



School Report

Smt. Kasturbai Walchand College of Science & Arts, Rajnemi Campus,
Sangli, Maharashtra 416416, India

http://www.iiap.res.in/meet/school_meet/index.php

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Aim of the School

- The SCOSTEP/ISWI International School on Space Science held in Sangli, India, has been one of the recent schools organized jointly by the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) and the International Space Weather Initiative (ISWI).
- The school was designed to be an excellent learning and enrichment opportunity for graduate students. The target audience was students who are pursuing PhD in solar terrestrial physics and space science.
- Some masters students who have already some exposures in solar/space physics were also included.
- The students received detailed exposure to topics ranging from the solar interior and atmosphere to Earth's magnetosphere, ionosphere, and atmosphere including phenomena of various time scales in the Sun-Earth connected space.

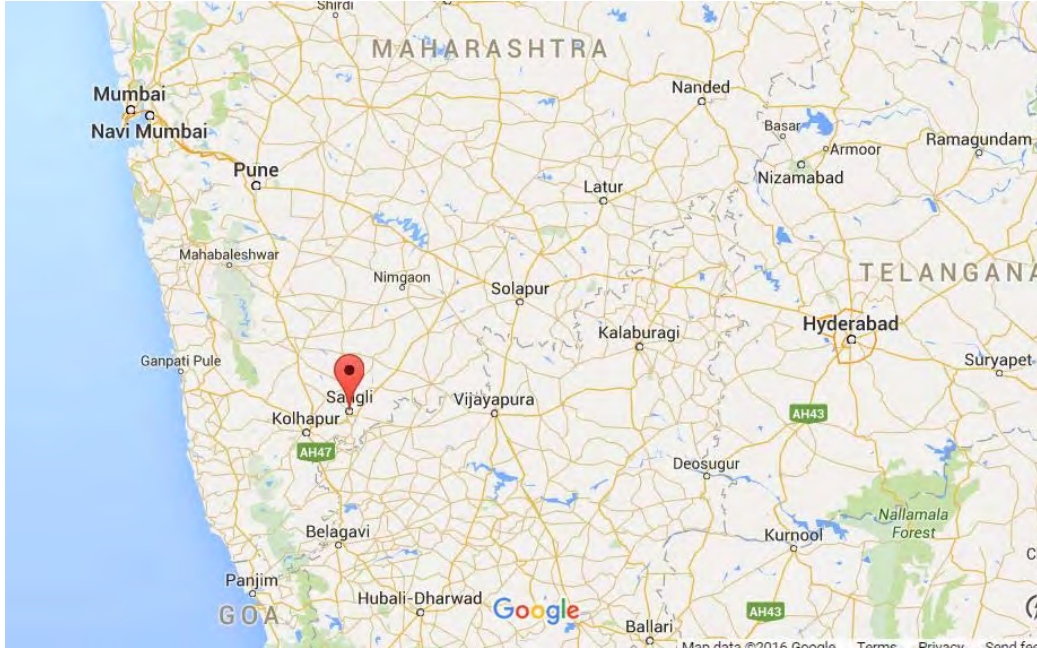
Organization

- Science content: School Directors
- Venue, accommodation, meals, transportation: Smt. Kasturbai Walchand College of Science & Arts (Local Organizing Committee)
- Web site: Indian Institute of Astrophysics, Bangalore
- International Travel: Boston College (ISWI), ISEE – Japan, Smt. Kasturbai Walchand College of Science & Arts

Sponsors

1. Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
2. International Space Weather Initiative (ISWI)
3. Indian Space Organization (ISRO)
4. Indo-US Science and Technology Forum (IUSSTF)
5. NITI Aayog, Govt. of India
6. Science and Engineering Research Board (SERB), DST, Govt. of India
7. Indian Institute of Geomagnetism (IIG)
8. Indian National Science Academy (INSA)
9. Committee on Space Research (COSPAR)
10. NASA
11. Center for International Collaborative Research (CICR), Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Japan
12. Japan Society for the Promotion of Science (JSPS) core-to-core program for Asia/Africa
13. Japan and Project for Solar-Terrestrial Environment Prediction, Japan.
14. Shivaji University, Kolhapur, India
15. Veetrag Computers, Sangli, India
16. Indian Institute of Astrophysics (IIA)

The School venue was a remote region brimming with sugar cane, turmeric, and thirst for science...



