





Dear GTTP reader,

In this first issue of 2012 you will find many inspiring reports, several new training opportunities, very interesting meetings and campaigns. Assembling such a vast repository of amazing activities and stories is never an easy task. But such a task is one we take with a great pride and humility. It is overwhelming the reach of educator's efforts and the seeds they keep planting every day.

By no means this newsletter is representative of all that is going on in the world of Astronomy education, in particular in GTTP corner, but we are all very happy to be able to share with you at least a small part of this world that makes so much sense.

We hope that this newsletter is a source of ideas and opportunities to you and that you find yourself a member of this fast growing movement!

May the skies be clear and your hearts strong and pure in the pursuit of your dreams. Make space in all of them to keep changing the world kid by kid.

## COSPAR 2012



COSPAR 2012 – (July/2012) There will be a special GTTP session during COSPAR that is taking place in Mysore (India) and a session devoted for education. Look for PE 1 and PE 2. In the following page you will find all the information for registration, abstract submission, and detailed program <http://www.cospas-assembly.org/>

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## IAU-GA 2012



IAU-GA 2012 in Beijing – (August 2012) For this meeting I want to highlight a few special sessions:

SpS11 IAU Strategic Plan and the Global Office of Astronomy for Development SpS14 Communicating astronomy with the public for scientists (<http://www.communicatingastronomy.org/meetings/iauga2012-sps14/>)

SpS17 Light Pollution: Protecting Astronomical Sites and Increasing Global Awareness through Education ( [http://www.iau.org/science/meetings/future/special\\_sessions/1049/](http://www.iau.org/science/meetings/future/special_sessions/1049/))  
<http://www.astronomy2012.org/>

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## GHOUS2012/GTTP 2012



GHOUS2012/GTTP 2012 – (July 2012) Global Hands-on Universe meeting in Morocco – This year's GHOUS meeting will take place in Ifrane and we welcome everyone to be there with us. The training session and the meeting will have a special taste

<https://sites.google.com/site/ghous2012/>

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## EWASS 2012



EWASS 2012 – (July 2012) in Rome – For this venue I call your attention to 2 special events:

A symposium for educating -  
[http://www.ifi-roma.inaf.it/ewass2012/?page\\_id=284](http://www.ifi-roma.inaf.it/ewass2012/?page_id=284)

And a special GTTP Training – SM6  
[http://www.ifi-roma.inaf.it/ewass2012/?page\\_id=546](http://www.ifi-roma.inaf.it/ewass2012/?page_id=546)

## 5° International Meeting



5° International Meeting of Astronomy and Astronautics (April 2012) – Campos de Goytacazes:  
<http://meeting.passeiopedoceu.org/index-meeting5.html>



## ASP2012

Astronomical Society of Pacific Meeting - ASP2012  
<http://www.astrosociety.org/events/2012mtg/epo.html>



## SPACE: From Foray to Habitation Conference

Douglas, Isle of Man  
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sge@spaceacad.org

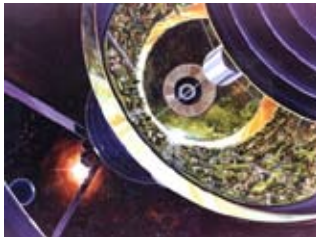


Image: NASA's Space Colony Art from the 1970s [Credit: NASA]

The Scientific Preparatory Academy for Cosmic Explorers (SPACE), a nascent undergraduate space university that fills a gap in the current space education pipeline, is holding a conference on the Isle of Man on July 9-10, 2012 to discuss three noteworthy topics and to inaugurate its inception.

SPACE: From Foray to Habitation Conference, as its name implies, calls for a united effort to colonize the solar system. It features an exploration of three themes: The requirements for space education, technical barriers to a space faring civilization, and legal and institutional barriers to space habitation.

For more information: <http://www.spaceconf.com>

There are several training events opportunities. Make sure you don't miss this opportunity, especially if you are in Europe. These are all Comenius/ Gruntvig Training Events. If your country has a national representative you may be entitled to a full expense coverage in order to attend these courses:

**Deadline for applications in your national agency April 30th!!**

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## EUHOU Training events



EUHOU: Hands-On Universe, Europe. Bringing frontline interactive astronomy in the classroom and EU-HOU - Connecting classrooms to the MilkyWay (both in Paris) [http://www.euhou.net/index.php?option=com\\_content&task=view&id=288&Itemid=49](http://www.euhou.net/index.php?option=com_content&task=view&id=288&Itemid=49)

EUHOU: Hands-On Universe, Europe. Bringing frontline interactive astronomy in the classroom (in Athens) <http://ec.europa.eu/education/trainingdatabase/index.cfm?fuseaction=DisplayCourse&cid=29854>

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## GTTP Training Events

All the information about the GTTP training events can be found here:

[http://www.site.galileoteachers.org/index.php?option=com\\_content&view=article&id=192:nuclio-a-gttp-comenius-and-gruntvig-training-courses&catid=40:gttp-sessions&Itemid=18](http://www.site.galileoteachers.org/index.php?option=com_content&view=article&id=192:nuclio-a-gttp-comenius-and-gruntvig-training-courses&catid=40:gttp-sessions&Itemid=18)



Mysterious Skies



Bridges



Universe Quest



## Discover the Cosmos Summer School

In the beautiful Island of Crete several Summer Schools are taking place next July. The deadline to apply to a national agency for a Comenius/Gruntvig grant is over but interested people can still register for the event.

More information can be found here: <http://dte.ea.gr/content/how-register>







Generously funded by Google, the \$30 million Google Lunar X PRIZE is an unprecedented competition to challenge and inspire engineers and entrepreneurs from around the world to develop low-cost methods of robotic space exploration. To win the Google Lunar X PRIZE, a privately-funded team must successfully place a robot on the Moon's surface that explores at least 500 meters (1/3 of a mile) and transmits high definition video and images back to Earth. The first team to do so will claim a \$20 million Grand Prize, while the second team will earn a \$5 million Prize. Teams are also eligible to win a \$1 million award for stimulating diversity in the field of space exploration and as much as \$4 million in bonus prizes for accomplishing additional technical tasks such as moving ten times as far, surviving the frigid lunar night, or visiting the site of a previous lunar mission. To date, more than 20 teams from a dozen countries around the world have registered to compete for the prize. The Google Lunar X PRIZE is available to be claimed until the end of the year 2015.

Website: <http://www.googlelunarprize.org/>

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## MoonBots Challenge



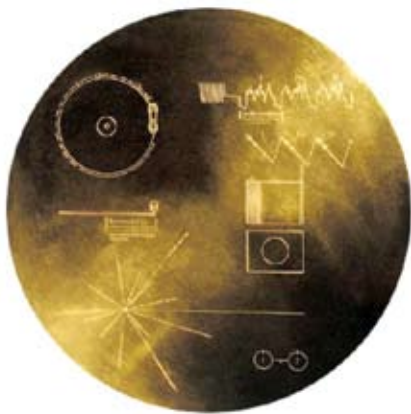
A contest that challenges teams of students (ages 9-17) and adults to learn about robotics, the Moon, and space exploration by designing and constructing a LEGO® MINDSTORMS® robot that performs simulated lunar missions similar to those required to win the \$30 million Google Lunar X PRIZE.

Website: <http://moonbots.org/>

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## How about a little trip to the Moon?



Do you think there is life elsewhere in the Universe, do you believe we will ever be able to communicate with another beings in this vast Universe. Well many astronomers believe in this. Despite the fact that we never found life in the Universe beyond our planet, scientists are convinced that in this immense sea of galaxies life must thrive. In 1977 scientists sent two golden records aboard two spacecrafts in case the ships might bump into other intelligent beings. The record contains images and sounds picturing life on Earth. This Golden Record will reach parts of the Universe where a leaving human being can't yet dream.

