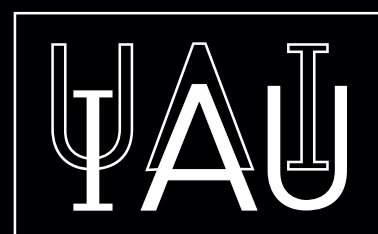
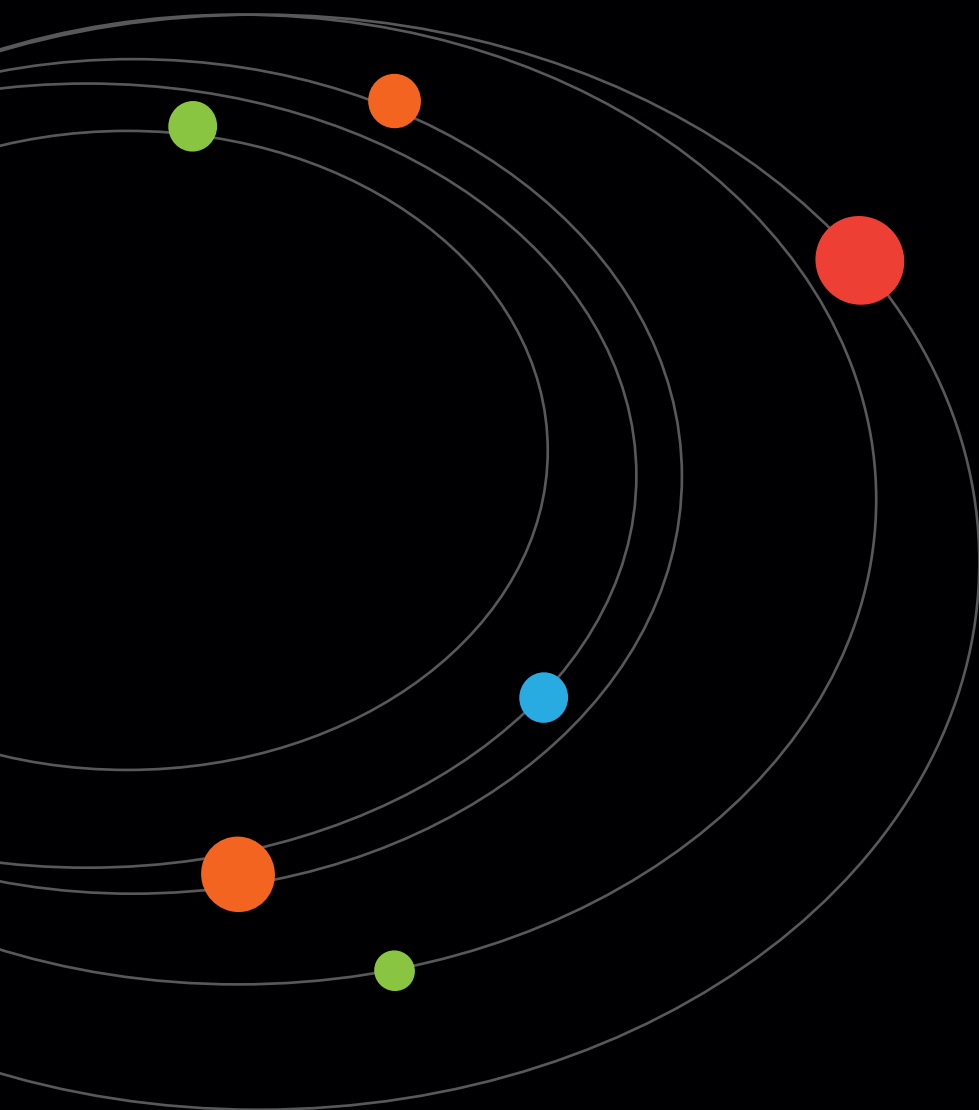


