Kai'aleleiaka THE MILKY WAY

Issue 5 • 7 August 2015

TABLE OF CONTENTS

IAU XXIX GENERAL ASSEMBLY Hawaii

INTERNATIONAL YEAR OF LIGHT 2015

COSMIC LIGHT IAU

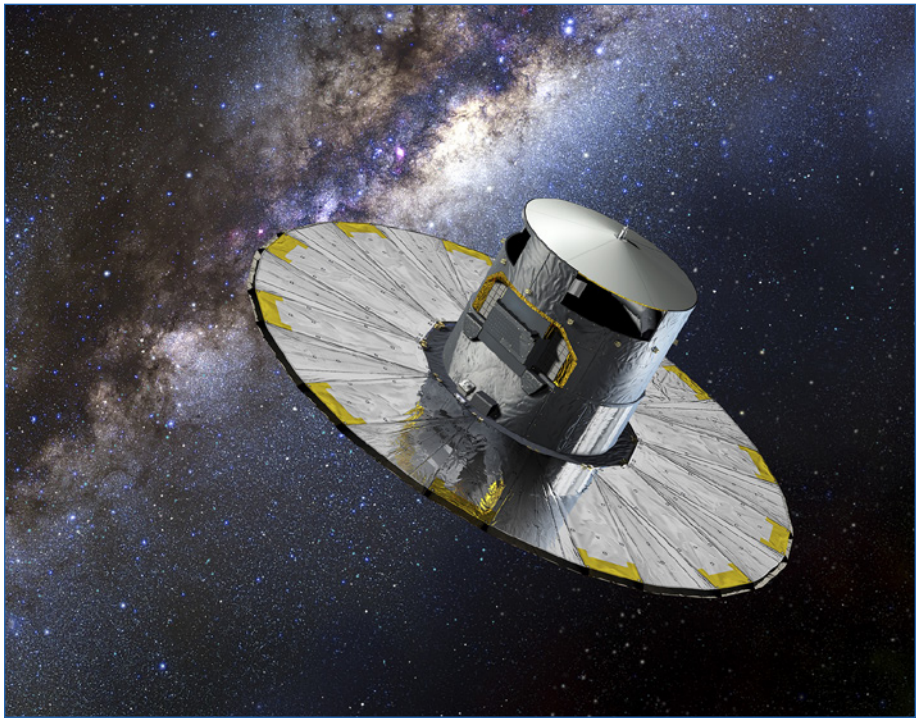
DIVISION A

The Foundations for Exploring the Universe

By SERGEI A. KLIONER

Fundamental astronomy lays the foundations for further physical and astrophysical exploration of the universe. The disciplines of astrometry, celestial mechanics and dynamical astronomy, solar-system ephemerides, Earth rotation, space and time reference frames, and fundamental astronomical standards currently form the backbone of Division A, Fundamental Astronomy.

Along with the whole of astronomy, our field has been revolutionized over the past few decades. Drastically improved observational accuracies, new observational techniques, rapidly increasing data volumes, new data-processing methods and technologies, new space-science applications — all of these aspects brought deep changes to fundamental astronomy.



An artist's impression of the European Space Agency's Gaia spacecraft. The mission aims to construct a precise 3-D map of the Milky Way. *[ESA, D. Ducros]*

Our community provides definitions and models that describe space-time reference systems and frames used in astronomy, investigates the dynamical behavior of celestial bodies, obtains physical information on celestial objects, and investigates physical laws in the universe using the methods of astrometry and celestial mechanics. Another part of our activity is represented by services that provide data and ephemerides of solar-system bodies, Earth-orientation data, timescales, astronomical constants and models, relevant software procedures, etc., for users within the astronomical community and beyond.

Our Division Meeting at the IAU General Assembly provides a great review of our research field. We will have several sessions covering particular research topics and a session devoted to the synergies with other parts of the astronomical community. As a special highlight, we prepared a four-hour session dedicated to the status and first data-

Kaiʻaleleiaka THE MILKY WAY

EDITORIAL

Editor in Chief Rick Fienberg

Managing Editor Sarah Reed

Writers/Editors Gina Brissenden, Pamela Gay, Inge Heyer, Susanna Kohler, Larry Marschall, Iris Nijman

DESIGN & PRODUCTION

Design Director Leslie Proudfit

Designer Crystal Tinch

NEWSPAPER OFFICE

Hawaii Convention Center, Room 302;
open Monday to Friday, 8 am to 6 pm
(closing at 2 pm on Friday, 14 August).
Email: newspaper@astronomy2015.org
Phone: +1 (808) 792-6638. Download PDFs at
http://astronomy2015.org/newspaper.

Kaiʻaleleiaka (The Milky Way) is the official newspaper of the XXIX General Assembly of the International Astronomical Union, 3-14 August 2015, Honolulu, Hawaiʻi. It is published for the IAU by the American Astronomical Society, which thanks the following organizations for providing staff to work on the newspaper: Astronomical Society of the Pacific, Stratospheric Observatory for Infrared Astronomy, and Universe Awareness at Leiden University.

processing results of the European Space Agency's astrometry mission, Gaia, which was launched in December 2013. Born as an astrometric project within our community, Gaia can be considered as one of the symbols of progress, innovation, and synergy across the whole field of astronomy. ✿

SERGEI KLIONER, the outgoing President of Division A, is based at the Lohrmann Observatory, Dresden University of Technology, Germany. He estimates that he spends 80% of his time working on the Gaia mission.

Division Meeting — Division A: Fundamental Astronomy	
Start date	Friday, 7 August
End date	Monday, 10 August
Oral sessions	Room 313A, Hawai'i Convention Center
Posters	Exhibit Hall 1, Hawai'i Convention Center

For details on presenters, topics, and times see the online program or mobile app.

INTERNATIONAL YEAR OF LIGHT 2015

The Galileoscope: Making Cosmic Light Accessible to All

By LINA CANAS

The Galileoscope is a high-quality, low-cost telescope kit developed by a team of astronomers, engineers, and science educators and optimized for use in both optics education and celestial observation. It was created for the 2009 International Year of Astronomy (IYA), and since then nearly 240,000 kits have been distributed in more than 100 countries — a remarkable feat for a project managed entirely by volunteers. For the 2015 International Year of Light (IYL), the Galileoscope has been named part of the Cosmic Light cornerstone project coordinated by the IAU's Office for Astronomy Outreach (OAO).

