CAWSES: Climate and Weather of the Sun-Earth System

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A BRIEF HISTORY OF SCOSTEP

- 1966: ICSU established the Inter-Union Commission on Solar-Terrestrial Physics (IUCSTP), the predecessor of SCOSTEP.
- 1972: ICSU reorganized IUCSTP as a special committee with responsibility for interdisciplinary solar-terrestrial physics programs of finite duration.
- 1973: SCOSTEP took effect after the ratification of a new Constitution by the ICSU Executive Board and General Committee.
- 1978: SCOSTEP became a Scientific Committee of ICSU charged with the long-term responsibility to promote international interdisciplinary programs in solar-terrestrial physics.
- 1982: SCOSTEP held its first General Council Meeting under the new Constitution. The Constitution was revised in 1988.

SCOSTEP Overview

- Provides guidance to the STP discipline centers of ICSU's World Data Center system
- Develops and sustains student and public interest in Sun-Earth connections (capacity building)
- Seeks projects and programs that cross over traditional boundaries of physical regions
- SCOSTEP organizes and conducts international solar-terrestrial programs (STP) programs of finite duration in cooperation with other ICSU bodies (Current scientific program: CAWSES)
- Results from these programs are shared with the community of SCOSTEP scientists by joining in conducting meetings, conferences, and workshops and by publishing newsletters, handbooks and special journal issues.
- Quadrennial STP Symposia (200-300 scientists attend)

SCOSTEP Organization

- President: N. Gopalswamy (USA)
  Vice President: F.-J. Lübken (Germany)
  Scientific Secretary: Marianna Shepherd (Canada) [ex. Officio]
- Representatives of Participating Bodies

  M. Candidi, Italy (SCAR)

  M. Lester , U. K. (IUPAP)

  T. Nakamura, Japan (COSPAR)

  N. Gopalswamy, USA (IAU)

  K. Hamilton, USA (IAMAS)

  C. Hanuise, France (URSI)

  V. Kuznetsov, Russia (IAGA)
- General council: Adherent Representatives & Discipline Reps
  - elects the executive officers (President and Vice President)

The governing body of SCOSTEP is the SCOSTEP Bureau

Past Programs

- Completed SCOSTEP programs include:
- International Magnetospheric Study (IMS: 1976-79)
- Solar Maximum Year (SMY: 1979-81)
- Middle Atmosphere Program (MAP: 1982-85)
- Solar-Terrestrial Energy Program (STEP: 1990-97).

Post-STEP programs

- STEP-Results, Applications, and Modeling Phase (SRAMP 1998 - 2002): http://www.kurasc.kyoto-u.ac.jp/s-ramp/
- International Solar Cycle Study (ISCS 2003): http://www.scostep.ucar.edu/archives/scostep11_lectures/Pap.pdf ESA-SP 535 Proceedings of ISCS 2003
- Planetary Scale Mesopause Observing System (PSMOS 1998): http://www.kurasc.kyoto-u.ac.jp/radar-group/psmos/psmosj/index-e.html
- Equatorial Processes Including Coupling (EPIC 1999): http://www.kurasc.kyoto-u.ac.jp/~epic

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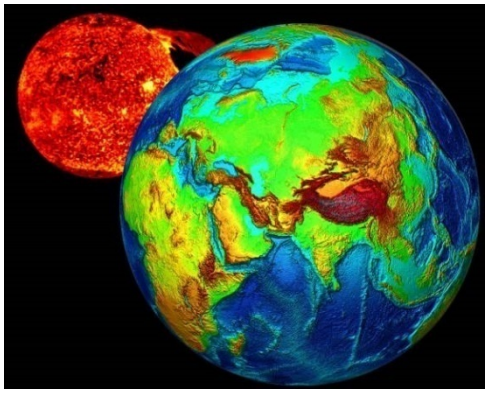


- CAWSES: 2004 -2008
- CAWSES II 2009 – 2013
- Enhance our understanding of the space environment and its impacts on life and society
- Help coordinate international activities in observations, modeling and theory crucial to achieving the understanding
- Involve scientists in both developed and developing countries
- Provide educational opportunities for students at all levels