**INTERNATIONAL ASTRONOMICAL UNION**  
OFFICE OF ASTRONOMY FOR DEVELOPMENT

Astronomy for a better world

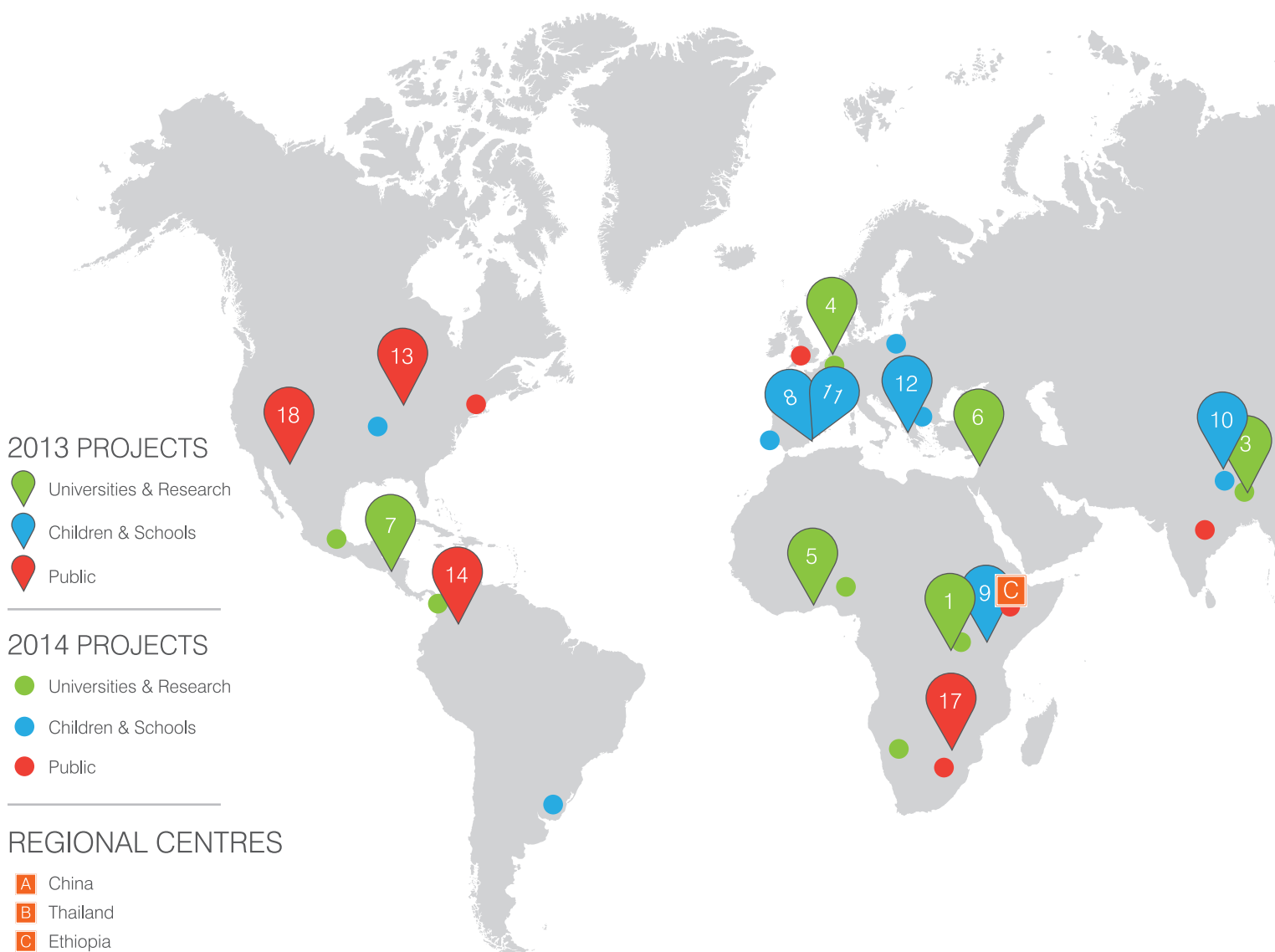


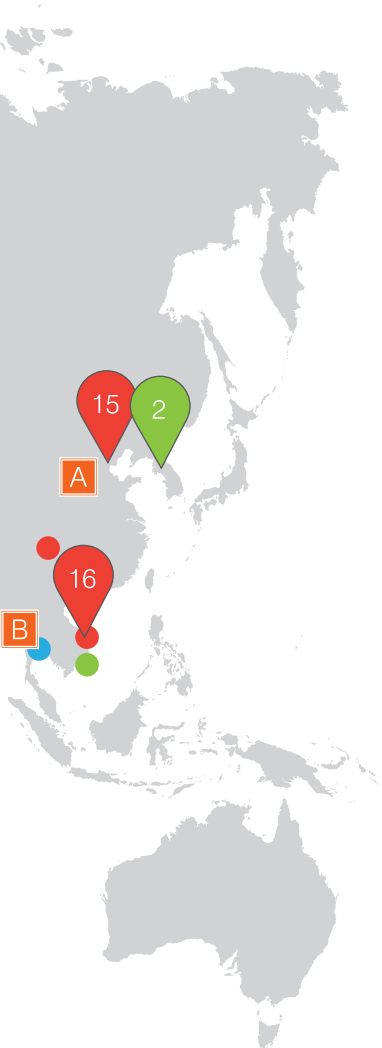
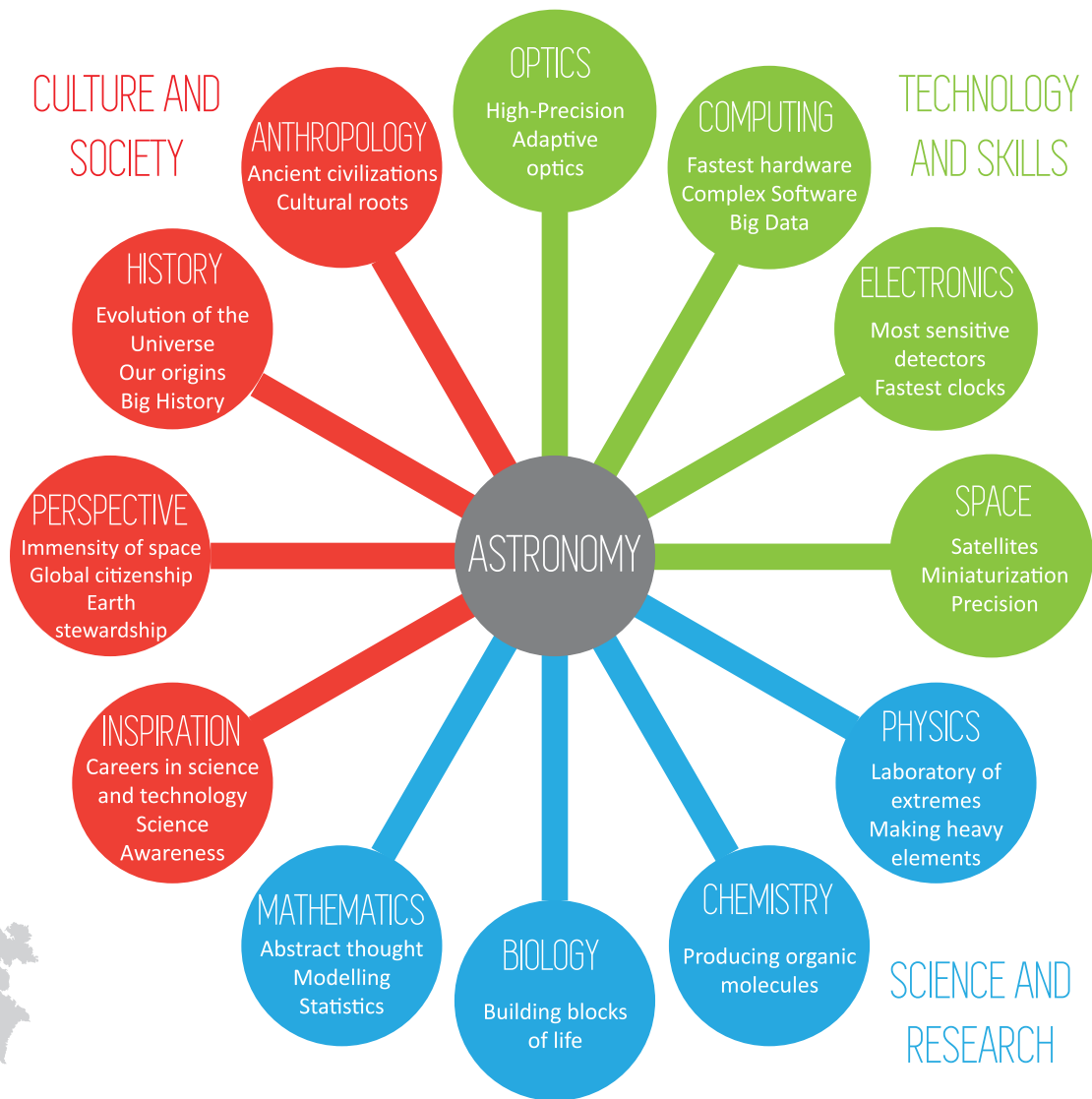
# ASTRONOMY FOR DEVELOPMENT

Astronomy is a field that combines science and technology with inspiration and excitement. As such it can play a unique role in facilitating education and capacity building, and in furthering sustainable development throughout the world. In August 2009 at its General Assembly in Brazil, the International Astronomical Union (IAU), which is the largest international body of professional astronomers, ratified a visionary strategic plan that was based on this idea.

Central to this plan is the Office of Astronomy for Development (OAD), for which South Africa was chosen as the host country and the South African Astronomical Observatory, a facility of the National Research Foundation (NRF), as the host institution. With strong support from the South African government, the OAD was officially launched in April 2011 by the President of the IAU and the South African Minister of Science and Technology.