Well, travelling through this vast Universe can be a dangerous and complicated adventure. Whilst it is very hard for human beings to leave the Earth and travel across the Universe going to the Moon is a more concrete possibility, a very complicated and expensive one, but feasible. If you belong to the 99,99% of the life forms of this planet that don't have this possibility we will be offering the possibility of going to the Moon and back.. well kind of... With the support of art and radio astronomy artist Daniela de Paulis together with a team of radio amateurs at Dwingeloo radio telescope in Holland, created a way to send images to the Moon and back. We will have the opportunity to MoonBounce images produced by schools. To know more visit the complete story at:

[http://www.site.galileoteachers.org/index.php?option=com\\_content&view=article&id=193:how-about-a-little-trip-to-the-moon&catid=1:announcements&Itemid=28](http://www.site.galileoteachers.org/index.php?option=com_content&view=article&id=193:how-about-a-little-trip-to-the-moon&catid=1:announcements&Itemid=28)

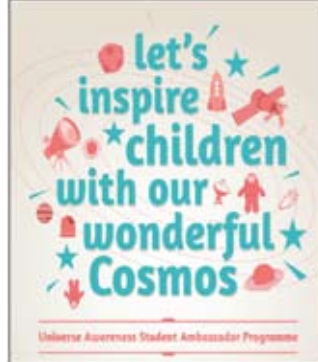
## Scientix: search for astronomy teaching resources and have them translated in your language!



The Scientix resource repository collects various materials for science and maths classroom - lesson plans, guidelines, hands-on experiments, etc. – from EU and other national and international education projects. You can search the repository by topic, target group or keyword; astronomy topics include materials from highly successful projects such as Hands-On Universe Europe or I-CLEEN.

If you would like to use some of them in your teaching, but they are not in your preferred language, you can request an additional translation via the 'Scientix translation on demand service'. The service is **free of charge and available only through the Scientix website**. Go to <http://www.scientix.eu/web/guest/request-translation> to find out more!

Scientix is the community for science and maths education in Europe: it collects teaching materials and research reports from science education, science communication and science outreach projects financed by the EU funding programmes (Framework Programmes, the Lifelong Learning Programme) and other international and national initiatives. It is managed by European Schoolnet on behalf of the European Commission's Research and Innovation DG.



## EU Universe Awareness Student Ambassador Programme by : EU-UNAWE

Universe Awareness (UNAWE) uses the beauty and grandeur of the Universe to encourage young children (between 4 and 10 years old), particularly those from an underprivileged background, to develop an interest in science and technology. The programme also aims to use the cultural aspects of astronomy to foster a child's sense of global citizenship from the earliest age. UNAWE is endorsed by UNESCO and the International Astronomical Union (IAU) and it is now an integral part of the IAU Strategic Plan 2010–2020, which is called Astronomy for the Developing World. To help UNAWE to achieve its goals, we are now recruiting UNAWE Student Ambassadors.

### Who?

UNAWE Student Ambassadors can be either BSc, MSc or PhD students of astronomy, space science, physics, mathematics, social sciences or another relevant topic for the UNAWE programme. The Student Ambassadors will be recruited and coordinated by the UNAWE International Office, which is based in Leiden University, in collaboration with the UNAWE national programmes.

Want to volunteer and know more about this opportunity here is the complete information: <http://www.unawe.org/ambassadors/>



## Telescopes4 Teachers Program

by Dr. Douglas N. Arion



Starting this spring, Galileoscope will be launching the Telescopes4Teachers program - modeled after the successful donation program conducted during the IYA, Galileoscope, in partnership with non-profit astronomy organizations, will be accepting (tax deductible) donations to put telescopes in classrooms. A donor can select the specific school or teacher to whom the telescopes will be sent. This is a great opportunity - with great timing - to make sure that starting in the fall teachers will have telescopes to use in their classrooms to teach optics, astronomy, and science history.

GTTP workshop in Thailand. courtesy Pornchai Pop, Thai Astronomical Society

National Optical Astronomy Observatory outreach event in Arizona. Courtesy Rob Sparks, NOAO.

More about Galileoscope in : [www.galileoscope.org](http://www.galileoscope.org)



## Global Astronomy Month 2012

Global Astronomy Month 2012 (GAM 2012) in April is the world's largest global celebration of astronomy since the unprecedented International Year of Astronomy 2009. Organized yearly by Astronomers Without Borders (AWB) since 2010, GAM 2012 brings new ideas and new opportunities, and again brings enthusiasts together worldwide, celebrating the AWB motto of "One People, One Sky."

A broad range of programs and events fill the month, highlighting Saturn, the Moon, the Sun, a meteor shower and more. Thousands will view through telescopes provided by amateur astronomers and science centers. Online programs with live interaction between the host and attendees will extend the opportunity to thousands more regardless of location or local circumstances. There's a program every club, school or individual to take part in.

For ideas on taking part, see "10 Ways to Get Involved in GAM 2012" (link [www.astronomerswithoutborders.org/gam2012-news/latest-news/1047-10-ways-to-get-involved-in-gam-2012.html](http://www.astronomerswithoutborders.org/gam2012-news/latest-news/1047-10-ways-to-get-involved-in-gam-2012.html)).

For more see the GAM 2012 website at [www.gam-awb.org](http://www.gam-awb.org)

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## Global Astronomy Month (GAM) Astropoetry Contest

by Bob Eklund

FOR TEACHERS: A good subject for children, especially those in the lower grades, is the Moon. A major GAM program will be “Lunar Week,” the first week in April, when the moon is between First Quarter and Full. We suggest that teachers first hold local contests in their classrooms, asking the children to observe the moon’s shape and position in the evenings (no equipment needed), then discuss what they’ve seen in class and write a poem about it for the contest. Teachers can choose the best poems from their classroom contests, then submit these to the worldwide contest on the GAM form.

NOTE: In addition to GAM contest entries, your poems (and those of your students) are welcome at any time for posting on the Astronomers Without Borders Astropoetry Blog. To view the blog, go to: <http://www.astronomerswithoutborders.org/community/members-blogs/blogger/Astropoetry%20Blog>

To send poems to the AWB Astropoetry Blog, email to: [astropoetry@astronomerswithoutborders.org](mailto:astropoetry@astronomerswithoutborders.org)

The contest is intended as a feature of Astronomers Without Borders’ Global Astronomy Month (GAM), April 2012. Poems should be submitted between April 1 and April 30. The submission form will be available in March on the AWB-GAM web page. Check for this and other details at: [www.gam-awb.org/astropoetry-contest](http://www.gam-awb.org/astropoetry-contest)

The contest is intended for both children and adults, worldwide. There will be three categories:

Children grades 1-6

Children & Young Adults grades 7-12

Open (Adults)

When submitting your poem, include your name, city and country of origin, address where you can be contacted, and your category (for children, include grade level).

To be judged in the contest, poems must be in English. (If poem was originally written in another language, the original may be included for reference along with the English version, if the poet so desires.)

Poems may be on any astronomy, night sky, or space-related subject, but it is preferred that they relate to GAM programs (for example, Sun Day, Lunar Week, Dark Skies).

Poems may be in any style or form. It is preferred that they be less than 30 lines in length.

The contest winners will be chosen by a panel of judges. Prizes to be announced later.



## US GHOU Conference

Dear Good HOU Teachers, Students, Educators, and Other Friends,

Please save the dates of June 21-22-23 (arrive on June 20th) for our annual US HOU conference! HOU has been charging along for 20 years, and is one of the longest living, real-data based science-education projects in the world.

US HOU keeps getting better, and filling in missing pieces, and many teachers find it is working quite well now in their classrooms. And we keep spreading around the world, somehow!

We invite you to come and learn about new software, new activities, new planetaria programs, new workshops, new telescope networks, new asteroids -- all and more!

We are reserving rooms at George Williams College and also at Fontana Village Inn.

More details and a web site will emerge soon!

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## Astronomy from the Ground Up! Workshop for Science Teachers, Parkes Observatory, 18 - 20 May 2012

by Robert Hollow

Science Teachers, this is your opportunity to develop your knowledge of how to teach astronomy in an exciting and engaging manner. Over three days in the shadow an icon of Australian science, the Parkes radio telescope, you will have the chance to enhance your confidence and skills in the astronomical concepts required to teach junior high school science. No background or training in astronomy is required for participation in this workshop.

