
THE UNIVERSE
YOURS TO DISCOVER
INTERNATIONAL YEAR OF
ASTRONOMY
2009
UNESCO
United Nations
Educational, Scientific and
Cultural Organization
IAU
International
Astronomical
Union
Partners for the International Year of Astronomy 2009
INTERNATIONAL YEAR OF
ASTRONOMY
2009


UNESCO/Michel Ravassard

Mr. Koïchiro Matsuura
Director-General of UNESCO

As lead UN agency for the Year, UNESCO works with the International Astronomical Union and other partners to make the initiative a success. In particular, we encourage citizens of the world, especially young people, to learn more about the Universe in which we live and to explore the links that astronomy provides between the scientific and cultural spheres.

UNESCO's Member States give high importance to science education as a driver of sustainable development and economic growth. Astronomy, the "first science", teaches us about the basic sciences — mathematics, physics — which are fundamental to understanding the Universe, its stars and planets, including the Earth. The UNESCO Space Education Programme encourages the introduction of astronomy and other space-related subjects into the school curriculum and will implement activities that enhance knowledge in these fields through the IYA2009 Cornerstone projects.

Under the World Heritage and Astronomy Initiative, UNESCO works to raise awareness of the importance of astronomical heritage worldwide, in terms of its enrichment of human history, the promotion of cultural diversity and the enhancement of international exchange. From World Heritage sites such as the ancient Neolithic monuments of Stonehenge, to the most recent Large Hadron Collider experiment, led by the European Organization for Nuclear Research (CERN), which aims to throw light on the origin of the Universe, people have always looked to the sky for answers to the questions "How did we get here?" and "Why are we here?".

The sky belongs to everybody. Astronomy is and can be an instrument to promote peace and understanding among nations, and as such is at the heart of UNESCO's mission.

I wish all of you every success for the Year.

Antennae Galaxies
(NASA, ESA, and the Hubble Heritage Team STScI/AURA)-ESA/Hubble Collaboration. Acknowledgement: B. Whitmore (Space Telescope Science Institute) and James Long (ESA/Hubble)

Front Cover Image:
Helix Nebula (ESO)


Volker Steege

Catherine Cesarsky
IAU President

The International Astronomical Union (IAU) launched 2009 as the International Year of Astronomy (IYA2009) under the theme, The Universe, Yours to Discover. IYA2009 marks the 400th anniversary of the first astronomical observation through a telescope by Galileo Galilei. It is a global celebration of astronomy and its contributions to society and culture, with a strong emphasis on education, public engagement and the involvement of young people, with events at national, regional and global levels throughout the whole of 2009. UNESCO has endorsed the IYA2009 and the United Nations proclaimed the year 2009 as the International Year of Astronomy on 20 December 2007.

Astronomy is one of the oldest fundamental sciences. It continues to make a profound impact on our culture and is a powerful expression of the human intellect. Huge progress has been made in the last few decades. One hundred years ago we barely knew of the existence of our own Milky Way. Today we know that many billions of galaxies make up our Universe and that it originated approximately 13.7 billion years ago. One hundred years ago we had no means of knowing whether there were other solar systems in the Universe. Today we know of more than 350 planets around other stars in our Milky Way and we are moving towards an understanding of how life might have first appeared. One hundred years ago we studied the sky using only optical telescopes and photographic plates. Today we observe the Universe from Earth and from space, from radio waves to gamma rays, using cutting-edge technology. Media and public interest in astronomy have never been higher and major discoveries are frontpage news throughout the world. The IYA2009 meets public demand for both information and involvement.

There are outstanding opportunities for everyone to participate in the IAU IYA2009 events. This brochure outlines some of the events planned at the global level, which are supported by thousands of additional national and regional activities.

The IAU, UNESCO and our Partners wish everyone a year rich in astronomical experiences as we all celebrate the International Year of Astronomy 2009!

Vision and Goals of the International Year of Astronomy 2009

Star Trails Over Gemini North
(Gemini Observatory)

The International Year of Astronomy 2009 is a global effort initiated by the International Astronomical Union and UNESCO to help the citizens of the world rediscover their place in the Universe through the day- and night-time sky, and thereby engage a personal sense of wonder and discovery.

Vision

The vision of the International Year of Astronomy 2009 is to help people rediscover their place in the Universe through the sky, and thereby engage a personal sense of wonder and discovery. Everyone should realise the impact of astronomy and other fundamental sciences on our daily lives, and understand how scientific knowledge can contribute to a more equitable and peaceful society.

IYA2009 activities are taking place locally, nationally, regionally and internationally. National Nodes have been formed in each country to prepare and implement activities for 2009. These nodes have established collaborations between professional and amateur astronomers, science centres and science communicators to prepare activities for 2009. 140+ countries are involved in this global undertaking. To help coordinate this extensive global programme and to provide an important resource for the participating countries, the IAU has established a central IYA2009 Secretariat and an IYA2009 website (www.astronomy2009.org) as the principal IYA2009 resource for public, professionals and media alike.

Goals

1. Increase scientific awareness among the general public through the communication of scientific results in astronomy and related fields, as well as the process of research and critical thinking that leads to these results.
2. Promote widespread access to the universal knowledge of fundamental science through the excitement of astronomy and sky-observing experiences.
3. Empower astronomical communities in developing countries through the initiation and stimulation of international collaborations.
4. Support and improve formal and informal science education in schools as well as through science centres, planetariums and museums.
5. Provide a modern image of science and scientists to reinforce the links between science education and science careers, and thereby stimulate a long-term increase in student enrolment in the fields of science and technology, and an appreciation for lifelong learning.
6. Facilitate new, and strengthen existing, networks by connecting amateur astronomers, educators, scientists and communication professionals through local, regional, national and international activities.
7. Improve the gender-balanced representation of scientists at all levels and promote greater involvement by under-represented minorities in scientific and engineering careers.
8. Facilitate the preservation and protection of our global cultural and natural heritage of dark skies and historical astronomical sites, through the awareness of the importance and preservation of the dark skies and astronomical sites for the natural environment and human heritage.