The OAD is tasked with establishing and strategically coordinating Regional Nodes (ROADs) and Language Expertise Centres (LOADs) across the world, as well as three Task Forces, namely (i) Astronomy for Universities and Research, (ii) Astronomy for Children and Schools, and (iii) Astronomy for the Public. The bulk of the implementation of projects is carried out by volunteers, supported by the OAD, with advice and guidance from its Task Forces, and oversight by an international Steering Committee.





## IMPLEMENTATION

The first year of operation of the OAD focused on setting up the office, building the necessary networks and promoting its existence in various fora. It culminated in an international workshop of stakeholders in December 2011 followed by an announcement of opportunity for the establishment of regional nodes, and a call for nominations for the Task Forces. The second year saw the launch of the three Task Forces, the establishment of the first two regional nodes as well as several partnerships, and the first release of annual OAD open call for proposals.

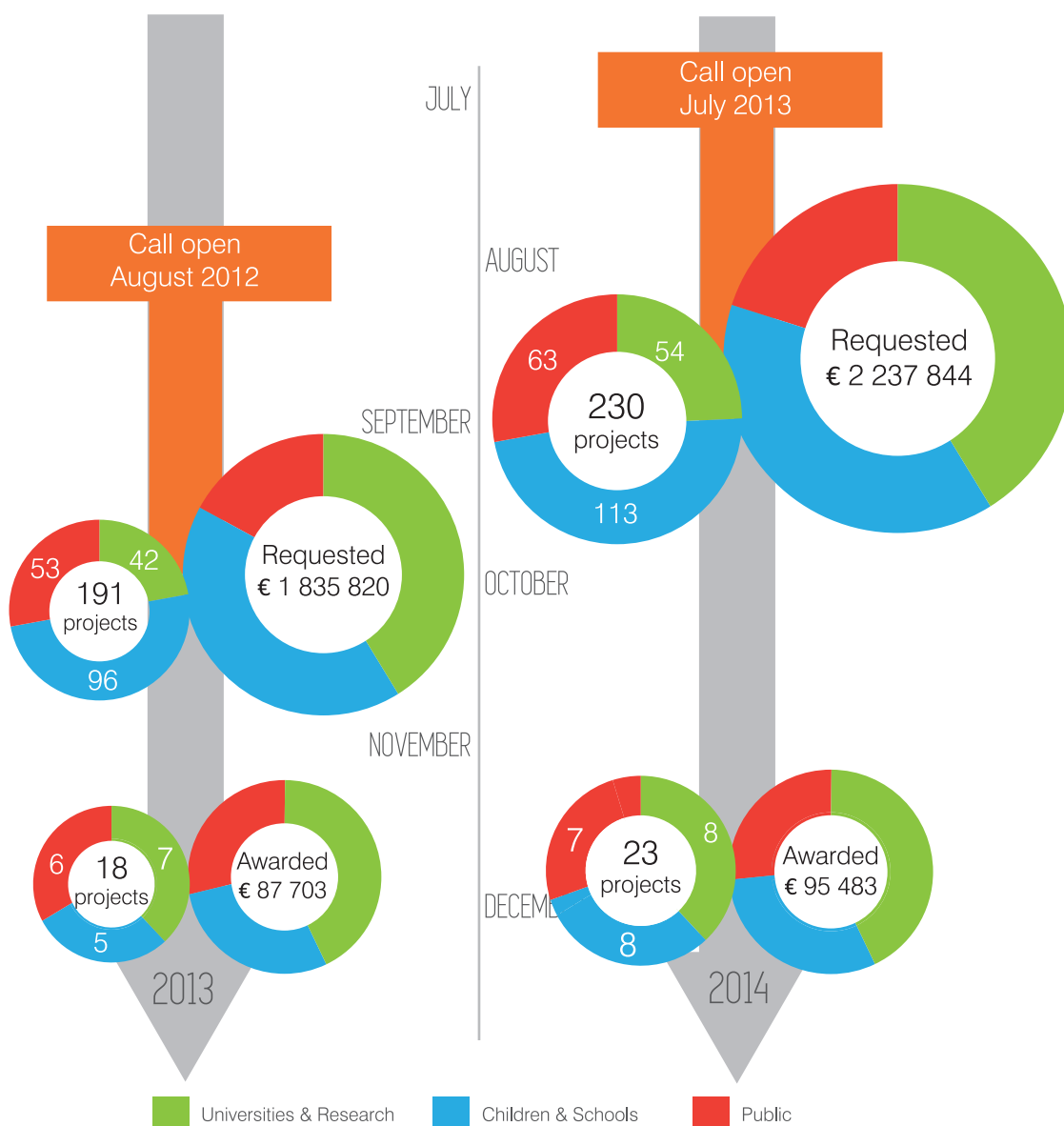
The third year saw the OAD in full operational mode, overseeing the many projects funded through the first call for proposals and refining the process for the second call for proposals. An additional regional node was established and a funding framework was developed to serve as a basis for OAD fundraising activities. The third year also saw the development of a Monitoring and Evaluation framework for OAD-funded projects. Moving into the fourth year of operation the OAD will redouble its fundraising efforts, undergo an external review of its activities, and develop the theoretical and practical tools required to be able to assess the impact of astronomy-for-development activities over the decade 2010-2020.

# ANNUAL CALL FOR PROPOSALS

Throughout its history the IAU has always funded several projects related to astronomy-for-development activities. In the era of the OAD and in implementing the Strategic Plan, the IAU now allocates these funds via the Task Forces. This ensures a strategic approach to using astronomy for development with input from experienced international experts. The funding cycle is annual with funding allocations announced in December for projects to be implemented in the next calendar year. Projects fall into one of three respective sectors: Astronomy for Universities and Research (Task Force 1), Astronomy for Children and Schools (Task Force 2), and Astronomy for the Public (Task Force 3). The first call for proposals was issued in August 2012 and the second, which saw a 20% increase in demand over the first, was issued in July 2013.

The IAU provides around €100,000 per year to fund the successful proposals. All applications received by the OAD are reviewed and evaluated by the members of the respective Task Force and recommendations are submitted to the IAU Extended Development Oversight Committee (EDOC) for final approval (the EDOC comprises the OAD Steering Committee plus the IAU President, General Secretary and President of Division C - Education, Outreach and Heritage).

Projects not funded directly by the IAU but still ranked highly by the Task Forces go onto a recommended list for which the OAD continues to search for funds throughout the year.





## 1 Strengthening Astronomy Research at the University level in Rwanda

Astronomy has entered an era in which research can be done using data available online. In 2009, the IAU donated 5 computers to the Physics Department of the Kigali Institute of Education to help students and lecturers learn and use astronomy software. Given the growing number of initiatives to build telescopes in East Africa (e.g. the Entoto optical observatory in Ethiopia and the Square Kilometre Array radio telescope dishes planned for Kenya), a local astrophysics research team would be beneficial to the region. Under the sponsorship of the OAD, a workshop on optical data reduction and analysis (photometry and spectroscopy) was organised in Rwanda from 5 to 11 May 2013 for Physics lecturers and students. International Astronomy lecturers included Dr. Petri Vaisanen (SAAO, South Africa) and Dr. Mirjana Povic (IAAS, Spain). Phase II will extend the activity to whole region and aims to build a pan-East-African research team which will be able to reduce multi-wavelength photometric and spectroscopic data.