School Directors

Dr. Nat Gopalswamy (NASA/GSFC, USA)

Dr. P. K. Manoharan (Radio Astronomy Center, Ooty, India)

Dr. Dipankar Banerjee (Indian Institute of Astrophysics, Bengauru, India)

Dr. Dadaso Shetti (Smt. Kasturbai Walchand College, Sangli, India)

Participation

- 28 lectures by 23 Professors from USA, Japan, India, and Norway
- ISWI Instruments workshop conducted by 8 scientists from USA, India, Japan, and Switzerland
- There were 120 applications. 74 students were selected. Participants were from China, Egypt, Ethiopia, India, Indonesia, Ivory Coast, Kenya, Korea, Nigeria, Philippines, Rwanda, Thailand, Uganda, and Vietnam



Decorative art by the local organizers using color powders (Rangoli)

School Lectures

- Sun in the Universe: M. Guhathakurta, NASA/HQ, USA
- Magnetohydrodynamics: Mark Miesch, High Altitude Observatory, USA
- Numerical Simulations: Mark Miesch, High Altitude Observatory, USA
- Software tools: Python – Mihael Kirk, NASA/GSFC, USA
- Basic Plasma Physics – Nat Gopalswamy, NASA/GSFC, USA
- Solar Interior: S. P. Rajaguru, IIA Bangalore, India
- Solar Dynamo : Mark Miesch, High Altitude Observatory, USA
- Solar Atmosphere: Dipankar Banerjee IIA, Bangalore, India
- Magnetic Reconnection : Kazunari Shibata, Kyoto University Japan
- Solar Wind Observations: P. K. Manoharan, NCRA/TIFR, Ooty, India
- Solar Wind Theory: T. Suzuki, Tokyo University, Japan
- Sun and Climate : R. Ramesh, Physical Research Laboratory, India
- Solar Eruptions : Nat Gopalswamy, NASA/GSFC, USA
- Solar Energetic Particles: Pertti Mäkelä. NASA/GSFC, USA
- Radio Physics of the Sun : C. Kathiravan IIA Bangalore, India
- Magnetic Flux ropes : Vemareddy Panditi, IIA, Bangalore, India
- CME Stereoscopy : Nandita Srivastava, PRL/Udaipur, India
- Helio Data/HEK : Neal Hurlburt, Lockheed Martin, USA
- Magnetospheric Physics: Nikolai Ostgaard, University of Bergen, Norway
- Magnetosphere-solar wind interaction: Nikolai Ostgaard, Norway
- Ionospheric Physics : Kazuo Shiokawa, Nagoya University, Japan
- Magnetosphere-Ionosphere Coupling : A. Yoshikawa, Kyushu U., Japan
- Equatorial Aeronomy : A. K. Patra, NARL, Gadanki, India
- Atmospheric Physics: S. Gurubaran, IIG, Mumbai, India
- Space Weather : Keith Groves, Boston College, USA
- Remote-sensing Instrumentation : Sankar Subramanian, ISRO, India
- In-situ instrumentation: S. Kanekal, NASA/GSFC, USA
- Cosmic Rays - Pertti Mäkelä, NASA/GSFC, USA

SCOSTEP/ISWI School 2016



74 students

23 Professors

LOC

Officials from Latte Educational Society that runs the host institution

Traditional Welcome



Let the Light of Knowledge Spread...



Lamp lighting ceremony: Professor Wadmare, Professor Manoharan, Mr. Suhas Patil, Dr. Gopalswamy, Dr. Guhathakurta, Mr. Sakale, Mr. Suresh Patil, Mr. Kodag, Dr. Miesch, and Dr. Shetti

Inaugural lecture on “The Sun in the Universe”