On Wednesday, 5 August, Galileoscope project leader Rick Fienberg visited the IAU/OAO booth in the Exhibit Hall during the morning and afternoon coffee breaks to answer questions about the kit and show visitors how it works. "I see lots of emails and tweets from people who got their first look at the Moon's craters or Saturn's rings through a Galileoscope," says Fienberg. "It's extremely gratifying to know that we've introduced hundreds of thousands of people to the wonders of the night sky with this very simple, but very good, little telescope."

Fienberg reported that while there has continued to be demand for the Galileoscope since the end of the IYA, sales to science educators, outreach professionals, and end users have amounted to only a few thousand units per year since 2010. That changed dramatically with the arrival of the IYL. Most of the 30,000 IYL-branded kits manufactured to date have already been claimed, including 10,000 that were donated to U.S. primary- and secondary-school teachers and students by Jean and Ric Edelman of

Virginia, USA, who expressed their deep commitment to science education with a similar donation during the IYA.

The Galileoscope assembles in minutes without tools and without tape, glue, or other adhesives. It can also be disassembled, so classroom teachers can use the same kits with different groups of students from year to year. It is supported by free standards-based optics-education and observing activities developed principally by the science-education team at the U.S. National Optical Astronomy Observatory (NOAO). These well-tested activities can be used by classroom and after-school teachers as well as informal educators to teach science and the process of science to people of all ages.

The Galileoscope has been featured in professional-development workshops for astronomy educators worldwide. Among the organizations routinely incorporating the kit into their teacher training are the NOAO, the Astronomical Society of the Pacific (ASP), and the Galileo Teacher Training Program (GTTP).

IYL-branded Galileoscopes are available at a bulk-discount price of US$150 per case of six (i.e., $25/kit), plus shipping, from the Galileoscope website. You can buy individual kits from a variety of resellers, including Amazon.com, usually at a price in the neighborhood of $50 plus shipping.

Want to learn more? Fienberg presents “The Galileoscope: From IYA 2009 to IYL 2015 & Beyond” during this morning’s session of the Division C meeting in Room 312 of the Hawai‘i Convention Center. Want to see a Galileoscope for yourself? Drop by Booth 329 in the Exhibit Hall, and we’ll show you one. ✿

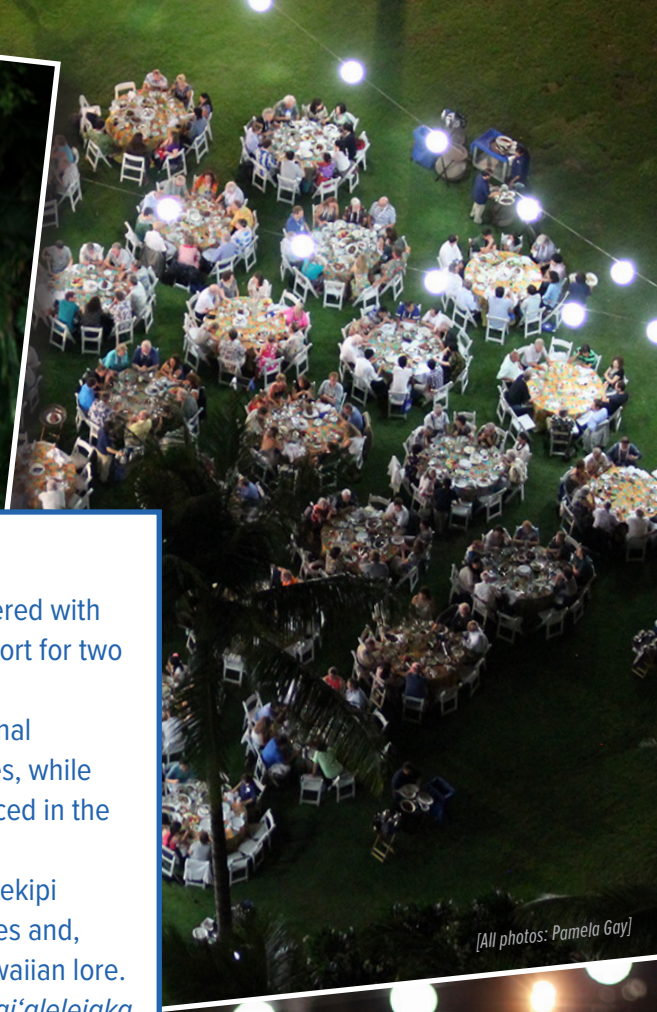
Every local student who visited the Exhibit Hall on Wednesday went home with a Galileoscope thanks to the generosity of event sponsor Associated Universities, Inc. *[Coty Tatge, University of Wyoming]*

LINA CANAS is Assistant Outreach Coordinator in the IAU Office for Astronomy Outreach (OAO) at the National Astronomical Observatory of Japan (NAOJ) in Tokyo. She is originally from Portugal.

How to Say It in Hawaiian

- E komo mai: welcome, enter
- Aloha kakahiaka: good morning
- Mahalo nui loa: thank you very much
- Pūpū: snacks, appetizers
- Moana: ocean
- Humuhumunukunukuapua‘a: triggerfish (the Hawaiian state fish)

Vowels are generally pronounced as follows: a “ah,” e “eh,” i “ee,” o “oh,” u “oo.” If a vowel has a little horizontal line over it (a kahakō), it means you hold the sound an extra beat. A **6**-shaped apostrophe, or ‘okina, signals a glottal stop. Source: Hawaiian Words.



[All photos: Pamela Gay]

Heavenly Hula

As the Sun set on 5 August, several hundred members of the IAU gathered with friends and family on the Great Lawn of the Hilton Hawaiian Village resort for two hours of traditional Hawaiian music and storytelling.

Attendees were greeted with a Hawaiian lei, then enjoyed a traditional Polynesian banquet. Tables were adorned with fruits, breads, and cakes, while hot meat and rice dishes were served "family style" — large plates placed in the center of each table from which everyone served themselves.

Throughout the banquet a historian and storyteller, Joseph Pekelo Kekipi Bright Recca, a descendent of King Kamehameha, told traditional stories and, along with three other dancers, used the hula to convey additional Hawaiian lore.

— Pamela L. Gay, Kaiʻaleleiaka

DIVISION D

A Hawaiian Cocktail of Science for Division Days

By DIANA WORRALL

The organizers of Division Days programs for Division D, High Energy Phenomena and Fundamental Physics, have selected a broad range of exciting science topics that complement the specialized Symposia and Focus Meetings of the IAU General Assembly.

