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* ISWI Newsletter - Vol. 17 No. 011 15 November 2025 *
* Editor: George Maeda, georgemaeda3[at]gmail.com
* Archive of back issues: ISWI Website https://iswi-secretariat.org/
* Send subscription request to: iswisupport@bc.edu
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Dear ISWI Newsletter Subscriber:

Please be reminded that this newsletter has two versions:

[1] Email version -- this gets distributed via email
directly to you but does not have the attachments.
[2] Web version -- this is the full version with attachments.

To view the Web version, go to this web page:
https://iswi-secretariat.org/
and click on "NEWSLETTERS".

If you have space-weather-related news or announcements,
please send them to me and I will distribute your
material through the ISWI NEWSLETTER.

Cordially,
George Maeda
Editor of the ISWI Newsletter, since 2009.

CONTENTS OF THIS ISSUE:

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[01]----------

The Vice Provost of Research at Boston College discusses the
space weather research activities of ISR in a 2-page email
report of October 2025.

See: BC news on ISR; Oct 2025.pdf
001

[02]----------

Space Meteorology Summer School -- IMAOC, 7th edition;
Theme: *Artificial intelligence for space weather ;*
15-26 June 2026, Tunis, Tunisia

FROM: Christine Amory
DATE: 31 Oct 2025
TO: ISWI Newsletter

Dear Georg

Please find in the attached file the announcement of the next ISWI school in Tunisia in 2026.
Sincerely,
Christine

See: IMAOC7Tunisie_2026-pre-project-english.pdf
002

[03]----------

RE:
SCOSTEP 16th Quadrennial Solar-Terrestrial Physics Symposium announcement

From: Yenca Migoya-Orue
Date: 6 Nov 2025

Dear George,

I hope you are doing good!
Please, would you include this announcement in the next ISWI Newsletter?
I'm attaching also the circular with the sessions description.
Thank you!

Kind regards,

Yenca

Dear Colleagues,

We are pleased to announce that the abstract submission portal
for the 16th Solar-Terrestrial Physics Symposium (STP-16) is now open!
You can submit your abstract via the symposium website at
https://www.stp2026.org/
The deadline for submissions is January 10, 2026.

If you want to apply for travel support, please make sure to submit
your request through the same portal by the same deadline.

You will find more details about STP-16 below and in the attached circular:

Date: 1-5 June 2026 (School on 30-31 May 2026)
Location: Makedonia Palace Hotel, Thessaloniki, Greece
Website: https://www.stp2026.org/

Abstract submission deadline: 10 January 2026

STP-16 brings together leading scientists from the fields of solar,
magnetospheric, ionospheric, and atmospheric physics to explore the
latest advances in solar-terrestrial physics (STP). A key focus will
be on cross-scale coupling processes, marking the kick-off of SCOSTEP's
new program COURSE – Cross-Scale Coupling Processes in the
Solar-Terrestrial System (2026–2030).

We look forward to your contributions!

Best regards,
Yenca Migoya-Orué
on behalf of the STP-16 organizing committee

--
Yenca Migoya-Orue'
Researcher, STI Unit
The Abdus Salam International Centre for Theoretical Physics (ICTP)
Strada Costiera 11, 34151 Trieste,Italy
Tel: +39 040 2240 4338

See: STP-16_2nd Circular.pdf
003

[04]----------

AGS Newsletter - NOVEMBER 2025, VOL. 8. NO 5
African Geophysical Society

Read it here:
https://mailchi.mp/0f5588597da8/ags-newsletter-vol1-no-001-27-november-19885435?e=3d8c869948

**********[End of this issue of the ISWI Newsletter]**********

001

The following 2 pages come from an email sent out by Boston College. It is about the ISR (Institute for Scientific Research) and its space weather research activities under Dr Keith Groves. -- *G. Maeda, 21 Oct 2025.*

October 2025

Research with Impact

Dr. Keith Groves

Dr. Keith Groves is the Associate Director of the Institute for Scientific Research (ISR) on the Newton Campus of Boston College. The ISR is a research institute consisting of about 30 scientists and engineers supported by sponsored research projects. A focus of their research activity is understanding "space weather" caused by disturbances in the ionosphere, which is an ionized layer of Earth's atmosphere that is 50-500 miles in altitude. There, the extreme ultra violet (UV) rays from the sun collide with atoms and molecules, knocking the electrons off to create ions. The resulting layer of charged gas particles behaves as a plasma that can cause dramatic effects on radio wave propagation.