Susan Avery and Alan Rodger: CAWSES Co-chairs, being replaced

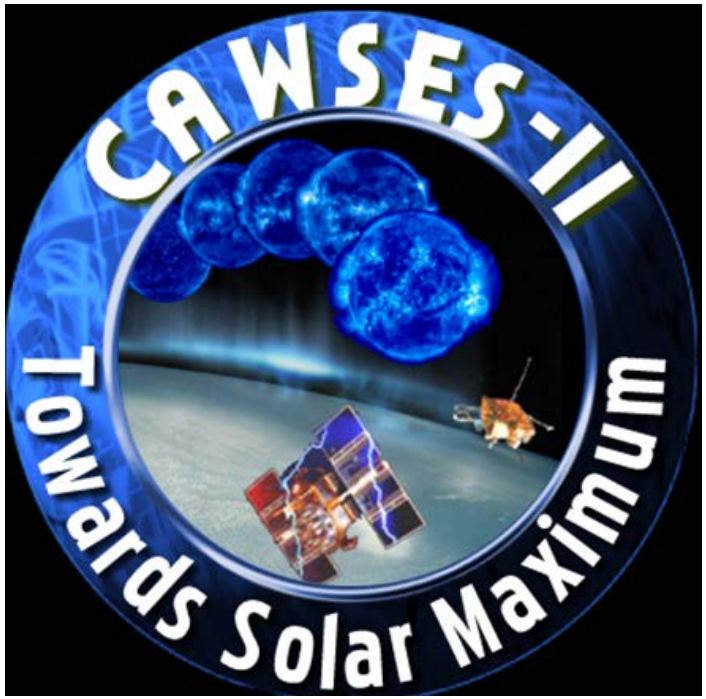
Climate and Weather of the Sun-Earth System (CAWSES) Book

Online: Free hard cover ~$150 (12000 yen) Terrapub, Japan
http://www.terrapub.co.jp/onlineproceedings/ste/CAWSES2007/index.html

International CAWSES Symposium, October 23–27, 2007, Kyoto University, Kyoto, Japan

CAWSES II Task Groups/Leaders

http://www.cawses.org/wiki/index.php



- **Task Group 1:** What is the solar influence on climate? Ilya Usoskin (FIN) Joanna Haigh (UK)
- **Task Group 2:** How will geospace respond to a changing climate? Jan Lastovicka (CZ) & Daniel Marsh (US)
- **Task Group 3:** How does short-term solar variability affect the geospace environment? Kazunari Shibata (JPN) & Joe Borovski (USA)
- **Task Group 4:** What is the geospace response to variable inputs from the lower atmosphere? Jens Oberheide (GER), Kazuo Shiokawa (JPN)

Task Group 1

- Task Group 1 is concerned with the effect of transient solar events on the middle and lower atmosphere quantifying the direct and indirect solar effects upon climate over timescales ranging from minutes to millennia.
- This group is involved in several study projects at the International Space Science Institute (ISSI) in Switzerland.

Task Group 2

- This group studies the complex physical and chemical processes of the upper atmosphere in response to processes such as rising greenhouse gas concentrations and cooling in the middle atmosphere and the related consequences in the ionosphere and magnetosphere.
- This group has undertaken several projects that will help understand the geospace response to the changing climate.

Task Group 3

- This group deals with the science of space weather, involving the mass and electromagnetic emissions from the Sun on short time scales.
- Electromagnetic radiations (flares, irradiance) drive the ionosphere, while the mass emissions (CMEs, solar wind, solar energetic particles) impact the magnetosphere and lower layers all the way to the surface of Earth.
- Adverse space weather can be detrimental to human technology in space and on Earth, so understanding space weather effects is important in developing techniques to forecast them.