### Topics

The workshop sessions will cover a range of topics on astronomical objects and techniques. We focus on the role of Australian astronomers and facilities to provide you with relevant examples to use with your students. Examples of current research and background information on key aspects of astronomy will enhance your confidence in teaching the subject effectively. With the Transit of Venus and a total solar eclipse both visible from Australia in 2012 this is a great opportunity to learn how to incorporate these events in your teaching program.



**Robert Hollow**  
Education Officer  
CSIRO Australia Telescope National Facility  
phone 02 9372 4247  
fax 02 9372 4444  
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### Activities

Workshop sessions will be varied and provide you with opportunities to:

- trial "hands-on" activities you can take back to the classroom
- incorporate the latest research in astronomy education in your teaching
- meet and listen to Australian astronomers and talk with them about their work and the cosmos
- tour the Parkes radio telescope and learn how it works
- learn how to run a viewing night for your students and find your way around the night sky using the unaided eye and small optical telescopes (weather permitting)
- use powerful visualisation and other free software tools and learn how to incorporate them in your classes
- take home a range of useful and practical resources and ideas that you can use with your students.

The 2012 workshop will also be part of the Galileo Teacher Training Program, one of the international cornerstone legacy projects for the 2009 International Year of Astronomy.

Teachers from the 2011 workshop on The Dish.

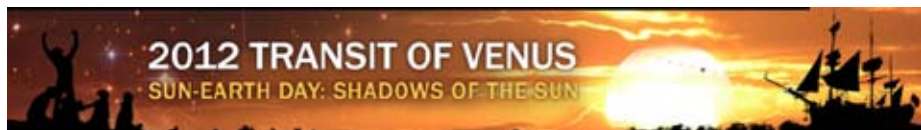
More information can be found here:

<http://outreach.atnf.csiro.au/education/teachers/workshops/afgu.html>

## Latest NASA Launch Targets Transit of Venus

Chuck Bueter [bueter@nightwise.org](mailto:bueter@nightwise.org)

[www.transitofvenus.org](http://www.transitofvenus.org)



In October NASA launched its 2012 Sun-Earth Day website, making a major calendrical wake-up call to the astronomy education community as the 2012 transit of Venus approaches. On June 5 or 6, 2012, with the date depending on one's location, Venus passes directly in front of the sun as Venus, on the inside orbit, overtakes earth. This last transit of Venus in our lifetimes is visible in whole or in part from much of the world, with the exception, per NASA's Fred Espenak, of "Portugal or southern Spain, western Africa, and the southeastern 2/3 of South America."

The historical value of the transit phenomenon is yielding to rewarding new applications of the transit method. In past centuries, astronomers tried to capitalize on the transit of Venus to quantify the size of our solar system. Global expeditions spurred on by the math and encouragement of Edmond Halley attempted to eke out the size of the solar by timing how long it takes Venus to move from one edge of the sun to the other. That time could be converted into a chord across the sun, or a distance, and with parallax calculated one could discern the Astronomical Unit. Today, transits are answering another leading science question of the day: "Are there planets capable of harboring life?"

NASA's Kepler mission is targeting over 150,000 stars simultaneously, looking for the signature dips in brightness that reveal the presence of a planet passing regularly in front of the parent star. Early results have found a diverse collection of planets and candidates, including planets orbiting in resonance and a tight pair of stars orbited by a common planet. The 2012 transit of Venus is like having a front row seat to the celestial phenomenon by which the Kepler spacecraft succeeds. In earth's own backyard we can see the black silhouette of the transiting planet and measure the discrete drop in brightness, just as Kepler seeks to do with stars hundreds of light years away.

Astronomers Without Borders is taking a lead role in astronomy education and public outreach by facilitating a Transit of Venus phone app that is being developed by Steven van Roode. Rather than dispatch expeditions around the world to time the transit, the general public can easily record and send observed contact times and GPS locations via smartphones. Can our modern technology and multitude of data yield a better value for the Astronomical Unit than the best effort of our predecessors? Support the app and find out! In addition to the Sun-Earth Day website, [www.transitofvenus.org](http://www.transitofvenus.org) and [www.transitofvenus.nl](http://www.transitofvenus.nl) offer significant transit of Venus resources to help you bring this rare celestial spectacle to your community. Prepare now, be safe, and enjoy the spectacle.

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## Less of Our Light for More Star Light



NEW! 2012 Dates for GLOBE at Night

In 2012 there will be four opportunities to participate in GLOBE at Night:  
January 14-23    February 12-21  
March 13-22    April 11-20

Learn more from the 365 Days of Astronomy Podcast:  
GLOBE at Night Kickoff: Seeing the Light.

Make plans to join us!

### 2011 Results Summary

More countries than ever before participated in the 2011 GLOBE at Night campaign. Nearly all of the 14,249 measurements were taken by 48 of the 115 countries.

The GLOBE at Night program is an international citizen-science campaign to raise public awareness of the impact of light pollution by inviting citizen-scientists to measure their night sky brightness and submit their observations to a website from a computer or smart phone. Light pollution threatens not only our “right to starlight”, but can affect energy consumption, wildlife and health. The GLOBE at Night campaign has run for two weeks each winter/spring for the last six years. People in 115 countries have contributed 66,000 measurements, making GLOBE at Night one of the most successful light pollution awareness campaigns.

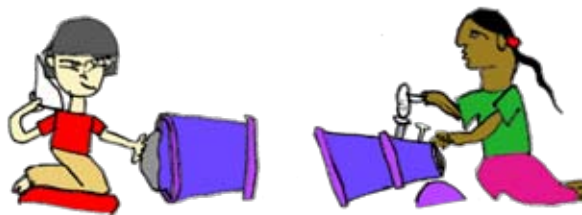
Check out the new web application data submission process. The GLOBE at Night website is easy to use, comprehensive and holds an abundance of background information. The database is usable for comparisons with a variety of other databases, like how light pollution affects the foraging habits of bats.

Once again the GLOBE at Night Team would like to express their thanks to all the participants who contributed measurements locally to make a global difference.

### Five Easy Star-Hunting Steps:

- 1) Find your latitude and longitude.
- 2) Find Orion, Leo or Crux by going outside more than an hour after sunset (about 8-10pm local time).
- 3) Match your nighttime sky to one of our magnitude charts.
- 4) Report your observation.
- 5) Compare your observation to thousands around the world.

Visit us : <http://www.globeatnight.org/>



## Primary Science Week Astronomy Workshops May 7-11th 2012

Workshops to be hosted in four locations, Chch, Wlgt, Akl and Whanganui in association with the Royal Astronomical Society of NZ

Two of New Zealand's most important astronomical events will be happening this June. What will you be doing at your school? Two exciting teacher development opportunities will be available for this year's Primary Science Week. In these workshops we will be covering two of Aotearoa New Zealand's most important topics when it comes to astronomy.

### **Matariki – The Maori New Year in your classroom**

Tuesday 8th May 4-6pm

Carter Observatory (Wlgt), Stardome Observatory (Akl), Science Alive (Chch) and Whanganui Museum (Whanganui)

**Matariki** has always been a hugely significant event in the Maori calendar. In modern times it is fast becoming a celebration of our unique culture but how much do we really know about the astronomy behind Matariki? In this 2 hour workshop we will be exploring what Matariki is all about and giving teachers the confidence to mark this occasion at their school. The rising of this most beautiful star cluster marks Matariki and in some locations the bright star Puanga is used. See it up close in the planetarium, hear ancient legends, learn about the science of this amazing and unique star cluster and get all you need to know to celebrate Matariki come June 21st 2012.

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### **The Transit of Venus – Observing this historic event at your school**

Thursday 10th May 4-6pm

Carter Observatory (Wlgn), Stardome Observatory (Akl), Science Alive (Chch) and Whanganui Museum (Whanganui)

**The Transit of Venus** is a once in a lifetime event, the next transit wont occur until the year 2117. It is the reason Captain James Cook came to this part of the world and in doing so was able to contribute to the knowledge of just how far the Sun really is. This was so important to us here on Earth as we began to get certainty around the scale of our Solar System. Everyone will be able to observe the 2012 Transit of Venus, weather permitting. It will be a daytime event that with the right knowledge and equipment will be once in a lifetime opportunity for your students. This workshop will provide you with everything you need to know to run an observational programme at your school leading up to and including the day of June 6th when Venus crosses the face of our Sun.