Marconi was the first scientist to demonstrate transatlantic radio signal propagation, a concept considered impossible at the time. Years later, scientists discovered the ionosphere and its ability to reflect radiowaves, enabling long-distance, "over the horizon" radio transmissions. Like thunderstorms in the lower atmosphere, under certain conditions the ionosphere can experience instabilities leading to turbulence that distorts the amplitude and phase of radio signals and impacts the ability of the receiver to track them accurately. This happens frequently in some locations, like in the polar regions, the auroral zones and around the magnetic equator.

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Continued on the next page

Dr. Groves and his team are trying to understand the effects that the ionosphere has on radiowave propagation. They try to model this phenomenon and forecast what's going to happen in the ionosphere. Both civilian and military agencies are interested in their research. Dr Groves serves as the Principal Investigator of a recently awarded $22.9 million contract from the Air Force Research Laboratory (AFRL) to understand and quantify the impact of the space environment on satellite communication and navigation systems, such as GPS. ISR was awarded a similar grant from NASA in 2024 to focus on longer term forecasting capabilities.

There is an increasing reliance on space assets for everyday living, like credit card transactions, which often rely on satellites now. In the continental United States, the effects of the space environment on such activities aren't usually a concern, except during large magnetic storms. However, near the equator where the space environment is frequently disturbed, impacts may be much more significant. For example, while the US is currently in the process of approving GPS-only navigation for aviation, the technology cannot be applied safely in large portions of South America, Africa, India and SE Asia due to errors induced by the ionosphere.

Dr. Groves and his team have built a nowcast model for satellite communications to predict where the propagation effects will be most severe and what system impacts are expected. The model is driven by data collected from ISR sensors that monitor satellite signals worldwide to identify ionospheric disturbances in real-time. Once the disturbances occur, ISR can model them, predicting where they are going and how fast they're expected to decay. ISR is currently leading a multi-institutional effort to forecast the location and severity of space weather disturbances before they actually occur.

Dr. Groves welcomes students interested in space weather science to reach out to ISR to explore research opportunities. If interested, please contact Dr. Keith Groves at keith.groves@bc.edu.

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Space Meteorology Summer School – IMAOC, 7th edition

Theme:

Artificial intelligence for space weather;

Physical and numerical foundations for understanding and forecasting the state of the ionosphere

15 to 26 June 2026

Tunis, Tunisia

Organised by

ESPRIT: Private Higher Education Institution for Engineering and Technology

With the support of

International Space Weather Initiative (ISWI)

and

ICG (International Commission of GNSS)

Under the High Patronage of

The Minister of Higher Education and Scientific Research

Mr Mondher Belaid

Summary

I. COMMITTEES

- HONOURARY COMMITTEE

Prof. Mondher Belaid, Minister of Higher Education and Scientific Research of the Republic of Tunisia, Chair

Prof. Tahar Ben Lakhdar, Founding President of ESPRIT, Vice-Chair

- ORGANISING COMMITTEE

Manel Medhioub (ESPRIT/Tunisia), Chair
Mohamed Hédi Riahi (ESPRIT/Tunisia), Vice-Chair
Ahmed Ammar (ESPRIT/Tunisia)
Wissal Neji (ESPRIT/Tunisia)
Hiba Maalaoui (ESPRIT/Tunisia)
Aymen Ben Brik (ESPRIT/Tunisia)
Amir Yazidi (ESPRIT/Tunisia)
Mohamed Anis Ben Lasmer (ESPRIT/Tunisia)
Oumeima Iben Khalaf (ESPRIT/Tunisia)
Sarra Ismail (ESPRIT/Tunisia)
Mohamed Khalil Zghal (ESPRIT/Tunisia)

SCIENTIFIC COMMITTEE

Faouzi Kamoun, President, (ESPRIT/Tunisia)
GAYE Idrissa Vice-President (Senegal/UIDT)
AMMAR Ahmed, Vice-President, (ESPRIT/Tunisia)
AMORY-MAZAUDIER Christine (LPP/France)
BOUNHIR Aziza (Mohammed V University/Morocco)
COISSON Pierdavide (IPGP/France)
DINGA Bienvenu (Marien Ngouabi University/RC)
FLEURY Rolland (IMT Atlantique/ France)
HAMMOU Ali Omar (CRAG/Algeria)
LECONTEL Olivier (LPP/France)
OBROU Olivier (UFHB/ Ivory Coast/)
PITOUT Frédéric (IRAP/ France)
RIAHI Mohamed Hedi, (ESPRIT/Tunisia)
ZERBO Jean Louis (Nazi BONI University/ Burkina Faso)

