



'IMIOA

Astronomy Center of Hawai'i

Educational Highlights May-June, 2007

Student Field Trips				
Date	School / Youth Group	Location	Grades	Student #
May 1	Hilo Union School	Hilo	3	59
May 2	Moanalua Middle School	Honolulu	8	96
May 2	Mary Butterworth High School	Hilo	9-12	31
May 3	Kea`au High School	Kea`au	9-12	82
May 6	Lāna`i Intermediate School	Lāna`i	7	47
May 8	Hawa`i Academy of Arts and Sciences	Pāhoa	2	9
May 9	Wai`alae Elementary Public Charter School	Honolulu	4	50
May 10	Nā`ālehu Elementary School	Nā`ālehu	4	46
May 10	Kapa`a Elementary School	Kapa`a, HI	4-5	11
May 11	Laupāhoehoe Intermediate School	Laupāhoehoe	10-12	7
May 11	Noelani Elementary School	O`ahu	4	70
May 11	Hilo Intermediate School	Hilo	8	49
May 11	Jarrett Middle School	O`ahu	6-8	32
May 13	Aptos Academy	California	4-8	19
May 15	Mauna Loa School	O`ahu	1-8	26
May 15	Keaukaha Elementary- Ka`Umeke Ka`eo PCS	Keaukaha	4	56
May 15	West Hawai`i Explorations	Kona	4	23
May 15	Pū`ōhala Elementary School	O`ahu	4	32
May 16	Koko Head Elementary School	O`ahu	4	38
May 16	Ha`ikū Elementary School	Kaua`i	5	59
May 17	Volcano School of Arts and Sciences	Volcano	6-7	29
May 17	Mililani Elementary School	O`ahu	4	106
May 18	Kaunakakai Elementary School	Moloka`i	5	26
May 18	Mountain View Head Start Pre-School	Mountain View	Pre-K	20
May 18	Island School	Kaua`i	5	19
May 19	Kamehameha School	Hilo	7-10	18
May 22	Ka`Umeke Ka`eo	Keaukaha	5	22
May 22	Kaūmana Elementary School	Hilo	5-6	34
May 24	Trinity Christian School	O`ahu	4	19
May 24	Soto Academy	O`ahu	4	15
May 24	Enchanted Lake Elementary School	O`ahu	4	48
May 25	Kona Christian	Kona	4	15
May 25	Wilson Elementary School	O`ahu	4	91
May 29	E. B. DeSilva Elementary School	Hilo	K	36
May 29	Hawai`i Academy of Arts and Sciences	Pāhoa	Inter	12
May 29	Waimea Elementary School	Waimea	5	85
May 30	Kula Kaiapuna O Kualapu`u	Moloka`i	2-3	27
May 31	Waikaloa Elementary School	Kona	2	26
May 31	Waimea Elementary School	Waimea	3	88
			May Total	1578

June 1	Waimea Middle School	Waimea	8	28
June 2	Girl Scout Troop 116	Pāhoa	4–6	15
June 5	Honoka`a Elementary School	Honoka`a	5	56
June 5	Hau`ula Elementary School	O`ahu	4	30
June 6	E.B. DeSilva Elementary School	Hilo	4	25
June 8	Small World Preschool	Kamuela	Pre-K	43
June 13	Little League Mauka All Stars	Kailua-Kona	4–5	13
June 14	YMCA	Hilo	K–4	37
June 14	MOISD Math/Science/Technology Center	Big Rapids, MI	10–12	10
June 15	MOISD Math/Science/Technology Center	Big Rapids, MI	10–12	10
June 17	Hanalei Girl Scouts	Princeville	4–5	10
June 17	Brunswick High School	Brunswick, OH	10–11	16
June 19	Waiākea Intermediate / Laupāhoehoe School	Hilo/Laupāhoehoe	6–11	7
June 20	Na Pua No`eau	Hilo	6–8	12
June 20	Department of Parks and Recreation	Hilo	7–10	30
June 20	Ola`a Community Center	Kea`au	5–9	18
June 22	Na Pua No`eau	Hilo	6–8	12
June 22	Kamehameha Schools	Hilo	5	46
June 22	Ho`olauna Puna (Kamehameha School Program)	Hilo	6–8	10
June 23	Tropical Reforestation & Ecosystem Education Center	Kona	7–10	16
June 26	Na Pua No`eau	Hilo	6–8	11
June 26	Salvation Army	Honoka`a	1–8	5
June 26	Waimea Middle School	Waimea	6–8	3
June 26	Island Pacific Academy	O`ahu	9–10	9
June 27	West Hawai`i Explorations Academy	Kona	7–12	24
June 27	Keaukaha Elementary School	Hilo	3–5	16
June 27	Kamehameha Schools	O`ahu	5	19
June 28	Waimea Elementary School	Waimea	K–8	97
June 28	Na Pua No`eau	Hilo	6–8	12
June 28	Kona Family YMCA	Kona	K–8	52
June 29	Ho`olauna Puna (Kamehameha School Program)	Hilo	6–8	19
June 30	Hawai`i Preparatory Academy	Waimea	6–12	84
			June Total	795

