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SCOSTEP CAPACITY BUILDING ACTIVITIES THAT ENHANCE SPACE WEATHER UNDERSTANDING

Marianna G. Shepherd
Scientific Secretary

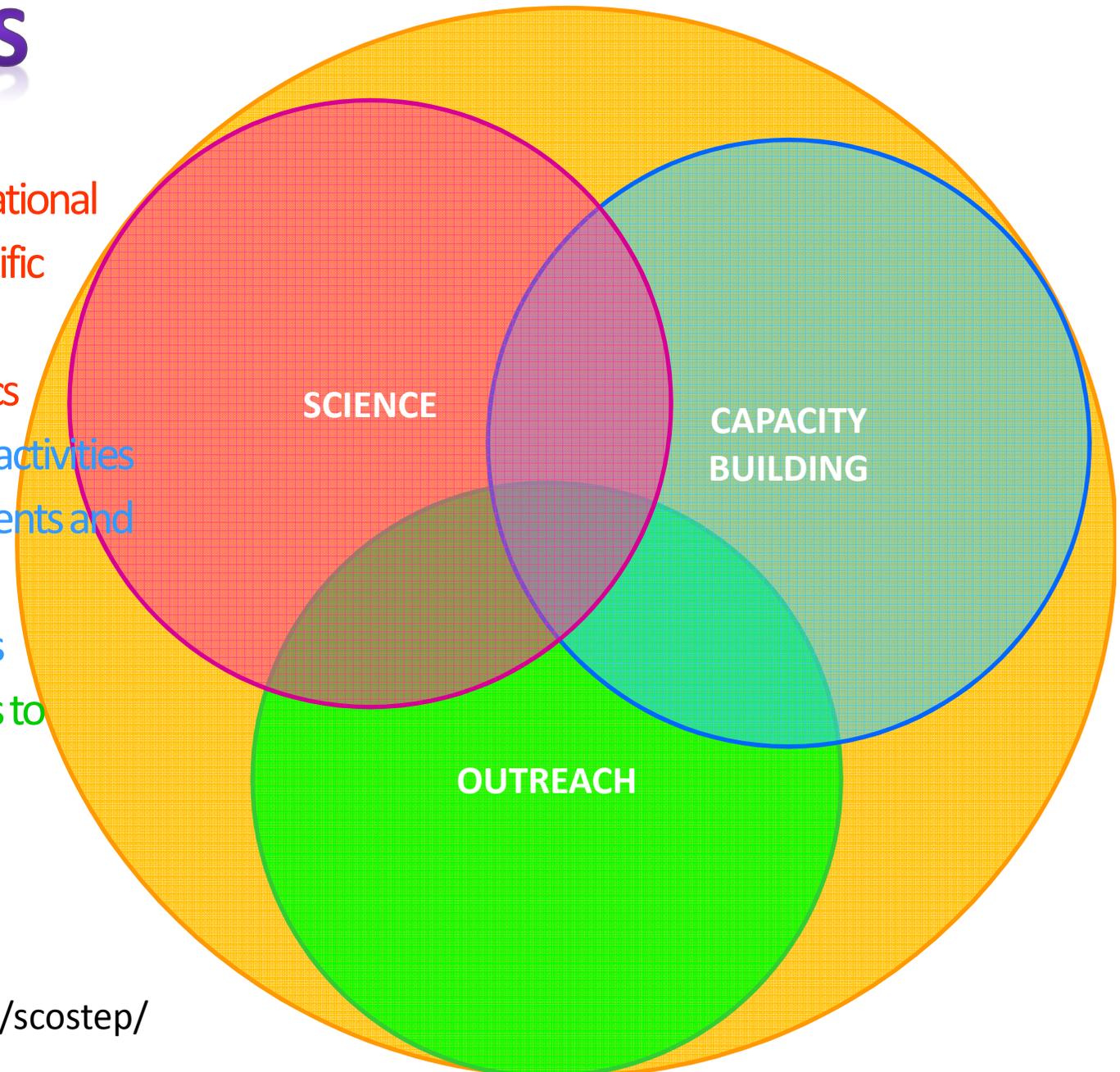
Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
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ACTIVITIES

■ Long-term international interdisciplinary scientific research programs in Solar-Terrestrial Physics

■ Capacity Building activities to train graduate students and young scientists via Space Science Schools

■ Outreach activities to educate the public on the Sun-Earth System (e.g. comic books)



SCOSTEP TRAINING AND OUTREACH

- **Solar-Terrestrial Physics Symposia (STP):** Every 4 years - assess progress made by the scientific program. The STP13 was held in Xi'an, China, Oct 12-18, 2014 (<http://stp13.csp.escience.cn>)
- **SCOSTEP Awards:** Three awards - since 2013, to honor outstanding service (1) and scientific achievement in STP (one general and one young scientist)
- **SCOSTEP Visiting Scholar (SVS) Program:** Initiated in 2014, to support training visits by graduate students or young scientists from developing countries to an advanced laboratory (up to 3 months)
- **International Space Science Schools:** Every year to provide advanced training to PhD students and Post Doctoral Fellows in collaboration with the International Space Weather Initiative (ISWI), International Council for Science (ICSU), and International Union of Radio Science (URSI).