**The Royal Astronomical Society of NZ has an education group consisting of experienced astronomy educators from all over NZ. We would like to support you in your classroom in any way we can. Come to this free workshop filled with information and we will follow through with support as you plan your school lessons for these events come June.**

To register for one of these workshops please us by April 30th. Ron Fisher  
RASNZ Education Group Convenor  
[education@rasnz.org.nz](mailto:education@rasnz.org.nz)

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## Astronomy Outreach Workshop

RASNZ Education Group



This full day workshop is aimed at anyone interested in astronomy outreach and education on any level within New Zealand and globally. We will be seeking to create new paths for moving forward with astronomy outreach in NZ.

To be held on Friday 15 June 2012 at the recently opened Carterton Events Centre in conjunction with the RASNZ 2012 Annual Conference.

### Themes

How do we currently do outreach here and overseas?

What are the best tools available now and into the future?

As well as exploring these questions we will be running hands-on activities for people young and old, giving you ideas and inspiration to deliver the best astronomical experiences possible.

Content will include local astronomy educators alongside live video conferencing presentations from overseas speakers with opportunity for question and answer time with our keynote speakers.

If you share astronomy with anyone young or old then we would love to see you there.

### Registration

Full day workshop includes morning tea, lunch and afternoon tea. Registration fee has been kept to a bare minimum at just \$40 per participant

For further information or to register your interest, please email the RASNZ Education group at [education@rasnz.org.nz](mailto:education@rasnz.org.nz) or visit the RASNZ website [www.rasnz.org.nz](http://www.rasnz.org.nz).

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## European Space Camp 2012

by Salomé Pereira de Matos

Date: 24th June 2012 - 2nd July 2012

Location: Andøya Rocket Range, Andenes, Norway

European Space Camp enables talented students from around the world to spend a week in the life of a rocket scientist, taking control of every part of a rocket campaign, including circuit making, telemetry and of course the launch itself. Participants are also privileged enough to listen to lectures on topics ranging from Rocket Physics to the Northern Lights from some of Europe's best scientists. Social activities including swimming in the midnight ocean, a GPS treasure hunt and going on a whale safari complete an unforgettable week.

Price: Free, but participants must pay for their own transport to and from Andenes Airport

Language: English

Registration Deadline: 1st April 2012

Website: [www.spacecamp.no](http://www.spacecamp.no)

Contact E-mail: [contact@spacecamp.no](mailto:contact@spacecamp.no)

Participant Restriction: Students between the ages of 17-20, with fluent English and a keen interest for mathematics, physics and rocket/space science

If you need any further information or have any questions, please feel free to contact us at [contact@spacecamp.no](mailto:contact@spacecamp.no).

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Image 1 - A 25 cm printed 3D moon available for you and your institution. (Credit: Observatorio Astronomico of Universidad de Valencia)



## Call for proposals: receive your own free tactile moon

[http://www.site.galileoteachers.org/index.php?option=com\\_content&view=article&id=190:call-for-proposals-receive-your-own-free-tactile-moon&catid=1:announcements&Itemid=28](http://www.site.galileoteachers.org/index.php?option=com_content&view=article&id=190:call-for-proposals-receive-your-own-free-tactile-moon&catid=1:announcements&Itemid=28)

With funding support from Europlanet and Fundación Española para la Ciencia y la Tecnología (FECyT), Observatorio Astronomico of Universidad de Valencia, Spain, manufactured a set tactile moons to be tested by different target groups. If you are interested on receiving one of this 3D printed Moon models, just write a letter of interest, explaining how you would test the tactile moon and what kind of teaching and outreach activities would you develop for this project.

The final model and selected activities will be made freely available at the GTTP website for everyone to enjoy. The users' feedback will help improve the design and release a final and fully tested tactile model.

## Get a feel of the full moon

We all wished to reach for the Moon when we were children. How would it feel like if we could touch it? As we can only grasp it with our eyes and imagination, the Moon has been a source of inspiration for humanity since the dawn of mankind. But this sense of wonder is not available to all, and by not being able to see the Moon many are missing an important element of our experience as living beings on planet Earth.

So, Observatorio Astronomico of Universidad de Valencia team embarked on the journey of the construction of a tactile moon model for the blind, designed to convey in a tactile way the visual experience of observing the Moon.

The project started by designing a 3D computer model of the Moon, ready to be printed by a 3D printer. It allows you to touch the most visually prominent features in both lunar sides: mountain ranges, craters and maria. It is not intended to be a topographical map of our satellite, and only the main features have been represented to avoid too many details could be misleading.

Next to the features addressed, a flat rectangle containing a letter in Braille alphabet was placed. An accompanying document in Braille helps the user to identify the letter with the corresponding name of the lunar feature. Also, the polar caps have been marked with flat circles, and the North is marked with a cross, so the user can easily orientate the sphere.

## Receive a free tactile moon

If you are interested on testing the Moon model, please send a letter of interest, explaining how you plan to test the tactile moon and what kind of activities you will be developing for the project and help extend the network of this project worldwide.

As only a small number of Moons available, only the best proposals will be select.

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Contact:

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## Saving the night, while saving energy

by Tom Morin  
(Shaker School District, Belmont NH, USA)



In 1990's, my school district was search for ways to save energy costs related lighting and heating in their middle/high school buildings. The campus was an array of buildings built between 1940's to 1970's. The buildings had large single paned windows, incandescent lighting and little insulation. I was able to obtain a grant to train my students in doing and energy audit.

After training, my class along with fellow friend and teacher we conducted the audit, produced a report and presented our findings to the school administration and school board members. We calculated that the district could save up to \$39,000.00/year with renovations and replacing old lighting systems with energy efficient bulbs and fixtures. The lighting savings turned out to be around \$5,000/year. Has the years have gone by, major renovations such as better windows, more efficient outdoor lighting have been made with continuous savings to the community.

# Precovery of NEAs using the Virtual Observatory

by Enrique Solano Márquez  
(Principal Investigator of the Spanish Virtual Observatory)

Since July 2011, the Spanish Virtual Observatory is conducting a citizen-science project to precover Near Earth Asteroids using astronomical archives. The system is open for everybody and just a very limited knowledge of astronomy is required to use it. It can be accessed at:

<http://www.laeff.cab.inta-csic.es/projects/near/main/?&newlang=eng>

Precovery is the process of finding an object in astronomical archives generally for the purpose of calculating a more accurate orbit. Calculating the orbit of an astronomical object involves measuring its position on multiple occasions: The more widely separated these are in time, the more accurately the orbit can be calculated. Accurate determination of the orbital parameters is of fundamental importance for objects like asteroids with a non-negligible probability of impacting Earth.

Aphophis is an excellent example of how important Precovery can be. Discovered on June 19, 2004, follow-up observations indicated a small probability (up to 2.7%) that it would strike the Earth in 2029. It was not until precovery images taken in March 2004 were analyzed when the possibility of an impact on Earth was eliminated.

Aphophis belongs to the category of Potentially Hazardous Asteroids (PHAs). These objects are characterized by a Earth Minimum Orbit Intersection Distance(MOID) of 0.05 astronomical units (AU) or less and an absolute magnitude (H) of 22.0 or less. This “potential” to make close Earth approaches does not mean a PHA will impact the Earth. It only means there is a possibility for such a threat. By monitoring these PHAs and updating their orbits, we can better predict the close-approach statistics and thus their Earth-impact threat. The same approach applies for Near Earth Asteroids (NEAs), objects whose orbits partly lie between 0.983 and 1.3 astronomical units.

The Virtual Observatory (VO) is an international initiative whose main goal is to ensure an efficient access and analysis of the information hosted in astronomical archives. In the framework of the Spanish Virtual Observatory we have taken advantage of the VO standards to develop a system to easily access astronomical archives and look for PHAs and NEAs. At the moment, the public access is limited to the Sloan Digitized Sky Survey (SDSS).

## Search Methodology

The procedure of identifying NEAs relies on the comparison of images of the same region of the sky taken several minutes apart. The vast majority of the objects recorded in the images are stars and galaxies that will appear in the same position in all the images. On the contrary, NEAs are nearby objects with high relative velocities and they will appear in slightly different positions (see Figure).