FACULTY TEAM

ZERBO Jean Louis (Nazi BONI University/ Burkina Faso)
AMORY-MAZAUDIER Christine (LPP/Polytechnique/UPMC/France)

FLEURY Rolland (France)
GAYE Idrissa (Senegal/UIDT)
OBROU Olivier (Côte d'Ivoire/UFHB)

COISSON Pierdavide (IPGP/France)
LECONTEL Olivier (LPP/France)
PITOUT Frédéric (IRAP/ France)

II. INTRODUCTION

As part of the **International Space Weather Initiative (ISWI)** programme, and in collaboration with the **GIRGEAA network (International Research Group on Geophysics and the Atmospheric and Space Environment in Africa),** the 7th edition of the IMAOC (ISWI Maghreb-West and Central Africa) summer school will be held in **Tunis in June 2026**.

This edition will mark an important milestone, as it introduces for the first time a French-language course **dedicated to the application of artificial intelligence (AI) to space weather sciences**, in particular through the analysis of **space time series and ionosphere forecasting**.

The main objective of this school is to strengthen the expertise of **students, doctoral candidates, young researchers and engineers** from the Maghreb, West Africa and Central Africa so that they can actively participate in international research projects in the field of space meteorology. It aims to offer a balanced training programme covering:

- Understanding **of physical phenomena** related to the space environment,
- Mastery **of digital tools and space data processing**,
- And the integration of **artificial intelligence** methods for analysis and forecasting.

Two priorities structure the training:

1. **Strengthening skills in the use of existing data**, which is often underutilised (less than 10% is actually used), particularly spatial and geophysical datasets made available by organisations such as NASA, ESA, NOAA, or via GNSS networks. By combining this data with knowledge of physical phenomena and advanced numerical methods, it is possible to produce original scientific work.
2. **The appropriation of modern tools** by African scientists to effectively combine ground and satellite data in applications related to geophysics, telecommunications, navigation, space meteorology, risk management and sustainable development.

Training content

To achieve these objectives, the training will focus on:

- **Scientific lectures** on the physical processes governing space weather, measurement principles and effects on technologies (telecommunications, navigation, etc.).
- **Practical sessions** analysing TEC GNSS data and other solar and ionospheric datasets available online.

• **Introduction to digital tools** for data extraction, processing and visualisation (Python, Jupyter, Matlab, GIS interfaces, etc.).

• **Introduction to ionospheric models** such as IRI, NeQuick, TIEGCM, CTPIM, IGRF, and their calibration with real data.

• **Modules on artificial intelligence**, particularly machine learning applied to spatial time series, for anomaly detection and spatial event prediction.

Technologies used

Participants will discover and use:

• **Ground-based GNSS sensor networks** to access TEC data from Africa and other regions, available via international servers.

• **Open databases** from space missions (NASA, NOAA, ESA), coupled with ground data for multi-source analysis.

• **Technologies related to data science and AI**: supervised and unsupervised learning, time series, LSTM architectures, neural networks, interactive visualisation, etc.

This school aims to strengthen environmental and spatial data analysis capabilities in Africa by promoting the results and infrastructure developed through numerous international programmes such as the International Heliophysical Year (IHY) and the International Space Weather Initiative (ISWI). It is part of a strategy to maximise the scientific and educational benefits of these projects by facilitating their local adoption and implementation in African contexts.

It will also provide a unique opportunity for researchers, engineers and scientists from the Maghreb and sub-Saharan Africa who wish to train or improve their skills in the use of existing data sets (GNSS, solar observations, ionospheric measurements, etc.) and modern tools related to space meteorology studies, artificial intelligence and geophysical modelling. By acquiring these skills, participants will be able to contribute fully to international research initiatives and, in the long term, launch high-impact regional projects.

Finally, IMAOC schools provide a stimulating environment for exchanges between young researchers from different regions of Africa, facilitating the creation of sustainable and dynamic collaborative networks that are essential for the development of a strong, connected, and forward-looking African scientific community.