On Friday morning you can hear about accretion flows, and after lunch you can find out the latest about black-hole spin. On Monday morning we will discuss phenomena ranging from fast radio bursts to cosmic rays and neutrinos. Also in the mix are talks on the growth of galaxy clusters and on the magnetic universe.

Division D's agenda features presentations from the Presidents of our two post-General Assembly Commissions: D1, Gravitational Wave Astrophysics, and the Cross-Division X1, Supermassive Black Holes, Feedback and Galaxy Evolution, which falls under Divisions D and J. The President of X1, Bill Forman, will discuss on Friday how outbursts from supermassive black holes affect the evolution of galaxies, groups, and clusters. On Monday Neil Gehrels, President of D1, will discuss multimessenger observations and opportunities for gamma-ray bursts. A new Division Working Group on Supernovae is on the horizon, and you can learn about that in Monday's talk by Paolo Mazzali.

The Division Presidents have worked as a team over the past three years. One innovation has been the introduction of these Division Days, in recognition that the primary affiliation of IAU members is now to one or more of the nine Divisions. We have high hopes that the Division Days will thrive. The incoming Division committees are keen to receive your thoughts on their future content. ✿

Division Meeting — Division D: High Energy Phenomena and Fundamental Physics	
Start date	Friday, 7 August
End date	Monday, 10 August
Oral sessions	Room 315, Hawai'i Convention Center
Posters	Exhibit Hall 1, Hawai'i Convention Center
Related events	FM 10: Stellar Explosions in an Ever-Changing Environment, 11-13 August FM 14: The Gravitational Wave Symphony of Structure Formation, 12 -14 August FM 18: Scale-Free Processes in the Universe, 12-14 August
For details on presenters, topics, and times see the online program or mobile app.	

DIANA WORRALL is Professor of Physics at the University of Bristol, U.K., and outgoing President of IAU Division D. Her research interests include extragalactic astrophysics and X-ray astronomy.

SPLINTER MEETING

Time-Domain Astronomy

By ELIZABETH GRIFFIN

Everything in the universe changes in some manner. For example, the gradual momentum of evolution; the measureable periodicities associated with binary systems; and the unpredictable explosions of novae or higher-energy transient events, such as supernovae and gamma-ray bursts.

The scientific success of numerous surveys and missions — the Large Synoptic Survey Telescope (LSST), Gaia, and the Laser Interferometer Gravitational-Wave Observatory (LIGO), to name just a few — depend on engagement by those projects with the international astronomical community. It needs rapid response follow-up, spectroscopic characterization, archival research, and other complementary multimessenger science. It is therefore self-evident that the IAU can and will play a critical role in galvanizing such time-domain astronomy (TDA) efforts.

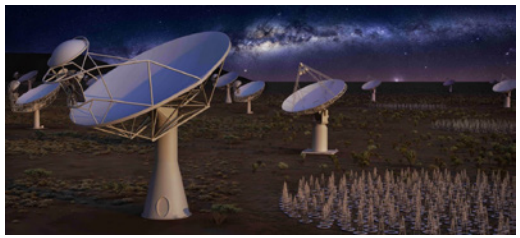
It was unexpected when several proposals for Commissions and Symposia, focusing on diverse TDA topics, were rejected in recent months. However, the IAU has created a Time Domain Astronomy Working Group (WG), currently hosted by Division B Commission 5, and will move it to the new Commission B2, Data and Documentation, after the General Assembly.

The WG will hold its initial gathering as a Splinter Meeting. If you believe that TDA has an important future, please attend this meeting and help direct or select the following:

1. A formal structure for the WG;
2. A plan to resubmit a proposal to elevate the WG to Commission status;
3. A schedule of near-term TDA activities, such as meetings, fora, and symposia;
4. Communications, e.g., circulars, newsletters, websites, and anything else to enhance what the WG will plan to undertake.

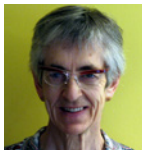
The Square Kilometre Array (SKA) project is an international effort to build the world's largest radio telescope. The SKA will conduct transformational science to improve our understanding of the Universe and the laws of fundamental physics, monitoring the sky in unprecedented detail and mapping it hundreds of times faster than any current facility. In its first phase, the SKA will be composed of hundreds of dishes in South Africa and hundreds of thousands of antennas in Australia. Currently supported by 10 countries, construction of the SKA is set to start in 2018 and early science in 2020.

Come learn about this incredible project at booth 137 and in the whole-day splinter session on Sunday 9 August.



Splinter Meeting: Working Group on Time Domain Astronomy	
Organizer	Elizabeth Griffin
Date	Friday, 7 August
Time	9:00 to 10:00 am
Location	Room 328, Hawai‘i Convention Center

We welcome suggestions for agenda items for this meeting, as well as new WG membership. We particularly encourage all those who submitted TDA proposals or work in the field to come to the Splinter Meeting. See you there! ✿



ELIZABETH GRIFFIN works at the Dominion Astrophysical Observatory of the National Research Council in Canada. She is the outgoing Vice-Chair of Division B Commission 5 Working Group “Time Domain Astronomy.”

OPEN HOUSE

Celebrate Dark Skies at the Bishop Museum

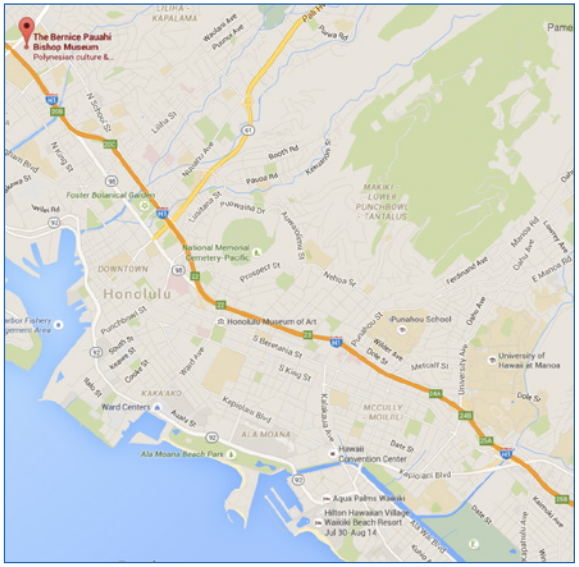
By RICHARD GREEN, CONSTANCE WALKER & CLIVE RUGGLES

We cordially invite you to join attendees of Focus Meetings 2 and 21 for a celebratory kick-off event at the Bernice Pauahi Bishop Museum, Atherton Hall, on Sunday, 9 August.