## Usage and results

At present, there are more than 3000 registered users in the system who have provided more than 130,000 measurements. All this information was submitted to the Minor Planet Center and was used to improve the orbits of 375 Near Earth Objects. Among the most remarkable results obtained so far are the major precoveries (confirmation of a second opposition) and the dramatic extension of the arc length for some asteroids (e.g. 2008 UN90 for which the participants in the project made an identification in images taken ten years before its official discovery).



Two SDSS images taken four minutes apart. The movement PHA 136617 is clearly visible compared to the rest of fixed objects (stars and galaxies)



## Painting space with WorldWide Telescope

*Dorota and Jacek Kupras*  
[www.djkupras.blogspot.com](http://www.djkupras.blogspot.com)

The following video is an example of how to use the WorldWide Telescope in the context of art classes:



Screenshot WWT tour about painting space - <http://youtu.be/QEwYlhrvXP4>

Plan these activities might look like this:

**1st** At the beginning of preparing WWT session devoted to objects that children will draw.

**2nd** We also prepare a set of images that will inspire the class.

**3rd** We conduct classes, starting it from a presentation prepared earlier session and a brief discussion of the objects shown in him. Below album remind classes that were in the Upper Silesian Museum February 12, 2011:



More pictures on - <http://infobot.pl/r/21js>

**4th** Work done scanning or photographing, then introduce them to the session prepared earlier.

**5th** Record screening program to screen capture .

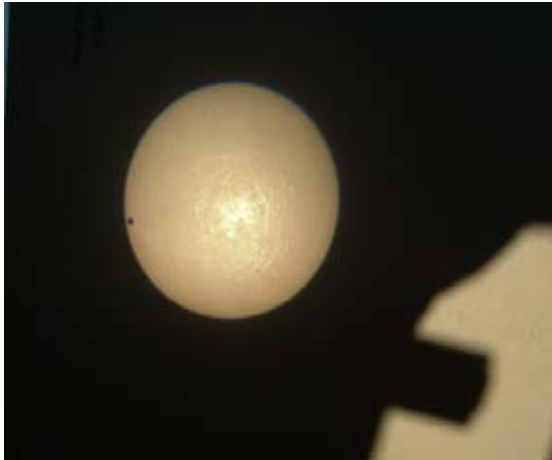
**6th** Publish a recording on YouTube, showing the place of one of the free servers. This, which was the basis for starting recording this text can be downloaded (35MB) by clicking this link - <http://youtu.be/QEwYIhrvXP4>

**7th** Links leading to the recording session and provide the children who participated in the classes.

The most important thing of all, in our opinion, is the ability to achieve synergies and to give a new context, the work made by children. After processing them to digital form, they become something permanent and transfer them into the virtual space generated by WWTeleskop lets give them a new, attractive, and acts on the imagination context. We believe that this will facilitate the creation of mental maps of the cosmos understood not only as the domain of science, but as a source of inspiration of all kinds. We think also that the simplicity of use WWT can encourage children to their own subsequent research. Unfortunately, we had no opportunity to test this in practice. This would require a more frequent schedule and the use of appropriately selected evaluation procedures allow you to check to what extent such activities develop their imagination and increase the motivation to take an interest in the natural sciences.

### **Teacher Training activity W/ Spica telescope**

*The latest introductory presentation for Japanese teachers*



Solar disk projected on screen by Spica telescope  
By Prof. Shinpei Shibata Yamagata University jp 2004.

This system will support teachers in the very simple method, making science education a fun experience. You can show the real time solar disk and the sunspots, not printed but the real image. The telescope surrounded by young students. and their teacher is a perfect trigger for discussions about the Sun, our star.

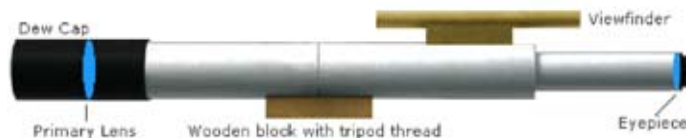
Spica telescope features high mobility and high performance. Teachers can easily show the solar disc using the projection method. Educators can take students out of the classroom during school hours. The telescope is easy to assemble and to transport. Students will discover that the Sun has thousands faces. Bellow a practical example for its use

#### **Using the Spica Telescope to observe the Transit of Venus and Sunspots:**

The Transit of Venus is once in a lifetime event, or twice for some of us. It occurs when from our point of view we can see the planet passing in front of the disc of the Sun. The last one occurred in 2004 and the next one will be in 2012, after that only in 2117. So make sure you don't miss this opportunity: June 5th of 6th (depending where in the world you are). Observe with a simple telescope.

This suggestion is adequate to middle school teachers of all disciplines, not only for science areas. This idea can also be used to observe Sunspots. You will need a Spica solar telescope mounted on a photographic tripod.

If you have standard Spica telescope you can make Spica Solar telescope with the instruction we provide here. The solar telescope will produce a 60 mm diameter solar disk projected on the screen and a 2mm diameter black spot Venus on the solar disk.



The instructions given here are for teacher’s use only. For safety reasons we suggest its use only for group viewing and not as a student’s activity



The Spica telescope for sun comes with one metallic ring to protect the eyepiece and prevent it from melting. It is to be placed in the eyepiece lens and attached with a small piece of scotch tape to prevent it falling out of the eyepiece. If the ring is not installed as a part of eyepiece, the eyepiece will be melted and broken for exceeded heat of the sun beam produced by the objective lens.

You can show Sunspots on the real time environment that gives completely different experience for students. It is different than seeing it in the pages of a book or in pictures on the internet.

To learn how to build a projection system see article by Aldino Adry Baskoro and Avivah Yamani in this newsletter.

## Observing the Sun Using Spica Telescope

*Aldino Adry Baskoro and Avivah Yamani  
(langitselatan.com ; Indonesia)*



It is dangerous to directly observe the Sun with our eyes. But we can safely watch the Sun with You Are Galileo Telescope Spica Telescope. How to do it? The simplest way is to project the sun through telescope. Let's learn how to build it:

### Material you need :

- Spica telescope
- Tripod
- 1 cylinder bamboo diameter 0.8 cm (less than finder diameter)
- 1 metal ring as a cover for eyepiece so it won't melt. The ring diameter is the same as the inner eyepiece diameter. The ring hole diameter is the same as the eyepiece diameter.
- 2 thumb tacks
- 2 white cardboard

### Steps to build :

Setup You Are Galileo Spica Telescope

Remove the eyepiece and attach the metal ring to cover eyepiece from melting when projecting the sun.





Attach the cylinder bamboo into Finder

To support the bamboo and cardboard from falling, attach thumb tacks on both ends of the cylindrical bamboo.



Measure the distance between the bamboo and the telescope tube

Take a sheet of cardboard and make two holes with a size of bamboo and telescope tube diameter using the previous measurement. The purpose is to attach and hold the cardboard.

Take the 2nd cardboard and make a hole with the size of cylinder bamboo diameter to attach the 2nd cardboard as a projector screen.

Attach the 1st and 2nd cardboard as seen in the picture



The Spica telescope is ready to observe the sun.



If you observe the sun when it's in zenith you can modify the cardboard as seen in the image.

## ESA/GTTP 2012 Workshop

*Aldino Adry Baskoro and Avivah Yamani  
(langitselatan.com ; Indonesia)*



This year's joint ESA and GTTP training workshop took place at ESA's European Space Astronomy Centre (ESAC) in Spain. We had 20 secondary school teachers coming from 15 European countries. During the event participants had the opportunity to learn how to use ESA science data archives and how to implement real research lessons in classroom using this data. The programme was very rich and composed by several talks related to ESA's missions and recent discoveries. The programme was composed by modern tools and resources and several hands-on experiments, designed to sparkle the interest of students in science research and its importance to our daily lives.

A complete report about this workshop can be found at ESA's Education website:

[http://www.esa.int/SPECIALS/ESERO\\_Project/SEMWGE5Y1ZG\\_0.html](http://www.esa.int/SPECIALS/ESERO_Project/SEMWGE5Y1ZG_0.html)

This was the third on a series that started in 2009. The Galileo Teacher Training Programme, as a leaving legacy of IYA2009, hopes to bring the best to our volunteers and devoted educators. This profitable collaboration between ESA and GTTP has enriched our achievements. We thank the vision and reach of ESA's efforts by making this venue possible. Hope that many more will come ...



