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Journey through the Universe

Hawaii has just completed its fifth year of [Journey through the Universe](#), a national science education initiative that engages *entire* communities—students, teachers, families, and the public—using education programs in the Earth and space sciences and space exploration to inspire and educate. The initiative engages communities in sustained science, math, and technology education, and is a celebration of exploration and the joys of learning.

What the human race knows about our world and the greater Universe is used to inspire *the next generation* of scientists and engineers through interactions with *the current generation*; give teachers the tools and training to conduct powerful lessons in the classroom that are deeply relevant to the science curriculum; and provide venues for family learning where parents and their children learn together. [More ...](#)

February 5-13, 2009

Journey Week: February 5-13, 2009

- Thursday February 5, 2009:** Master Teacher Training: 8am - 12pm at 'Imiloa Astronomy Education Center
- Friday February 6, 2009:** Astronomer Workshop: 10am - 12pm at 'Imiloa Astronomy Education Center
- Saturday February 7, 2009:** Teacher Orientation: 8am - 1:30pm at 'Imiloa Astronomy Education Center
- Sunday February 8, 2009:** Family Science Day: 9am - 4pm at 'Imiloa Astronomy Education Center
- Monday February 9, 2009:** Borders Journey Astro Night: 5-7pm at Borders Hilo
- Tuesday February 10, 2009:** Hawaii Chambers of Commerce Appreciation Event: 5-8pm at Hilo Yacht Club
- Wednesday February 11, 2009:** Family Science Night: 4pm - 8pm at 'Imiloa Astronomy Education Center

The National Science Team

- [Dr. Tim Slater](#), University of Wyoming
- [Dr. Kevin Grazier](#), NASA, Jet Propulsion Laboratory
- [Kevin M. Caruso](#), Stankraft
- [Dr. Stephanie Slater](#), University of Wyoming

The Local Science Team

- [Andy Adamson](#), Joint Astronomy Centre
- [Colin Aspin](#), Institute for Astronomy
- [Kenyan Beals](#), Institute for Astronomy, Hilo
- [Kevin Caruso](#), Stankraft
- [Richard Chamberlin](#), Caltech Submillimeter Observatory
- [Antonio Chrysostomou](#), Joint Astronomy Centre
- [Paul Coleman](#), Institute for Astronomy, UH Manoa
- [Richard Crowe](#), University of Hawaii at Hilo
- [Chris Davis](#), Joint Astronomy Centre
- [Anil Dosaj](#), Caltech Submillimeter Observatory
- [Scott Fisher](#), Gemini Observatory
- [Brian Force](#), Caltech Submillimeter Observatory
- [Gary Fujihara](#), Institute for Astronomy, Hilo
- [Tom Geballe](#), Gemini Observatory
- [Taras Golota](#), Subaru Telescope
- [Kevin Grazier](#), NASA JPL
- [Oliver Guyon](#), Subaru Telescope
- [John Hamilton](#), University of Hawaii-Hilo
- [Janice Harvey](#), Gemini Observatory
- [Saeko Hayashi](#), Subaru Telescope
- [Inge Heyer](#), Joint Astronomy Centre
- [Michael Hoenig](#), Gemini Observatory
- [Ryoko Ishioka](#), Subaru Telescope





David James, University of Hawaii at Hilo
 Shawn Laatsch, `Imiloa Astronomy Center
 Joe Masiero, Institute for Astronomy, UH Manoa
 Tony Matulonis, Gemini Observatory
 Richard McDermid, Gemini Observatory
 Pablo McCloud, Subaru Telescope
 Callie McNew, Mauna Kea Visitor Information Station
 Peter Michaud, Gemini Observatory
 Ramprasad Rao, Submillimeter Array
 Ruisheng Peng, Caltech Submillimeter Observatory
 Robert Potter, Subaru Telescope
 Julie Renaud-Kim, W.M. Keck Observatory
 Kathy Roth, Gemini Observatory
 Hiroko Shinnaga, Caltech Submillimeter Observatory
 Doug Simons, Gemini Observatory
 Stephanie Slater, University of Wyoming
 Tim Slater, University of Wyoming
 Walter Steiger, Caltech Submillimeter Observatory
 Marianne Takamiya, University of Hawaii at Hilo
 Holly Thomas, Joint Astronomy Centre
 Kumiko Usuda, Subaru Telescope
 Watson Varricatt, Joint Astronomy Centre
 Kevin Volk, Gemini Observatory
 Virginia Volk, Astronomer



Proclamation

Humans have always looked upward, fascinated with the hundreds of points of light in the night sky. As technology progressed and people were able to see ever farther into the cosmos, the heavens began to reveal some of its secrets, and teach us our place among the stars.