SCOSTEP VISITING SCHOLARSHIP

■ Objectives:

- a) To provide training to young scientists and graduate students from developing countries in well-established solar-terrestrial physics (STP) laboratories
- b) Aims to fund 4 scholars each year, one related to each of the four SCOSTEP/VarSITI themes (<http://www.varsiti.org/>).
- c) The training will help the young scientists to advance their career in solar-terrestrial physics using the technique/skill they acquire during the training.
- d) SCOSTEP will provide the airfare; it is expected that the hosting laboratory will provide the living expenses

■ Duration of tenure: 1 to 3 months

■ All applications and inquiries – SCOSTEP Secretariat

■ Further information – <http://www.yorku.ca/scostep/>

SCOSTEP VISITING SCHOLARSHIP INSTITUTIONS



- IAF – Leibniz Institute of Atmospheric Physics, Germany
- STEL – The Solar-Terrestrial Environment Laboratory, Nagoya University, Japan
- NASA – National Aeronautic and Space Administration, USA
- NiPR – National Institute of Polar Research, Japan
- NSSC – National Space Science Center, Chinese Academy of Sciences, China

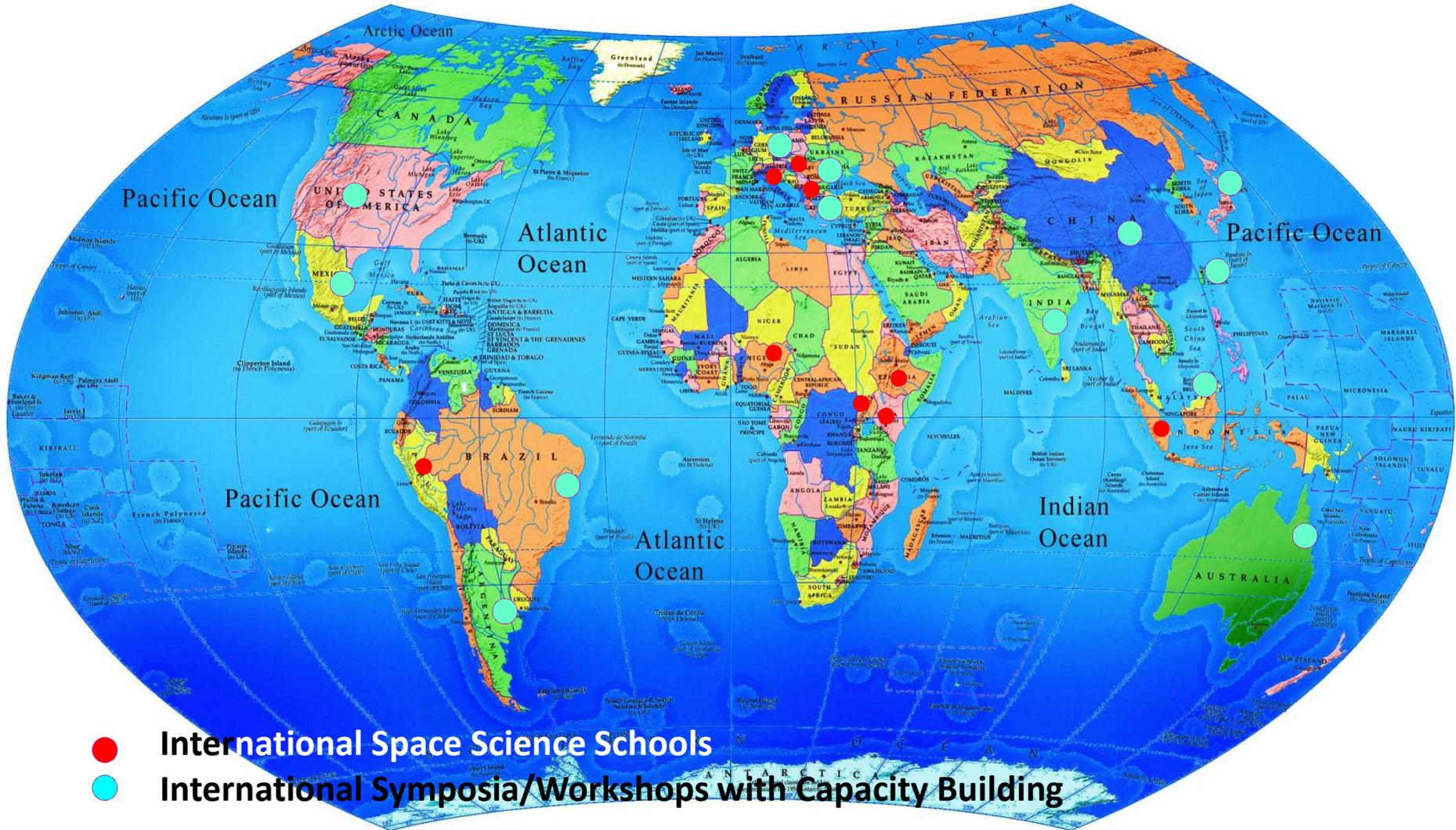
CAPACITY BUILDING AND EDUCATION

- SCOSTEP has partnered with the ISWI in capacity building and science education (CBASE) activities in Asia, Africa, and South America in collaboration with the URSI and ICSU regional offices for Asia and the Pacific (ICSU/ROAP), Africa (ICSU/ROA), and Latin America and the Caribbean (ICSU/ROLAC).

The CABSE activities consist of three elements:

- a) conducting advanced schools in Space Weather/Space Science for young people (scientists and graduate students)
 - b) organizing teacher workshops for the benefit of school teachers in the host country, and