## 2 DPRK Astronomy research, Huairou Solar Station, China

In order to help capacity building in astronomy in the Democratic People's Republic of Korea (DPRK), this project initiated extended exchanges of astronomers from Pyongyang Astronomical Observatory to neighbouring China. The first of these exchanges took place at the Huairou Solar Physics station of the National Astronomical Observatories, Chinese Academy of Sciences (NAOC), and was jointly funded by NAOC and the OAD. The main aims of supporting this exchange were: (1) to enable scientists from DPRK to transfer knowledge to their colleagues at their home institute, and (2) to immerse them in an international research environment with the ultimate aim of producing scientific output fit for publication in an international peer-reviewed journal. As part of the exchange project, the two DPRK scientists studied a loop-like eruption that occurred on 30 March 2010 known as the "first light of the Solar Dynamical Observatory (SDO)". Promising results were obtained from the SDO and have been submitted to the Astronomy & Astrophysics journal.

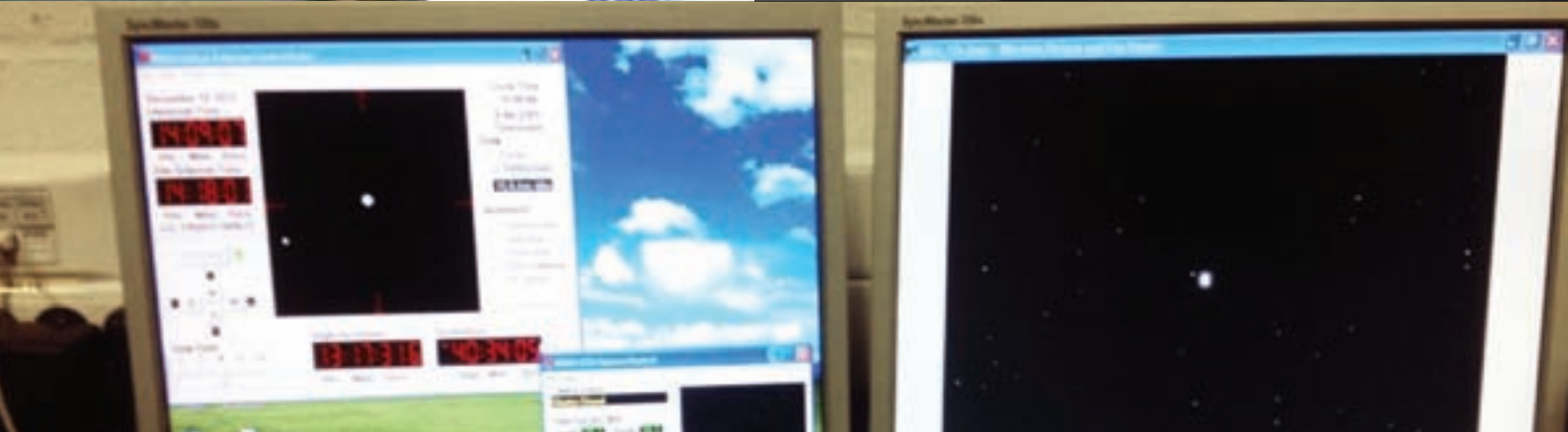




### 3 National Workshop on Astronomy & Astrophysics, Nepal

Tribhuvan University (TU) has been bringing the world of astrophysics education and research to Nepalese students since 2009 through theoretical and computational astrophysics courses at Master's level, and has produced more than 400 astrophysics graduates. Owing to the wealth of astronomical data at hand, a large number of Astrophysics graduate students are interested in astrophysical data reduction.

With the support of the OAD and the Government of Nepal, a National Workshop on Astronomy and Astrophysics was held on 25 - 28 July 2013 and exposed 57 Nepalese students to virtual observatories, databases, software and basic programming languages commonly used in astrophysical research. The workshop was so successful that the students asked for a second edition of the school, which has since been granted funding from the OAD, and scheduled for 9-13 June 2014.



### 4 Starlight in the university lab: Astrolab

*Astrolab* is a research tutorial project for universities in need of astronomy infrastructure and curriculum, allowing science undergraduate students to perform real-time observations on a remote telescope, and turning those observations into scientific results. The remote telescopes are elsewhere in the world, so students can work during the local daytime. *Astrolab* is implemented at the Vrije Universiteit Brussel in Belgium and is the driving experiment for a pilot implementation in 2014 at Anambra University in Nigeria and at The Copperbelt University in Zambia.

The activity is not a recipe but a learning-by-doing tutorial to acquire research skills. It uses several concepts that make up the success of gaming: ownership (students choose their objects, plan the project, command the telescope in real time, acquire their own data); a thrilling pressure (telescope in another place/continent, as the student works in a limited timeslot); chance for failure but also for success (weather conditions, wrong/good strategy for data acquisition); and a community feeling (results can be shared worldwide).



5

## Astronomy lectures for university students & teachers, Ghana

A five-day Astronomy Workshop was held at Ghana Planetarium in Accra in August 2013. The workshop brought 3 international astronomy lecturers together with 45 local participants, among which were students, lecturers and teachers. The workshop aimed at increasing the participants' astronomy knowledge, promoting higher-level studies, and highlighting how astronomy and space science research brings technological innovations relevant to everyday life. The ability of astronomy to inspire young people to study related fields of mathematics, science, and technology, is important in enhancing the region's socio-economic development.

The participants also visited and learned about the Ghana Radio Astronomy Project in Nkutunse (conversion of a telecommunication dish into a radio astronomy telescope) as well as the Ghana Atomic Energy Commission which hosts the Ghana Space Science and Technology Institute. Among the wide news coverage that the workshop received, The Daily Graphic, the largest daily national newspaper, published an article entitled "*Government urged to invest in astronomy*".



## MENA Regional Summer School, Lebanon: "Astronomy with Small Telescopes"

Small telescopes are optimal for developing astronomy communities. They can be used for public outreach, education, and with the proper instrumentation, astronomical research. The MENA region (Middle East and North Africa) holds many observatories and projects equipped with small telescopes. Hence a regional summer school on astronomy with small telescopes is planned to take place in Lebanon. The school is intended for advanced physics students, and graduate students in physics and astronomy. It aims to show how small telescopes can be used in astronomical research. It will provide basic training on the use of small telescopes and present the science that is doable with such instruments. The capacity of the school will be 40 students. Instructors will be astronomers from Lebanon, the MENA region, as well as Europe and North America. Unfortunately this project has had to be postponed from August 2013 to a similar date in 2014 due to circumstances beyond the control of the organisers.