Link to the Sustainable Development Goals (SDGs)

In line with the 2030 Agenda for Sustainable Development, this initiative will contribute to several Sustainable Development Goals (SDGs), including:

• ODD 3: Good health and well-being – GNSS positioning can be used to optimise health interventions, patient monitoring and emergency coordination in the event of extreme events.

• ODD 7: Affordable and clean energy – GNSS reflectometry techniques improve the modelling of the Earth's surface, facilitating the optimal location of wind and solar farms.

• ODD 9: Industry, innovation and infrastructure – Artificial intelligence applied to space weather improves the prediction of disturbances affecting space infrastructure, contributing to safer and more innovative management of orbital operations.

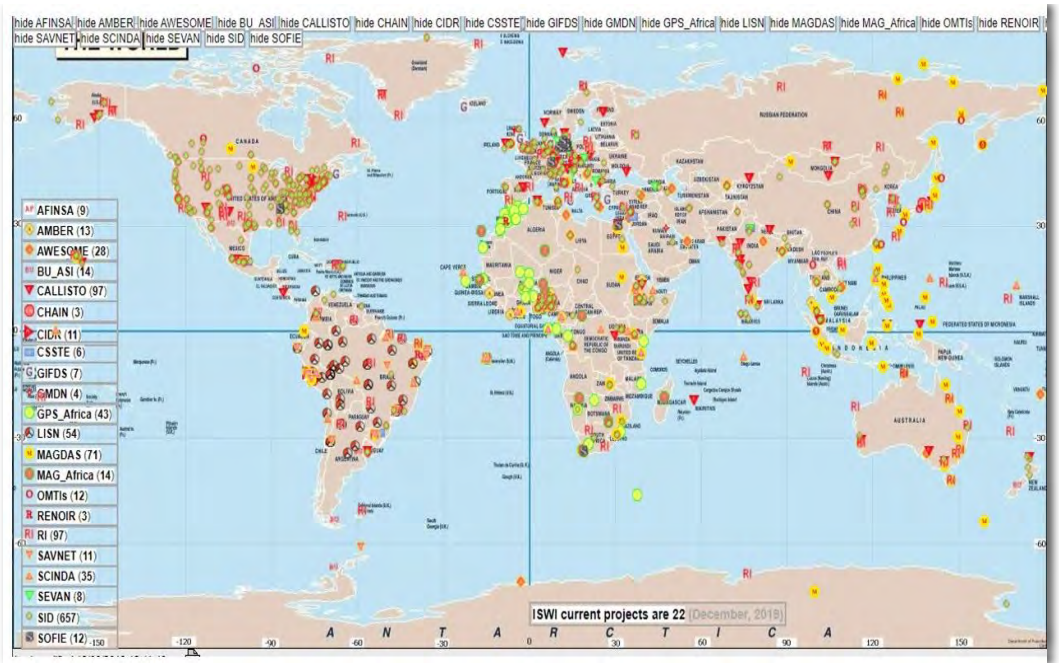
• ODD 11: Sustainable cities and communities – GNSS is widely used for urban mapping, infrastructure monitoring and land-use planning.

• ODD 17: Partnerships for the goals – The development of collaborative data analysis methods (AI, GNSS, SWx) promotes scientific cooperation between African and international institutions.

III. MOTIVATIONS

1. Instrument networks in Africa and around the world

Following the International Heliophysical Year 2007-2009 project, the International Space Weather Initiative (ISWI) programme (2010-2012) continued to develop instrument networks on the African continent and around the world, including networks of GNSS stations, magnetometers, radars, etc. (See figure below from the website http://www.iswi-secretariat.org).



GIRGEA (International Research Group in Geophysics Europe Africa www.girgea.org), which has been present in Africa for over 30 years, has developed research teams in various countries in Africa (Tunisia, Algeria, Burkina Faso, Ivory Coast, Egypt, Guinea, Morocco, DRC, Senegal, etc.) and Asia (Vietnam, Nepal, Pakistan, etc.).

In tropical and equatorial zones, it is necessary to understand the contributions of the ionosphere (the ionised layer surrounding the Earth, located between 90 and 1,000 km) and the atmosphere to the GNSS signal for many different applications, as the signals received are disrupted when passing through these two environments.

This school will focus on:

- GPS applications for studying the impact of the sun on the ionised layers of the atmosphere;
- The study of the ocean-atmosphere interface and climate variability;
- Meteorological applications for sustainable development;
- GIS and remote sensing;
- EGNOS.

