes training of 27,000 teachers in Solar System science. Jeff oversaw the development of *Voyage*, a permanent scale model of the Solar System that opened on the National Mall in Washington, DC, in October 2001 in front of the Smithsonian's National Air and Space Museum, and which the Center is now replicating and permanently installing in communities world-wide.

Jeff has conducted over 150 educator workshops, and over 700 presentations at elementary through college levels. He is routinely invited to give keynote and featured presentations at educator conferences. In 1995, Jeff was the recipient of the 2005 Barry M. Goldwater Education Award from the National Capital Section of the American Institute for Aeronautics and Astronautics, and in 2005 received the Klumpke-Roberts Award for Outstanding Contributions to the Public Understanding and Appreciation of Astronomy from the Astronomical Society of the Pacific.

Examples of Classroom Presentations

***How Big is Big?* [Grades: K-12]**

It's a big, often intimidating universe out there. How do we even begin to fathom objects and distances that dwarf anything we've ever experienced? Earth's place in space *is* knowable. The secret is placing the

universe in a context that is *familiar*. Let Dr. Jeff show you how on a magical journey from spaceship Earth to points unknown.

***Saying Hi to E.T. on a Planet Far, Far Away* [Grades: 4-12]**

Wouldn't it be cool to talk to an alien? It's not as far out as you might think. Right now a radio signal with 'hello' from E.T. may be passing through your body. We might just need to point an antenna in the right direction, tune to the right channel, and listen in! That's exactly what's we're doing around the world.

***An Expedition to the Top of the World* [Grades: K-12]**

See what it's like to be a scientist on a research expedition to the top of the world in the Pacific. It's about an expedition to one of the largest telescopes on Earth, atop 14,000 ft Mauna Kea, on the island of Hawaii. The mission: measure winds on other worlds!

***A Voyage that will Forever Change Your Perspective of Home* [Grades: 4-12]**

We live aboard a spaceship called Earth. It's the big thing under your feet. It carries us through space at fantastic speeds all the while orbiting one special star we call the Sun. But only when you leave Earth and look back can you truly understand the nature of our existence.

How? Get ready to be transformed into a cosmic giant, able to comfortably journey through our Solar System—a vast space with many tiny worlds. It is a *Voyage* that will forever change your perspective of home.

***The Horrendous Space Kablooie and the Xerox Machine* [Grades: 9-12]**

Once upon a time, long, long ago, there was a big bang, or so the theory goes. We think that this big bang (which took place here, there, and everywhere) gave birth to the universe. We don't know why it happened, but there is plenty of evidence that it did. And yes, you too can understand the big bang theory. All you really need is a piece of paper, a pen, and a good xerox machine!

Examples of Family/Public Program Presentations

A Voyage that will Forever Change Your Perspective of Home

Sometimes a story is so moving, so powerful, it is capable of changing the way we view the world and ourselves. In October 2001 *Voyage: a Journey Through Our Solar System* opened on the National Mall in Washington, DC. *Voyage* is a permanent one to 10-billion scale model of the Solar System that provides visitors a dramatic understanding of Earth's place in space, and celebrates our ability to reach beyond our tiny world and uncover the breadth and majesty of the universe. Join Dr. Jeff Goldstein, *Voyage* project director, for a memorable *Voyage* that will forever change your perspective of home.

Human Exploration—the Journey Continues

Throughout history, humans have been space explorers. For thousands of generations we have looked to the sky and wondered about our place in the cosmos. Yet it was only 400 years ago that we first improved our view with telescopes. And only within the last 40 years have we become true spacefarers, able to travel beyond Earth's atmosphere with robots and humans.

Standing on the shoulders of past generations, we have done remarkable things in our time. On July 20, 1969 we walked on the Moon. Through the eyes of robots we've seen sunset on Mars, volcanoes erupting on a moon of Jupiter, and the awesome majesty of Saturn's rings. With telescopes on the ground and in space we have seen the birth of other suns, found solar systems beyond our own, and have traveled back in time to see the universe as it was billions of years ago. We humans have even sent four spacecraft beyond Pluto en route to the stars with greetings from Earth aboard. Look what we have done!

Join Dr. Jeff on a journey to the frontiers of space to see how far we've come and what awaits the next generation.

How Big is Big?

It's a big, often intimidating universe out there. How do we even begin to fathom objects and distances that dwarf anything we've ever experienced? You might memorize all the facts and figures—our galaxy possesses 100 billion stars, our Sun is 93,000,000 miles away. But where's the learning? The numbers are big, impersonal, even irrelevant. Alternately, you might construct a simple world model with Earth, our Sun, some neighboring planets and stars adrift in an endless ocean of space. But both approaches do a disservice to the majesty of the cosmos.

Earth's place in space *is* knowable in a tangible way—even for elementary school students. The secret is placing the universe in a context that is *familiar*. You're not convinced? Come and take this magical journey from spaceship Earth to points unknown. I promise when we come back home you'll *feel* T.S. Eliot's words: "...and the end of all our exploring will be to arrive where we started and know the place for the first time."

All attendees will receive a scale model solar system and an activity for the classroom.

Saying Hi to E.T. on a Planet Far, Far Away

A casual observer looking into the starry night, far from city lights, is struck by a myriad of questions. One of the most thought provoking—"Are we alone?" We now know enough about the universe and the nature of life, and have the technology, to seek an answer. If for instance radio waves, moving at the speed light, are an efficient way to communicate across vast space, right now we may be bathed in signals from another intelligence. In concept it's simple, point the radio telescope, tune to the right channel, and have a means of discerning a non-natural signal. But where do you point, to which channel do you tune, and how do you tell it's an intelligent signal? In fact what dictionary would you call upon? The challenge is remarkable, and success would be profound—for it would change us, all of us.

The Art of Science

Science is an art. It's about asking the right questions, framing a pathway to an answer, and reveling in seeing something new. In fact science is often not about the knowledge at the end of the road but the act of getting there. Knowing that you've been able to pull back the veil of nature a little, and see how she operates, feels wonderful. Knowing that you've empowered yourself to take this journey is remarkably gratifying. Hear first hand what science is—and isn't—from Dr. Jeff.