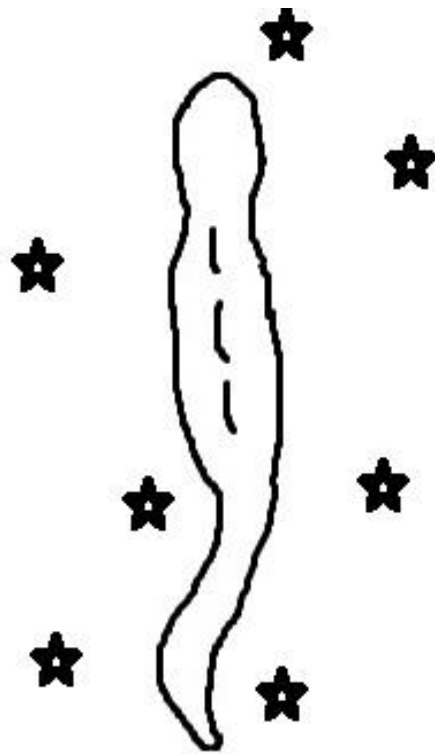


Astronomy in Timor-Leste Celebrating the Transit of Venus 2012

Version 1.0 - 22 February 2012



SUMMARY

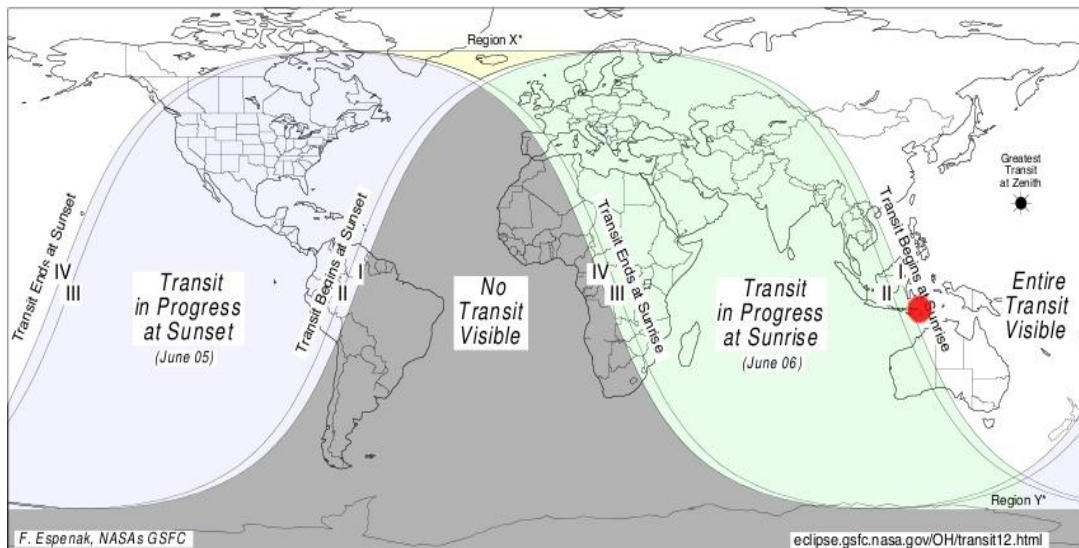
On 6 June 2012, the planet Venus will cross the solar disc in an extremely rare astronomical event only visible from some parts of the globe. Timor-Leste will witness this transit of Venus, which will only happen again in more than 100 years. Universe Awareness (UNAWA) partners are organising several educational activities in Timor-Leste on the occasion of the transit, ranging from teacher training workshops to a public observing event. These activities are targeted at teachers, children, students and the general public and follow the vision of UNAWA: Inspire everyone with our wonderful cosmos.

1. PROJECT DESCRIPTION

Astronomy in Timor-Leste is an initiative by the Universe Awareness Student Ambassador Programme, whose vision is to inspire young children with the beauty and grandeur of the universe and encourage them to pursue their interests in science and technology. The aims of this project in Timor-Leste are two-fold:

1. To start an on-going collaboration between UNAWA and Timor-Leste, a developing country founded as recently as 2002, and lay the foundation for a national Universe Awareness programme.
2. To inspire teachers, educators, children, and the general public of Timor-Leste about astronomy in a grand way, reaching over 4,000 people, through the observation of a rare astronomical event—the transit of Venus—which will occur on 6 June 2012.

Global Visibility of the Transit of Venus of 2012 June 05/06



* Region X - Beginning and end of Transit are visible, but the Sun sets for a short period around maximum transit.