The Divisions and Commissions behind FM 2, Astronomical Heritage: Progressing the UNESCO-IAU Initiative, and FM 21, Mitigating Threats of Light Pollution & Radio Frequency Interference, are deeply engaged in the global celebration of the International Year of Light 2015 (IYL 2015), an initiative that also includes efforts to protect dark skies. Both IYL 2015 and dark-sky initiatives will be highlighted during the museum presentations. The reception will also feature the launch of an updated edition of *Nā Inoa Hōkū: Hawaiian and Pacific Star Names* by Rubellite Johnson, John Mahelona, and Clive Ruggles (see page 12 of this issue).

The reception is sponsored by C&W Energy Solutions, Ocarina Books, the Center for Astronomy & Physics Education Research (CAPER), and the International Dark-Sky Association.

This event provides an excellent opportunity for you to see the cultural collections at the Bishop Museum (separate admission required). Designated as the Hawai‘i State Museum of Natural and Cultural History, this facility is the largest museum in Hawai‘i and home to the world’s largest collection of Polynesian cultural and natural-history artifacts. The museum complex is also home to the Richard T. Mamiya Science Adventure Center.



The Bishop Museum is located at 1525 Bernice St., Honolulu. *[Google Maps]*

The IAU discounted admission fee is $16.95 for adults, with reduced rates for seniors and youth. (Please bring your IAU General Assembly badge.) Museum staff recommend that you allow about two hours to explore their collections. ✿



RICHARD GREEN is Assistant Director of the University of Arizona's Steward Observatory in Tucson, outgoing President of Commission 50, incoming President of Commission B7, Chair of the IAU Cosmic Light Working Group, and Co-Chair of FM 21. CONNIE WALKER is an astronomer at the U.S. National Optical Astronomy Observatory, outgoing Vice-President of Commission 50, incoming Vice-President of Commission B7, and Co-Chair of FM 21. CLIVE RUGGLES is Assistant Director at Steward Observatory, former President of Division C Commission 41, and organizer of FM 2.

Open House at the Bishop Museum: Special Presentations and Free Reception	
Date, time	Sunday, 9 August, 5:00 pm
Address	Atherton Hall, The Bernice Pauahi Bishop Museum 1525 Bernice St. Honolulu, HI 96817
Coordinating Divisions	Division B: Facilities, Technologies and Data Science Division C: Education, Outreach and Heritage
For details on presenters, topics, and times see the event page or mobile app.	

SPLINTER MEETING

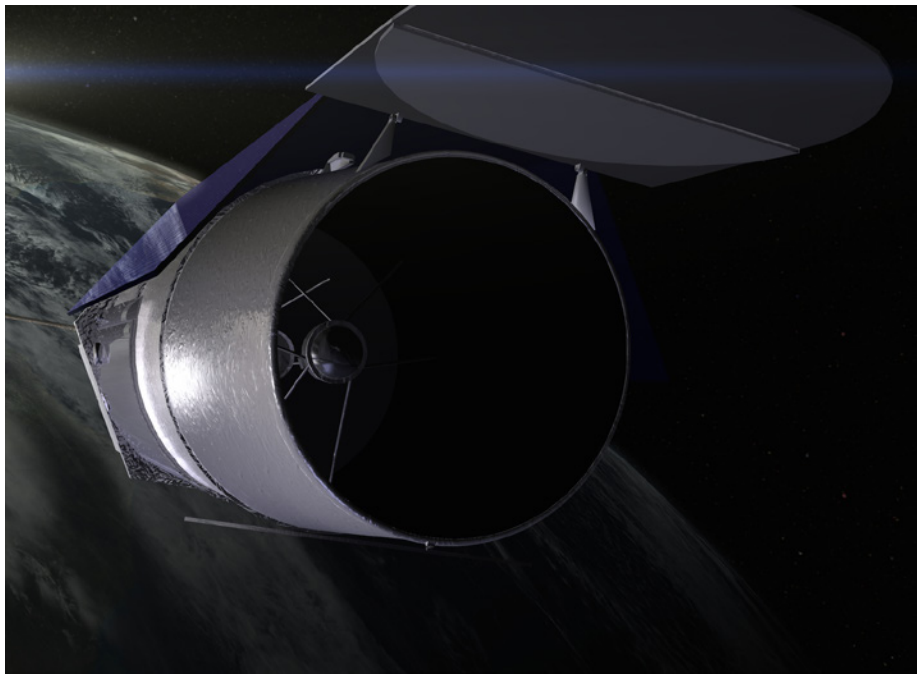
An Infrared Look at the Universe with WFIRST

By NEIL GEHRELS

NASA's Wide-Field Infrared Survey Telescope (WFIRST), a proposed infrared (IR) space observatory, is the top-ranked large space mission of the Astro2010 Decadal Survey. The planned mission has the potential to promote large advances in studies of dark energy, exoplanets, galaxy formation, and many other areas of extragalactic, galactic, and solar-system astrophysics.

In 2012 NASA acquired two Hubble-class 2.4-meter telescopes, and one of these has been designated for use as the basis for WFIRST. The predicted performance for WFIRST is impressive, with IR surveys covering thousands of square degrees to 27th magnitude. In addition to a wide-field imaging camera with an integral-field spectrograph and a grism (which allows the camera to be used simultaneously for imaging and spectroscopy), a high-contrast coronagraph will significantly advance exoplanet direct imaging — the highest-ranked Astro2010 mid-scale priority. Observing time will be available to the community through a vigorous Guest Investigator program.

The WFIRST wide-field near-IR surveys and high-contrast exo-



Artist's depiction of what NASA's WFIRST will look like once launched. *[NASA/GSFC CI Lab]*

planet imaging capabilities will be highly complementary to those of the James Webb Space Telescope (JWST), as rare targets found by WFIRST surveys across the sky can be studied in depth with JWST. In addition to dark energy and exoplanet observations, WFIRST will survey our galaxy and other nearby galaxies to answer key questions about their formation and structure. It will observe billions of galaxies to high redshift, enabling studies of their origin and evolution.

WFIRST will be a tool that astronomers can use across the IAU's broad range of subjects of interest. Sunday's Splinter Meeting will examine the scientific opportunities for the IAU community made available by the utilization of the 2.4-meter WFIRST, and it will provide an opportunity for astronomers to meet and discuss the best ways to take advantage of this powerful mission. ✿

Splinter Meeting: Science of the WFIRST Mission	
Date	Sunday, 9 August
Time	2:00 to 5:00 pm
Location	Room 327, Hawai'i Convention Center

NEIL GEHRELS is Chief of the Astroparticle Physics Laboratory at NASA's Goddard Space Flight Center in Greenbelt, Maryland; College Park Professor of Astronomy at the University of Maryland; and Adjunct Professor of Astronomy & Physics at Pennsylvania State University.