Interactive Tutorial on Python – the free Software for Data Analysis

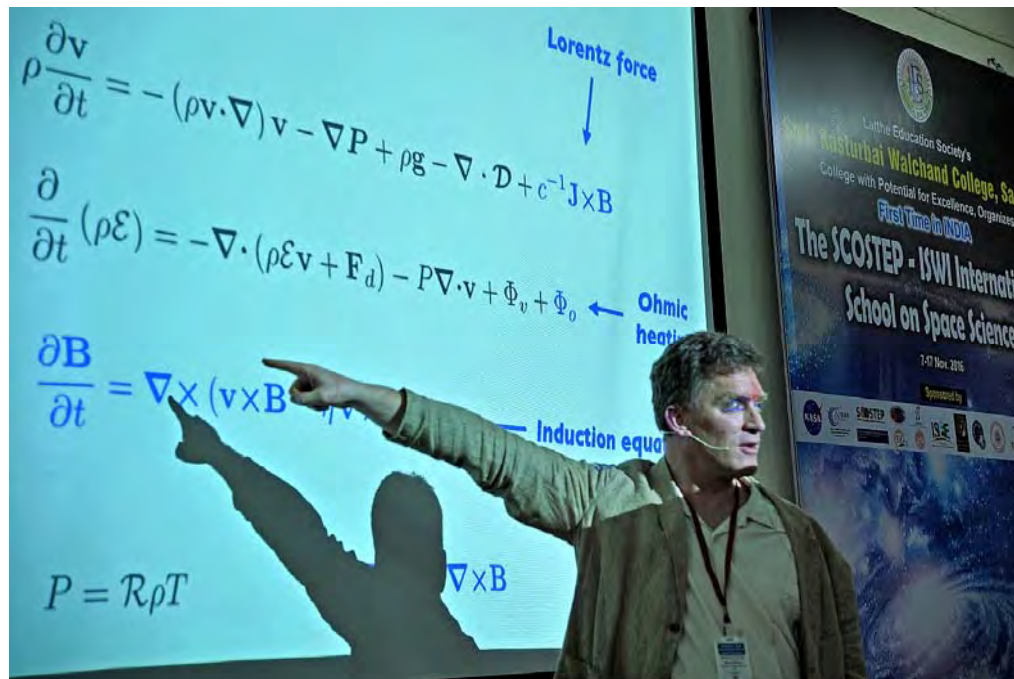


Solar Interior and Oscillations

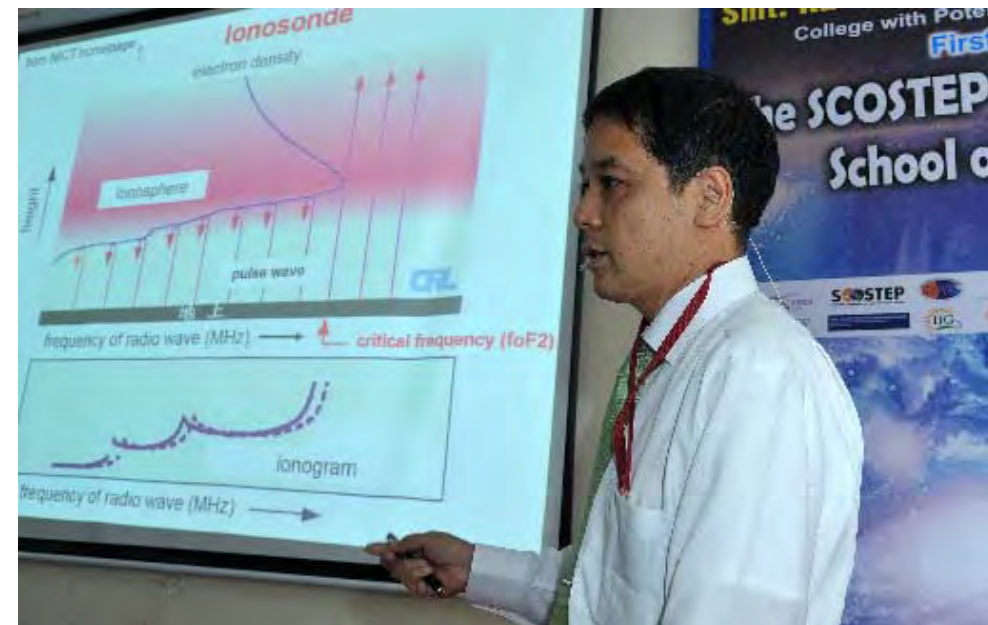
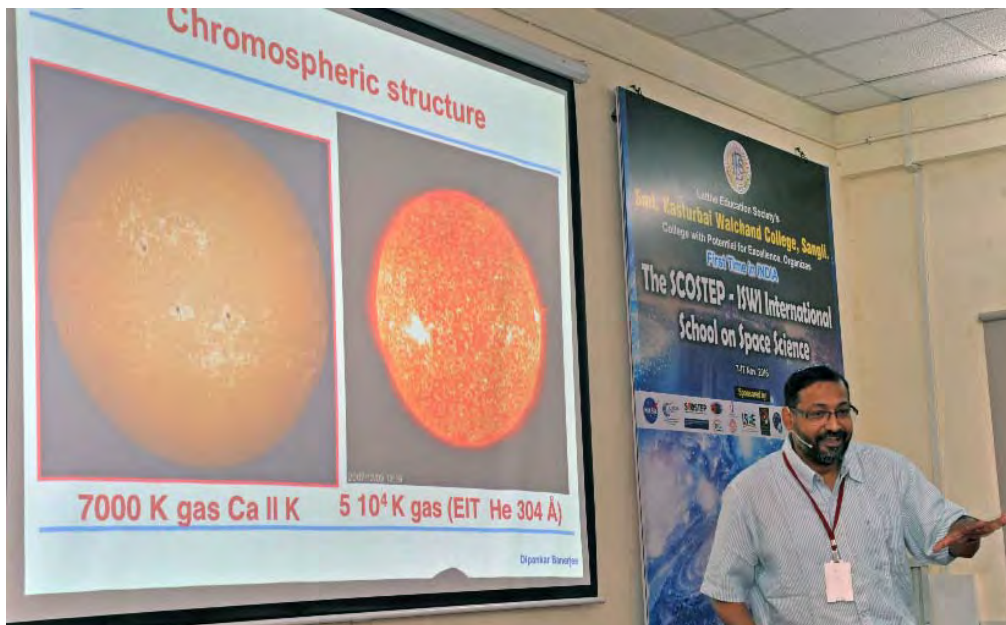
The scientific sessions started with the first lecture by P. Rajaguru on the interior of the Sun – how the energy is generated and transported to the surface