We have learned that we do not live at the center of the solar system, nor of the universe. This special place we call our home is an average planet orbiting an average star in the vast-of-forever corner of the Milky Way.

But far from detaching our standing, these discoveries have opened up endless possibilities. If an average planet like ours can be so remarkable, what else awaits us? Will we one day discover that Earth is not unique in its ability to support life?

These are questions that challenge the very foundations of how we perceive ourselves, and the answers can only come through astronomy and the other sciences. Coinciding with the 40th anniversary of Galileo's first use of an astronomical telescope, events will take place worldwide to celebrate 2009 as the International Year of Astronomy.

In Hawaii, Journey Through the Universe Week will take place to highlight astronomy's profound impact. Astronomers will visit schools in the Hilo, Waikane and Lapekoohe areas of the Big Island, and teachers will get specialized astronomy training. In addition, there will be radio programs, special astronomy exhibitions in Hawaii's Hilo, Hana and West Hawaii's Tulehu, and two Family Science Days at the `Imiloa Astronomy Center on February 1 and 2.

Our Administration supports the efforts to increase students' knowledge of science, technology, engineering, and math (STEM) skills in order to prepare them to compete in the 21st-century economy. The Journey Through the Universe educational program will have a profound impact on improving the STEM skills of Hawaii's students.

WHEREFORE, I, LINDA LINGLE, Governor, and I, JAMES R. "DINK" AIOHA, JR., Lieutenant Governor of the State of Hawaii, do hereby proclaim February 1 through 13, 2009, as

JOURNEY THROUGH THE UNIVERSE WEEK

In Hawaii, and that a hearty salute be extended to the preceding Hawaii's students with a greater understanding of the cosmos through their research and exploration efforts.

DONE at the State Capitol, in the Executive Chamber, Honolulu, State of Hawaii, this sixth day of October 2008.

Linda Lingle
 Linda Lingle
 Governor, State of Hawaii

James R. Aioha, Jr.
 James R. "Dink" Aioha, Jr.
 Lieutenant Governor, State of Hawaii

Lead Local Team

Richard Crowe, University of Hawaii at Hilo
 Janice Harvey, Gemini Observatory
 Andolie Marten, Gemini Observatory
 Inge Heyer, Joint Astronomy Centre
 Bess Jennings, Department of Education
 Gail Loeffler, `Imiloa Astronomy Center
 Peter Michaud, Gemini Observatory
 Valerie Takata, Department of Education
 Darrell Nekoba, Department of Education

Bios of Astronomy Educators:
http://hubble.uh.hawaii.edu/JTTU_2009/Journey_Bios_2009.pdf



The Program

Developed by the National Center for Earth and Space Science Education (NCESE), *Journey through the Universe* provides a window on the true nature of science and the lives of modern-day explorers, with special emphasis on not just *what* is known about our world and the universe but *how* it has come to be known. It is an approach that reveals the very personal means by which researchers ask questions of the world and empower themselves to create a pathway to an answer.

The initiative includes local programming for thousands of students and families, grade K-12 lessons and curriculum support materials, grade K-12 educator training, and ongoing support from scientists and educators nationally in both science content and pedagogy for the classroom. The communities integrate these resources into their existing science, mathematics, and technology education programming in both formal and informal science education venues. The result of this partnership is programming that reflects the strengths and capabilities of the community, and provides access to resources that would otherwise be

unavailable.

Hilo, Hawaii is currently one of 10 communities around the nation that are designated Journey through the Universe sites.