The adoption of information and communication technologies (ICT) and access to the Internet are expanding rapidly in Africa, but due to their rapid growth worldwide, the digital divide between Africa and the rest of the world persists. It is therefore important to inform and train scientists and students in new database techniques (creation and use of existing databases): data warehousing, data mining, big data analysis, etc. There is a need for better knowledge of Internet monitoring methods in order to track its evolution, and access to computers and computing grids to enable them to exploit their data, run their simulations, and collaborate with teams around the world.

2. Training: SPACE METEOROLOGY SCHOOL

GIRGEA has already organised schools in Côte d'Ivoire (1995, 2017, 2022), the Republic of Congo (2009), Egypt (2010), the DRC (2011), Algeria (2013), Morocco (2011, 2014, 2015), Senegal (2019) and Guinea (2024). All reports from previous schools are available on the website www.girgea.org.

The schools aim to:
1) introduce students to Sun-Earth relations and Space Meteorology with specialists from different disciplines (solar physics, solar wind, magnetosphere, ionosphere, troposphere and internal and external magnetic fields), and Ocean-Atmosphere interaction.
2) analyse existing data in these different disciplines using digital tools, computing grids, data servers, the internet and intensive computing resources;
3) develop mini scientific projects for students on a given event;
4) to learn project management, the process of writing theses and scientific publications, and how to participate in national or international calls for tenders,
5) to promote exchange and cooperation between students of different nationalities,
6) to publish in peer-reviewed journals, despite the sometimes difficult-to-find cost.

3. The Project

The school is aimed at 40 participants from universities in West, Central and East Africa and the Maghreb. Selected participants must already have a basic knowledge of IT and databases.
The aim of this school is to enable participants to:

- Master the use of GPS and the collection of information in the field;
- Master the use of GPS data according to their area of expertise and possible applications;

- Introduction to mapping and mastery of basic and advanced GIS functionalities using various standard software packages;
- Strengthening knowledge of climate variability and ocean-atmosphere interaction;
- Promoting synergy between GIS and GPS in various fields of application.

At the end of this training, participants should be able to:

For Space Meteorology

- Properly analyse solar activity and its consequences on the Earth's environment and related systems.

For GNSS

- Know how to use a GPS (different features of the instrument, installation);
- Quantify the various errors in positioning accuracy and analyse local differential GNSS or geostationary satellite correction systems;
- Know how to use measurements taken on the ground or aboard satellites/probes for morphological studies of the atmosphere, ionosphere and geodesy.
- Analyse the various existing satellite navigation systems and their developments.
- Be familiar with the various fields of application

For GIS

- Build a geographic database (opening and creating layers, scanning, digitising, structuring and organising geographic data, modifying or deleting graphic objects, changing coordinates and manipulating projection systems, georeferencing, integrating GPS points into an existing base map);
- Performing thematic and spatial analyses (cartographic rendering);
- Understanding the equivalencies between software programmes (principles and terminology).

For GPS and GIS

- Know how to handle: recording, identification, storage, searching for point coordinates in the field, transferring points, etc.;
- Know the relevant databases in the various fields covered;
- Know how to collect field data from a GPS and transfer it to a GIS;

For new technologies

Train participants in accessing, processing, and analysing data from NOAA, NASA, and other agencies (geomagnetic indices, solar radiation, solar wind, GNSS data).

- Use AI tools for anomaly detection, event classification, and ionospheric parameter prediction.
- Integrate standard formats (NetCDF, CDF, JSON) and access platforms such as OMNIWeb, CDAWeb, NCEI.
- Develop regional databases and portals to aggregate, visualise and exploit data.
- Apply predictive models to specific cases: GNSS navigation, communications, transport, surveillance.
- Promote synergies between international data and local observations in Africa.
- Strengthen participation in open spatial data science and international collaboration projects.

Practical applications should be based on a variety of thematic data and relate to areas of national interest.

An analysis of participants' specific needs and levels will be carried out as soon as registration opens.
We recommend that registered students bring their laptops with them.
The content of the various courses is generally provided at the end of each session.
Participants will be master's students, doctoral students and university staff or staff from other organisations requiring refresher training.