Questions on Solar Dynamo

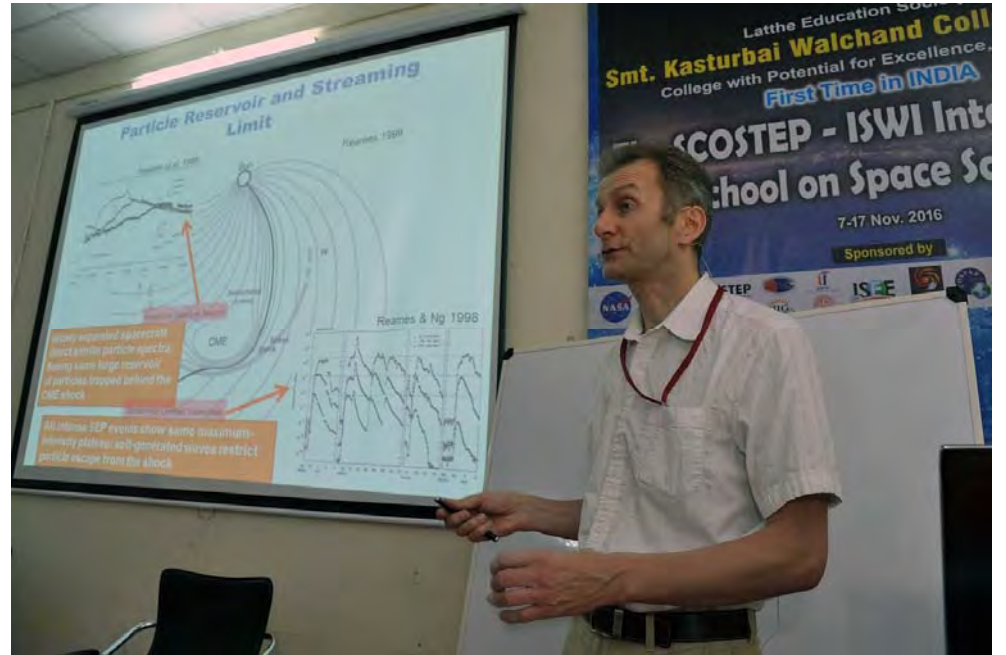


Chromosphere and Ionosphere



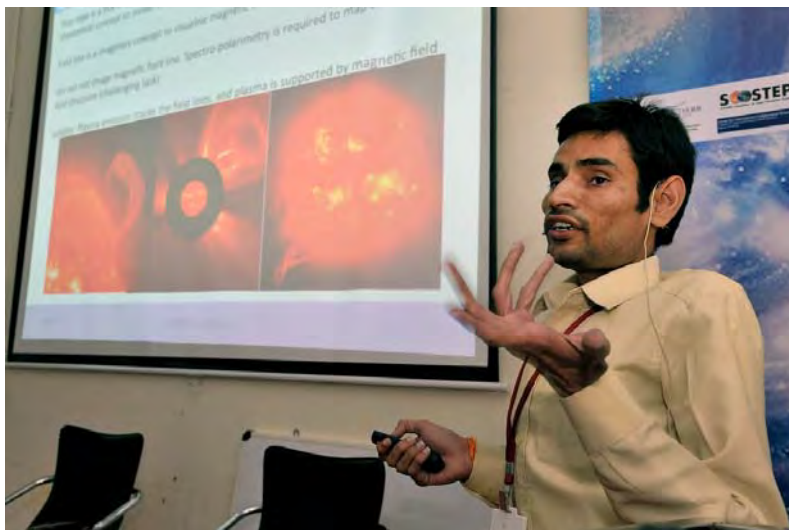
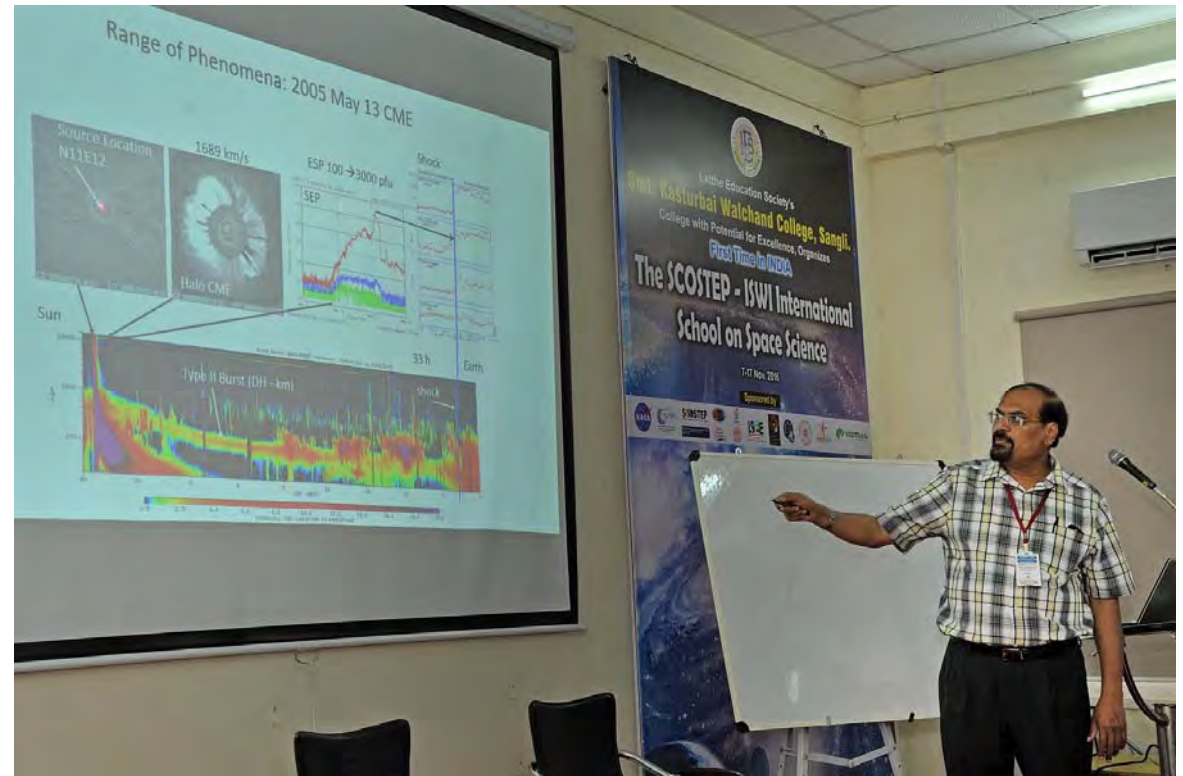