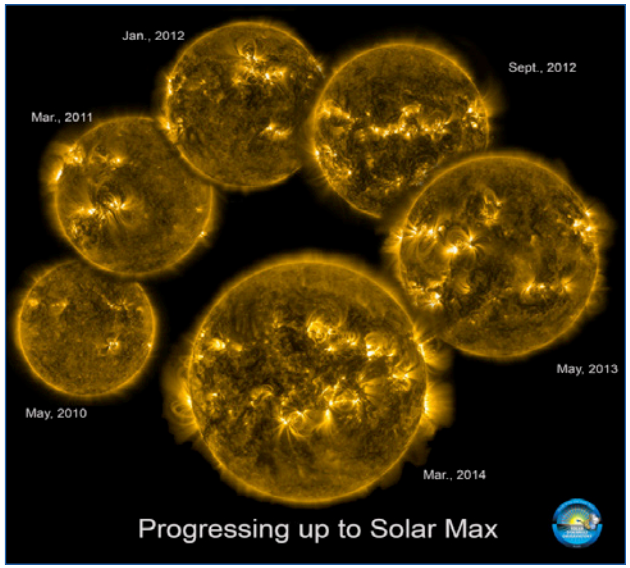
DIVISION E

Connections Within Solar and Heliospheric Studies

By LIDIA VAN DRIEL-GESZTELYI

Division E, Sun and Heliosphere, provides a forum for the exchange of ideas of astronomers — including observers, theorists, modelers, and instrumentalists — studying a wide range of phenomena related to our star and its environs. Research topics housed within this Division include the structure, radiation, and activity of the Sun; the dynamic magnetized solar wind that shapes the heliosphere; and their combined impact on the multitude of bodies within the solar system, including Earth.

The realm of Division E includes a broad span of intrinsically coupled research subjects, beginning with the uniquely detailed study of the dynamic solar interior enabled by helioseismology, and the unrivaled opportunity to study a functioning astrophysical dynamo. Studies of the solar interior, long-term irradiance changes, and the Sun's dynamic atmospheric structure are directly connected to the topic of magnetic fields and the solar cycle. Transient phenomena that result — such as flares, eruptions, coronal mass ejections, and particle acceleration — all occur within the context of a more gradually evolving background atmosphere, and together this shapes the entirety of the heliosphere.



Solar activity has increased from the longest and deepest solar minimum of the Space Age in 2009 to a modest solar-cycle maximum in 2014. These images show the increasingly active solar corona during Cycle 24 at 171 angstroms. *[NASA Solar Dynamics Observatory]*

Within the context of the heliosphere, Division E focuses on understanding the solar wind and the interplanetary magnetic field; their associated transients, shocks, and energetic particles; and the space-weather phenomena that all of these processes drive around the bodies located within the heliosphere. The long-standing Division Working Group "Solar Eclipses" reaches out to professionals, amateurs, and the public by providing information on and facilitating involvement in eclipse research.

A Note on Solar Missions from the New Division E President

The Sun is a unique star that can be investigated with high sensitivity and resolution in time, space, and across the entire electromagnetic spectrum. Current missions (such as SDO, SOHO, STEREO, Hinode, and RHESSI) continue to provide us with a wealth of data about solar and heliospheric processes, and recently built observatories such as the Chinese Spectral Radioheliograph and ALMA will provide unprecedented high-resolution imaging of the Sun and its surroundings. Planned future missions will push into new regimes. For example, Solar Probe Plus will approach the Sun in 2018 and take observations from a mere 8.5 solar radii above the photosphere.

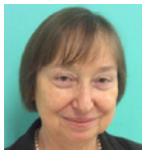
Join us at the Division E meeting to discuss the science covered by these missions and witness the exciting and thriving fields within solar and heliospheric physics.

— Yihua Yan (National Astronomical Observatories, China)

Division Meeting — Division E: Sun and Heliosphere	
Start date	Friday, 7 August
End date	Monday, 10 August
Oral sessions	Room 314, Hawai‘i Convention Center
Posters	Exhibit Hall 1, Hawai‘i Convention Center
For details on presenters, topics, and times see the Division E meeting program (PDF)	

Division Days will feature the first-ever science meeting of Division E, which will cover everything from the deep solar interior to the fringes of the heliosphere. The 19 invited and 22 contributed talks, as well as 22 posters, will present state-of-the-art solar and heliospheric observations, theory, simulations, and instrumentation; an overview of scientific highlights of the past triennium; and projects for the next triennium and beyond.

With ground- and space-based instrumentation providing observations with ever-increasing spatial and temporal resolution, we recently passed the best observed solar maximum. One of the highlights of the Division Meeting will be the presentation of results from a years-long effort by a large group of solar-cycle experts: the re-calibration of the most-analyzed solar data sets, the sunspot number and sunspot group number series. The data will be made available to the solar community at the time of the meeting, and an invited talk on the effort will be presented by Fréderic Clette on Friday, 7 August. The program additionally includes the Business Meeting of the Division on 7 August, from 6:00 to 7:30 pm. ✿



LIDIA VAN DRIEL-GESZTELYI is the outgoing President of Division E. Her affiliations include Mullard Space Science Laboratory of UCL (University College London) in the U.K., Konkoly Observatory of the Hungarian Academy of Sciences, and the Paris Observatory, France.

New Books on Hawaiian Astronomy

By TIMOTHY F. SLATER

If you are looking for a book on Hawaiian astronomy, then look no further. Three new books on the subject, all written or coauthored by IAU members, are being released during the XXIX General Assembly.

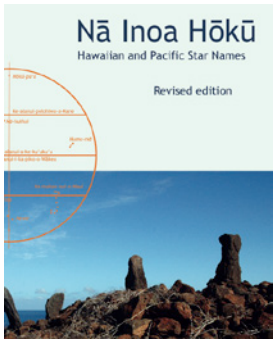
Updating a 1975 book considered to be a seminal work on Hawaiian astronomy, Rubellite Kawena Johnson, John Kaipo, and IAU member Clive Ruggles (University of Leicester, U.K.) are releasing *Nā Inoa Hōkū: Hawaiian and Pacific Star Names*, 2015 Revised Edition. Distributed through Native Books, Ocarina Books (U.K.), and the University of Hawai‘i Press, this book provides a scholarly description of Hawaiian star names and their origins.