Task Group 4

- This group strives for an understanding of the cause-and-effect chain that connects atmospheric variability with geospace processes
- Effects of the quiescent atmospheric variability transmitted to the magnetosphere: Persistent tropical rainstorms drive atmospheric waves that modulate ionospheric densities in the equatorial region. Lightning strokes generate radio waves that interact with radiation belt particles in the magnetosphere. Hurricanes and typhoons generate gravity waves that seed plasma bubbles in the low-latitude ionosphere.
- Task Group 4 actively encourages interactions between atmospheric scientists and plasma scientists by bringing out a Newsletter once every 3-4 months.

Next Scientific Program

- 2014 onwards
- Currently soliciting ideas
- One of the possibilities: Global solar minima

Other activities

- Support workshops and schools
- Outreach activities
- Campaigns in support of the scientific program
- STP Symposia (quadrennial)
- Focused symposia (e.g., CAWSES)

Quadrennial STP Symposia

SCOSTEP 2010

28.08.2011 13:47:52

Welcome

- » to Berlin
- » Venue, Dates and Deadlines
- » Scientific Program
- » Detailed Program
- » Invited Speakers
- » News

How to participate ?

- » Expression of Interest
- » Abstract Submission
- » Registration and fees
- » Travel Support
- » Accompanying persons

Travel, Accommodation

- » Travel to Berlin
- » Berlin: travel, map, restaurants
- » Accommodation

Social Activities

- » Ice Breaker, Tour, Dinner, ...
- » Berlin Tourist Center

Organizations involved

- » SCOSTEP

Welcome

Welcome to SCOSTEP's Symposium STP12 to be held in Berlin 12. - 16. July, 2010

STP-12 will be held in the week prior to the COSPAR Scientific Assembly in Bremen 18-25 July. There is frequent and convenient rail access to Bremen from Berlin for those who wish to attend both meetings.

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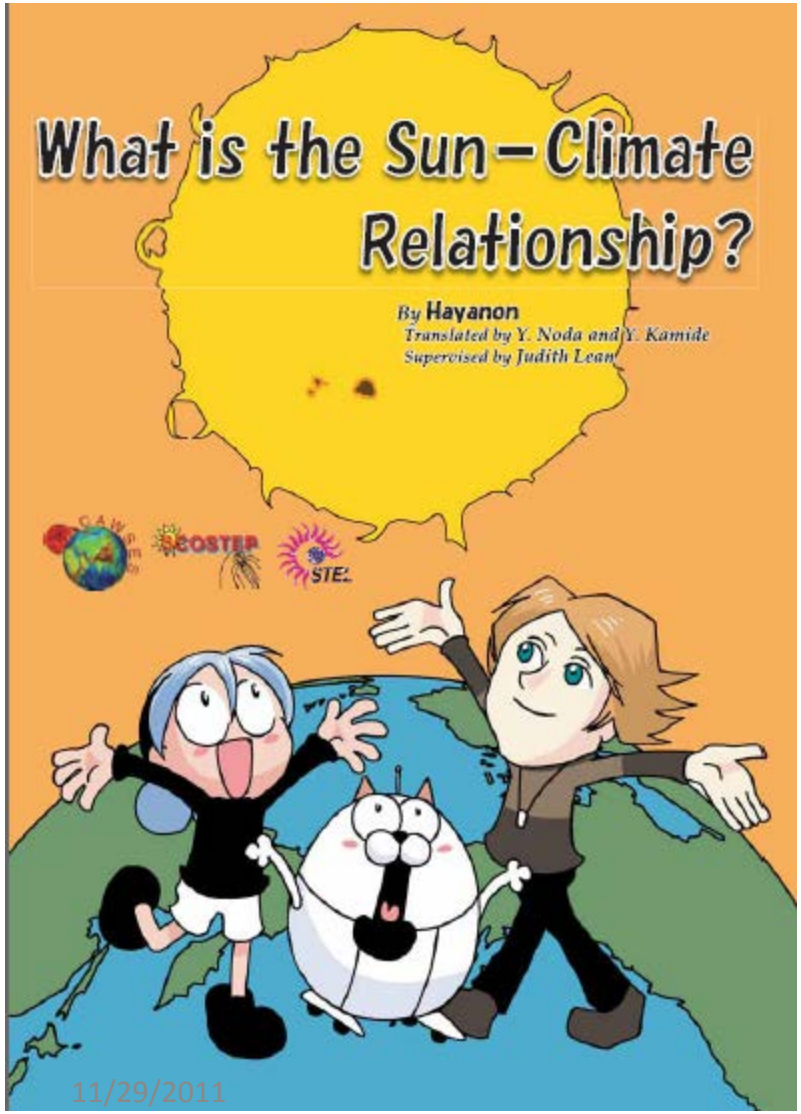
http://www.iap-kborn.de/SCOSTEP2010/