## 7 The first Guatemalan School of Astrophysics

From 9 to 13 December 2013, the first ever GUAtemalan School of Astrophysics (GUASA) took place in Guatemala. The school brought together 37 Central American/Caribbean undergraduate physics, mathematics or engineering students, with 5 Astronomy professors from prestigious astronomical institutions around the world. The project leaders aim to continue organizing the school every two years, focusing on different topics. During this first edition, the school was devoted to the topic of exoplanets. Overall the school was considered to be one of the most successful science/astrophysics events in the region in recent years. The school helped motivate students to pursue major degrees in Astronomy elsewhere. On the other hand, it also served to consolidate a group of students who could potentially become the critical mass of professional astronomers in the region. As a complementary project, outreach activities were organised for the general public. These activities included public lectures, one public observation session using a small telescope, an exhibition of astronomical images and activities for small children.

## 8 “A Touch of the Universe” for the visually impaired

“A Touch of the Universe” is a box of astronomical activities with materials that can be used by both the sighted and the visually impaired. It allows for a tactile and visual tour of the Moon, to see and feel a nebula with NASA’s Chandra X-ray Observatory’s prints, to learn about the Moon phases and to enjoy a planetarium show with special sound effects and a tactile representation of the night sky on a half-sphere. The 3D printer files of the Moon and half-sphere, as well as the activity book in Braille, can also be freely requested for download by those who have the resources to reproduce them.

In 2013, 30 such kits were produced and have been sent around the world to educators in several countries including Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ethiopia, Ghana, India, Iran, Nepal, Portugal, South Africa, Tanzania, Venezuela and Zambia.





## 9 The Mathare Ambassadors of Astronomy, Kenya

The project aimed at promoting astronomy among primary school teachers and students in the Mathare “slum” of Nairobi (Kenya) through improving their knowledge and skills, providing educational aids and creating the network of teachers capable of both training their fellow teachers and introducing them to the exciting world of astronomy.

17 of the most active science teachers from Mathare completed an intense training programme on astronomy and facilitation skills that prepared them to promote hands on astronomy among their colleagues. They then organized trainings for 187 teachers who learned how to excite students with astronomy through practical activities and the use of educational software. Over 1600 students from this marginalized area had an opportunity to explore the mysteries of the Universe, observe the stars and planets through telescopes and admire the beauty of Saturn on their computer screens. Mathare Astronomy Festival – the grand finale of the project – attracted almost 800 members of the Mathare community.



## 10 Galileo Teacher Training Program, Nepal

In Nepal, astronomy is included in the school syllabus but very little is included in higher level education. Hence teachers in schools are general science graduates and usually not experts in astronomy. The 2013 Nepal Galileo Teacher Training Programme (GTTP) workshop took place on 8 and 9 February at SOS Hermann Gmeiner Higher Secondary School in Gandaki, Pokhara. In total, 43 teachers and science communicators from different regions of Nepal participated in the event.

The participants attended three lectures and four workshops on different astronomical and space science topics, delivered by professional and amateur astronomers. They also had an opportunity to learn more about astronomy through direct sky-viewing and observation. The event introduced simple, hands-on activities and basic software to bring astronomy to the classroom, so that teachers could popularize astronomy and science both in their classrooms and respective communities.





## 11 Network for Astronomy School Education (NASE) in Africa

The Network for Astronomy School Education (NASE) is an international project specifically aimed at primary and secondary school teachers. In countries where general astronomy may be included in the school curricula the lessons are usually limited to books and a theoretical understanding. This is often due to lack of access to a nearby observatory or telescopes. This particular project, funded by the OAD, aims to organise three courses in Africa to set up local NASE groups of 6-8 teachers each. These groups will, in turn, organise successive editions every year which include courses, seminars, festivals, performances, workshops and the basic NASE course. The first event was held in Nairobi, Kenya with about 30 participants. A group of professors and teachers was created and will work with NASE in the future in order to teach the courses in Kenya.

Due to unforeseen circumstances, part of this project has had to be postponed from its original dates in 2013. Two more events, similar to the one in Kenya, will be implemented in 2014.

## 12 Astronomical measurements in Ancient Greece for students

Although it is not widely known to students and the public, ancient Greek philosophers made a number of accurate astronomical measurements and created successful models in an effort to describe the wonders of the cosmos. With the power of the human mind they carried out reasonable estimates of the sizes of the Earth, the Moon and the Sun and were able to calculate their relative distances.

This project aimed at bringing this knowledge to Greek students, who, by carrying out these measurements, appreciated how an innovative mind can explore the universe from our planet. In turn, the students then showed their local communities that the cosmos is not out of reach but is within anyone's grasp to explore, even from their own backyard, just as the Ancient Greek astronomers had done. This project can be replicated throughout Greece and the rest of the world.



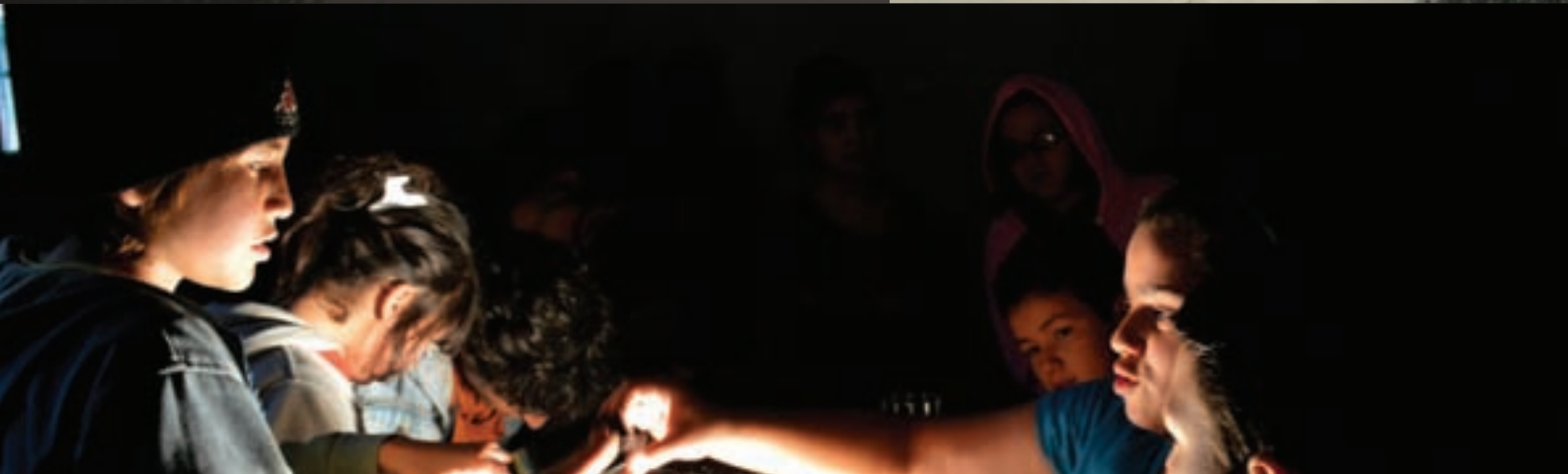


13

## Astronomy for critically ill / traumatically injured children, USA

This project developed an astronomy programme for the critically ill or traumatically injured children and their families staying at the four Ronald McDonald Houses (RMHs) of Chicago, as a pilot study. The RMHs (250 in the USA, 100 in other countries) provide a comfortable, supportive atmosphere where family members can sleep, eat, relax and find support from other families in similar situations. Families are kept united at a time when mutual support is often as critical as the medical treatment.