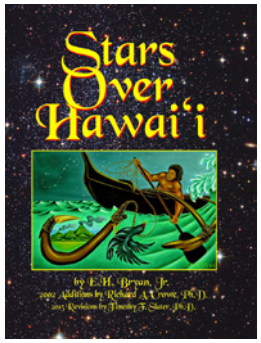
In celebration of 60 years in print, a new edition of the book *Stars Over Hawai‘i* is being released this month. The original

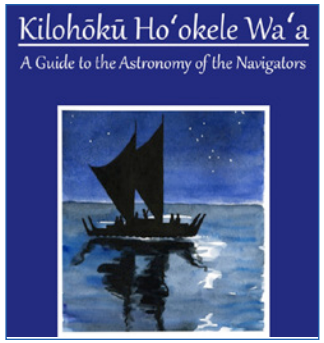
Honolulu Almanac ◓ 7 August 2015	
Sunrise / set	6:07 am / 7:07 pm
Twilight[1] start / end	4:48 am / 8:26 pm
Moonrise / set	12:18 am / 1:32 pm
Moon phase[2]	◑ Waning crescent (43% illum.)
Evening planet[3]	Saturn (SSW)
Morning planet[3]	Mars (E)
Special event	Cross-quarter day (midpoint between June solstice and September equinox)

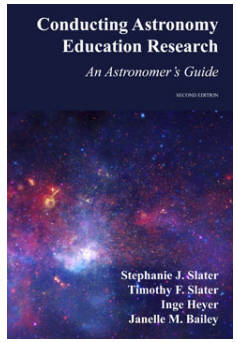
[1]Astronomical twilight (Sun 18° below horizon). [2]At meridian crossing [3]Naked-eye planets. Source: timeanddate.com

CAPER Team Book Signings: Exhibit Hall, Booth 315	
Conducting Astronomy Education Research	Friday, 7 August, 10:00 – 11:30 am
Nā Inoa Hōkū	Friday, 7 August, 1:30 – 3:30 pm
More book signings are planned for Week 2 of the General Assembly.	









book was published in 1965 by Honolulu's Bishop Museum's Edwin Bryan, Jr., who was well-respected at the time for, among other things, providing local island newspapers with monthly Hawaiian star charts. The book was significantly updated by the late Richard Crowe of the University of Hawai'i at Hilo, who added chapters on Polynesian voyaging and celestial navigation. In honor of the 60th anniversary of its original publication, I am leading the preparation of a revised version, published by Petroglyph Press. It includes updated facts with respectful sensitivity to Hawaiian culture that I have gained through working with hundreds of teachers in Hawai'i. A new chart of Hawaiian Moon phases is also included.

Pono Publishing is releasing *Kilohōkū Ho'okele Wa'a* — the astronomy of the navigators. The book is authored by Kālepa Baybayan of the Polynesian Voyaging Society, Stephanie Slater of the Center for Astronomy & Physics Education Research (CAPER), and me. This book is written from a Hawaiian perspective and provides a beginner's primer on the astronomical names used by modern Hawaiian wayfinders who navigate across the Pacific Ocean without modern instrumentation in double-hulled canoes.

Our CAPER team is also releasing a second edition of *Conducting Astronomy Education Research: An Astronomer's Guide*.

These books, among others, are being featured at a UNESCO and International Year of Light 2015 event at the Bishop Museum of Honolulu at 5:00 pm on Sunday, 9 August, organized for the IAU General Assembly. More information about the event can be found in the museum's PDF flyer. ✿

TIM SLATER is the University of Wyoming Excellence in Higher Education Endowed Professor of Science Education and serves as Editor of the *Journal of Astronomy & Earth Sciences Education.*

A Sky Wonderful with Stars

A Sky Wonderful with Stars: 50 Years of Modern Astronomy on Maunakea tells the fascinating story of how a remote mountaintop in the middle of the Pacific Ocean became home to the most powerful collection of telescopes in the world. It is a tale of triumphs, failures, and the indomitable human spirit of exploration. More than 160 photographs augment the text to bring the past and present to life and showcase the many remarkable discoveries made by the observatories atop Maunakea.

This book has just been published and is available in the Exhibit Hall of the IAU General Assembly.

— Michael West (Lowell Observatory, Flagstaff, Arizona)

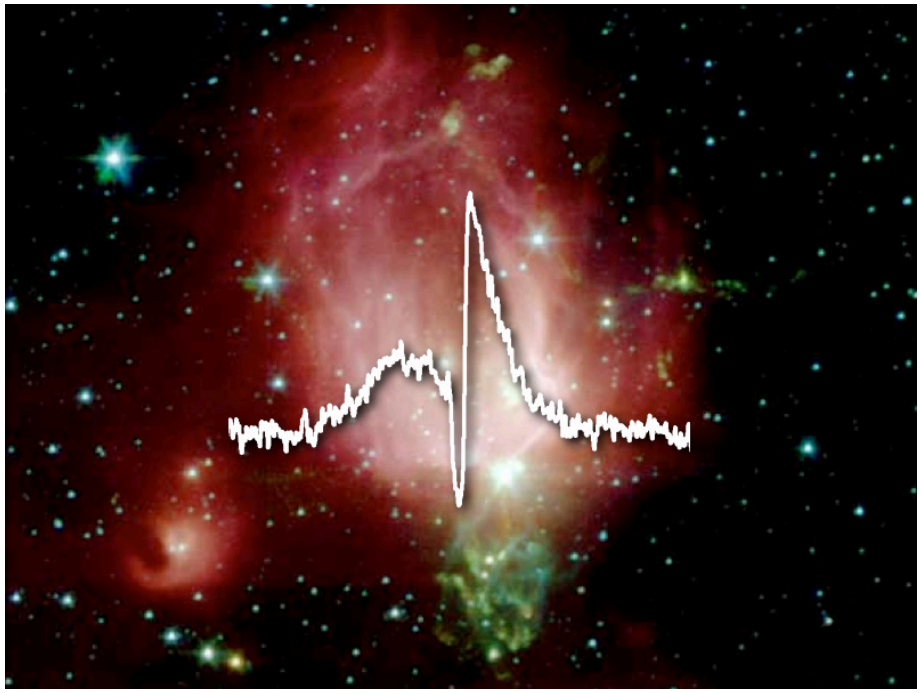
From Divisions VI and VII to Division H

By EWINE VAN DISHOECK

The invitation to become the President of the new IAU Division H, Interstellar Matter and the Local Universe, in Summer 2012 came as a big surprise. I was Vice-President of Commission 14, Atomic and Molecular Data, at that time and transitioning to become President of that Commission. Leading an entire Division was undoubtedly a bigger challenge!