Informal chat among lecturers

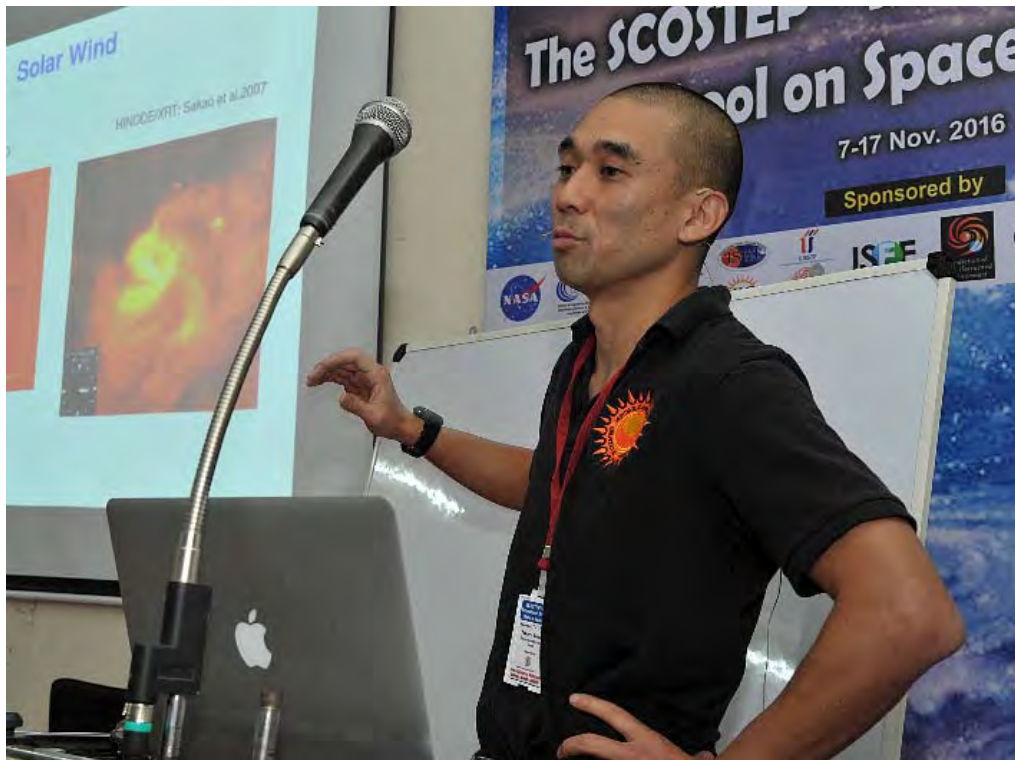


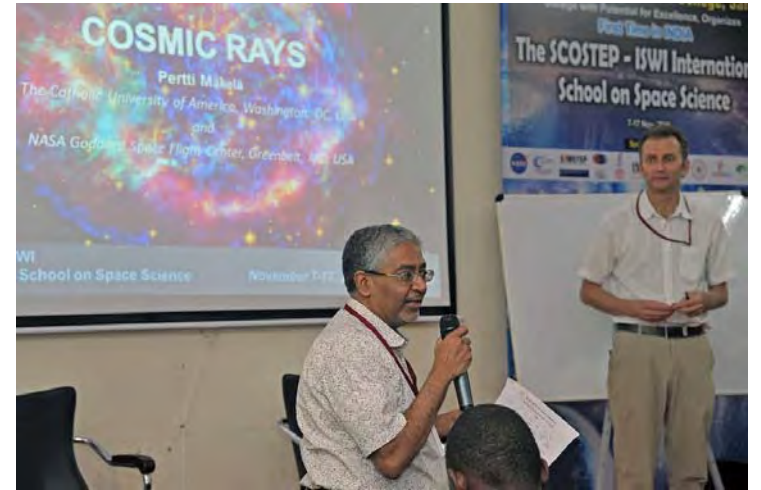