The team behind the scenes

The International Astronomical Union

The International Astronomical Union is the initiator and international leader of IYA2009. The IAU was founded in 1919 and maintains a small secretariat in Paris. Its mission is to promote and safeguard the science of astronomy through international cooperation. The Individual Members are professional astronomers active in research and education in astronomy all over the world. The IAU is a grassroots organisation run by its members for the benefit of astronomy worldwide. It maintains friendly relations with organisations that include amateur astronomers in their membership. Currently the IAU has nearly 10 000 Individual Members in 87 countries. In addition to arranging scientific meetings, the IAU promotes astronomical education and research in developing countries through its International Schools for Young Astronomers, Teaching for Astronomy Development and World Wide Development of Astronomy programmes and through joint educational activities with UNESCO and other bodies.

The IAU acts as a catalyst and coordinator for IYA2009 at the global level, largely, but not exclusively, through the IYA2009 website and the Secretariat. The IAU established an IAU IYA2009 Executive Committee Working Group to define and coordinate globally IYA2009.

UNESCO

United Nations Educational, Scientific and Cultural Organization

UNESCO — the United Nations Educational, Scientific and Cultural Organization — was founded on 16 November 1945. It is a specialised agency of the United Nations that, through its day-to-day work in education, the social and natural sciences, culture and communication, aims to build peace in the minds of men.

UNESCO functions as a laboratory of ideas and a standard setter to forge universal agreements on emerging ethical issues. The Organization also serves as a clearinghouse for the dissemination and sharing of information and knowledge, while helping Member States to build their human and institutional capacities in diverse fields. In short, UNESCO promotes international cooperation among its 192 Member States and six Associate Members in the fields of education, science, culture and communication.

In the field of science, UNESCO acts as an advocate and as a platform for sharing ideas and standard setting and promotes dialogue between scientists and policy makers. The Organization empowers and catalyses innovative initiatives in the field of international cooperation in science, in particular through networks and capacity building activities.

UNESCO is working to create the conditions for a genuine dialogue between nations based on respect for shared values and the dignity of each civilisation and culture. The world urgently requires a global vision of sustainable development based upon the observance of human rights, mutual respect and the alleviation of poverty, all of which lie at the heart of UNESCO's mission and activities.

The IAU IYA2009 Secretariat

The central hub of the IAU activities for the IYA2009 is the Secretariat. This was established to coordinate activities during the planning, execution and evaluation of the Year. The Secretariat liaises continuously with the National and Organisational Nodes, Task Groups, Partners and Organisational Associates, the media and the general public to ensure the progress of the IYA2009 at all levels.

The IYA2009 website (www.astronomy2009.org) has been set up and more than 140 member countries have established national committees and appointed Single Points of Contact (SPoCs). The Secretariat and the website are the most important coordination and resource centres for all the countries taking part, but most particularly for those developing countries that lack the national resources to mount major events alone.

The Tarantula Nebula
(ESO/IDA/Danish 1.5 metre/R. Gendler, C. C. Thöne, C. Féron, and J.-E. Ovaldsen)

Babak A. Tafreshi

Pedro Russo — IAU Coordinator for IYA2009

Pedro coordinates the implementation of the IYA2009 globally. He is the first point of contact for international matters concerning IYA2009. Pedro supports external requests from Single Points of Contact, journalists, scientists and the general public, prepares generic and event-related outreach material and interfaces with the hundreds of national and organisational IYA2009 nodes.

Luis Calçada

Mariana Barrosa — IYA2009 Coordination Assistant

Mariana supports the planning, coordination, preparation, implementation and revision of the International Year of Astronomy 2009 and other joint programming processes.

Süddeutsche Zeitung

Lars Lindberg Christensen — IYA2009 Secretariat Manager

Lars manages the IYA2009 Secretariat, i.e. oversees the strategy of the project, the budget (including fundraising) and ensures a smooth daily workflow for the Secretariat, which is hosted by the education and Public Outreach Department at the European Southern Observatory.

Lee Pullen

Lee Pullen — IYA2009 Staff Writer

Lee assists in the development and production of all communication products for the IYA2009, including producing content, proofing, editing and liaising with journalists.

Organisational Associates

ESO	European Southern Observatory	AAS	American Astronomical Society	Nordic Optical Telescope	Nordic Optical Telescope
INSU	L'Institut National des Sciences de l'Univers	Canadian Astronomical Society	Canadian Astronomical Society	ICRANet	International Center for Relativistic Astrophysics Network
Sterrewacht Leiden	Sterrewacht Leiden	NRC CNRC Canada	National Research Council Canada	NASA Lunar Science Institute	NASA Lunar Science Institute
Science & Technology Facilities Council	Science & Technology Facilities Council	NOVA	Nederlandse Onderzoekschool Voor Astronomie	इसरो ISRO	Indian Space Research Organization
sc | nat	Swiss Academy of Sciences	esa	European Space Agency	agenzia spaziale italiana	Agenzia Spaziale Italiana
	Ministerio de Educación y Ciencia (Spain)	SPA	The Society for Popular Astronomy	eas	European Astronomical Society
European Science Foundation	European Science Foundation	NASA	National Aeronautics and Space Administration	TUM Excellence Cluster Universe	Excellence Cluster Universe
DLR	Deutsches Zentrum für Luft- und Raumfahrt	cnes	Centre National d'Etudes Spatiales	NRAO	National Radio Astronomy Observatory
The Planetary Society	The Planetary Society	JAXA	Japan Aerospace Exploration Agency		Armagh Planetarium
NAOJ	National Astronomical Observatory of Japan	Greek National Committee for Astronomy	Greek National Committee for Astronomy	cea	Commissariat à L'énergie Atomique
KASI	Korea Astronomy and Space Science Institute				

The IYA2009 Organisational Associates are the organisations, institutions and agencies related to astronomy, space science and natural science that support the global coordination of IYA2009 financially.