* Region Y - Beginning and end of Transit are NOT visible, but the Sun rises for a short period around maximum transit.

The transit of Venus last occurred in 2004, and after 6 June 2012, it will only occur in 2117, making it a rare event of our lifetime. The event is visible from Earth, but not from all places: we can see the countries that will witness the transit in the image above.

The big red dot in the image is Timor-Leste, a country that became independent in 2002 and is at the beginning of a long process of nation building. It is located at a point where the entire transit

is visible, creating an outstanding opportunity to develop a large scientific event in a community that is new to pedagogical practices in astronomy and science education. Through awareness of the wonders of our universe, we hope that our efforts will open new horizons for the young and bright children of Timor-Leste to pursue scientific knowledge for their community.

The project, spanning an eight-day horizon, includes several activities to reach the community at a large scale. It will start with a UNAWE teacher training session, where teachers of Timor-Leste will be introduced to astronomical concepts, with a focus on the transit of Venus, how to teach astronomy in the classroom, and how to use UNAWE resources for the coming years. Visits to several schools are planned where children will be stimulated with fun activities and games designed to engage children in science at an early age. A talk about modern astronomy is planned for natural science and engineering students of the National University of Timor-Leste. A science exhibition and the observation of the transit itself will culminate the program. This event will reach out to the public (over 4,000 people estimated) in Dili, the capital of Timor-Leste.



On the day of the main event, the transit will start at 07:14:00 (time in GMT +9). In the above image, we can also see the movement of Venus across the solar disk relative to the zenith (the point directly overhead). The event will end approximately at 13:46:00. On the final day, a workshop will be held for science educators in Timor-Leste to fully benefit from this project and have the right support to continue other science activities, thus establishing the UNAWE Timor-Leste program.

2. PROJECT BACKGROUND

ABOUT THE TRANSIT OF VENUS

When a planet passes directly between the Earth and the Sun, we call it a transit. As seen from Earth, transits of planets in our Solar System can only occur for planets closer to the Sun than our Earth, i.e. Mercury and Venus. This places Solar System transits among the rarest of predictable astronomical phenomena. The transit of Venus occurs four times in a period of 243 years in a pattern with two pairs of transits eight years apart. The first of this transit's pair occurred in 2004. During the transit, Venus can be seen from Earth in the daytime as a little black circular disk obscuring some light of the Sun as it moves in front of it, which means that this rare event is accessible to millions of people across the world with an almost naked eye.



The transit of Venus has been observed for several centuries and is of great value to astronomy. From Venus' transit, astronomers used the technique of parallax to determine the distance from Earth to the Sun, and formulated the astronomical unit (AU), which took an important place in the distance ladder in astronomy. But there are more scientific conclusions that can be drawn from transit measurements such as an understanding of Venus's atmosphere. In addition, transit detection is one of the popular methods to detect planets outside our own Solar System. Because of the historical and scientific importance of planetary transits, measuring the 2012 transit of Venus with

children is a fantastic platform to demonstrate the beauty of astronomy and the opportunities of science.

ABOUT THE UNAWE NETWORK

UNAWE programs are active in 45 countries and comprise a global network of almost 500 astronomers, teachers and other educators. It represents an ambitious blueprint that aims to use astronomy to foster education and provide skills and competencies in science and technology to young children throughout the world, particularly in developing countries.

UNAWE was founded in 2006 supported by a grant from Netherlands' Minister of Education, Culture and Science. Developments over the last four years have led the European Union to award a grant of 1.9 million Euro to fund a three-year project under the name European Universe Awareness (EU-UNAWE), which builds on the work of Universe Awareness (UNAWE). EU-UNAWE is endorsed by the International Astronomical Union (IAU) and it is now an integral part of the IAU Strategic Plan 2010–2020: Astronomy for the Developing World.

The international network provides a platform for sharing ideas, best practices and resources between educators from around the world. The network is also used to run ambitious global projects, with the aim of broadening children's horizons beyond their local area and to show them that they are part of a global community. UNAWE reinforces the concept of global citizenship. It provides training activities for teachers and other educators of young children, giving them confidence to introduce astronomy and other science topics in the classroom, and to create innovative methods for engaging young children in astronomy.