STP 13 in China (2014)!

SCOSTEP Outreach: The COMIC BOOKS



To raise the awareness of general public on selected scientific topics.

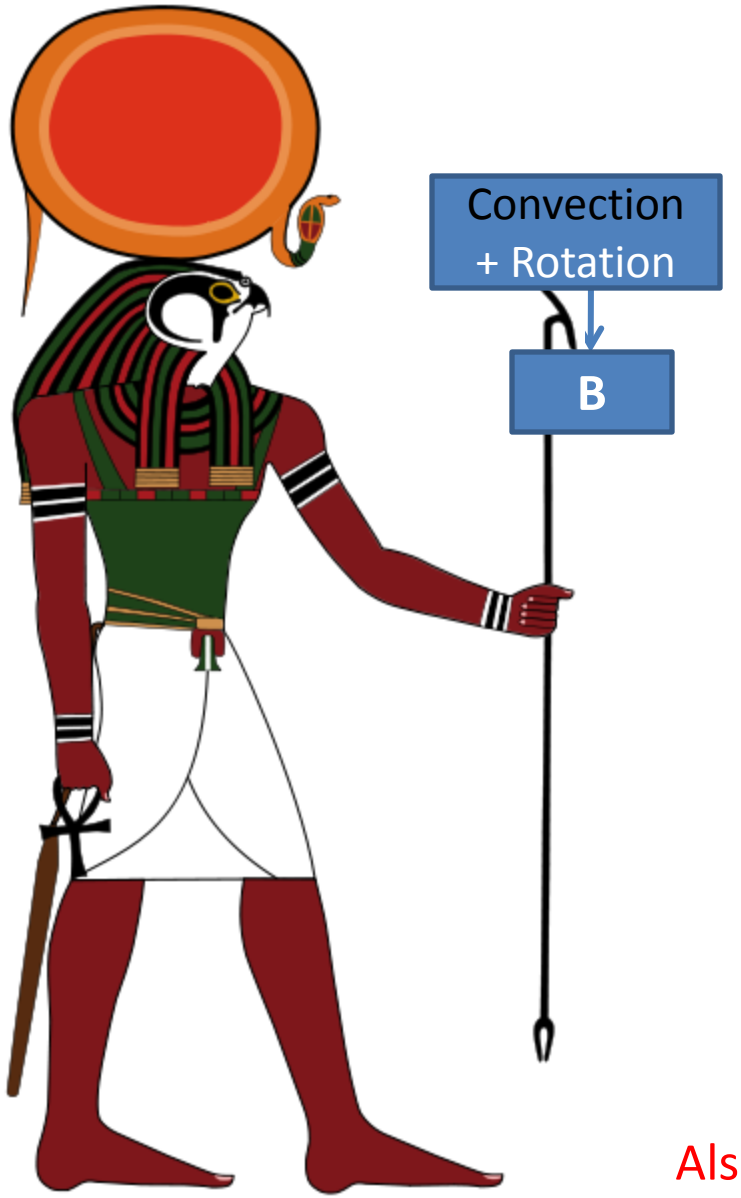
Blanks available if you want to use it for a new language