I was familiar with the old Division VI, Interstellar Matter, but the "Local Universe" part of the Division H title sounded rather vague to me. Fortunately, the IAU Executive Committee had selected an excellent Vice-President, Joss Bland-Hawthorn, whose expertise is complementary to mine and who could educate me on this part. Our first joint task — together with Division J President Francoise Combes — was to draw up a definition of "Local," which is now posted on the Division H website along with many other resources for the Division.

The two parts in the title of our Division are of course closely linked: the interstellar medium (ISM) and stars, the two major visible components of a galaxy, are coupled to each other through star formation, stellar feedback, and their gravitational potential. The research in Division H therefore ranges from the physics and chemistry of different components of the ISM (ionized, neutral, molecular) — both locally and on galaxy-wide scales — to measurements of resolved stellar populations and star clusters in the local universe and the dynamics of galaxies. The formation and evolution of atoms, molecules, and dust during all phases of star formation and death are an integral part of ISM studies. The



Major advances in star formation — one highlight of Division H science — have come from infrared imaging and spectroscopy using recent space telescopes. This figure shows the Herschel-HIFI spectrum of water from the protostar NGC 7129 IRS. *[D. Johnstone, L. Kristensen] The background is a Spitzer Space Telescope image of this star-forming region. [NASA/JPL-Caltech/S.T. Megeath]*

Division Meeting — Division H: Interstellar Matter and the Local Universe	
Start date	Friday, 7 August
End date	Monday, 10 August
Oral sessions	Room 313C, Hawai'i Convention Center
Posters	Exhibit Hall 1, Hawai'i Convention Center
For details on presenters, topics, and times see the Division H meeting schedule (PDF).	

structure and composition of protoplanetary disks around pre-main-sequence stars set the scene for planet formation. We were fortunate to get a strong Division Steering Committee (DSC) with expertise on all these aspects in early 2013.

The next three years were a busy time for the Division Presidents, since the new IAU structure still had to be put together at the Commission level. Steered by the IAU General Secretary, Thierry Montmerle, and stimulated by several face-to-face meetings, the transition from the old to the new Commissions (listed on the IAU Division H webpage) was made. New Working Groups are the next step in the new structure.

The DSC also evaluated and selected many excellent proposals for IAU Symposia and Focus Meetings. We are pleased to have a rich program of interest to our Division at the IAU General Assembly during the full two weeks. If you want to learn more about our science, please come and visit us at the Division Meeting! ✿

EWINE VAN DISHOECK is a professor of molecular astrophysics at Leiden University, the Netherlands, and an external scientific member of the Max Planck Institute for Extraterrestrial Physics in Garching, Germany. She was formerly Vice-President of Commission 14 and is now President of Division H, Interstellar Matter and the Local Universe.

WOMEN IN ASTRONOMY: SCATTERED TALK #1

Workplace Climate and Anti-Harassment Policies

By FRANCESCA PRIMAS

The IAU Women in Astronomy Working Group (WG) and the AAS Committee on the Status of Women in Astronomy have teamed up to present a series of three lunchtime "Scattered Talks" during the XXIX General Assembly.

The first one of these will be presented by Christina Richey, Senior Scientist at Smart Data Solutions, LLC, working for the Science Mission Directorate at NASA Headquarters, and will take place today from 12:30 to 2:00 pm in Room 318A. Please bring your own lunch.

Workplace climate can promote, or hinder, scientific productivity and innovation. The Survey on Workplace Climate sought to discover whether scientists in the astronomical community experienced a hostile work environment. We recruited 426 participants for an online questionnaire and reported the preliminary results from respondents' experiences in the last five years. Notable conclusions:

1. Scientists in the astronomical community experience and witness inappropriate language, verbal harassment, and physical assault.
2. Abuses that relate to gender are those that appear in the greatest proportion in this sample.
3. Inappropriate comments, harassment, and assault lead to a number of scientists feeling unsafe in their workplaces and

pursuing fewer scholarly opportunities as a direct result of these experiences.

Each of our three presenters was asked to answer three questions. Dr. Richey's answers follow here.

Q1: What is the topic of your Scattered Talk?

CR: My key topic will be workplace and conference climate, with particular emphasis on the issue of harassment. I'll report preliminary results from the Survey on Workplace Climate, then define harassment and highlight the types of harassment that are frequently encountered by scientists.

Q2: What are you most excited about at the IAU XXIX General Assembly?

CR: As a member of the CSWA and co-organizer (with IAU Women in Astronomy WG Chair Francesca Primas) of the Women's Lunch Events and Meet-the-Mentor sessions, I'm really looking forward to hearing top members of our community not only discuss key science topics, but also share their success stories and tips with the next generation of leaders in our field. For those programs to continue to be successful, we need to reach the next generation of scientists and excite them, and we need to improve many issues that are negatively impacting scientists and taking away from their vital work.

Q3. What would be your key piece of a career advice for women based on your own experience?

CR: Have confidence in yourself and know that there are support networks to help you as you advance your career. Meeting with leaders in the field can be intimidating, but remember that they are people too, and they were once young up-and-comers as well. Don't be afraid to network, as that's what these conferences are for. If you are nervous about this, feel free to find me, and I'll help you (just look for a woman with purple hair). ✿

Honolulu Weather Forecast 7–8 August 2015

FRIDAY, 7 AUGUST		*High: 84°F / 29°C Low: 73°F / 23°C*
Morning	**Afternoon**	**Evening**
Clear	Partly cloudy	Cloudy
20% chance of rain	40% chance of rain	10% chance of rain
SATURDAY, 8 AUGUST		*High: 83°F / 28°C Low: 73°F / 23°C*
Morning	**Afternoon**	**Evening**
Partly cloudy	Clear	Partly cloudy
20% chance of rain	0% chance of rain	5% chance of rain

Extended forecast: Tropical Storm Guillermo is expected to continue passing over the islands through Friday. East-southeast winds will build behind the system on Friday and shift to trade winds Saturday and into early next week. Sources: Weather Underground and the National Weather Service.