Total number of students/youth visiting `Imiloa during FY 2007: 8035

Education’s projected numbers for Fiscal Year 2007 (July 1, 2006 – June 30, 2007) was 8100 students/youth, so we achieved 99% of our goal. Our goal for FY 2008 is 11,000 students/youth.

Breakdown of FY 2007 student/youth numbers by location:

<u>Hawai`i Island (5932)</u>		<u>Neighbor Islands (1638)</u>	<u>US Mainland (104)</u>
North/South Hilo	North/South Kona		California – 53
Hilo – 2368	Kona – 946	O`ahu – 1382	Michigan – 20
Laupāhoehoe – 22	Ka`ū	Maui – 112	Ohio – 16
Pāpa`ikou – 29	Nā`ālehu – 84	Moloka`i – 34	New York – 15
Hāmākua	Other – 5	Lāna`i – 47	
Honoka`a – 269	Puna	Kaua`i – 63	<u>International (361)</u>
Pa`auilo – 29	Kea`au – 579		Japan – 322
North/South Kohala	Pāhoa – 334		Saipan – 12
Waimea – 962	Mt. View – 187		Okinawa – 27
	Other – 118		

`Ohana Discovery Day

Sponsored by the
Earl and Doris Bakken Foundation

“Solar Sunday: Exploring our Sun” was the title of `Imiloa’s fourth `Ohana Discovery Day held on June 10. Fourteen families (24 keiki and 21 adults) participated in the two-hour program, which began with a skit performed by `Imiloa Education staff to introduce interesting facts about Earth’s nearest star. Families were then engaged in a number of fun, hands-on activities to further explore our Sun.



After brainstorming uses of the sun’s energy, participants learned about different types of solar cookers. They then built their own funnel cooker, a conical shaped solar oven, with aluminum foil and other simple materials—and tested it by cooking a hot dog. The “dogs” didn’t get very hot due to Hilo’s overcast skies that day, but keiki took home their ovens and were eager to try again on a sunnier day.



Keiki discovered that sunlight can be used to create art in another activity. They placed a variety of shapes or leaves on light-sensitive paper and exposed it to the sun to create beautiful patterns. After “developing” the paper in water, they used their sun prints to create note cards.



Families also learned about ultraviolet radiation and its harmful effects to humans. Keiki (and some parents) made bracelets with UV-sensitive beads, which change color when exposed to the sun. Their bracelets serve as a reminder to apply sunscreen before going outdoors.



In the last two activities of the day, participants created a human sundial to see how the sun can be used to keep time. They also investigated the reason for seasons. Using Styrofoam balls to represent Earth, they circled the “sun” (a bright lamp) to see how the tilt of the earth’s axis determines when we experience spring, summer, fall and winter.

Student Programs

Guided Experiences



Guided field trip experiences focusing on Polynesian navigation and voyaging were conducted for Nā`ālehu School on May 10 and Mauna Loa School on May 15. Seventy-two students participated in the experiences, which included a Hawaiian Star Compass activity, a Science on a Sphere program about the Hōkūle`a voyage to Japan, the *One Ocean, One Sky* planetarium show, and guided tours of the Exhibit Hall and `Imiloa garden canoe plants.