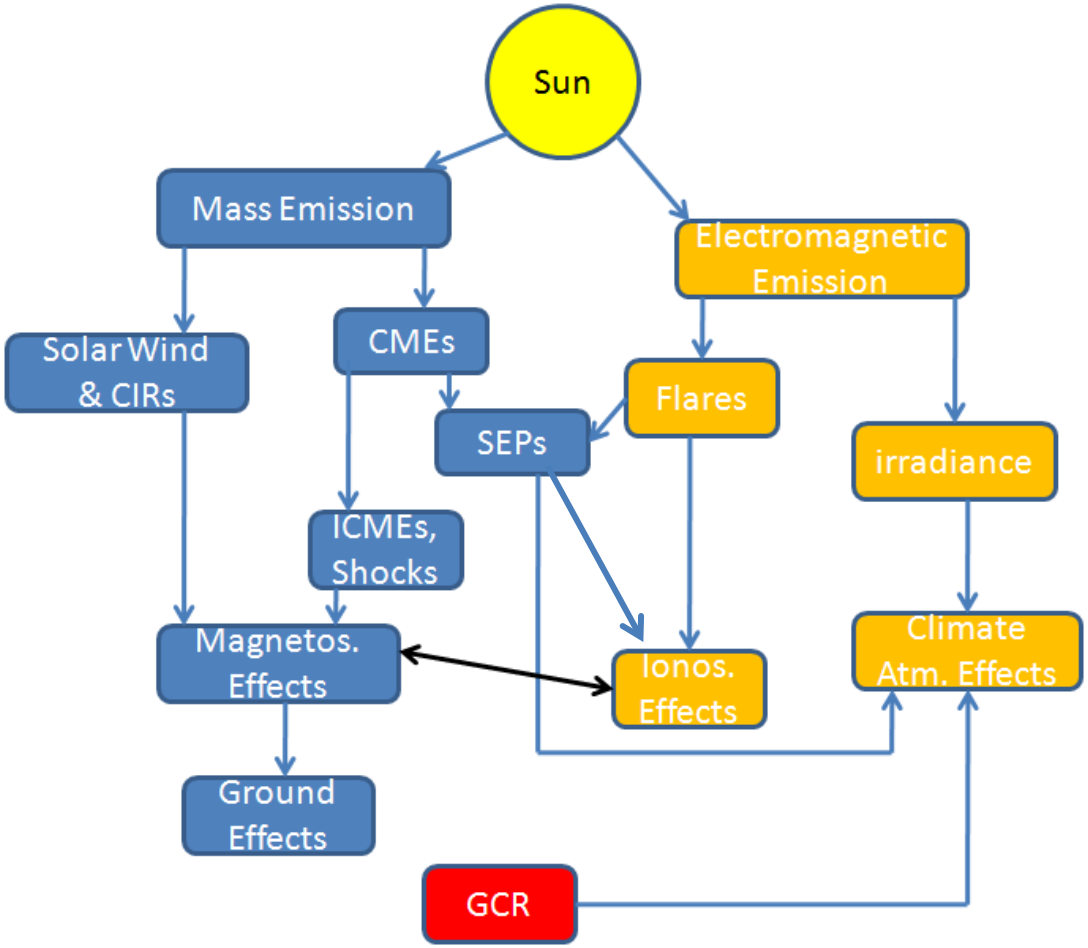
Already in many languages

SCOSTEP Capacity Building

ISWI School Bahir Dar, Ethiopia 2010

Solar Terrestrial Physics

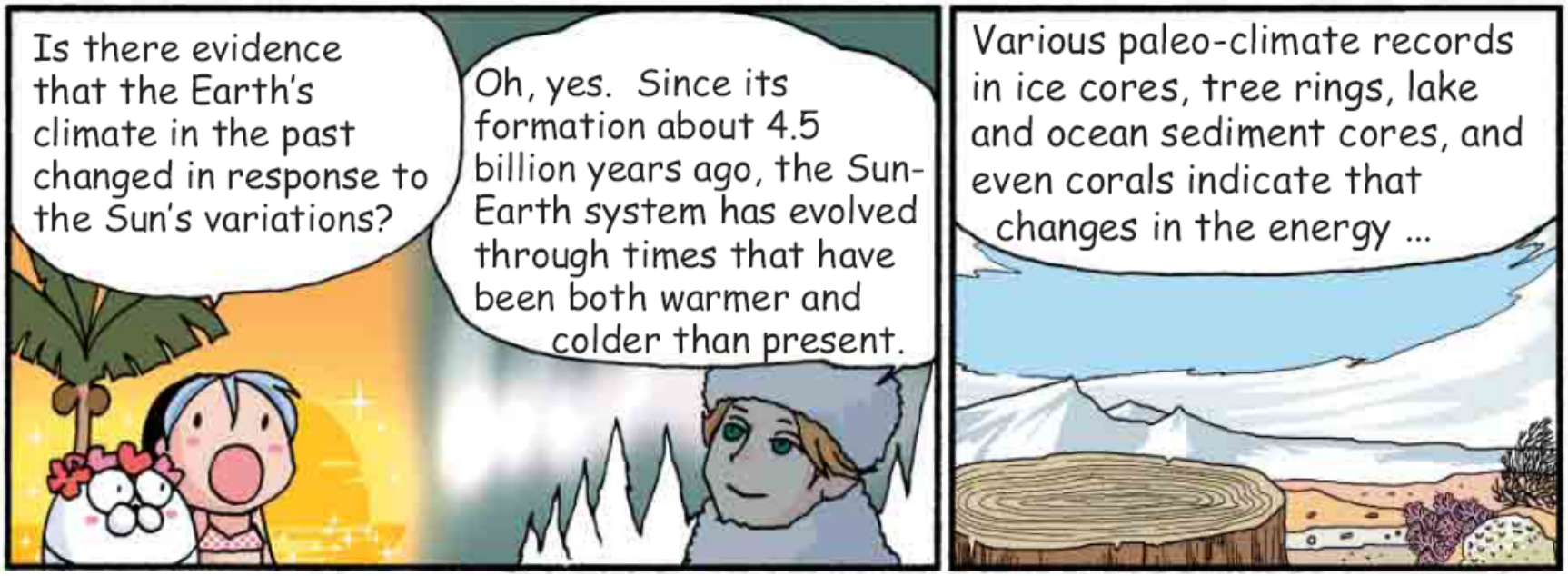




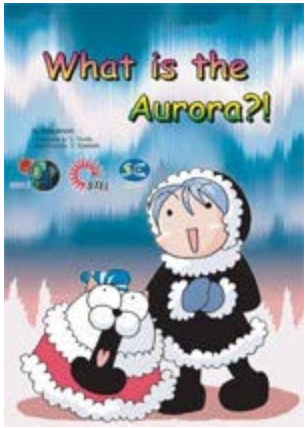
Also Earth to space coupling

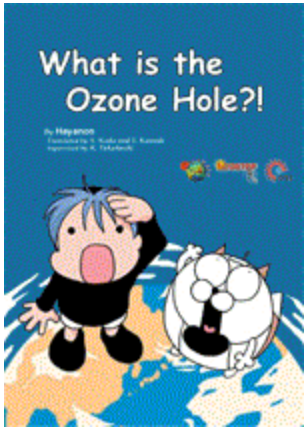
Gopalswamy, 2009

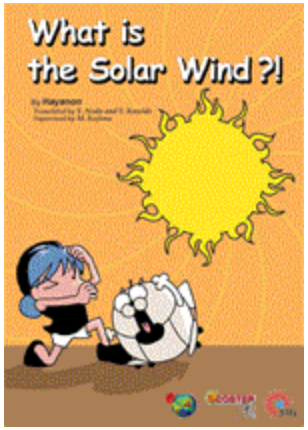
Backup Slides

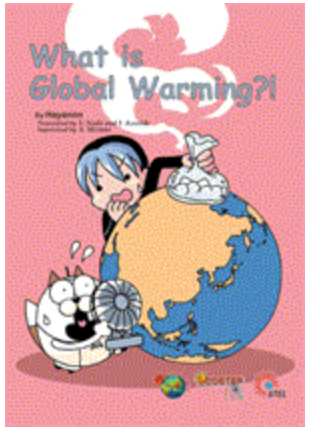


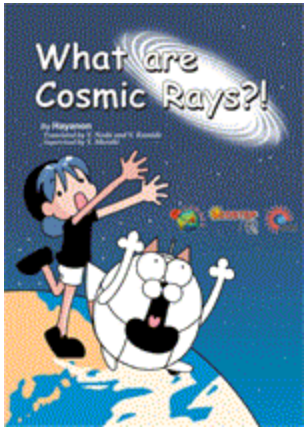
Popular Comic Books

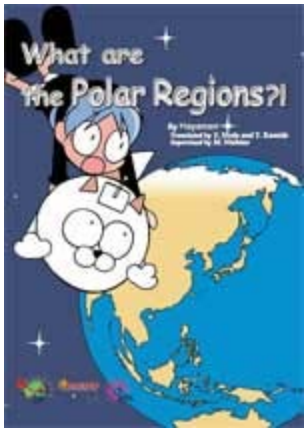


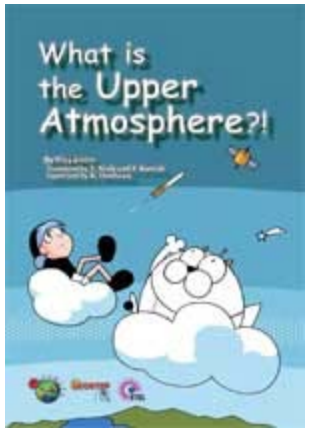


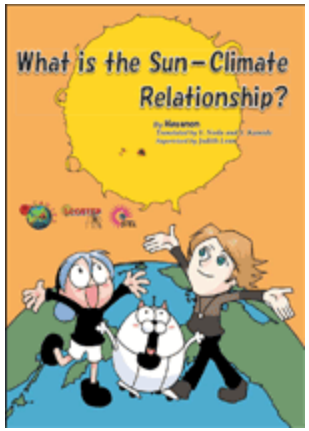












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SCOSTEP Overview

- SCOSTEP operates as an ICSU body, its General Council providing oversight for SCOSTEP operations and participates in election of the Executive Officers.
- A Bureau directs scientific, administrative and financial activities. They select the Scientific Secretary who administers the Secretariat, organizes meetings, and conducts the financial business of SCOSTEP.