Media Partners

PLANETARIAN	Planetarian	HISTORY	History Channel
SKY & TELESCOPE	Sky & Telescope	Cosmotoons, Inc.	Cosmotoons
Astronomy NOW	Astronomy Now	Taffy Entertainment	Taffy Entertainment
physicsworld	Physics World	Wiley-VCH	Wiley-VCH
ASTRONOMY.IE	Astronomy Ireland	Springer the language of science	Springer
ASTRONOMÍA	Astronomía	Science Newspaper	Science Newspaper
Redshift www.redshift-live.com	Redshift	Astronomy & Astrophysics	Astronomy & Astrophysics
SEED	Seed Magazine	Popular Mechanics	Popular Mechanics
BBC Sky at Night MAGAZINE	Sky at Night Magazine	Astrocast.TV	Astrocast.TV
medea awards	Medea Awards	ATHENA WEB	Athenaweb The European Science Films Portal
CAMBRIDGE JOURNALS journals.cambridge.org	Cambridge Uni. Press		

To promote its activities, the IYA2009 Secretariat has established a network of media partners that write and report on IYA2009 activities around the world.

Icy Promethei Planum
(ESA/ DLR/ FU Berlin (G. Neukum))

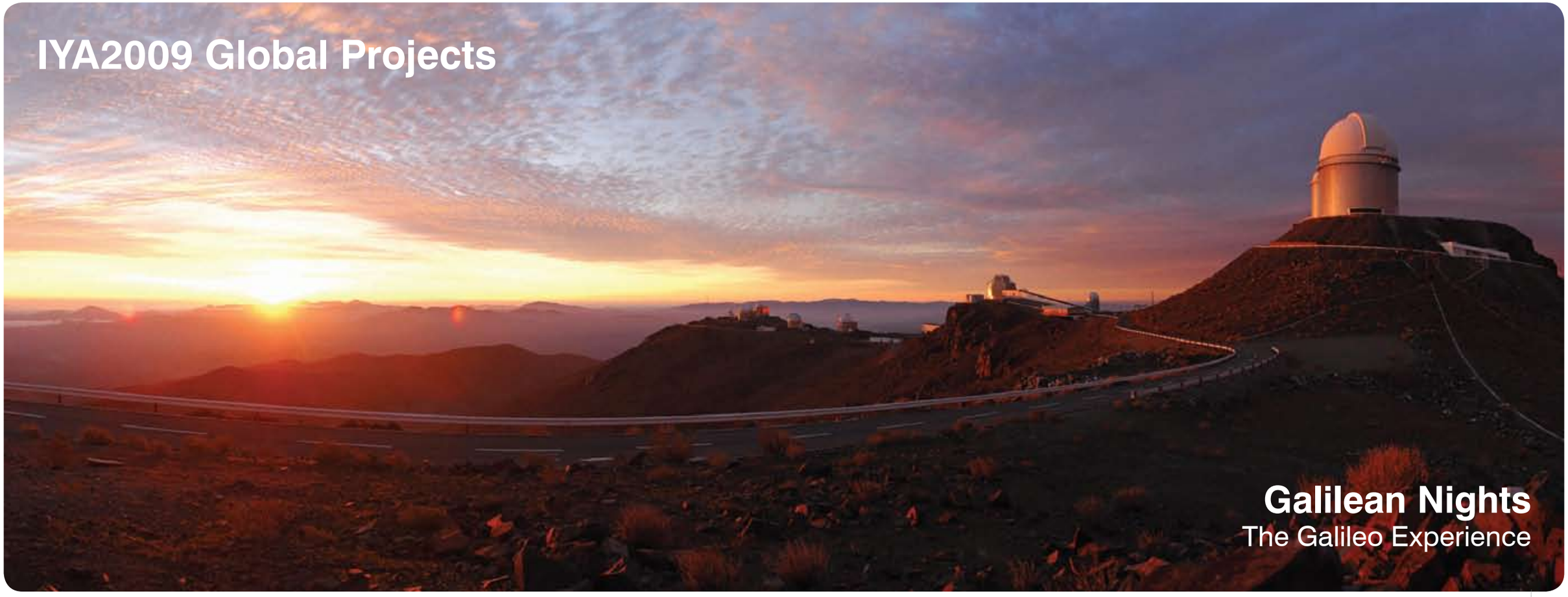
International networks — now and in the future

The Carina Nebula
(NASA, ESA, N. Smith (University of California, Berkeley), and The Hubble Heritage Team (STScI/AURA))

The IYA2009 is promoting and facilitating the creation of international networks to foster a global appreciation of the role and value of science and astronomy as a unifying activity for humanity. IYA2009 has started up, connected and supported networks of professional and amateur astronomers, educators and astrophysicists from all over the world, so that all of these valuable sources of knowledge can be shared. The networks of hundreds, if not thousands of astronomical organisations, nationally and internationally, will be one of the legacies of the IYA2009 that will last far beyond the year 2009.

The activities of the IYA2009 are largely taking place at the national level and a significant global network has already been created. This network extends across 140+ countries, making it possible to reach out to 97% of the world's population.

IYA2009 Global Projects



Galilean Nights
The Galileo Experience

ESO's La Silla Observatory
(ESO/F. Kamphues)

The International Year of Astronomy 2009 is supported by twelve Cornerstone projects. These are global programmes of activities centred on a specific theme and are some of the projects that help to achieve the IYA2009's main goals; whether it is the support and promotion of women in astronomy, the preservation of dark-sky sites around the world or educating and explaining the workings of the Universe to millions, the twelve Cornerstone projects are key elements in the success of the IYA2009.

The Cornerstone projects are supported by a number of Special projects, which develop interactions and link up the different initiatives and activities within IYA2009. Special projects provide additional means to achieve the IYA2009's main goals and objectives. The Cornerstone and Special projects are outlined in more detail on the following pages.

Following the unprecedented success of IYA2009's 100 Hours of Astronomy (www.100hoursofastronomy.org), with more than 1 million people participating in events such as a Global Star Party, the live 24-hour webcast "Around the World in 80 Telescopes", a Science Centre webcast, and Sun Day, another weekend of astronomy events has been lined up for 23–24 October 2009. This new IYA2009 Cornerstone project is called Galilean Nights and will see amateur and professional astronomers around the globe taking to the streets, pointing their telescopes to the wonders that Galileo observed 400 years ago.