Pertti Makela's lecture on solar energetic particles

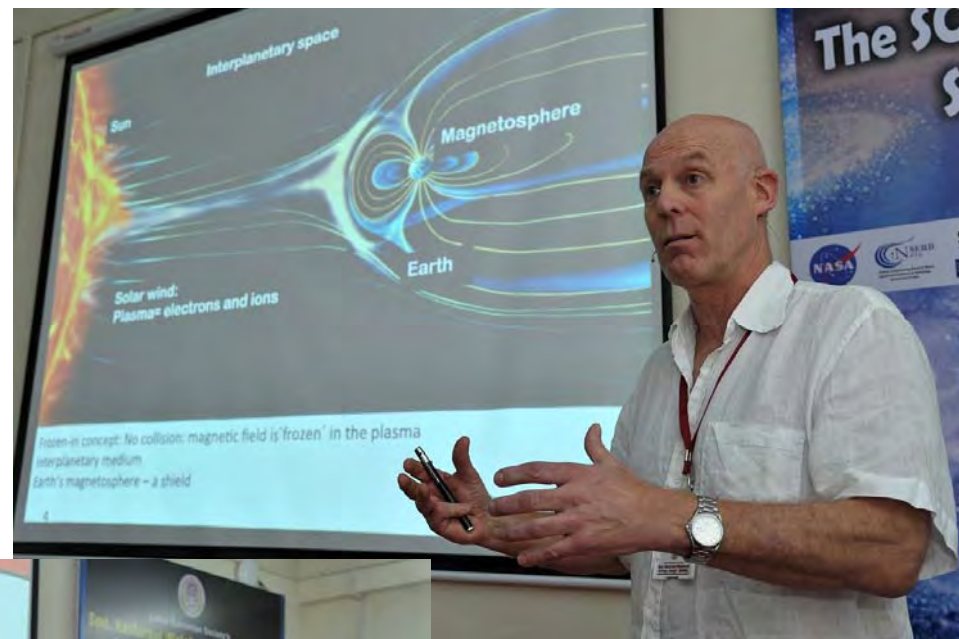
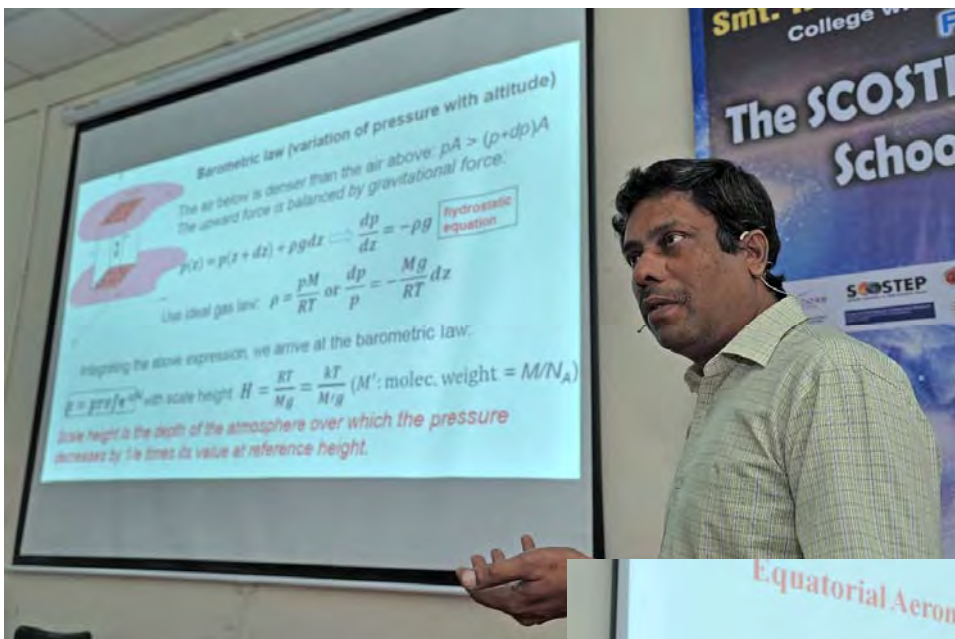
CMEs!