This project provided an educational family learning experience and a diversion from the stress of being sick or of having a family member hospitalized. In terms of the demographic reached, 45% of the families are low-income with 1/3 below the US poverty guidelines; over 50% of patients are female; and 50% are African-American or Hispanic. Six members of the RMH staff were trained to use optical and solar telescopes and to conduct astronomy demonstrations on their own. RMH Chicago administers 150 family rooms for 10,000 families per year from all 50 states and dozens of countries.



14

## Astronomía Periférica: art & astronomy in Colombia

Astronomía Periférica is a project aimed at bringing the poetic force of astronomy into the periphery of Latin-American cities, through art, design and science. The target public are those who do not have immediate access to museums, universities or planetariums. The hierarchical transmission of knowledge is a hurdle in stimulating people into taking responsibility for exploring, understanding and challenging the world we live in. Through a more open-ended process and without explicit knowledge of hierarchies, artistic experimentation offers a way to overcome this problem. The artistic experience is a medium to lower that barrier and engage people, making them feel part of a world that often sends the opposite message by excluding them from knowledge circuits.

The project was implemented in Bogota, Colombia, with 100 members of the public using a setup that could be implemented in other similar Latin-American cities such as Medellin, Quito, Lima or Caracas.



## 15 Chinese Ancient Poetry Astrophotography

Our ancestors were closer to the night sky than we are. Celestial objects are mentioned by many ancient Chinese poets and storytellers, who looked up and wondered about the same sky, 1200 years ago. The Chinese Ancient Poetry Astrophotography Competition encourages people to take pictures of the night sky according to these ancient poems. This project blends our cultural astronomical roots and modern technology used to observe the stars: it allows us to appreciate the night sky through the lens of that beautiful poetry!

The project brought together literature teachers, astronomers & photographers to produce a set of 40 pictures, inspired from Chinese poetry, which will be posted on the Beijing Planetarium website and displayed in its exhibition hall. It will serve as an example to unite and inspire people from all over the world to provide their own cultural astronomical poems and astrophotography.



## 16 Bringing astronomy to remote areas in Vietnam

Vietnam has a population of about 90 million people and is on the way towards economic development. However, astronomy is still not appreciated much in Vietnam.

This project had two main objectives. First, it aimed at building up a coherent, unique online website to coordinate activities of amateur astronomy clubs in Vietnam and to spread astronomical news and knowledge in a more organised way. Secondly, it aimed at organising various observing nights and hands-on activities in remote provinces of Vietnam to increase people's awareness of astronomy. During the project the Vietnamese Amateur Astronomy Clubs website [www.vietastro.org](http://www.vietastro.org) was developed, the first National Vietnamese Amateur Astronomy Meeting was organised and more than 10 visits to schools and universities in other provinces were conducted, reaching around 900 people.



17

## Limpopo astronomy outreach, South Africa

Limpopo is one of South Africa's poorest provinces with a large percentage of the population living below the national poverty line. In 2013, the Soutpansberg Astronomy Club (SAC) and Limpopo Astronomy visited 13 venues in the Limpopo Province: Thohoyandou, Polokwane (twice), Modimolle, Bela Bela (twice), Tshipise, Giyani, Mokopane, Tzaneen, Elim, Mussina, Makhado and Lephalale.

The project committed to "pavement public outreach", reaching an estimated 10,000 individuals, in order to stimulate their interest in science and astronomy. Contact was made with teachers at various schools in the region and many of the day visitors made their way back for the stargazing evenings. Posters on Science, Engineering and Technology careers (and where to study these subjects) were also available, as well as video clips highlighting major astronomy projects in Southern Africa. The many questions that were asked implied growing awareness of astronomy amongst the general public.



18

## Dark Skies Africa: light pollution awareness

The National Optical Astronomy Observatory (NOAO) in Arizona, USA, led this project to deliver a programme on light pollution awareness across Sub-Saharan Africa, through institutions in 12 African countries. The programme helped students identify wasteful and inefficient lighting and provided ways to reduce energy consumption and to keep costs in check. The goal was to inspire students to be responsible stewards in helping their community safeguard one of Africa's natural resources - a dark night sky.

The programme kit included complete instructional guides, equipment for six activities and a project on energy conservation and responsible lighting. The coordinators from the various institutions were trained on the activities in a series of Google+ Hangouts, and they in turn trained local teachers in junior and senior high schools. Students from the different countries then shared final class projects (such as posters or slide presentations) on the programme's website. The kits remain with the coordinators and will enable the project to continue beyond the funding period.

# RECOMMENDED PROJECTS

Due to the limited funding currently available and the large number of proposals, only about 10% of the number of projects could be funded thus far. Recommended projects that could not be funded are placed onto a list and advertised on the OAD website. The OAD then works towards raising additional funds for them and providing assistance wherever possible, such as promoting them internationally and providing guidelines for monitoring and evaluation. It is clear that the proposals process itself often helps the leaders of these prospective projects develop skills for writing successful proposals and planning a project. The OAD calls for assistance and advice to help make these recommended projects a reality. Potential donors who may want to adopt certain projects can either contact the project leaders directly or enlist the support of the OAD to manage the funds for the project.



Green pin: Universities & Research   Blue pin: Children & Schools   Red pin: Public   Yellow pin: Volunteers

# VOLUNTEERS

The greatest resource to enable the OAD to achieve the vision of "*Astronomy for a Better World*" is volunteers. Assistance is sought on an ongoing basis from professionals, amateurs, educators, students or members of the public anywhere in the world. There is an active call on the OAD website for volunteers to register their skills, preferred target regions and other details that will help match volunteers with opportunities. There is also a call for organisations or projects to submit requests for volunteers, with the OAD facilitating the volunteer matching process. The OAD currently has over 500 volunteers (represented approximately by the yellow dots in the map above) who are regularly called upon to engage and support various projects and activities.



# SPECIAL PROJECTS



## AstroEDU

A project of the Task Force on Children and Schools, astroEDU makes the best astronomy activities accessible to educators around the world. It is an open-access platform for peer-reviewed astronomy education activities. astroEDU is a platform for educators to discover, review, distribute, improve, and remix educational astronomy activities. Partners include UNAWE and LCOGT. <http://astroedu.iau.org>

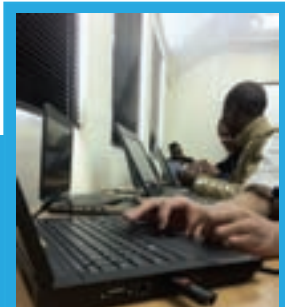
## AstroVARSITY

The AstroVARSITY project intends to provide course materials and tutorial resources for Maths and Physics lecturers at undergraduate level to use astronomy to enhance science teaching as well as potentially start an astronomy module within their department. The project also offers hands-on activities and exercises based on an off-the-shelf telescope and instruments package to conduct practical experiments and research.