The project's focus is sidewalk observations of the gas giant Jupiter and its moons, and members of the public will also be able to observe the Sun, our own Moon and many more celestial marvels with their own eyes, much as Galileo did 400 years ago.

IAU/Lee Pullen

www.galileannights.org

The Galileoscope
Millions looking at the sky

Cosmic Diary
The life of an astronomer

The Bubble Nebula
(T.A. Rector/University of Alaska Anchorage, H. Schweiker/WIYN and NOAO/AURA/NSF)

Nothing piques a child's interest in astronomy as effectively as looking through a telescope she/he built herself/himself. For IYA2009, we have developed a high-quality, low-cost, easy-to-assemble refractor kit. This 50-mm-aperture, 25- to 50-power Galileoscope can enable anyone to see the celestial wonders that Galileo first glimpsed 400 years ago and that still delight stargazers today, including lunar mountains and craters, Jupiter's moons, the phases of Venus and Saturn's rings. The Galileoscope incorporates features such as achromatic optics, stray-light rejection and a 1.25-inch focuser normally found only on more expensive telescopes. Accompanying the kit are curriculum materials based on active enquiry, cooperative learning, testing of ideas and predictions, and hands-on experimentation. Thus the Galileoscope gives students a pleasurable experience at the

Galileoscope

eyepiece and increases their understanding and sense of wonder at light, optics, and astronomy. As of May 2009, 60 000 Galileoscopes have been produced, 4000 of which will be donated to organisations and schools in developing countries, in collaboration with the Developing Astronomy Globally Cornerstone project. Sharing observations through the Galileoscope with as many people as possible, and encouraging parents, teachers, students, and others to think about their importance, supports one of the main goals of IYA2009: to promote widespread access to new knowledge and observing experiences.

Chair: Rick Fienberg (rfienberg@andover.edu)

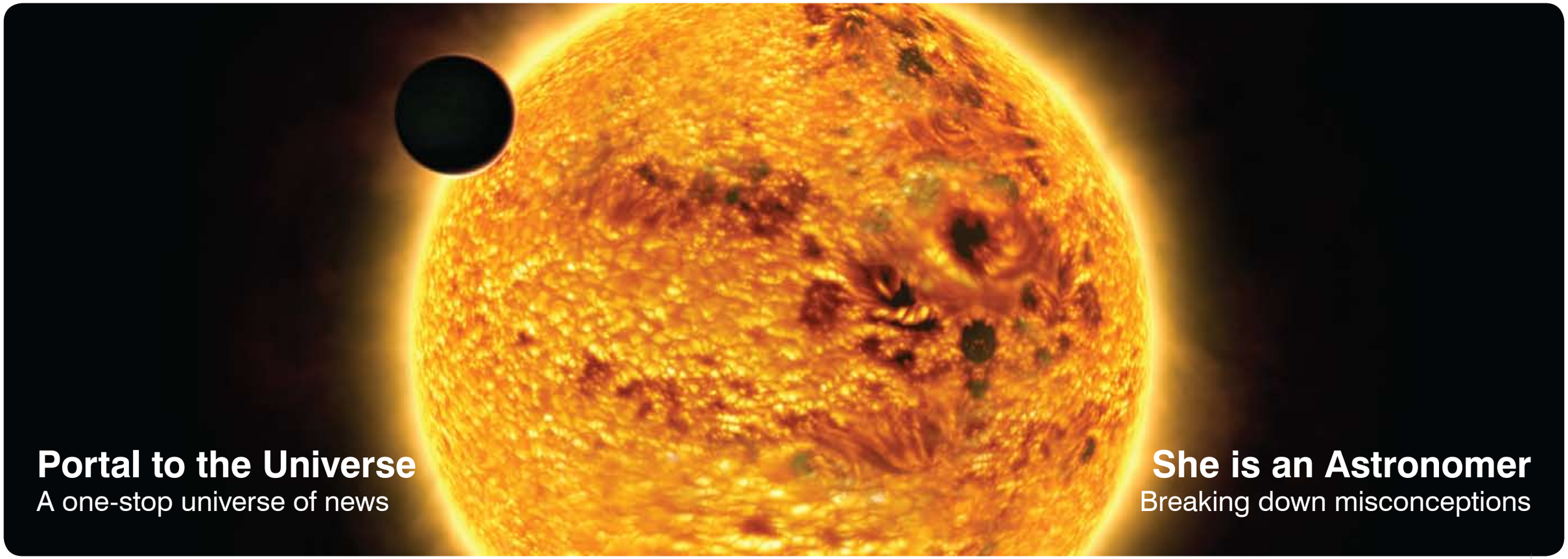
The Cosmic Dairy is not just about astronomy, but more about what it is like to be an astronomer.

At its core, the project is a collection of blogs that put a human face on astronomy. 60+ professional scientists from 28+ countries are blogging in text and images about their lives, families, friends, hobbies and interests, as well as their work, latest research findings, and the challenges they face. To date there are over 1000 individual blog posts which have attracted more than 55 000 unique visitors. This Cornerstone project has already made waves in the scientific community. IYA2009 Organisational Associates, NASA, ESA, ESO and JAXA have all Cosmic Diary sub-blogs.

Throughout the year, a number of bloggers will explain their specialist fields of expertise to the public by writing popular science articles. These describe cutting-edge scientific research to a wide audience, giving people unprecedented access to those at the forefront of scientific discoveries. By the Year's end the Cosmic Diary will host an archive of over 20 feature articles, written specifically for the project.

Chair: Mariana Barrosa (mbarrosa@eso.org)

www.galileoscope.org www.cosmicdiary.org



Portal to the Universe

A one-stop universe of news

PORTAL TO THE UNIVERSE

The Portal to the Universe (PTTU) provides a global, one-stop portal for online astronomy content, serving as an index and aggregator for astronomy content for laypeople, press, educators, decision-makers, scientists and more. In its first month of operation PTTU had more than 40 000 unique visitors.

The site itself features news, blogs, video podcasts, audio podcasts, images, videos and more. Web 2.0 collaborative tools, such as the ranking of different services according to popularity, help the user to sift constructively through the wealth of information available and promote interactions within the astronomy multimedia community. A range of "widgets" (small applications) have also been developed to tap into all sorts of existing "live data", such as near-live pictures of the Sun, live positions of spacecraft or live observations from telescopes.