The North Hilo/Laupahoehoe/Waiakea Complex area located on the island of Hawaii joined the Journey through the Universe program in June 2004. There is a genuine desire among the scientists and professionals associated with astronomy to participate with Hilo schools. Local educators and students desire to share in the excitement of astronomy. Journey through the Universe Week can bring the two together. The joint partnership will:

- Heighten awareness of science in classrooms.
- Help students meet the Hawaii Content and Performance Standards and national standards.
- Provide rigor, relevance and relationships in curriculum, instruction and assessment.
- Tap into the rich resources that are the Hilo community.
- Improve teaching staff in content fields. Professional development, in-service training sessions, networking and articulation amongst educators, scientists, and community people will help improve teaching.
- Educate parents and the community in the space science enterprise.

Programming provided to each community includes a weeklong celebration of learning "Journey through the Universe Week" conducted by a National Team of researchers and engineers reflecting organizations from across the NASA communities. During Journey Week:

Pictures of Journey 2009

The following are links to pictures taken during Journey Week 2009.

- http://outreach.jach.hawaii.edu/outreach_activities/ittu.html

Family Science Events

A family science night will be held at the 'Imiloa Astronomy Center, including planetarium shows, four guest lecturers, and free access to the exhibit area.

Classroom Visits

A National Team of researchers and engineers working on the frontier conduct Classroom Visits for 8,000 K-12 students. The researchers are gifted at communicating their passion for research and science to audience of all ages, providing students a personal interaction with explorers working on the space frontier, and providing a window on the lives of researchers and the process of science.

Educator Workshops

Training is provided for K-12 educators on Education Modules that are mapped to the National Science Education Standards. Each Module includes an Educational Unit at three (K-4, 5-8, 9-12) or four (K-2, 3-4, 5-8, 9-12) grade levels, and includes content overviews; inquiry-based, hands-on activities; assessment rubrics; and resource listings.

Contact Us

- **E-Mail** [Journey through the Universe Program](#)
- **Phone** Janice Harvey (808) 974-2603
- **Mail** Journey through the Universe, Janice Harvey, Gemini Observatory, 670 N. A'ohoku Place, Hilo, Hawaii
- **Press Inquiries** Janice Harvey, Gemini Observatory, (808) 974-2603, jharvey@gemini.edu

Press Releases

- [Journey Through The Universe in February 2009 - Taking Big Island Students and Teachers to the Stars and Beyond](#)
- [Editorial by Valerie Takata, Hilo/Laupahoehoe/Waiakea Complex Area Superintendent, Department of Education](#)

[Journey 2008](#)

[Journey 2007](#)

[Journey 2006](#)



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Family Science Events

Purpose of Family Science Events:

The Family Science Events are meant to provide a cross-generational learning experience for parents and their children, in subjects that are part of the science curriculum.

Take a journey to the space frontier with your family.

Family Science Events provide a family learning experience in exciting human space flight, Earth and space science subjects that are connected to the curriculum. The hallmark of these performances is audience participation. You will leave with a sense of wonderment about our world, and the experience will spark discussions between family members for weeks afterwards.

Family Science Events provides parents a window on the education of their children, schools a way to build bridges to the familiar, and researchers an opportunity to share what it's like to work on the great frontier of space.

The Family Science Events will be held at the I`miloa Astronomy Center and will include ongoing planetarium shows, featured speakers, along with exhibit hall, dining room and gift shop open.

Admission into the Events will be by ticket only. Please call Gemini Observatory, 974-2500, for free tickets. Tickets are LIMITED.

Family Science Day

SUNDAY, FEBRUARY 8, 2009

9am - 4pm

Peering Into Space: Celebrating the International Year of Astronomy's Best Images of the Cosmos

February 8, 2009
10:00am
Tim Slater, University of Wyoming

Four hundred years ago, a little known Italian scientist peered through his newly crafted telescope and unveiled inner workings of the cosmos never seen before. Following in Galileo's footsteps, this presentation will combine the awe inspiring aesthetics of the universe with a description of the underlying mechanics of how the universe works. Professor Tim Slater serves as your tour guide who will describe and show you rarely seen pictures of planets, stars, nebulae, and galaxies. In celebration of the 2009 International Year of Astronomy, don't miss this opportunity to take a personally guided virtual journey through the universe.