**Second GTTP@Chile (Januray 2012)-  
Promoted with support of US-HOU**

Held in Calama, Chile, from January 9th to 14th, 2012 this edition of GTTP@Chile had 47 teachers participating. Teachers attended from all around Chile (Arica to Puerto Williams). Representing 18 cities (some of them are part of the American Corners net: Arica, Putre, Valdivia, Puerto Montt, Punta Arenas and Puerto Williams; with 8 teachers attending)

All the teachers represent public and private schools (from Science and Physics areas, elementary and secondary education). Teachers were trained in the topics considered in the Physics curricula modification started 2 years ago by Ministry of Education.

The goal was training teachers in the effective use and transfer of astronomy tools and existing resources that are freely available on the internet, into classroom science curricula (robotic optical and radio telescopes, webcams, astronomy exercises, cross-disciplinary resources, image processing software, among others).

Trainers came from University of California, Berkeley; Lycée Louis Le Grand de Paris; OPCC; NOAO and U. de Antofagasta. These monitors' classes and activities were supported by four assistants (GTTP trained teachers in Chile).



## Telescopes to Tanzania - The First Journey

*By Chuck Ruehle*

From mid June to early July Chuck Ruehle, a Racine Astronomical Society member, traveled from Wisconsin to Northern Tanzania in East Africa.

One of his activities included sharing telescopes and his love of astronomy with secondary students and village communities on Mt. Meru. Traveling and living between six and ten thousand feet the eight member mission delegation stayed in the villages of Mulala, Kilinga, and Kyuta. From their location on the side of Mt. Meru (4,566 meters) the delegation enjoyed viewing the dark skies, especially objects like the Jewell Box in the Southern Cross. They also arranged for stops at Ngarenanyuki, and Songoro secondary schools.

The two schools and the Mulala Lutheran parish each received a telescope and tripod, two modern eyepieces, and other astronomy materials. Instructional sessions ranged from a brief equipment overview in Songoro, to introductory training in Mulala, and an evening viewing at Ngarenanyuki. At the sessions Chuck was able to show teachers how to use these instruments when instructing the students about astronomy and optics, and sharing the Southern night sky with children and adults in their communities.

Since returning, Chuck has stayed in communication with teachers and community members. A community member from Mulala reports that with the end of the rainy season that skies are clear and views are great. A science teacher from Songoro reports, ". . .our students are real excited and enjoying watching the stars. Thanks to you for providing us with a telescope. In fact my students are wondering why those object in the sky are not falling down."



Chuck is continuing to support this work. Recently another delegation from the area took classroom teaching materials about using the Galileoscopes and learning about optics, plus the recent NOVA two hour program, "Hunting the Edge of Space" to the schools and community.

In addition, he hopes that reports like this one will make it possible to take more Galileoscopes, tripods, and astronomy materials to other secondary schools in the area sometime in the coming year. As high quality, low tech instruments, the Galileoscopes are great tools to use in these very remote locations.

Special thanks for donating portions of the equipment and supplies taken in June go to members of the Racine Astronomical Society, the Astronomical Society of Kansas City, Adoration Lutheran Church in Greenfield, WI, and individual donors.

Chuck Ruehle is a retired Evangelical Lutheran Church in America pastor, community organizer, and trainer. He loves to teach adults and young people, especially his five grandchildren, about the beauty of the universe and the night sky from Southeastern Wisconsin. He can be reached at [Chuck.Ruehle@yahoo.com](mailto:Chuck.Ruehle@yahoo.com)

Acting Headmaster and Geography teacher Aloyce Mbuya at Songoro Secondary School was pleased to receive the astronomy equipment from Chuck Ruehle. The material will assist students as they prepare for National Education exams in October.





Each location received a telescope and tripod, two Modern eyepieces, and other astronomy materials.

Students and instructors from Ngarenanyuki Secondary School did night time observing of the lunar landscape.



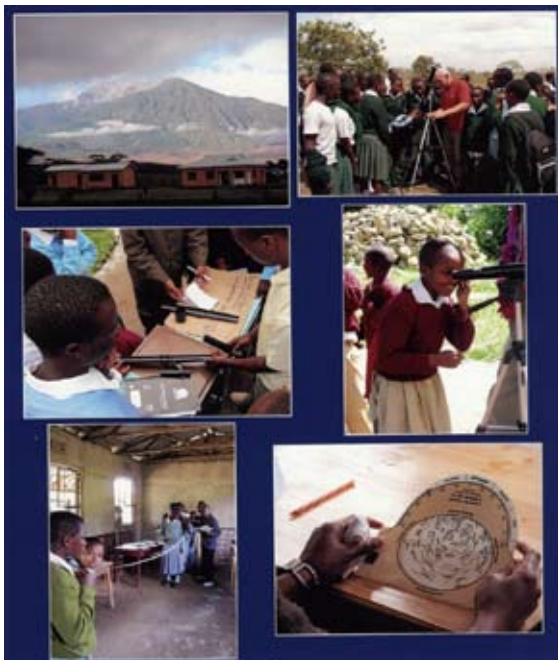
Students and Community leaders at Mulala Lutheran Parish did some daytime observing of a grazing cow. That brought smiles – as the cow appeared upside down in the eyepiece.

Mt Meru (4566 meters) and Mt Kilimanjaro (5869 meters) became familiar vistas for the delegation members. They also enjoyed viewing the Jewel Box in the Southern Cross.



## Telescopes to Tanzania: 2011

*By Chuck Ruehle*



Birika!!! That's the Swahili word used by teachers, students, and community members to name the tea pot asterism in Sagittarius. With dark skies (magnitude 7 on the Great World Wide Star Count chart) it was great fun finding deep sky objects during a month-long teaching experience in northern Tanzania.

In October Chuck Ruehle returned to Africa for a second year of teaching astronomy, optics, and light. He shared his love of astronomy and left almost 250 pounds of equipment and resources with five secondary and two elementary schools on Mt. Meru (4,566 meters). Each of the seven schools received either a 50mm Galileoscope or a 70mm Vixen Space Eye telescope, a tripod, three or four modern eyepieces, and other astronomy related materials. Traveling most of the time by Land Rover, he often lived off the grid between fifteen hundred and three thousand meters while staying in the villages of Kikatiti, Kitefu, Ngarenanyuki, Songoro, and Mulala.

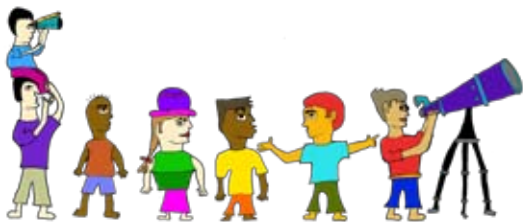
In the secondary schools he worked primarily with the math, physics, chemistry, and geography teachers. At some schools most of the teaching and administrative staff attended his sessions. Over a two day period he typically introduced the resources and teaching materials to the teachers on the first day and part of the second morning. Topics covered included:

- Telescope set-up and operation,
- Geography: latitude, longitude, and its impact on viewing
- Observing the night sky: constellations, sky maps and wheels, moon phases, tides, and eclipse

- Observing the sun: solar dynamics, sun spots, solar filters, safety first practices
- Optics and light: focal length, lenses, visible light spectrum, prisms, spectra scopes, spectra analysis
- Electro-magnetic spectrum; demonstrating radio waves, infrared, ultra-violet, x-ray and gamma ray
- Solar system: distance, size, orbits, and composition of the planets
- Dark Sky activities: light Pollution and the October Worldwide Star Count

By mid-morning of the second day each of the teachers worked with a small group of students (10-15 per group) presenting some of the teaching material introduced. Chuck moved from group to group, answering questions and assisting the teachers. During the sessions the instructors would often share that they had learned much of the theory about optics, light, and color – but that this was their first opportunity for hands-on experience with equipment like telescopes, lenses, and spectra-scopes. In addition to the resources and teaching tools he left behind Chuck also tried to introduce some hands-on, interactive pedagogical methods to the teachers.