3. PROJECT TIMELINE

The project has been running from December 2011 and will run through to completion in June 2012. The event spans eight days from 31 May to 7 June 2012. The activity plan is outlined below:

Timeline	Activity
May 31	Set up and preliminary meetings
June 1	Children Day
June 2–3	Teacher training workshops
June 4–5	Visits to schools and university
June 6	Venus Transit Event
June 7	Follow up workshop

4. PROJECT BUDGET AND FUNDING

To make this project possible, we hope to receive either complete or partial funding from different entities who share our goals. Our project budget is split into two parts: Logistics (e.g. travelling expenses, living costs, etc.; €4,260) and Educational Materials (e.g. purchasing small telescopes, printing booklets, etc.; €10,000).

Items	Price/Item (Euro)	Quantity	Total (Euro)
Flight Tickets	1,100	3	3,300
Lodging (8 days)	60	3	1440
Educational Materials			10,000
Total			14,260

The budget excludes the local costs for hosting the workshops and public events.

5. PROJECT TEAM AND PARTNERS

The project Astronomy in Timor-Leste is possible through a collaborative effort between Leiden Observatory, the UNAWE Student Ambassador Programme, and several advisers. A project team is responsible for the project, and our partners and collaborators from the Netherlands, Portugal, East Timor, Indonesia, and Australia make the action possible through their network and dedication in the field.

THE PROJECT TEAM

The project team organisation is a key factor to the project success. It relies on a competent and sharp project team, with people who perform a number of roles and carry out a variety of group/individual responsibilities with a lot of dedication, loyalty and passion for their work.

UNAWE Student Ambassadors and Project Leaders			Supervisors	
Carla Santos Natario Astronomy Master Student	Ainil S Abdullah Astronomy PhD Student	Cindy Gunuwan Dutch Language Graduate	Pedro Russo UNAWE Int. Project Manager	George Miley UNAWE Founder

CARLA SANTOS NATARIO

From a coastal town Setubal in Portugal to Leiden University in the Netherlands to pursue Astronomy, Carla is a science lover and astronomy student at Leiden University. During her bachelor studies in Physics and Astronomy at the University of Lisbon, Carla was very active in science outreach activities at the Astronomical Observatory of Lisbon and was part of various organizations including Interact (Rotary International's service club for young people), Portuguese Red Cross, and Ciencia Viva Science Centre. Along with her master's, she works as an Ambassador and part-time science writer at UNawe, The Netherlands. Carla wishes to pursue a career as an astronomer, astrophysicist, science populariser and science communicator in astronomy and the natural sciences.

AINIL S. ABDULLAH

Ainil is from the East Java Province of Indonesia where she completed her bachelor studies at the Bandung Institute of Technology. She completed her master studies at Leiden University and has recently begun her PhD program here. Popularizing science to the community is important to Ainil and she has been an active member of UNawe Indonesia since 2008. Prior to that, she has also been involved in public outreach activities by the Astronomical Student Union in Indonesia.

CINDY GUNAWAN

Cindy is from East Java, Indonesia. After working in the field of accounting for four years in Indonesia, Cindy decided to follow her passions and obtain a Bachelor's degree in Dutch Studies from Leiden University and is set to pursue a Master's in Linguistics. She was invited to join the project because of her unique combination of language and public relation skills. She also shares a passion for astronomy and education of young children, making her a perfect fit to realize this project.

PATRONS, GLOBAL PARTNERS AND COLLABORATORS



THE NETHERLANDS

- Koen Kuijken, Director of Leiden Observatory
- Paul van der Werf, Director of Education of Leiden Observatory
- Evelijn Gerstel, Manager of Leiden Observatory
- Jaya Ramchandani, UNawe Product Development Internship
- Sara Khalafinejad, UNawe Educational Resources Developer

PORTUGAL

- Luis Barreira de Sousa, Portuguese Embassy in East Timor
- Nuno Crato, Portuguese Ministry of Education and Science

EAST TIMOR

- Joao Cancio Freitas, East Timor Minister of Education
- Ana Bessa, Portuguese School Teacher in Portuguese School of Dili

INDONESIA

- Premana Premadi, Observatory Bosscha ITB Astronomy Department Indonesia / UNawe Indonesia Program Manager
- Taufik Hidayat, Astronomy Department of ITB
- Donald Tambunan, ASEAN Education section
- Edegar da Conceicao, PhD student from Timor

INTERNATIONAL

- Kevin Govender, IAU Office of Astronomy for Development
- Jean-Luc Dighaye, EurAstro
- ThilinaHeenatigala, AstroBookDrive

AUSTRALIA

- Sandra Thong, Monash Science Centre, Australia
- Ana Margarida Lopes, Nature
- Robert Hollow, CSIRO Astronomy and Space Science
- Corrie Williams, Monash Science Centre Australia



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