Alien Worlds, Real and Imagined

February 8, 2009
11:00am
Inge Heyer, Joint Astronomy Centre

With new and more sensitive technology it has finally become possible to search for planets around other stars. Since the age of science fiction people have imagined what other worlds might look like, now we can at least infer some of their characteristics. It won't be long until we will be able to take pictures. What are these worlds like? Can we compare them to our planets? And if there should be life on these worlds, how might it perceive the Universe? We will go on a journey, both fanciful and very real, to see what we have found in our search for alien worlds.

Physical Science on the Big Island: Perspective Checks All Around

February 8, 2009
1:00pm
Scott Fisher, Gemini Observatory

There is a huge amount of science taking place on the Big Island every day. From the telescopes on Mauna Kea to the seismometers near Pu'u O'o, teams of scientists are working on cutting-edge research right here in our own backyard. This lecture will pull together results from different fields in an attempt to show that the Big Island is a very scientifically active location. Although I will meander between geology, oceanography, and atmospheric science, the talk will concentrate on the latest astronomical research being conducted atop Mauna Kea that is designed to give the participants a 'perspective check' on the scale of the Universe.



"Hands-On Space"

February 8, 2009
2:00pm
Kevin Caruso, Stankraft

Get ready for a Fun, Energetic, Space Presentation which starts with a quick Hubble View of our Space Neighborhood, and then a closer hands-on look at some of our closer planetary neighbors. Get Ready: Several Volunteers Requested!

FIVE YEARS AT SATURN: THE CASSINI/HUYGENS MISSION

February 8, 2009
3:00pm
Dr. Kevin Grazier, Jet Propulsion Laboratory, California Institute of Technology

The Cassini spacecraft has been in Saturn orbit for nearly five years, and has been completely rewriting the book about the planet Saturn. Dr. Kevin Grazier--Investigation Scientist and Science Planning Engineer on Cassini--will provide an overview of the mission, recent science results, and discuss the plans for Cassini's future.

MONDAY, FEBRUARY 9, 2009

Borders Journey Astro Night

February 9, 2009
5-7pm

Come join us at Hilo Borders for some fun astronomy readings and activities on Monday February 9th evening from 5pm to 7pm. Astronomers will read children's astronomy books, and everyone gets to be a part of the Solar System. A variety of readings and activities are planned.

Family Science Night

WEDNESDAY FEBRUARY 11, 2009

4pm - 7pm

FIVE YEARS AT SATURN: THE CASSINI/HUYGENS MISSION

February 11, 2009
4:15pm
Dr. Kevin Grazier, Jet Propulsion Laboratory, California Institute of Technology

The Cassini spacecraft has been in Saturn orbit for nearly five years, and has been completely rewriting the book about the planet Saturn. Dr. Kevin Grazier--Investigation Scientist and Science Planning Engineer on Cassini--will provide an overview of the mission, recent science results, and discuss the plans for Cassini's future.

"Hands-On Space"

February 11, 2009
5:15pm
Kevin Caruso, Stankraft

Get ready for a Fun, Energetic, Space Presentation which starts with a quick Hubble View of our Space Neighborhood, and then a closer hands-on look at some of our closer planetary neighbors. Get Ready: Several Volunteers Requested!

Physical Science on the Big Island: Perspective Checks All Around

February 11, 2009
6:15pm
Scott Fisher, Gemini Observatory

There is a huge amount of science taking place on the Big Island every day. From the telescopes on Mauna Kea to the seismometers near Pu'u O'o, teams of scientists are working on cutting-edge research right here in our own backyard. This lecture will pull together results from different fields in an attempt to show that the Big Island is a very scientifically active location. Although I will meander between geology, oceanography, and atmospheric science, the talk will concentrate on the latest astronomical research being conducted atop Mauna Kea that is designed to give the participants a 'perspective check' on the scale of the Universe.