The Portal enables real-time access to content by aggregating (pulling) from providers of dynamic content like blogs, images, news, etc. and distributing (pushing) to users, as well as indexing and archiving, collecting and maintaining a central repository of useful information. Modern technology such as RSS feeds and standardised metadata make it possible to tie all the suppliers of astronomy information together with a single, semi-automatically updating portal. The result is a technologically advanced site that brings together strands of astronomy content from across the world wide web.

Chair: Lars Lindberg Christensen (lars@eso.org)

www.portaltotheuniverse.org

She is an Astronomer

Breaking down misconceptions

Artist's impression of the hazy red sunset on HD 189733b (ESA, NASA and Frédéric Pont (Geneva University Observatory))

SHE IS AN ASTRONOMER

Promoting gender equality and empowering women is one of the United Nations Millennium Development Goals. The IYA2009 Cornerstone project, She is an Astronomer povides information to female professional and amateur astronomers, students, and those interested in the gender equality problem in science. Approximately one quarter of all professional astronomers are women. In some countries there are no female astronomers, whilst in others more than half the professional astronomers are female. The drop in numbers towards more senior levels suggests that scientific careers are heavily affected by social and cultural factors, and are not determined solely by ability.

She is an Astronomer has its own dedicated website, where people can pick up information about the subject, ask questions and find answers. The main areas are: profiles of living and historical female astronomers (a largely invisible part of the astronomy community), resources available to female astronomers, events taking place during the year, an area for ambassadors of She is an Astronomer, and a forum where issues, lessons-learned and challenges can be discussed. At the end of IYA2009 the information gathered will be retained and maintained as a legacy from IYA2009.

Naveen Nanjundappa/She is as Astronomer

Chair: Helen Walker (helen.walker@stfc.ac.uk)

www.sheisanastronomer.org

The star cluster Pismis 24
(NASA, ESA, N. Smith (University of California, Berkeley),
and The Hubble Heritage Team (STScI/AURA))

Dark Skies Awareness

Seeing in the dark

IAU & NASA

The arc of the Milky Way seen from a truly dark site is part of our planet's cultural and natural heritage. It is now more urgent than ever to preserve and protect dark night skies in places such as urban cultural landscapes, national parks and sites connected with astronomical observations, as well as to support the goals of UNESCO's thematic initiative, Astronomy and World Heritage, to preserve sites of astronomical importance for posterity. The ongoing loss of a dark night sky for much of the world's population is a serious and growing issue that not only impacts astronomical research, but also human health, ecology, safety, security, economics and energy conservation. According to the United Nations, around 3.3 billion people, over half of the world's population, live in cities. With the growth of large cities, the number of people living in cities could climb to 5 billion by 2030. As cities grow, so does their impact on the global environment.

For this Cornerstone project the IAU and UNESCO collaborate with the US National Optical Astronomy Observatory, representatives of the International Dark-Sky Association, the Starlight Initiative and other national and international partners in dark-sky and environmental education on several related themes. The focus is on three main citizen-scientist programmes that measure local levels of light pollution. These programmes take the form of "star hunts" or "star counts", providing people with a fun and direct way of acquiring heightened awareness of light pollution through firsthand observations of the night sky. The three programmes cover the entire IYA2009, namely GLOBE at Night (in March), the Great World Wide Star Count (in October) and How Many Stars (January, February, April through September, November and December). During IYA2009, GLOBE at Night set a new record, with 80% more observations of the world's dark skies than the programme's previous best.

Chair: Connie Walker (cwalker@noao.edu)

www.darkskiesawareness.org

Astronomy and World Heritage

Universal treasures

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

The cosmos has captivated the imagination of civilisations throughout the ages. The desire to understand or interpret what they see in the sky are often reflected in architecture, petroglyphs, urban planning and other cultural representations. These "material testimonies" of astronomical observations, found in all geographical regions, span all periods from prehistory to today.

UNESCO and the IAU are working together to promote research and education collaboration as part of UNESCO's Thematic Initiative "Astronomy and World Heritage". This project offers a possibility to evaluate and recognise the importance of astronomical heritage in terms of enrichment of the history of humanity, the promotion of cultural diversity and the development of international exchange.

Support from the international community is needed to save the properties connected with astronomy from progressive

TWAN

TAWN

deterioration and to recognise the astronomical heritage by the inclusion of the most representative of these properties on the World Heritage List.

Chair: Anna Sidorenko-Dulom (a.sidorenko@unesco.org)

www.whc.unesco.org

Galileo Teacher Training Program

Bringing astronomy into the classroom

GALILEO
Teacher Training Program

The goal of the Galileo Teacher Training Program is to train teachers, the Galileo Ambassadors, in the effective use and transfer of astronomy tools and existing resources that are freely available on the internet, into classroom science curricula. Through workshops, online training tools and basic education kits, the products and techniques developed by this programme can be adapted to reach locations with few resources of their own, as well as computer-connected areas that can take advantage of access to robotic optical and radio telescopes, webcams, astronomy exercises, cross-disciplinary resources, image processing and digital universes (web and desktop planetariums). The Galileo Ambassadors are equipped to train other teachers in these methodologies, leveraging the work begun during IYA2009 in classrooms everywhere.

ESA

Deliverables:

1. A global network of Galileo teachers that will last well beyond 2009.
2. A website with a selection of resources, a forum, links to national contacts points, agenda of events, online training material, etc.
3. A certification programme and suggested course of study designed to produce Galileo Ambassadors trained to use the suggested educational materials and resources, and train other teachers in their use.

Chair: Rosa Doran (rosa.doran@gmail.com)

www.galileoteachers.org

Universe Awareness

One place in the Universe

UNAWE

Universe Awareness (UNAWE) is an international programme that exposes very young children in under-privileged environments to the scale and beauty of the Universe. Universe Awareness illustrates the multicultural origins of modern astronomy in an effort to broaden children's minds, awaken their curiosity in science and stimulate global citizenship and tolerance. Using the sky and children's natural fascination with it as common ground, UNAWE creates an international awareness of our place in the Universe and our place on Earth.