In the afternoon Chuck spent several hours with the teachers debriefing the experience of working with the students, answering questions, reviewing materials, and helping the teachers to consider how to use the resources with students on a regular basis. At some schools their plans included a school-wide astronomy focus for a day once every 4 to 6 weeks, and forming Space Clubs on campus. Whenever the sky was clear teachers and students engaged in solar observing during the day, and star/planet observing at night. (Evening viewing was clouded out early in the month.)



Topics introduced to primary teachers in day- long visits to the schools included

- telescope assembly and usage,
- optics,
- Observing the night sky – constellations, sky wheels, moon phases,
- Observing the sun – solar dynamics, sun spots, solar filters, safety first practices
- Geography and its impact on viewing
- solar system.

In the afternoon teachers worked with students on telescope observing, solar observing, and the orbits of the planets

A critical context for the work involved the current drought/famine situation in the Horn of Africa, including northern Tanzania. Because the rains did not provide sufficient moisture for the crops, shortages of maize and beans have resulted in food prices 3 times the normal rate. Thanks to supporters in the United States, Chuck was able to provide food relief monies to each of the schools and communities he visited.

When he describes the Telescopes to Tanzania program Chuck often repeats a quote from Oscar Wilde who once said, “Ordinary riches can be stolen, real riches cannot. In your soul are infinitely precious things that cannot be taken from you.” Chuck goes on to add that “Something magical, mystical, even spiritual occurs the first time the photons in the eyepiece strike your eye. They stay with you throughout your life – residing in your soul.” The Telescopes to Tanzania project is intended to give instructors and the young people they teach a gift for their soul and -- motivation to remain in school, study math and science – and help to build their young nation as they become leaders in their communities.

Since returning, Chuck has stayed in communication with teachers and community members. In addition, he hopes that reports like this one will make it possible for the Telescopes to Tanzania program to take more telescopes, tripods, and astronomy materials to other schools in Tanzania sometime in the next 18 months. He'd like to gather a delegation of four to six astronomers with math and science backgrounds to journey with him.

Thanks for donating money, equipment, and supplies go to: Astronomers Without Borders, Global Hands on Universe, The Galileo Teacher Training Program, Canadian Telescope, Celestron Telescope, American Science and Surplus, Agena AstroProducts, Learning encounters, the NASA EPO group, the European Southern Observatory, the Las Cumbres Global Observatory and Telescope Network, members of the Racine Astronomical Society, the Astronomical Society of Kansas City, several congregations in the Greater Milwaukee Synod (ELCA), the Pan de Cielo Ministry, and individual donors. Special thanks to the 27 individuals who, between June and October, used part of their checked baggage allotment to transport over 165 pounds of equipment and teaching supplies into Tanzania.

Chuck Ruehle, a member of the Racine Astronomical Society, is a retired Evangelical Lutheran Church in America (ELCA) pastor, community organizer, and trainer. He loves to teach adults and young people, especially his five grandchildren, about the beauty of the universe and the night sky from southeastern Wisconsin. He can be reached at [Chuck.Ruehle@yahoo.com](mailto:Chuck.Ruehle@yahoo.com) copyright 2011





## CLEA Workshop in Uruguay

*by Reina*

This July we made a workshop on CLEA, Contemporary Laboratory Experiences in Astronomy. It was destined to Secondary Teachers that teaches Astronomy at high school. This is the second time we do this, in order to reach the largest Lumber of teachers that can be multipliers.

The VIREO, Virtual Educational Programm, is a free software that helps in many classroom tasks as practice with telescope, managing with a spectroscope and a CCD, and making students feel like being astronomers. They can do photometry, sprectrography, astrometry, measures, etc.

To strengthen these practices, we must update and support our teachers.

The Workshop was a hole day, on a winter Saturday at IPA, Instituto de Profesores Artigas", were peple study to become a secondary teacher. Afterwords we went to the observatory of the Institut.

The trainers were: Ing. M.Sc. Eduardo Alvarez and me, Mag. Reina Pintos  
I have the names of the teachers that came in my desk, I can send the names to you tomorrow. Tell me if I'm in time.





## Activities in Vietnam

*by Lan Nguyen*

In the 2011, there are some activities relate to astronomy and astrophysics in Vietnam:

There was a workshop for high school for gifted teacher on physics (include section astronomy and astrophysics, the topic include the fundamental astronomy and astrophysics), this workshop held at Physics Department, Hanoi National University of Education, from 18 to 24 July, 2011. This workshop is the opportunity for high school teacher update the knowledge on astrophysics, using telescope to observe, ect.

There is the IAU-Vietnam workshop on astronomy and astrophysics at Hochiminh University of Education from 20-25 November, 2011. The participants this workshop include high school teachers, college teacher, graduate students. The topics of the workshop include stars, brown draft, galaxies, cosmology, etc.

The target of these workshops to help the high school and college teachers improve knowledge on astrophysics.

Right now this year just only two activities for teachers and some amateur activities for public, students, etc..like the observe moon eclipse.



## **GTP Morocco, activity report, Fall 2011**

*Dr. H. Darhmaoui, Al Akhawayn University in Ifrane, Morocco*



Two GTP training workshops took place in Morocco in 2011. The first one was in October 19th at Al Akhawayn University in Ifrane. Representative teachers and one school director from 2 primary schools, one middle school and two high schools (9 persons in total) in Ifrane and the nearby city Azrou, were introduced to the GTP program and benefited from a hands on observational training using a telescope (photos 1,2, and 3).

Another GTP training was organized in Dec 12th, 2011 in the Oukaïmeden observatory located in the High Atlas Mountains near Marrakech. This three day retreat training was in the framework of the Aldebaran national project which aims at creating a large network of astronomy clubs in primary and secondary schools all around Morocco. Two teachers' trainings prior to the Oukaïmeden training took part in Rabat in April 2 and 9, 2011 (photo 4) where 62 schools from all around Morocco were represented. The training was partly sponsored by the UNESCO office in Morocco. The Rabat training focused mainly on basic notions of astronomy, solar system, and astronomy clubs creation. Participants were then invited to a national competition about making a 3D solar system model (photo 5 represents one of the winning models of this competition). The 5 first winners of this national competition benefited from an advanced GTP training in the Oukaïmeden observatory. The training program included general astronomy lectures, star gazing training, hands on telescopes, sky-scoot apparatus, and sky maps.

## 2nd School of Astronomy, Space Science and Technology in Education December 15-29, 2011, University of Gondar, Ethiopia

*Amdeselassie Amde<sup>1</sup>, and Abebe Kebede<sup>2</sup>*



Following the success of the 1st School in December 2010, the 2nd school of Astronomy, Space Science and Technology was conducted during December 15 -29, 2011. The school was sponsored by University of Gondar (UoG), North Carolina Agricultural and Technical State University (NC A&T), Ethiopian Ministry of Science and Technology and the Ethiopian Scientific and Academic Network (ESAN). The school was divided into three main strands; namely (1) Adaptive Technologies for the Blind, (2) Astronomy, Space Science and Technology in Education, (3) Workshop on Remote Sensing & GIS. There were also discussions on challenges in teaching & doing research in basic sciences, ESAN-UoG youth development in science, technology, engineering and mathematics (STEM), and challenges of physics postgraduate programs-which way forward?

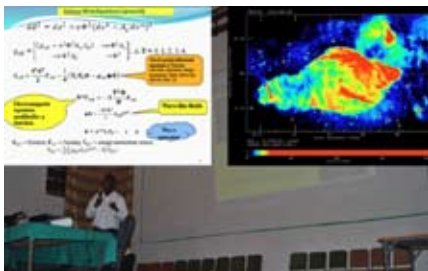
The direct beneficiaries were Department of Physics, Department of Earth Science and School of Education at University of Gondar, Gondar Area Schools and Colleges, and North Carolina Agricultural Technical University. The generalized curriculum of this school included several lectures on foundation of Ethiopian/African astronomy, introducing space science/astronomy across the curriculum, introduction to Ethiopian constellations and their relations with contemporary constellation, Space science and space technology curricula design, the power of Social Networking - the case of Ethiopian Scientific and Academic Network (ESAN) - a collaborative platform to develop the Ethiopian stake holder in higher education and national development. These lectures were followed by formal information session on Search for Near Earth Objects (NEO), Radio Jove, Sudden Ionospheric Disturbances and Remotely Operated Robotic Telescopes.