 - c) conducting space instrumentation workshops to disseminate information on low-cost instruments that can be deployed in developing countries to gather valuable data on space weather from ground.
- SCOSTEP and ISWI activities promote space Sun-Earth connection studies via complementary approaches in international scientific collaborations, capacity building, and public outreach.

SCOSTEP SPACE SCIENCE SCHOOLS



INTERNATIONAL SPACE SCIENCE SCHOOLS

- *ISSS – a collaborative effort of SCOSTEP and ISWI*
- *Slovakia – August 21 – 27, 2011: ISWI-Europe Summer School in Space Science, Tatranská Lomnica.*
- *Indonesia – September 17 – 26, 2012: ISWI/MAGDAS School on Space Science, Bandung, Indonesia <http://iswimagdas2012.dirgantara-lapan.or.id/>*
- *Kenya – October 21 – November 1, 2013: ISWI/SCOSTEP School on Space Sciences, Technical University of Kenya, Nairobi.
<http://www.tukenya.ac.ke/conferences/departments>*
- *Rwanda – June 30 – July 11, 2014: African School on Space Science: Related Applications and Awareness for Sustainable Development of the Region, with the Abdus Salam International Centre for Theoretical Physics, College of Science and Technology, Kigali.*
- *Peru – September 15 – 23, 2014: ISSS, part of the 10th Latin American Conference on Space Geophysics, Lima*
- *Italy –September 15 – 20, 2014: TRAINING SCHOOL on New challenges in the study of the impact of solar variability on climate, Trieste*



- **Space Festival 2012 in Coimbatore, India** (July 9 – 14, 2012) - organized by the Bharathiar University, SCOSTEP Comic Books translated into Tamil; 10,000 copies were printed and distributed to the students.



- **Space Science School** organized by the ISWI, supported by a SCOSTEP grant from ICSU - *September 17-26, 2012, Bandung, Indonesia.*