Chair: Carolina Ödman (odman@strw.leidenuniv.nl)

UNAWE

UNAWE

www.unawe.org

NGC3582, a minor nebula in the Sagittarius arm of the Milky Way Galaxy (Gemini Observatory)

From Earth to the Universe

The beauty of science

With images taken from both ground- and space-based telescopes, From Earth to the Universe (FETTU) showcases the incredible variety of astronomical objects that are known to exist. The exhibit also shows how these objects look when viewed across the electromagnetic spectrum, from the ultraviolet and visible light to infrared, X-rays and gamma rays.

FETTU is being shown in non-traditional public venues such as parks and gardens, shopping malls, metro stations and airports in major cities across the world. The FETTU images have been selected for their stunning beauty to engage members of the general public who might normally ignore or avoid astronomy. With short, but informative captions on each panel, FETTU introduces some basics of the science involved once an individual has been drawn to the image.

The worldwide response to the FETTU project continues to be astounding. As of May 2009, over 55 countries around the world have signed to host FETTU exhibits in more than 200 separate locations ranging from Brazil to Bulgaria and from Uruguay to the United States. The most current list can be found at: www.fromearthtotheuniverse.org.

FETTU

FETTU exhibit in Liverpool, UK

FETTU

FETTU exhibit in Mendoza, Argentina

Co-chairs: Kimberly Kowal Arcand (kkowal@cfa.harvard.edu) & Megan Watzke (mwatzke@cfa.harvard.edu)

Developing Astronomy Globally

Astronomy for all

This Cornerstone project acknowledges that astronomy needs to be developed in three key areas: professionally (universities and research); publicly (communication, media, and amateur groups) and educationally (schools and informal educational structures).

The focus is on regions that do not have strong astronomical communities. The implementation is centred on training, development and networking in each of these three key areas. This Cornerstone project uses the momentum of the IYA2009 to help establish and enhance regional structures and networks that work on the development of astronomy around the world.

These networks support the current and future development work of the IAU and other programmes and ensure that developing regions benefit from the IYA2009 and the work of the other Cornerstone projects. It should also address the questions of the contribution of astronomy to development.

Chair: Kevin Govender (kg@saao.ac.za)

Chicago Sidewalk Astronomy Club

www.fromearthtotheuniverse.org

www.developingastronomy.org

IYA2009 Special Projects

The Cornerstone projects are supported by a number of Special projects, which develop interactions and link the different initiatives and projects within the IYA2009. These projects provide extra means to achieve the IYA2009's main goals and objectives.

The World at Night

The World at Night (TWAN) creates and exhibits a collection of stunning photographs and time-lapse videos of the world's most beautiful and historic sites against a night-time backdrop of stars, planets and celestial events.
http://www.twanight.org

400 Years of the Telescope

Panoramic visuals, cutting-edge technologies and introspective contemplations position 400 Years of the Telescope as a must-see cinematic feature for the IYA2009.
http://www.400years.org

The Mutual Phenomena of the Galilean satellites of Jupiter

This project engages the public in the observation of the mutual phenomena of the Galilean satellites of Jupiter.
http://www.astronomy2009.org/globalprojects/specialprojects/galileansatellites/

Around the World, Around the Sky

Taking up the title of a ten-film series on the history of astronomical observatories from antiquity until today broadcast by Arte in 1990, this project deals with astronomy and observatories, but in present time, with a new story and a new scope.
http://www.astronomy2009.org/globalprojects/specialprojects/aroundtheworld/

Exoplanet Hunters

A 52-minute documentary. The fate of our planet Earth is increasingly at stake. Research carried out on other planets in space can develop knowledge of our own world and its protection.
http://www.astronomy2009.org/globalprojects/specialprojects/exoplanets

Celebrating the 1919 Eclipse at Principe

This Special project celebrates the historic 1919 eclipse expedition to the African equatorial island of Príncipe, led by Sir Arthur Eddington and organised by the Royal Astronomical Society.
http://www.1919eclipse.org

The Sky — Yours to Discover

This is a project that invites children and young people to gaze up at the sky and identify stars, imagine new constellations and create original stories.
http://www.astronomy2009.org/globalprojects/specialprojects/sky/

BLAST!

BLAST! is astrophysics Indiana Jones-style! The movie takes the viewer on a journey around the world and across the Universe to launch a new telescope on a high-altitude balloon.
http://www.blastthemovie.com

StarPeace!

StarPeace connects people living on two sides of a national border by conducting joint star parties to show that the sky can act as a bridge to join the people of the world regardless of the race, culture or nation they belong to.
http://www.starpeace.org

GalileoMobile

GalileoMobile is an itinerant science education project bringing IYA2009 to young underprivileged people across South America, to foster a love of learning by exciting wonder about our Universe, while supplying local teachers with educational resources to sustain our activities.
http://www.galileo-mobile.org

IYA2009 Special Task Groups

The Carina Nebula
(ESO)

Several IYA2009 Special Task Groups have been set up to organise very specific events or actions throughout the Year, which complement other global projects.

Opening Ceremony

The IYA2009 Opening Ceremony took place on 15 and 16 January 2009 at the UNESCO headquarters in Paris. About 900 leading figures in the world of astronomy and young people from all participating countries attended the event.
Chair: Françoise Combes (francoise.combes@obspm.fr)

EU Seventh Framework Programme

The IYA2009 established a Special Task Group to investigate possible European Commission calls for proposals in the framework of the 7th Research and Development Framework Programme (FP7).
Chair: Claus Madsen (cmadsen@eso.org)

Kepler

This Group promotes the celebration of the 400th anniversary of Kepler's Astronomia Nova, the cornerstone of modern astronomy, in the year of the launch of NASA's Kepler mission to seek Earth-sized extrasolar planets.
Co-chairs: Terence Mahoney (tjm@iac.es) & David Koch (d.koch@nasa.gov)

New Year's Eve Events

The main objective of this Special Task Group was to announce that 2009 is the International Year of Astronomy on 31 December 2008.
Chair: Helen Sim (helen.sim@csiro.au)