Ho`olauna Puna

Twenty-nine middle-school students (10 on June 22, and 19 on June 29) participated in special excursions to `Imiloa as part of Ho`olauna Puna, an outreach program sponsored by Kamehameha Schools. During each excursion, Gail Loeffler, Science Coordinator, conducted a hands-on activity on the Hawaiian Star Compass and presented the Science on a Sphere program about Hōkūle`a. The students also saw the *One Ocean, One Sky* planetarium show and took part in a special Exhibit Hall tour focusing on Hawaiian navigation. Hōkūao Pellegrino, Cultural Landscape Curator, also led a guided tour of canoe plants in `Imiloa's gardens.



Hilo Intermediate School

Richard Crowe, `Imiloa Astronomer-in-Residence, provided a 30-minute talk about water on Mars to 49 students from Hilo Intermediate School on May 11. During his talk, images were projected on `Imiloa's Science on a Sphere to show features on Mars.

Special Programs

“Kūpuna Thursdays”

`Imiloa staff, volunteers, and guest lecturers conducted a series of short educational presentations for island kūpuna each Thursday morning from May 3 through June 21. Topics included:

- ◆ *Art of Bonsai* by Jim Mimaki, Guest Lecturer
- ◆ *Using Solar Telescopes and Sun Spotters* by Richard Crowe, `Imiloa Astronomer-in-Residence, and Don Romero, `Imiloa Volunteer
- ◆ *Using Star Charts* by Gail Loeffler, `Imiloa Science Coordinator
- ◆ *Native Plants* by Hōkūao Pellegrino, `Imiloa Landscape Curator
- ◆ *History of `Imiloa* by Justina Mattos, `Imiloa Training Specialist
- ◆ *Art of Hawaiian Featherwork* by Doreen Henderson, Guest Lecturer
- ◆ *Unequal Resources* by Justina Mattos, Training Specialist, and Jean Kawachika, Volunteer
- ◆ *Hawaiian Star Compass* by Gail Loeffler, `Imiloa Science Coordinator

Public Programs

Sky Tonight

On May 26, Shawn Laatsch, `Imiloa's Planetarium Manager, introduced stars of constellations in the summer night sky. Dr. Emily Rice from Keck Observatory talked about brown dwarfs, enigmatic astronomical objects that are too massive to be planets, but are smaller and colder than the coolest stars. She described how telescopes atop Maunakea find and study brown dwarfs, which can tell us about our own Solar System.

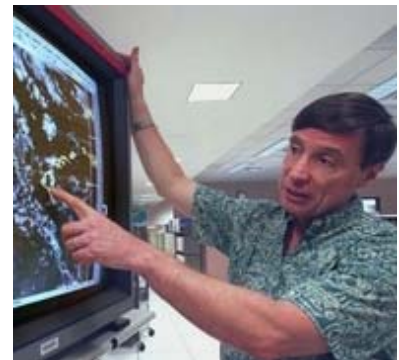


“Exploring the Universe with the Hubble Space Telescope”

On May 31, Dr. Matt Mountain, Director of the Space Telescope Science Institute, presented stunning images from the Hubble Space Telescope to an audience of 80 people and talked about its many discoveries since it was launched in 1990. He also discussed how the incredibly powerful James Webb Space Telescope will take the next steps in cosmic exploration and possibly answer one of mankind's greatest questions: Are we alone in the universe?

“Climate Change and Global Warming: Fact or Fiction”

On June 13, Jim Weyman, Director of the Central Pacific Hurricane Center and Meteorologist in charge of the Honolulu Weather Forecast Office, spoke about climate change and global warming, addressing the question of whether they are fact or fiction. He explained findings of the Intergovernmental Panel on Climate Change and discussed societal reasons for climate changes. He encouraged the 90+ people attending his talk to take action to diminish greenhouse gases to slow global warming.



“What's Up in the Universe?”



A preview showing of “What's Up in the Universe?” was attended by approximately 140 people at `Imiloa on June 16. This new PBS documentary looks at the human need to explore and ponders whether there is life elsewhere in the universe. The show was followed by a panel discussion that included Dr. R. Brent Tully, IfA Astronomer and executive producer, and Susan Friedman, UC-Santa Cruz faculty and producer/director.

“Killer Asteroids, Supernovae, and the Dark Side of the Universe”

Dr. Rolf –Peter Kudritzki, Director of the University of Hawai'i Institute for Astronomy, spoke about Near Earth Objects (NEOs), also known as “killer asteroids,” on June 30. He described the nature and dangers of these objects and a new project at IfA that will enable scientists to detect NEOs decades before their possible impacts. He also talked about how the search for killer asteroids leads to other astronomical discoveries, such as supernovae explosions in distant galaxies. Sixty people attended his presentation.