Peering Into Space: Celebrating the International Year of Astronomy's Best Images of the Cosmos

February 11, 2009
7:15pm

Tim Slater, University of Wyoming

Four hundred years ago, a little known Italian scientist peered through his newly crafted telescope and unveiled inner workings of the cosmos never seen before. Following in Galileo's footsteps, this presentation will combine the awe inspiring aesthetics of the universe with a description of the underlying mechanics of how the universe works. Professor Tim Slater serves as your tour guide who will describe and show you rarely seen pictures of planets, stars, nebulae, and galaxies. In celebration of the 2009 International Year of Astronomy, don't miss this opportunity to take a personally guided virtual journey through the universe.



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Educator Workshops

Teacher Workshops

Training is provided for K-12 educators on Education Modules that are mapped to the National Science Education Standards. Each Module includes an Educational Unit at three (K-4, 5-8, 9-12) or four (K-2, 3-4, 5-8, 9-12) grade levels, and includes content overviews; inquiry-based, hands-on activities; assessment rubrics; and resource listings.

Based on the Module selected for Journey through the Universe 2007: Earth Space Science; participating teachers will engage in hands-on activities involving energy and forces. A collection of lesson plans will be provided to each school's Master Educator for dissemination to teachers.

February 5, 2009

Master Teacher Training

8A.M. - 12P.M. – IMILOA

Dr. Tim Slater from the University of Wyoming will provide science content information while guiding Master Educators through selected lesson plans. This group of lead teachers will explore physical science concepts through inquiry and dialogue.

The Voyage through the Solar System module explores aspects of physical science including technology used in space exploration, including rockets and telescopes. Forms of energy, force and motion, collection of data, and scientific investigation are focal points for lessons which particularly address grade levels K, 1, 2, 3, 6; as well as physics and physical science instruction.

February 7, 2009

Teacher Orientation: Voyage through the Solar System

8A.M. - 1:30P.M. – IMILOA

Under the direction of Dr. Tim Slater, the Master Educators will facilitate groups of classroom teachers from all participating schools. Approximately 100 teachers will engage in the Voyage through the Solar System science lessons for use in their classrooms. The lessons have been selected to align with [Hawaii Content and Performance Science Standards and Benchmarks](#) at each grade level, and to promote the overarching "Big Idea" of Science as Inquiry.



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Classroom Visits

February 5-11, 2009

Journey Week: February 5-13, 2009

Master Teacher Training: 8am - 12pm Thursday February 5, 2009 at 'Imiloa Astronomy Education Center
 Astronomer Workshop: 10am - 12pm Friday February 6, 2009 at 'Imiloa Astronomy Education Center
 Teacher Orientation: 8am - 1:30pm Saturday February 7, 2009 at 'Imiloa Astronomy Education Center
 Family Science Day: 9am - 4pm Sunday February 8, 2009 at 'Imiloa Astronomy Education Center
 Family Science Night: 4pm - 8pm at Wednesday February 11, 2009 at 'Imiloa Astronomy Education Center

A National Team of researchers and engineers working on the frontier conduct Classroom Visits for 8,000 K-12 students. The researchers are gifted at communicating their passion for research and science to audience of all ages, providing students a personal interaction with explorers working on the space frontier, and providing a window on the lives of researchers and the process of science.

Schools we will be visiting throughout the week

- Connections Charter School
- DeSilva Elementary School
- Ha'aheo Elementary School
- Hilo community School for Adults
- Hilo High School
- Hilo Intermediate School
- Hilo Union Elementary School
- Ka 'Umeke Ka'eo Charter School
- Kalaniana'ole Elementary and Intermediate School
- Kapiolani Elementary School
- Kaumana Elementary School
- Ke Ana La'ahana Charter School
- Keaukaha Elementary School
- Laupahoehoe Elementary and High School
- Waiakea Elementary School
- Waiakea High School
- Waiakea Intermediate School
- Waiakeawaena Elementary School

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Press Inquiries

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(808) 974-2603

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Community Involvement

The Gemini Observatory, the Hawaii Department of Education North Hilo/Laupahoehoe/Waiakea Complex, Imloa and the observatories on Mauna Kea would like to extend a sincere thank you to the following organizations and individuals for their generous donations of funding, space, time and donations.