Solar Physics

This Special Task Group communicates the particular relation of the Sun with the rest of the Universe, and thereby the place of solar science in astronomy.
http://solarastronomy2009.org/
Co-chairs: Bruno Sánchez-Andrade Nuño (bruno@astro.physik.uni-goettingen.de)

Philately

This Special Task Group maintains a global philatelic checklist of postal authority releases generated in celebration of the IYA2009 and/or astronomy in general.
Co-chairs: Michael Howell (mhowell@mail.accd.edu) & John Budd (jwgbudd@earthlink.net)

Evaluation

IYA2009 is an excellent opportunity to increase public understanding and awareness of astronomy. But will it achieve its objectives? What lessons will we learn?
Co-chairs: Pedro Russo (prusso@eso.org) & Mariana Barrosa (mbarrosa@eso.org)

New Media

This Task Group provides online astronomy experiences where people work, play and learn; creates content to expose people to astronomy; distributes content for active and passive channels and uses a diverse suite of technologies to reach people on multiple platforms and in a range of online settings.
Chair: Pamela Gay (pamela@starstryder.com)

Galileo

This task group raises Galileo Galilei's public profile through intracommunity communication, formal and informal education and public outreach.
Chair: Paolo Galluzzi (galluzzi@imss.fi.it)

Extrasolar Planets

This Task Group operates in an area that is both easy for the general public to understand and one of the greatest scientific adventures of the 21st century: extrasolar planets and the search for life on these planets. The Task Group creates and maintains www.exoplanet2009.org, an international, multilingual website.
Chair: Jean Schneider (jean.schneider@obspm.fr)

Closing Ceremony

As the IYA2009 comes to an end, we will join in a celebration of astronomy and astronomical experiences. The Closing Ceremony is in preparation and will take place on 9–10 January 2010 in Padua, Italy.

The IYA2009 and the UN Millennium Development Goals

Planet Earth (NASA)

The IYA2009 is, first and foremost, an activity for everyone around the world. It conveys the excitement of personal discovery, the pleasure in sharing fundamental knowledge about the Universe and our place in it. The UN Millennium Development goals form a blueprint agreed by every country and the entire world's leading development institutions. The inspirational aspects of the International Year of Astronomy 2009 embody an invaluable resource for humanity and contribute to four of the UN Millennium Development goals.

Help to achieve universal primary education
The IYA2009 programmes add to the quality of primary education by providing access to basic astronomy to teachers and pupils all over the world. The night sky spans all nations. We just have to provide guidance to understanding what we see and discover. Providing equal chances globally to access knowledge will result in the development of international cooperation in scientific research and relevant applications and in its broader effect will be to assist the developing world to match the western world.

Help to eradicate extreme poverty and hunger
An increase in scientific wealth has been shown to be associated with an increase in economic wealth in developing countries, thereby contributing to the fight against poverty, improving economic capacity and establishing good governance. The IYA2009 programmes empower astronomical communities in developing countries through the initiation and stimulation of international collaborations. These small steps contribute to increasing the scientific, technological and economic wealth in developing countries.

Promote gender equality and empower women
One of the IYA2009 goals is to improve the gender-balanced representation of scientists at all levels and promote greater involvement of underrepresented minorities in scientific and engineering careers. Gender equality is a priority concern of the whole scientific community regardless of its geographical location. The problems and difficulties are different in all regions and continents, so the IYA2009 has initiated special programmes to meet local needs.

Develop a global partnership for development
Development relies on several factors, including the use of fundamental science to develop and use practical applications adequately. The IYA2009 programmes connect networks of professional and amateur astronomers and astrophysicists from all over the world, so that valuable sources of knowledge can be shared. The IYA2009 helps to channel the information obtained to the right development projects and applications.

UNESCO Space Education Programme

Space studies bring new knowledge and perspectives on the Earth's processes and resources and provide deeper and broader understanding of the Universe and its role and contribution to societal development issues. UNESCO's Space Education Programme (SEP) puts space in the forefront, using it both as a tool and a platform to raise the awareness and interest of the youth in fundamental science through space subjects such as astronomy. The Programme aims to develop and enhance the knowledge of students and teachers in different areas of space and to provide the support and infrastructure that will stimulate and engage the young generation in pursuing science-oriented careers in the future. SEP is one of the components of UNESCO's Intersectoral Platform on Science Education.

In celebration of the International Year of Astronomy, UNESCO has earmarked activities that will be carried out in the framework of the IYA Cornerstone projects, such as the Galileoscope, 100 Hours of Astronomy, Dark Skies Awareness, Developing Astronomy Globally, Universe Awareness, From Earth to the Universe, and of the Special Project, The World At Night. In addition, ongoing consultations are taking place for the development and implementation of astronomy-related outreach and capacity-building initiatives with special partners. All these activities are expected to be carried out in close cooperation with UNESCO Member States' schools, universities, institutes, planetariums, observatories and science centres (some of which have recently become IYA2009 National Nodes) and through the UN World Space Week network.

SEP Coordinator: Yolanda Berenguer (y.berenguer@unesco.org)

www.un.org/millenniumgoals

www.unesco.org/en/earth/space-education

Make it happen!
Support the IYA2009

Girls observing the Sun
(Kevin Govender)

Are you fascinated by the Universe? Would you like to contribute to the International Year of Astronomy? One of the goals of the International Year of Astronomy is to enable as many people as possible to experience the excitement of personal discovery that Galileo felt when he first saw lunar craters and mountains, the moons of Jupiter and other celestial wonders. The aim is to encourage everyone to think about how observations of the cosmos around us force us to reconsider our understanding of the natural world.

If you are a newcomer or an astronomy enthusiast…
If you are a beginner and would like to get some advice, contact your IYA2009 National Nodes, a local astronomy club, planetarium or science museum. A list of the IYA2009 National Nodes can be found on: www.astronomy2009.org. A list of other astronomy organisations worldwide can be found on: http://skytonight.com/community/organisations or www.astronomyclubs.com.