## AstroComputing

The OAD has implemented two interesting projects to explore ways in which the computing skills in astronomy can be applied to other areas. One was a Python programming workshop targeted at non-astronomy university students. The other was the implementation of astronomy and education software on a Raspberry Pi (a sub-\$50 credit card sized computer) for use by teachers and students as a laptop alternative.



## AstroSense

The OAD has chosen to expand on the ideas in one of its funded projects and explore more the area of astronomy for the visually impaired. This has taken two main forms: (1) expansion on the production and distribution of tactile astronomy resources, and (2) exploration of the use of sound to analyse astronomical data and teach mathematics. The latter was proposed and is being driven by OAD visitor and blind astronomer Dr Wanda Diaz Merced.



# REGIONAL OFFICES

## OVERVIEW

A single international office cannot sufficiently understand the local needs and cultures in all regions of the world. It is therefore extremely important for the OAD to receive regional input and support from local drivers. As such an Announcement of Opportunity (AO) for the establishment of Regional Offices of Astronomy for Development (ROADs) and Language Expertise Centres for the OAD (LOADs) was issued in January 2012, and remains open. ROADs are offices similar to the OAD established within host institutions and employing a full time coordinator, with a focus on activities in a specific geographic region. LOADs have a similar structure but with a focus on a particular language or cultural region, which could sometimes stretch across the entire world.

By the beginning of 2014, there were three ROADs established: one in China for East Asia, which also serves as a Chinese LOAD, one in Thailand for South East Asia and one in Ethiopia for East Africa. A proposal to host a ROAD in Zambia for the Southern African region was also approved and the agreement is expected to be signed in the first half of 2014.

## A EAST ASIAN ROAD AND CHINESE LOAD



The East Asian ROAD/LOAD was established in Beijing, China in August 2012. Activities of the ROAD entail the coordination of astronomy-for-development activities in countries within the general geographical region of East Asia (in first instance China, Mongolia and the DPRK, but without placing firm geographical limits on the region). The LOAD activities deal with all aspects relating to (mainly) the Chinese language and culture. The impact of the latter may obviously spread well beyond the geographical region to other parts of the world.

The main institutes involved in the consortium are the Kavli Institute for Astronomy and Astrophysics (KIAA, Peking University), Beijing Planetarium and the Yunnan Astronomical Observatory. The institutes are supported in their efforts by a number of important partners, including the National Astronomical Observatories of the Chinese Academy of Sciences (NAOC), the East Asian Core Observatories Association (EACOA), and Pyongyang Astronomical Observatory (PAO).

More information on the East Asian ROAD/LOAD is available on [www.eastasia.astro4dev.org](http://www.eastasia.astro4dev.org).

## B SOUTH EAST ASIAN ROAD



The South East Asian ROAD (SEA-ROAD) was formally established during the IAU General Assembly in Beijing in August 2012, and is hosted at the National Astronomical Research Institute of Thailand (NARIT), in Chiang Mai. The SEA-ROAD is committed to the development of astronomy in the ASEAN region (Association of South East Asian Nations). The countries in this region are Union of Myanmar, Thailand, Lao People's Democratic Republic, Kingdom of Cambodia, Socialist Republic of Vietnam, Malaysia, Republic of Singapore, State

of Brunei Darussalam, Philippines and Republic of Indonesia. In conjunction with the OAD, the SEA-ROAD is responsible for overseeing and assisting in the development of the following areas of astronomical activity in these ten South East Asian nations: (1) University research and teaching (both undergraduate and graduate) in astronomy; (2) Teaching of astronomy in schools; (3) The training of teachers in astronomy; and (4) Increasing astronomy awareness among the general public. This is achieved through key organisations such as the South East Asian Astronomy Network and the South East Asian Young Astronomers Collaboration.

More information on the SEA-ROAD is available on [www.narit.or.th/en/index.php/sea-road](http://www.narit.or.th/en/index.php/sea-road)

## C EAST AFRICAN ROAD



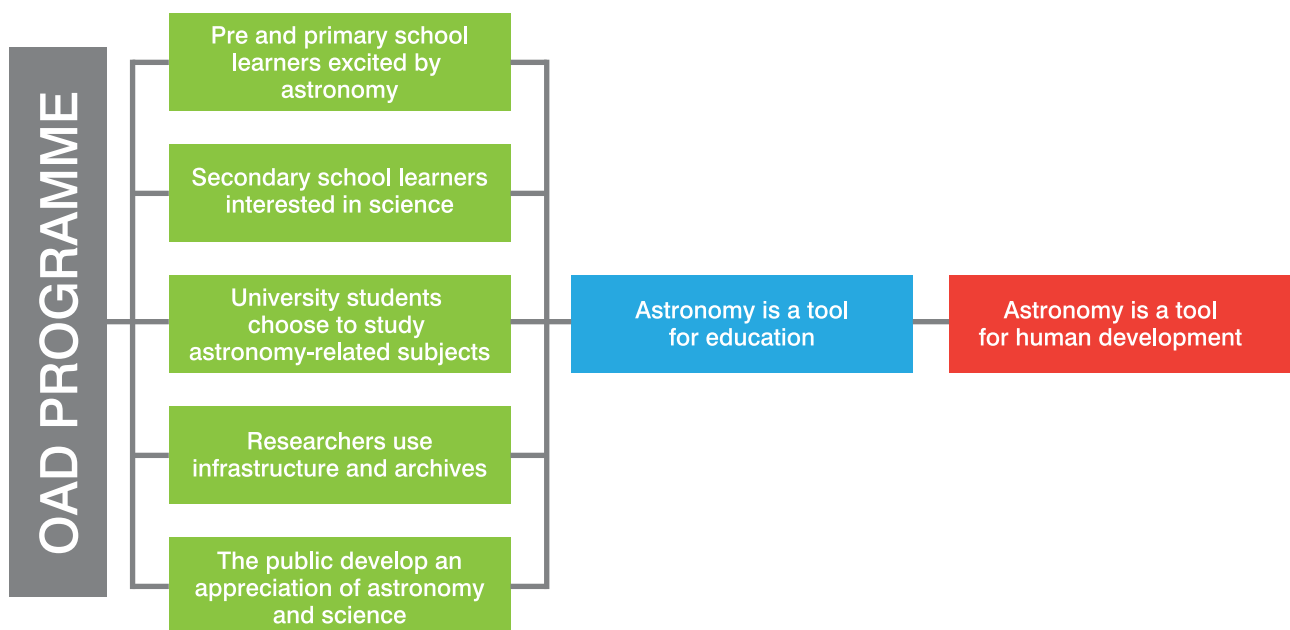
This is the most recently established ROAD (January 2014) and the first to be established on the African continent. The initiative is driven locally by the Ministry of Science and Technology, Ministry of Education, Ethiopian Space Science Society and Addis Ababa University. Entoto Observatory will serve as the training and research center for the ROAD. The establishment of the East African regional node in Ethiopia has received strong support from the East African Astronomical Society (EAAS) which is made up of representatives from

several countries including Burundi, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. In early 2014, at the time of going to print, the partners of this ROAD were in the process of establishing a steering committee which would consist of relevant expertise including representatives from the OAD, EAAS and other East African countries, in order to lead the activities of the three Task Forces in the region.