FRANCESCA PRIMAS is Chair of the IAU Executive Committee Working Group on Women in Astronomy. She is also User Support Scientist for the European Southern Observatory, based in Garching, Germany.

SPLINTER MEETING

Voyage to Education with the Sloan Digital Sky Survey

By KAREN MASTERS

Engaging students with real astronomical data has a variety of positive effects. For example, it provides opportunities for "hands-on, minds-on science," offers the thrill of possible discovery, and teaches students that not everything in science has

Splinter Meeting: Voyage to Education with the Sloan Digital Sky Survey (SDSS)	
Date	Monday, 10 August
Time	8:30 am to 2:00 pm
Location	Room 327, Hawai‘i Convention Center
Agenda	Mapping the Universe: Introduction to SDSS Introduction to SDSS Voyages: History and Evolution Coffee & tea break Matching Content to Curricula Exploring the Voyage Website: Individual exploration and work time Group Discussion: What do you need Voyages to do for you? Continued work time and/or lunch

been discovered.

The Sloan Digital Sky Survey (SDSS) has a long history of making its data publicly accessible. Now available from SDSS is an educator-focused website, SDSS Voyages, that brings real data into the classroom.

SDSS education consultant Kate Meredith has led the development of SDSS Voyages in collaboration with Jordan Raddick and Britt Lundgren. The site includes example activity plans to give ideas on how to use its resources, as well as a Featured Teacher section, which is a space to recognize educators who are making innovative use of SDSS data in their classrooms.

Activities on SDSS Voyages come in three flavors that provide a variety of lengths and levels of complexity. “Launch” and “Expedition” activities are specifically designed to be student-led, inquiry-based experiences, with multiple possible stopping points and support material. “Preflight” and “Help” sections provide background and reference materials that are grounded in the SDSS surveys.

You can learn to effectively use the SDSS in your classroom with SDSS Voyages. *[SDSS]*

I invite you to join us for a half-day, hands-on workshop exploring this resource on Monday, 10 August, from 8:30 am to 2:00 pm in Room 327 of the Hawai‘i Convention Center. We welcome drop-ins, and it is OK to come and go. Participants will have the opportunity to contribute their own experiences from using data in educational settings and to suggest new content based on exploration of SDSS data. ✿

KAREN MASTERS is a reader in astronomy and astrophysics at the Institute of Cosmology and Gravitation, University of Portsmouth, U.K. She is also the Director of Outreach and Public Engagement for SDSS and Project Scientist for the Galaxy Zoo citizen-science program.

O‘ahu Beach Is Named Best in the USA

By RICK FIENBERG, *Kai‘aleleiaka*

If you ask most people to name a beach in Hawai‘i, they’ll probably say, “Waikīkī.” That’s no surprise, because Waikīkī is adjacent to the Hawai‘i Convention Center and many popular hotels and resorts, and it has been featured in countless movies and television shows. But is it the *best* beach in Hawai‘i? Not according to Stephen P. Leatherman of Florida International University’s

[DrBeach.org]

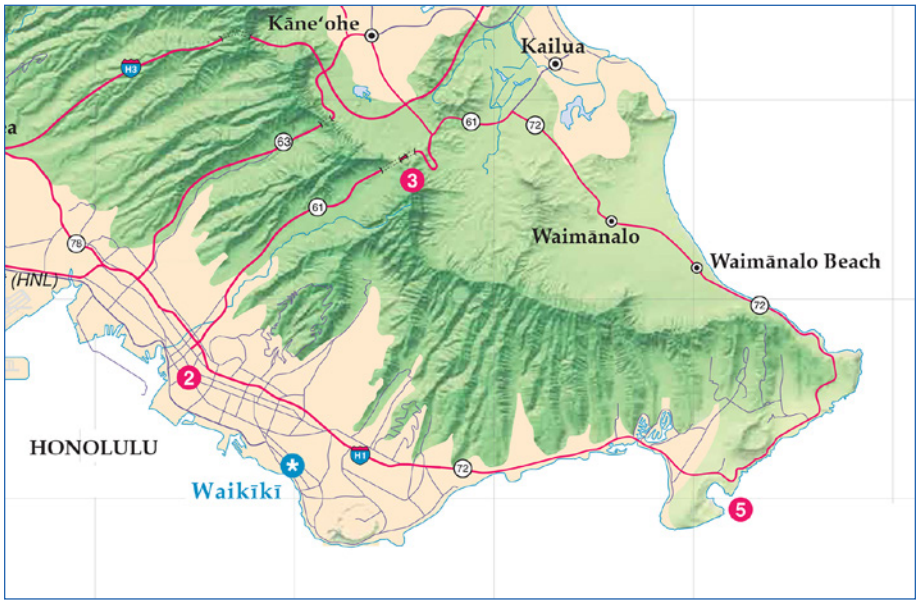
Department of Earth & Environment in Miami.

Leatherman is the author of more than a dozen books and hundreds of scientific articles about storm impacts, coastal erosion, and ways to improve beach health and safety. As "Dr. Beach" he has been publishing his Top 10 Beaches list for 25 years. His 2015 pick for the best beach not only on O'ahu, not only in Hawai'i, but in the entire United States is Waimānalo Bay Beach Park, about 18 miles (about 35 minutes by car) from Waikīkī.

Here's how Leatherman describes Waimānalo in a PDF press release issued in May: "[The beach] is located in the northeastern corner of O'ahu in the countryside and is often missed by tourists.... Waimānalo Bay is O'ahu's longest beach — extending for more than five miles; it is great for walking and beachcombing in the soft white sand. The wind is always blowing onshore because of the trade winds, making it safe for sailboats. This sandy coral beach slopes gently into the turquoise oceanic waters.... There are restrooms and showers along with shady areas courtesy of the ironwood trees.... The shallow sand bar provides for good [swimming and] body-boarding."

Dr. Beach uses 50 criteria when compiling his annual roundup, including water and sand quality as well as safety and environmental management. He awards bonus points for prohibition of smoking. O'ahu leads the way in that regard: smoking at all beaches on this Hawaiian island has been banned by law since January 2014.

To figure out how to get from your hotel to Waimānalo Bay Beach Park, see the transportation guide on the conference website. ✿



[© 2010 Hawai'i Visitors and Convention Bureau]

Congratulations to

Anamaria Maraboli-Smith!

You have won
breakfast for two at
Rainbow Lanai — Hilton Hawaiian Village
at 2005 Kalia Rd.

Prizes can be redeemed, and raffles can be entered, at Exhibit Hall Booth 336