If you are an amateur astronomer…
For every professional astronomer, there are at least 20 amateur astronomers. The IAU and UNESCO encourage amateur astronomers to play a major role in the organisation of astronomy outreach activities. As an amateur astronomer, you can join a local astronomy club and plan some interesting astronomy outreach activities. Lots of ideas can be taken from the IYA2009 activities pages — do not be afraid of adapting them to your own country's history and culture. Get in touch with science teachers in local schools and propose some practical activities for students involving observation of the sky.

If you are a professional astronomer…
You can do all the above and contact your IYA2009 National Node (see www.astronomy2009.org) or national astronomical societies for advice and new ideas on what can be done to promote astronomy in your region. You can coordinate activities with amateur astronomers, help to publish results and contribute to science.

Amateur Astronomers
(TWAN/Babak Tafreshi)

If you are an educator…
You can find inspiration for activities, receive training through the Galileo Teacher Training Program, and get assistance with relevant and exciting lesson plans that will take your students to another Universe.

If you have a new idea…
If you have a new idea and it is not listed in the national, regional and global activities pages, contact the Single Point of Contact in your own country and propose your ideas. Single Points of Contact are listed by country on the IYA2009 webpage: www.astronomy2009.org.

If you want to be a partner in the IYA2009…
There are unrivalled opportunities to partner the main IYA2009 events. Partners will receive enormous global exposure through the events themselves and through internet and media coverage. We envisage different levels of support. Each level can provide direct and significant support to IYA2009 financially, or can contribute through in-kind contributions. In return, the IYA2009 Partners will enjoy benefits assigned by the IAU IYA2009 in proportion to their specific contributions.

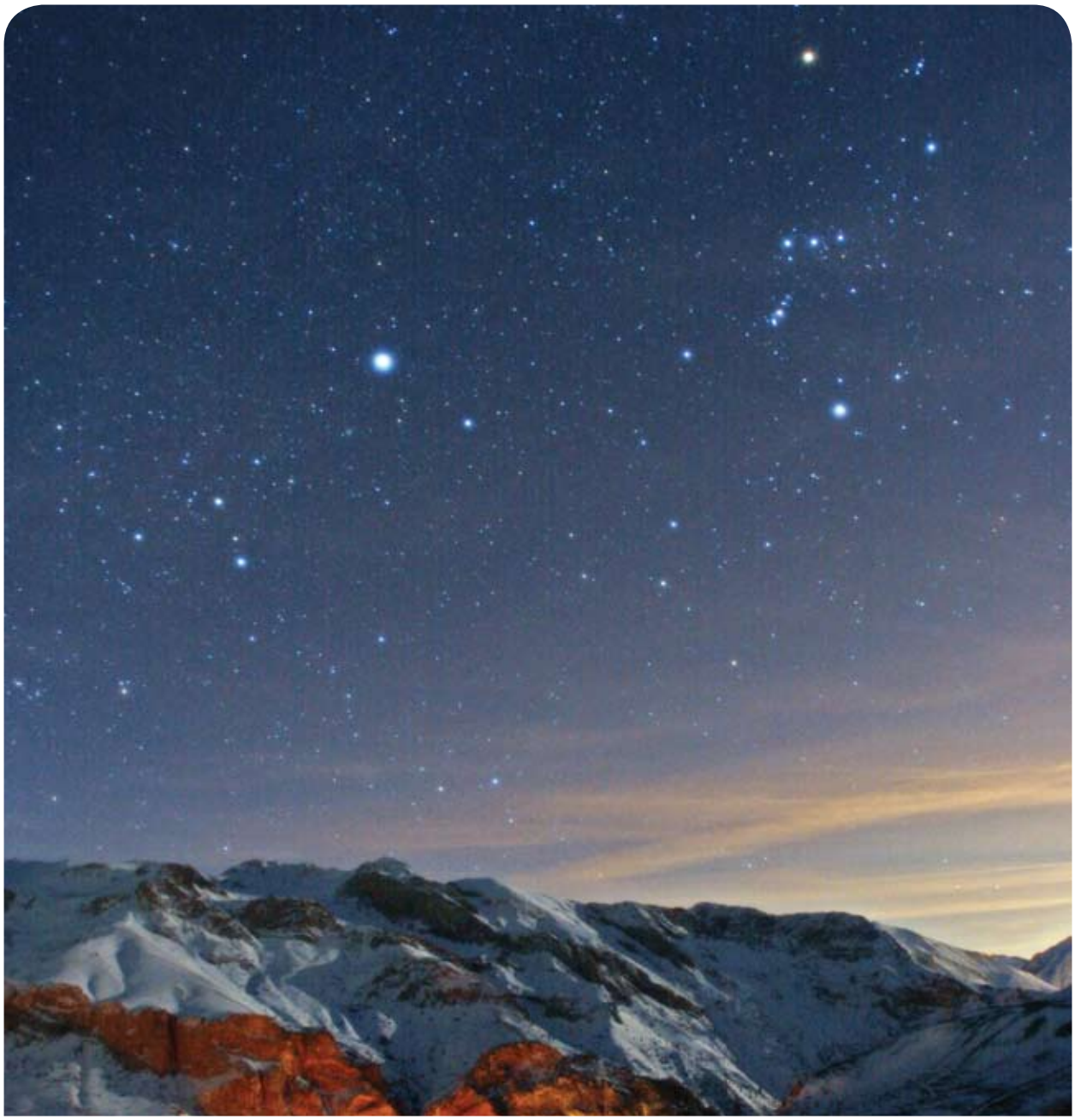
There are many countries and groups deeply involved in the IYA2009 project and thousands of activities are already underway. Please take some time to search the IYA2009 webpage. Feel free to contact us if you are interested in a specific activity. If you would like to know more about IYA2009 activities taking place in your country, please contact your national Single Point of Contact.

If you wish to donate…
If you wish to donate in support of the work of the International Year of Astronomy 2009, please contact iya2009@eso.org

The Universe, Yours to Discover

Astronomy is one of the oldest fundamental sciences. It continues to make a profound impact on our culture and is a powerful expression of the human intellect.

Catherine Cesarsky
IAU President



www.astronomy2009.org

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