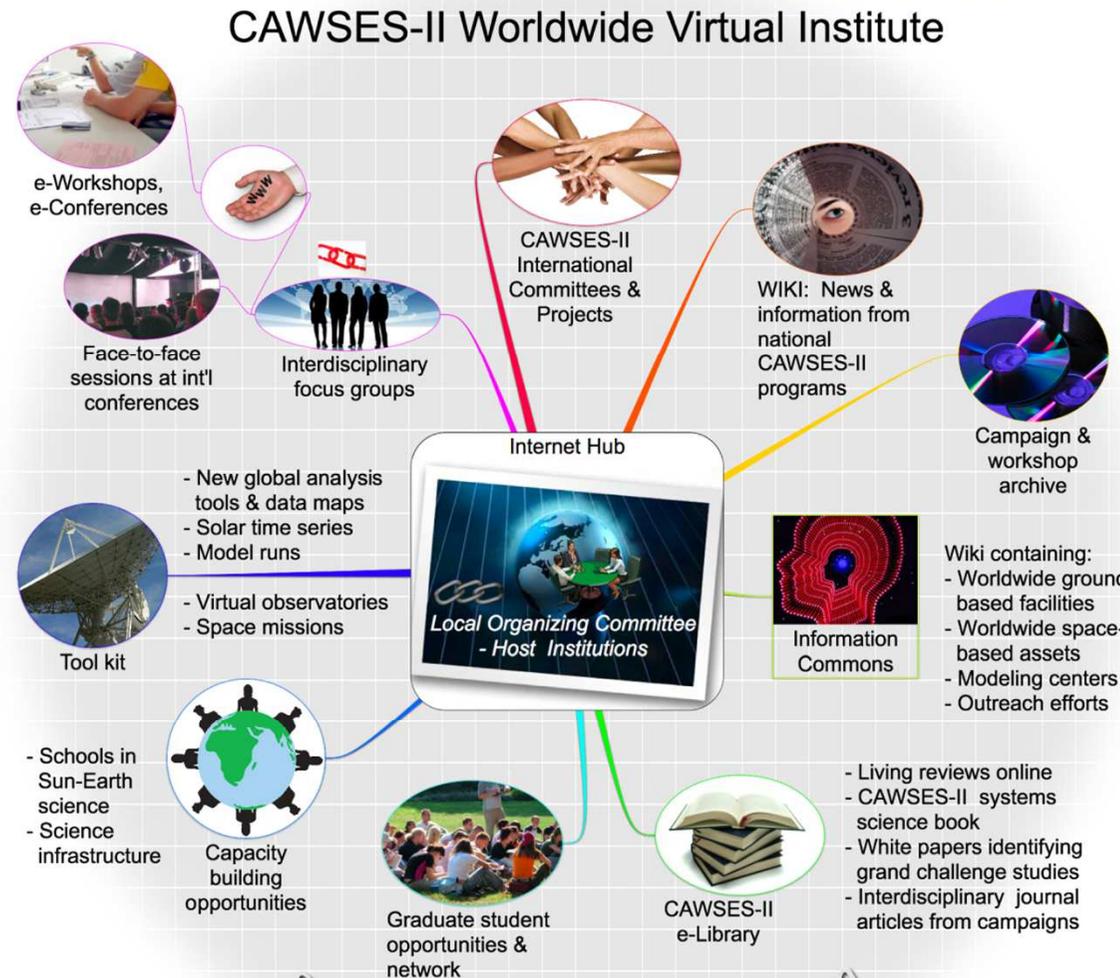
- **Chapman Conference on Longitudinal and hemispheric dependence of space weather, Nov 12-16, 2012, Addis Ababa, Ethiopia**



*African School on Space
Science, Kigali, Rwanda,
Jun 30 – Jul 11, 2014,*



SCOSTEP/CAWSES eSCIENCE AND INFORMATICS



Worldwide attention to data-aspects of international collaborations

– good

Relations to the World Data System

– okay

Use of virtual observatories as well as localized data sharing

– very good

CAWSES-II (Climate and Weather of the Sun-Earth System) – SCOSTEP program (2009 – 2013)

SCOSTEP AWARDS



SCOSTEP Distinguished Scientist Award

Awarded for outstanding contribution by a scientist to SCOSTEP science.

Statute and Procedure Award Announcement



SCOSTEP Distinguished Young Scientist Award

The award is given to young scientist who achieved considerable success in SCOSTEP science and took an active part in SCOSTEP events.

Statute and Procedure Award Announcement



SCOSTEP Distinguished Service Award

Awarded for unique contribution to SCOSTEP activities, to realization of its programs and events.

Statute and Procedure Award Announcement

SCOSTEP AWARDS

- SCOSTEP Awards (SCOSTEP Medal) for *Distinguished Science*, *Distinguished Young Scientist*, and *Distinguished Service* – Established in 2013
- The 1st Distinguished Young Scientist Award was given in 2014 to:
 - **Dr. Neel Savani** for his contribution to the study of coronal mass ejections (CMEs) and their impact on Earth, and
 - **Dr. Jia Yue** for his contribution to the study of vertical coupling by atmospheric waves between the troposphere and the upper atmosphere.