<sup>1</sup>Department of Physics, University of Gondar, Ethiopia

<sup>2</sup>Department of Physics, North Carolina Agricultural & Technical University, USA



Following the direct lessons participants conducted business meetings to evaluate the success of the school. The organizers of the school got high marks in harnessing local resources and local talent to deliver content. Many expressed their concern about the level of the lectures, in which case many lessons were beyond the scope of the students. The lack of adequate women participation and ways to increase their participation were discussed. A sustained outreach activity is suggested to increase the number of Science, Technology, Engineering and Mathematics (STEM) students, and enhance the quality of students joining Science Departments. The participants overwhelmingly voted to conduct the 3rd School of Astronomy, Space Science and Technology in Education at University of Gondar. In order to increase the visibility of the school and provide opportunities for national and international scientists, it is suggested that the school should be open to African scientists.



Following the experience from the 2nd school that resulted in hosting Workshop on Adaptive Technology for the Blind and Workshop on Remote Sensing, it is expected that the school will become a staging ground for larger academic projects; such projects can be sponsored by Ethiopian universities or other appropriate second parties. In addition the 2nd school was a networking platform for national and international universities.



The end of the 2nd school left a lasting mark on the participants that included excursions to historic sites of the City of Gondar and travel to Simien mountains national park. The School was concluded by the second **“Run4Science”** 2000 meter race, and large number of students, the faculty and the media participated in the race.



## FT Team train teachers in Belfast



On 3rd February, the Faulkes Telescope (FT) team were invited to Queens University, Belfast, to train their PGCE students on using astronomy resources in the classroom.

Organised by Robert Hill from the Northern Ireland Space Office, and Dr Ruth Jarman from the School of Education in Queens, the day-long workshop consisted of a number of hands-on sessions and talks aimed at enthusing students in STEM subjects.

Stephanie Harmar-Smith, from the Discovering Queen's widening participation programme, highlighted how effective the topic of astronomy has been as a mechanism for delivering the core curriculum and raising aspiration to STEM.

The workshops began in earnest with a talk from FT's Director and ESERO Space Ambassador for Wales, Dr Paul Roche about using robotic telescopes in the classroom. Dr Sarah Roberts, the Director of Education for FT, then took over and showed the trainee teachers the numerous resources which the FT Team have written over the years, based on using astronomy in the classroom to excite and inspire students.

The delegates were then shown how to use a variety of free software packages, such as Stellarium, SalsaJ and the Down2Earth impact calculator and encouraged to try them out and think about how they could use them in their classrooms.

The workshop was a great success, with very positive feedback from the 39 attending trainee teachers, including the following from one of the delegates "I think this was a great session, as an introduction it was excellent and has given me some excellent ideas that I cannot wait to try in the classroom"

A productive and enjoyable time was had by all, and we look forward to seeing many of the teachers using the Faulkes Telescopes in the future!

## An inspiring letter from Saigon

*(from a teacher trained by Robert Hollow team in Australia)*

*– Can you see GTPP spirit in this :)?*

I hope all is going well! I am in the middle of my astronomy unit and the kids are loving it! I am planning a viewing night aright after the Student Led Conferences so I am hoping to get a lot of parents and students out for the event. I have had 3 students bring in their telescopes and were are in the process of setting them up, learning about the lens and how the scopes work. I am using a lot of the stuff I got from the conference (stellarium, worldwide telescope and the movie the Dish...haha love it).

I have also been using the website earthsky.org and trying to get the students interested in following current events. It is amazing what little the students know about our Earth and beyond! One student had never looked at the moon before and she asked if the dark spots were lakes and trees...wow I have my work cut out for me! Next week I will be looking at the distances of the Solar System and I will be using the activity you showed with the ticket tape, but I will be using it as a math investigation by asking the students to explain why astronomers use Au's and light years.

Anyway, I hope you are well and letting you know that you and your workshop have really helped inspire a lot of kids here in Saigon.

Thanks again

Mike



## Discover the Cosmos



*Students and teachers in Portugal being introduced to the Discover the Cosmos tools.*



Several Global Hands-on Universe partners (France, Portugal, UK) are taking part on this European proposal that aims to introduce a new learning experience of science topics in school. This project, funded by the European Commission, will demonstrate ways to involve teachers and students in the use of existent e-infrastructures and reproduce in students the thrill of a scientific discovery.

Within the scope of this project a whole community of practitioners will be built composed by researchers, teachers, students, education authorities and local community. The designed experiences will be build using the Inquiry based learning approach and have as an essence the use of the scientific method as a tool to teach science. Students will have the opportunity to use robotic telescopes, astronomy data archives, CERN simulators among other powerful tools such as these.

The project contemplates several training events for educators and various demonstration activities for students at schools.

For more information: <http://www.discoverthecosmos.eu>



## Open Discovery Space



Starting this April the Galileo Teacher Training Programme will have the opportunity to take part of this new European Commission funded project. The Open Discovery Space intends to be a multilingual e-learning infrastructure that stimulates and engages teachers, students and parents in a new learning experience.

The main purpose is to exploit a vast and rich repository of modern tools and resources and promote its use for the constructions of modern and effective community of science educators and users.

The main objectives of this programme are:

- a) stimulate the demand for innovative eLearning resources
- b) engage teachers and students in innovative educational practices
- c) generate a showcase encompassing a broad community of users.

The proposed infrastructure and adapted resources will be vastly tested in classroom and a roadmap devised to help enlarge the successes and reflections to other schools. Keep tuned for more news on this project outcomes. The kick-off meeting will take place in Athens this April.

Information will be provided soon at: <http://www.opendiscoveryspace.eu/>

## EUHOU – Radio

The antennas of the EUHOU RADIO NETWORK for schools are all being built, installed and tested. The first countries to have an antenna are: Paris, Poland, Romania, Portugal and Spain. The web interface is being produced and user friendly exercises being prepared.

Radio astronomy observations can be very powerful allies to teachers. There are several important topics of the school curricula that can be taught using real time data. This particular waveband is very powerful as we can make the observations during day time and even under bad weather conditions. Topics that can be addressed using this observations range from features in our Sun to the discovery of Dark Matter in our Universe.

For more information on this and other EUHOU projects:  
[www.euhou.net](http://www.euhou.net)



*University Pierre & Marie Curie 2.3-m  
radio telescope in France*



## International Astronomical Search Collaboration

This programme, heroically managed by Patrick Miller, continues to bring the thrill of a scientific discovery into the lives of so many students around the globe. Reaching over 300 schools per year in more than 40 countries this programme contributes to the important task of mapping our Solar System neighborhood with the help of students.

More and more students from all over the world are experimenting real research in school and really contributing to discover new objects in the sky. For this year the programme promoters are working to bring more challenges to the young researchers, the possibility to work on more asteroid search campaigns and also comets and trans-neptunians besides de Super nova observing campaign.

Thus far, students have made 261 Main Belt asteroid discoveries and 2 near-Earth objects, one of which poses a potential hazard of hitting Earth.

From March 15th to April 19th the Pan-STARRS (Panoramic Survey Telescope & Rapid Response System) Asteroid Search Campaign is taking place involving 20 teams from Brazil, Bulgaria, England, Germany, India, Poland, Portugal, Taiwan and US.

A new programme to search for Comets and TNOs is being tested and plans for a pilot programme after the Pan-STARRS campaign is in motion.

Also a new Supernova Search programme is being prepared. Pilot tests are expected soon.



Portuguese students and teachers that successfully discovered new asteroids (8 so far). From top left to right and bottom: Escola Secundária de D. Inês de Castro, Escola Secundária c/ 2º e 3º ciclos Prof Ruy Luís Gomes, Escola Básica 2,3 e Secundária de Alvide, Escola Secundária D. Maria II, e Escola Básica Duarte Lopes and Escola Secundária Luís Freitas Branco.

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