IV. COURSES

2 weeks of 40 hours spread over 10 days => ~ 80 hours

SCHEDULE WEEK 1: 15 to 20 June

Time	Monday 15	Tuesday 16	Wednesday 17	Thursday 18	Friday 19	Saturday 20
09h 9h45		Machine Learning : Classification	Theme 1: Solar activity forecasting Geomagnetism	Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	Project Students' personal work
9h45 10h30	Opening Ceremony	Machine Learning : Classification	Theme 1: Solar activity forecasting Geomagnetism	Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	Project Students' personal work
10h30 11h	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
11h 11h45	Introduction to Space Weather	Machine Learning : Regression	Theme 1: Solar activity forecasting Geomagnetism	Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	Project Students' personal work
11h45 12h30	General introduction to AI	Machine Learning : Regression	Theme 1: Solar activity forecasting Geomagnetism	Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	Project Students' personal work
12h30 14h	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14h 14h45	Presentation of the three themes	Deep Learning: ANN, RNN, CNN	Visit to a GNSS network Gala dinner to be considered	Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	Visit to SIDI BOUSAID
14h45 15h30	Presentation of the three themes	Deep learning: ANN, RNN, CNN		Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	
15h30 16h	COFFEE BREAK	COFFEE BREAK		COFFEE BREAK	COFFEE BREAK	
16h 16h45	Data base for Theme 1	Deep Learning for Time Series		Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	
16h45 17h30	Data base for Theme 1	Deep Learning for Time Series		Workshop: AI applications for anomaly detection	Theme 1: Solar activity forecasting Geomagnetism	
17h30 18h00	SESSION POSTER	SESSION POSTER		ASSIGNMENT OF MINI-PROJECTS	SESSION POSTER	

SUNDAY: VISIT TO THE BARDO MUSEUM

SCHEDULE WEEK 2 : 22 to 26 June

time	Monday 22	Tuesday 23	Wednesday 24	Thursday 25	Friday 26
9h 9h45	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Presentation and approval of mini-projects
9h45 10h30	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Presentation and approval of mini-projects
10h30 11h	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
11h 11h45	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Presentation and approval of mini-projects
11h45 12h30	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Presentation and approval of mini-projects
12h30 14h	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14h- 14h45	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	School closing
14h45 15h30	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	School closing
15h30 16h	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
16h 16h45	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Preparation for departure
16h45 17h30	Theme 2: Solar wind and Magnetosphere	Theme 2: Solar wind and Magnetosphere	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	Theme 3: Ionosphere GNSS (TEC, scintillations) Database	
17h30 18h00	SESSION POSTER	SESSION POSTER	SESSION POSTER	SESSION POSTER	

V. ESTIMATED BUDGET

With regard to school funding, GIRGEA is a network that has no permanent infrastructure and only manages training schools as part of major projects with the help of various laboratories and international organisations. The institutions of the teachers participating in the training contribute by covering the teachers' travel expenses. GIRGEA's internal regulations propose that the country organising the school should cover the cost of meals and accommodation for teachers and students. In keeping with the spirit of assistance and knowledge sharing that drives GIRGEA, teachers do not receive per diem allowances. **Half of the students attending the school are from the host country, and the other half come from countries in the Maghreb, West Africa and Central Africa.**

Tickets for students are paid for by various organisations (AUF, French embassies, PNST, CNRS, SCOSTEP, ICTP, ICG, EGNOS, Nagoya University, etc.).

V.1 Local budget covered by Tunisia

	Quantity	Description	Unit cost (Tunisian Dinar)	Amount (Tunisian Dinar)	Amount (euros)
Supplies	100	Ballpoint pen with logo	5	500	148,3
	100	Flat folder	10	1000	296,61
	5	Box of paper	37	185	54,85
T-shirts	100		50	5000	1483,6
Restauration	1320	Coffee break	10	13200	3914,31
	(60 pers.x11dx2)				
	660	Lunch (starter/main course /mineral water/dessert/water in the dining room)	30	19800	5876,47
	(60 pers.x11d)				
Transport / logistics	12d	Mini bus hire	500	6000	1778,67
Accomodation	252	(21 twin rooms for 12 nights)	150	37800	11250,96
	238	(19 single rooms for 12 nights)	250	59500	17692,5
fees	20	Teachers (Diner)	100	2000	595,51
	40	Auditors (Diner)	70	2800	835,1
Excursions	2	Excursions	1000	2000	595,16
Media Coverage	5	TV, Radio, online news papers	200	1000	1658
Contingence	1		5000	5000	1486,64
Total				155785	47666,68