*Dr. Neel Savani,
Naval Research
Laboratory*

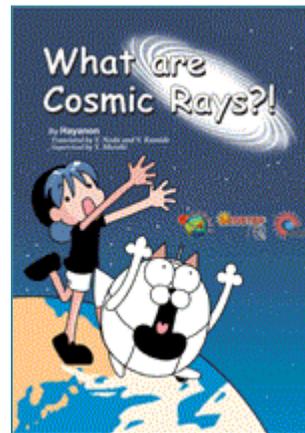
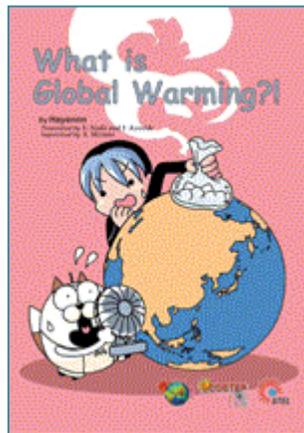
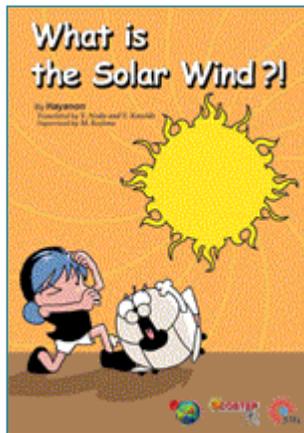
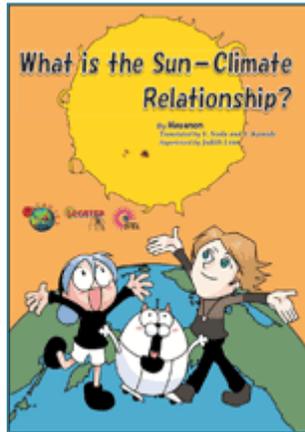
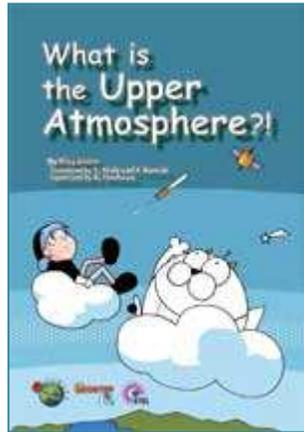
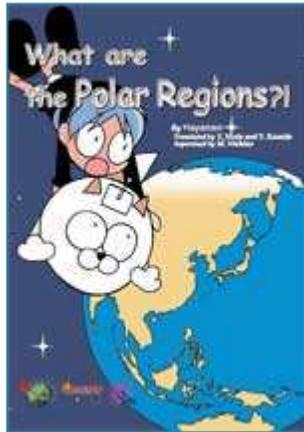
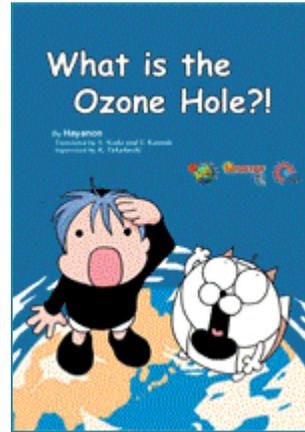
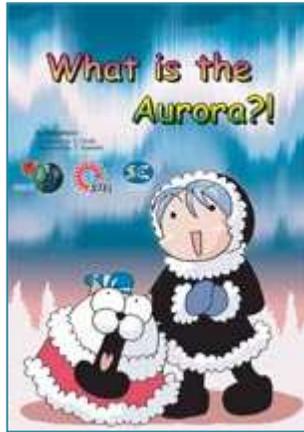


*Dr. Jia Yue
Hampton
University*

SCOSTEP President Dr. Nat Gopalswamy with the recipients of the Distinguished Young Scientist medal, Dr. Jua Yue, and Distinguished Science medal, Prof. Gordon Shepherd at the SCOSTEP 13th Quadrennial STP Symposium, Xi'an, China



SCOSTEP OUTREACH COMIC BOOKS



- To raise the public awareness on selected scientific topics (currently 9)
- Translated into nine languages, more translations – on going
- Available online: <http://www.yorku.ca/scostep>
- Translate into a new language!

SUMMARY

- SCOSTEP is actively involved in the advancement of Capacity Building and scientific excellence through its scientific programs and partnership with the ISWI, ICSU and URSI.
- Through its initiatives, e.g. Space Science Schools, SCOSTEP Visiting Fellowships (SVS), and eScience it facilitates the training, interaction and collaboration of young and early carrier scientists with the best of the STP scientific community.
- Between 2011 and 2014 SCOSTEP organized and/or supported a total of 55 international conferences/workshops from which 13 dedicated exclusively to Capacity Building in developing countries.
- The established SCOSTEP Awards and the SVS recognize scientific excellence and facilitate the achievement of such scientific excellence.