Solar Wind







ISWI Instrument Workshop (Nov 14, 2016)

- CALLISTO – C. Monstein
- SCINDA – K. Groves
- AWESOME – R. Singh
- GPS Receivers – G. Seemala
- MAGDAS – A. Yoshikawa
- OMTI – K. Shiokawa
- AMBER – E. Yizengaw
- CHAIN – K. Shibata

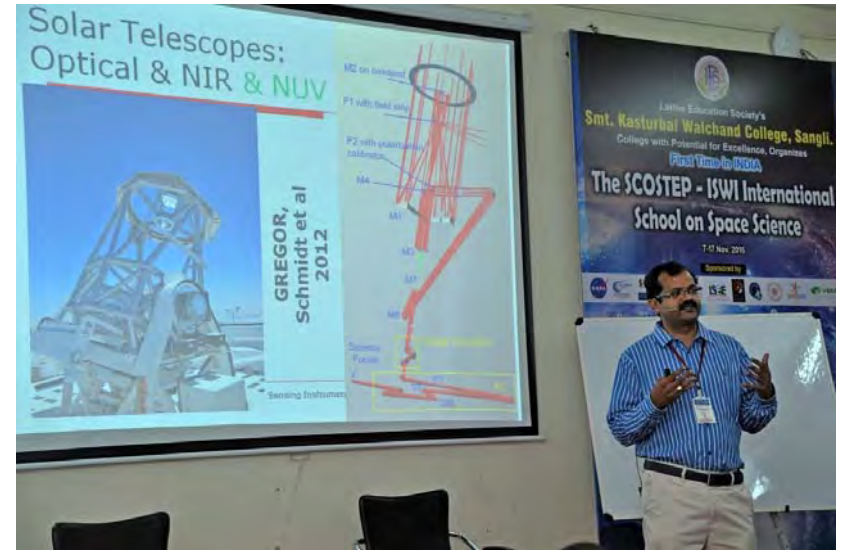


C. Kathiravan & I. Barve demonstrated the working of a two-element radio interferometer during the Instrument workshop

Instrument workshop







Instrument workshop: CALLISTO



Antenna installed in the premises of the host college



C. Monstein (PI) and D. Shetti (host) in the CALLISTO Control room

Cultural Program on the evening of Nov 16



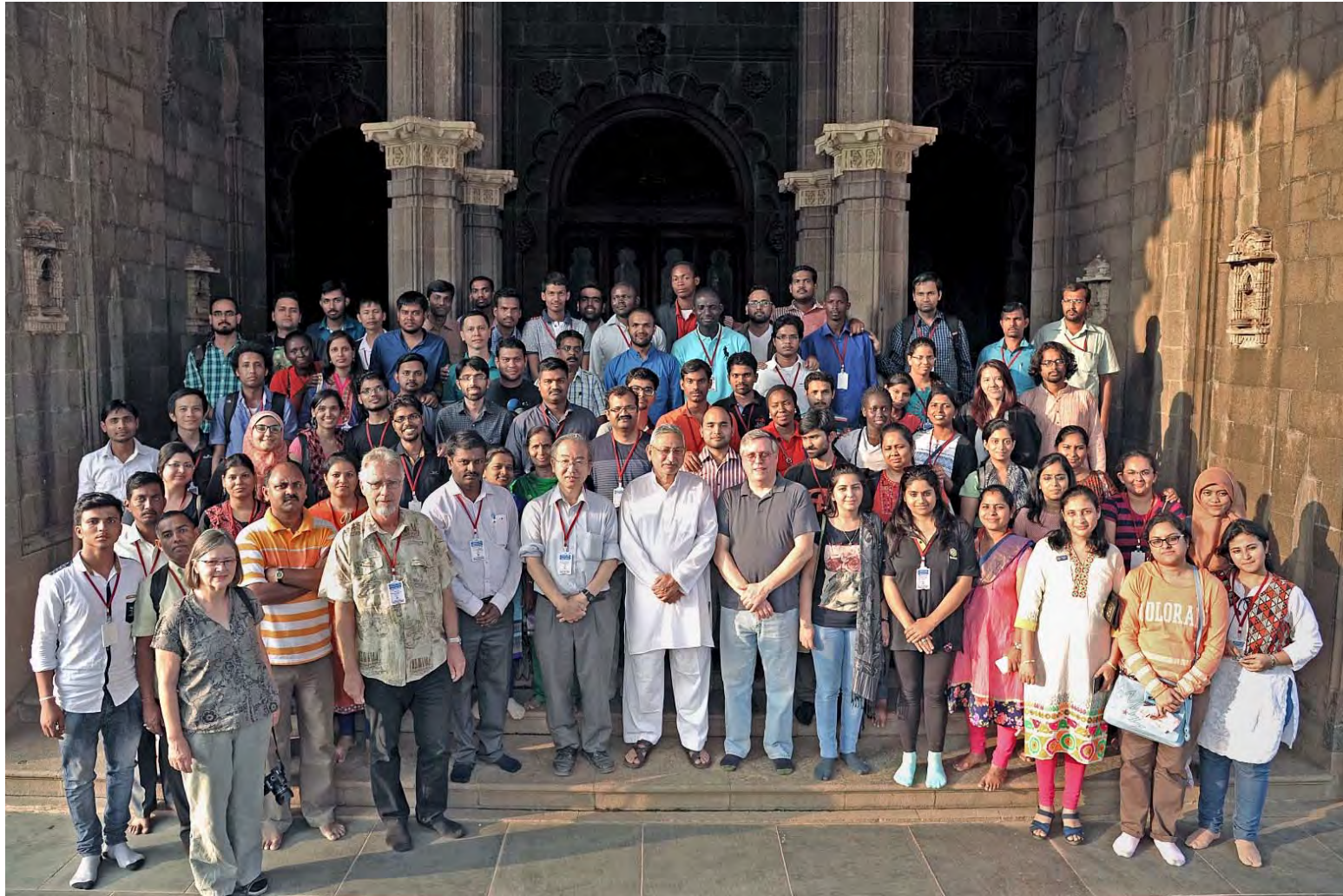
by a Sangli dance professional



and by a school participant



A percussion battle...



During the field trip on Nov 13, 2016, the school participants were greeted by the Maharaja of Kolhapur, H. H. Shahu II Chhatrapati (center in white)

Members of the LOC



Thanks to the LOC chair during the valedictory function



Participants Providing Feedback



Outreach Activities

- M. Guhathakurta, M. Kirk, M. Miesch, and S. Kanekal interacted with high school students from A. B. Patil High School on November 10, 2016
- N. Gopalswamy, K. Groves, P. K. Manoharan, and N. Ostgaard participated in a question-answer session with about 100 science students from local high schools



Feedback

- Every lecture was very informative and the exercises gave a practical feel to the subject ... Sayani Ghosh
- International school on space science is one of the best schools I ever attended. Lectures covered almost all area of space science, that I could feel that a gradual progress in the lectures. The exercise session gave me the real happiness to be a researcher and work together in a group. ... Ashna VM
- It was a experience of a lifetime attending a school for the first time. It gave me lots of new friends in my field from India as well as all over the world. ... Subir Mandal