More information on the East African ROAD is available on [www.eastafrica.astro4dev.org](http://www.eastafrica.astro4dev.org)

# EVALUATING ASTRONOMY FOR DEVELOPMENT

Soon after the first call for proposals the OAD set out to explore ways in which the impact of astronomy on development could be better measured. During 2013 a Monitoring and Evaluation Framework for astronomy-for-development projects was developed, in collaboration with the Institute for Monitoring & Evaluation at the University of Cape Town, and built into the grant agreements for projects to be implemented in 2014. The framework is based on the programme theory illustrated below with the following assumption: if programme activities for universities and research, children and schools, and the public are offered as intended and at the right intensity, astronomy will serve as a tool for education, and in the long-run as a tool for human development.



There are two levels of evaluation in the framework:

**Level 1** is aimed at evaluating the implementation process: it provides information as to whether the project is being implemented as intended (with fidelity) and at the level of intensity needed.

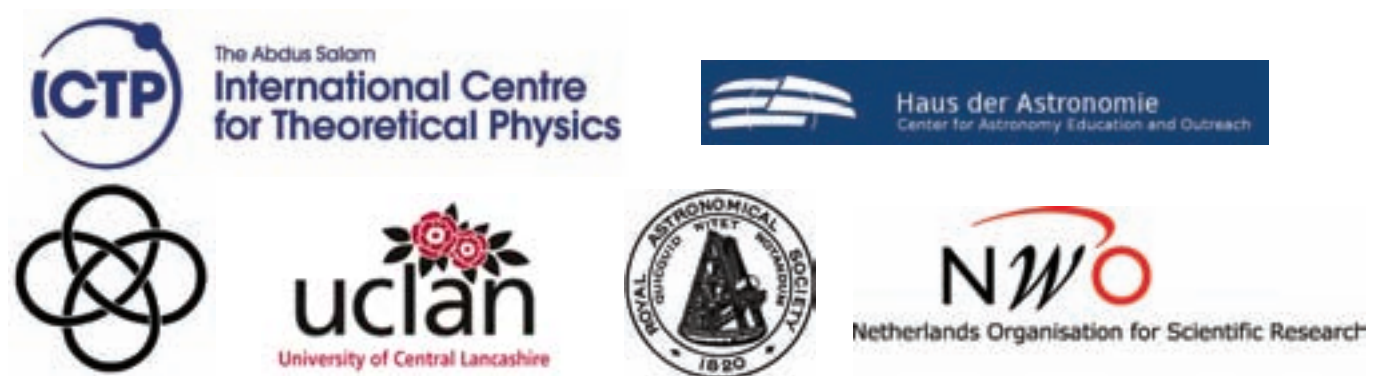
**Level 2** focuses on the outcomes: it provides information on the state of the project recipients before the start of the project and after its completion, and specifically, on how the project has changed the recipients.

The study of impact is more complex and an accurate determination of impact may call for randomised field experiments to make comparisons between regions affected and not affected by OAD programmes, not to mention elimination of other independent but related factors. During 2014, the OAD will work towards developing an impact evaluation design to assess the effect of astronomy-for-development programmes over the decade 2010-2020. In the meantime, the OAD encourages project leaders to include some measure of impact evaluation in the form of documenting “perceptions” of impact. This consists of gathering anecdotal testimonies, in the form of writings, pictures or short films, of how a project is perceived to have affected/changed the lives of its target audience.



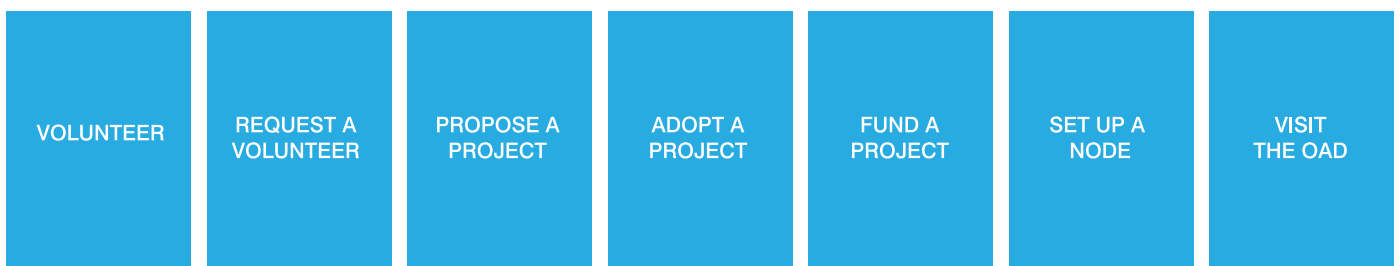
# PARTNERS

The OAD has established several partnerships with organisations sharing common interests. These partnerships range from visiting scientists programmes, to workshops, scholarships, and the provision of staff time. Current partnerships (through Memoranda/Letters of Understanding) include the (i) International Centre for Theoretical Physics in Italy; (ii) Royal Astronomical Society in the UK; (iii) Netherlands Organisation for Scientific Research; (iv) University of Central Lancashire in UK; (v) Inter-University Centre for Astronomy and Astrophysics in India; (vi) Haus der Astronomie in Germany. The OAD also works closely with global programmes associated with the IAU Strategic Plan such as Universe Awareness (UNAWA), the Galileo Teacher Training Programme (GTTP) and the Network for Astronomy Schools Education (NASE). A key partner and other project of the IAU is the Office for Astronomy Outreach (OAO) based at the National Astronomical Observatory of Japan. The OAD remains open to explore partnerships with other organisations wishing to be proactive in the area of science for development. The whole is greater than the sum of the parts!



## GETTING INVOLVED WITH THE OAD

There are many ways to engage with the OAD.



We welcome your ideas and input towards the vision of Astronomy for a Better World.

**Website:** [www.astro4dev.org](http://www.astro4dev.org)

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*"Astronomy provides an inspirational and unique gateway to technology, science and culture, three fundamental characteristics of developed nations. By mobilizing large numbers of talented and creative scientists, engineers and teachers in the service of international development the plan will be a cost effective spinoff of one of the most profound adventures of our civilization - the exploration of the Universe."*

George Miley

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