- GOVERNOR LINDA LINGLE
- BUSINESS-EDUCATION PARTNERSHIP
- JAPANESE CHAMBER OF COMMERCE
- HAWAII ISLAND CHAMBER OF COMMERCE
- BANK OF HAWAII
- HAWAII TRIBUNE-HERALD
- NEW WEST BROADCASTING CORPORATION
- HAWAII ISLAND ECONOMIC DEVELOPMENT BOARD
- MAUNA KEA OBSERVATORIES OUTREACH COMMITTEE
- ROTARY CLUB OF HILO BAY
- DOMINOS PIZZA
- BIG ISLAND TOYOTA
- BORDERS
- Richard J. Valcourt

The success of the Journey through the Universe program is largely dependent on our donors, and we appreciate their invaluable contributions.

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Highly Qualified Teachers Certification

Overview

This course will familiarize teachers K-12 with earth and space science resources on the Island of Hawai'i while strengthening their content knowledge, developing inquiry skills and abilities while learning to integrate science, social studies, language arts, and math standards to help students attain hands-on, experience-based learning of the science standards. The objectives are to:

1. Deepen understanding and improve classroom application of the following science content strands and standards through work with local and national science resources and technologies:
 Standard 1: The Scientific Process: Scientific Investigation
 Standard 2: The Scientific Process: Nature of Science
 Standard 6: Physical, Earth and Space Sciences: Nature of Matter
 Standard 8: Physical, Earth and Space Sciences: Earth and Space Science
2. Become familiar with the work that scientists do and build collaborative relationships with the scientific community to enhance science education in Hawai'i.

Solar System, Different Perspectives
 February 28
 8:00 - 11:30am
 Inge Heyer, Joint Astronomy Center

It has been less than a generation since we knew only one solar system. Today we know of over 250. How does this new knowledge challenge long-held beliefs of what a solar system looks like? Are they like us? If their planets, orbits, and environments are different, how might folks living there view the Universe? We will examine and challenge our ideas of the "world" concept, and also see how some of our more imaginative writers have already tackled this issue from a variety of perspectives. This class will cross several disciplines: astronomy, physics, biology, and literature.

Celebrating International Year of Astronomy 2009: From Galileo to Subaru Telescope
 12:30pm - 4:00pm
 Dr. Kumiko Ushida
 Subaru Telescope

The International Astronomical Union (IAU) launched 2009 as the [International Year of Astronomy \(IYA2009\)](#). IYA2009 marks the 400th anniversary of the first astronomical observation through a telescope by Galileo Galilei. In the 400 years astronomical telescopes evolved to be bigger and bigger with cutting-edge technologies. How were they improved from Galileo's telescope to the biggest ones such as Subaru? In the process of evolution of technologies, how did human beings change their picture and recognition of the universe? What kind of instruments (cameras) do the cutting-edge telescopes have and what do we see with them?

In this session, I will introduce:

1. The process that human beings change their picture of the universe with the evolution of a telescope
2. Cutting edge technologies of present optical and infrared telescopes with simple hands-on models

Modern Astronomical Telescopes
 March 7
 1:00pm - 10:00pm
 Peter Michaud and Dr. Scott Fisher

During this 'course' we will trace the steps that a professional astronomer makes as they prepare to use the Gemini North telescope for cutting-edge research. We will start at Gemini's Hilo base facility where we will tour the building, its laboratories, and control room. During our orientation at the base facility participants will learn about how a modern astronomical telescope works and an overview of the history of telescopes leading up to facilities like Gemini. Following this presentation by Peter Michaud, Gemini's Public Information and Outreach Manager, Peter will provide a complete safety briefing to assure a safe visit to the mountain. We will then depart for Hale Pohaku, the mid-level facility on the slopes of Mauna Kea where astronomers stay when they use the telescopes at the summit. There we will have dinner and mingle with the scientists as they prepare for the night's observing. While at Hale Pohaku Dr. Fisher will give a presentation that talks about Mauna Kea, all of the observatories on the summit, and some of the recent scientific highlights from Gemini. We will then head to the summit for an insider's tour of Gemini north as the night crew prepares for observing. We will stay to see the first



science data of the night then depart for either the mid-level facility for star-gazing or return directly to Hilo. Throughout the session Dr. Fisher will present information about the observatory and the science that is produced at Gemini. We expect that this will be a very interactive course with lots of time in the schedule for questions and discussions with the participants.