“Conversations with a Star Gazer”

On June 30, `Imiloa launched a new series of facilitated discussions that provide opportunities for the community to engage in dialogues with visiting astronomers, voyagers, and explorers in an informal setting in the `Imiloa Café. Dr. Rolf-Peter Kudritzki, IfA Director, kicked off the series with a talk about “Super Science on Mauna Kea,” which focused on discoveries by telescopes atop the mountain. About 30 people attended his presentation. Future “conversations” will be held quarterly.



Sky Tonight

On June 30, Richard Crowe, `Imiloa Astronomer-in-Residence, talked about bright massive stars in the night sky and star formation regions, such as the Orion nebula. His presentation was followed by Rolf Kudritzki, Director of IfA, who spoke about “jumbo” stars in addition to summarizing information from his previous two talks that same day (see above).

Educational Outreach



Richard Crowe, `Imiloa Astronomer-in-Residence, participated in the 2007 Hawaiian Astronomy Institute, a summer school program established in 2003 to get students in Kamehameha Schools interested in astronomy. On June 29, Dr. Crowe was part of a panel that presented information on astronomy career opportunities to students from the Kapalama Campus on O`ahu (*shown at left*).

Staff and Volunteer Training

“Brown Bag Seminars,” a series of 30-minute presentations conducted for `Imiloa staff and volunteers during their lunch time, provide information relevant to astronomy, the Hawaiian culture, and `Imiloa’s mission. Recent programs include:

- ◆ How to use Star Charts, by Richard Crowe and Gail Loeffler (May 17)
- ◆ Keanakāko`i Adze Quarry, by Hōkūao Pellegrino and `Āhia Dye (June 21)

Staff Development

Richard Crowe, Astronomer-in-Residence, attended the American Astronomical Society meeting in Honolulu on May 29-30. While there, he conducted 12 shows featuring Polynesian navigation and voyaging in the StarLab portable planetarium. Approximately 50 people attended the shows.



Janet Babb, Education Program Manager, and other `Imiloa managers participated in an RCUH training session to learn about conducting staff performance evaluations on May 3.

Collaborative Projects

`Imiloa staff collaborated with `Aha Pūnana Leo to prepare an Institute of Museum and Library Services – Native American/Native Hawaiian Museum Services grant proposal titled “Professional Development of Hawaiian Language Speakers in the Museum Curatorial Process.” This funding will be used to develop an exhibit and curatorial program for Hawaiian artifacts to be displayed at `Imiloa.



Justina Mattos and Gail Loeffler co-wrote an Office of Hawaiian Affairs grant proposal titled “Expansion of the `Imiloa Astronomy Center Pocket Theater Program.” If awarded, funds will be used to research, develop, and perform six new pocket theater programs at `Imiloa.



Richard Crowe, `Imiloa Astronomer-in-Residence, authored a paper titled “Ahu a `Umi Heiau: Directional Register or Astronomical Observatory” published in the June 2007 issue of SPARK, the American Astronomical Society newsletter. His paper, which addresses the purpose of the heiau (stone temple) in the saddle between Hawai`i’s three highest mountains, was one of several articles about astronomy education and outreach on Hawai`i Island.

Hōkūao Pellegrino, `Imiloa Cultural Landscape Curator, collaborated with DOE, UHH Department of Agriculture, Ka Haka `Ula O Ke`elikōlani (UHH Hawaiian Language College), to conduct a two-week STEM class in which 10 students learned about the cultivation of kalo. The class, which ran from June 12 to June 22, culminated in a hō`ike (exhibit) day at `Imiloa, where students (*see photo at right*) presented their work to family and friends.



Ka`iu Kimura (*second from left*), `Imiloa’s Experience Coordinator, participated in an `Aha Ho`ona`auao `Ōiwi Hawai`i (Native Hawaiian Education Council) meeting held at `Imiloa on June 23. The meeting was convened to strengthen collaboration among community stakeholders involved in educating Native Hawaiian children. She presented `Imiloa’s views on Hawai`i Island’s educational priorities and served on a panel discussion addressing the importance of data collection and evaluation.