- An international group of Scientific Discipline Representatives provides advice to SCOSTEP about scientific programs and serves to link activities in their fields to our programs.
- They lead within SCOSTEP and through other ICSU bodies to propose new programs and participate in the Steering Committees and projects of ongoing programs.
- Funding for these activities comes from ICSU annual grants; annual National Adherent subscriptions; and special grants as well as from services provided by host organizations.
- The Scientific Secretary provides an annual audited financial statement to ICSU and the Bureau.
- SCOSTEP seeks opportunities for interaction with national and international programs involving STP elements.
- It provides guidance to the STP discipline centers of ICSU's World Data Center system.
- It attempts to develop and sustain student interest in Sun-Earth Connections, to promote efficient exchange of data and information between STP scientists in all countries, and to seek projects and programs that cross over traditional boundaries of physical regions and focused scientific disciplines.

ICSU & SCOSTEP

Name of the Interdisciplinary Body	Acronym
An International Programme of Biodiversity Science	DIVERSITAS
Committee On SPAce Research	COSPAR
Committee on DATA for Science and Technology	CODATA
Global Climate Observing System	GCOS
Global Ocean Observing System	GOOS
Global Terrestrial Observing System	GTOS
Integrated Research on Disaster Risk	IRDR
International Geosphere-Biosphere Programme	IGBP
International Human Dimensions Programme on Global Environnemental Change	IHDP
International Network for the Availability of Scientific Publications	INASP
Programme on Ecosystem Change and Society	PECS
Scientific Com.on Frequency Allocations for Radio Astronomy and Space Science	IUCAF
Scientific Committee On Solar-TErrestrial Physics	SCOSTEP
Scientific Committee on Antarctic Research	SCAR
Scientific Committee on Oceanic Research	SCOR
WMO-ICSU-IOC World Climate Research Programme	WCRP
World Data System	WDS