V.2 Cost of air tickets

Air tickets for professors covered by their institution when the institution can cover the cost

Country	Unit cost (Euros)	Number	Total cost (Euros)
Algeria	350		
Burkina Faso	1050	1	1050
Côte d'Ivoire	950	1	950
France	250	6	1500
Morocco	450		
Senegal	860	1	860
Republic Congo	1800		
Vietnam	1050		
Total			4360

Air tickets for students (two per participating country) and certain teachers

Country	Unit cost (Euros)	Number	Total cost (Euros)
Algeria	350	2	700
Benin	1300	2	2600
Burkina Faso	1050	2	2100
Cameroon	1300	1	1300
Morocco	450	2	900
Republic Congo	1000	1	1000
DRC	1000	2	2000
Tchad	1500	2	3000
Côte d'Ivoire	950	2	1900
Senegal	860	2	1720
Guinea	1040	1	1040
Togo	1150	1	1150
total			19410

003

STP-16
SCOSTEP 16th Quadrennial Solar-Terrestrial Physics Symposium
2nd Circular

Date: 1-5 June 2026
(school on 30-31 May 2026)

Location: Makedonia Palace Hotel, Thessaloniki, Greece

Conference Website: https://www.stp2026.org/

1. Symposium description:

The Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) organizes the Solar-Terrestrial Physics (STP) symposium once every four years. SCOSTEP is engaged in three major activities: long-term scientific programs, capacity building, and public outreach. The scientific programs are of an interdisciplinary nature, involving scientists from around the world. They are designed to advance our understanding of the solar-terrestrial relationship using space- and ground-based observations, cutting-edge models, and theory. Under what ways the Sun affects the Earth and its environment over various time scales is the underlying theme of the scientific programs pursued under SCOSTEP. The predictability of those phenomena has been addressed during the recently concluded Predictability of the variable Solar-Terrestrial Coupling (PRESTO) in 2020-2024. The SCOSTEP's new program COURSE in 2026-2030 will address cross-scale coupling processes in the solar-terrestrial system. The SCOSTEP 16th Quadrennial Solar-Terrestrial Physics Symposium (STP-16) aims to gather eminent scientists from solar, magnetospheric, ionospheric, and atmospheric physics communities to discuss and deliberate on the cutting-edge sciences pertaining to STP, especially the cross-scale coupling processes as a focus area in each of the traditional topics deliberated upon during the earlier STP meetings. A series of tutorials/lectures by eminent scientists will be provided two days prior to the STP-16 symposium, i.e., on 30-31 May 2026, for students and early-career scientists on topics of solar-terrestrial physics.

2. Important deadlines:

Abstract submission: 10 January 2026
Financial support request: 10 January 2026
Notification of acceptance/rejection of abstracts: 15 February 2026
Early Bird registration: 31 March 2026
Conference School: 30-31 May 2026
Conference dates: 1-5 June 2026

3. Session structures and descriptions

Session 1. Cross-scale coupling processes in Sun-Earth relationship

Conveners: Nick Pedatella, Monica Laurenza, Nat Gopalswamy, Yoshizumi Miyoshi

The Cross-scale cOUpling pRocesses in the Solar-tErrestrial system (COURSE) program is focused on cross-scale coupling within the Sun-Earth environment. There are three scientific focus areas within COURSE: (1) Sources of Space Weather and Space Climate; (2) Solar wind, Magnetosphere, and Ionosphere coupling; and (3) External impacts and internal dynamics of the Earth atmosphere. The long-term goals and short-term objectives of these focus areas are envisioned to be addressed through the implementation of novel methods, such as AI/ML, integrated models, new missions, the combination of multipoint in-situ data with ground observations, improved metadata, and adoption of FAIR data principles. Societal impacts, extreme events, and improvements in predictions are also of interest to the COURSE program. In this session, an overview of COURSE focus areas and their goals and objectives, as well as details on the planned activities of the COURSE program will be provided. In addition, this session welcomes presentations that examine cross-scale, cross-regional, and cross-energy coupling processes in the solar-terrestrial system that span across the COURSE focus areas.

Session 2. Sources of Space Weather & Space Climate

Conveners: Natalie Krivova, Anil Raghav, Hannah Schunker, Cristina Mandrini, and Sowmya Krishnamurthy

This session will focus on cross-scale coupling processes involved in the generation and evolution of sources of the Space Weather and Space Climate, in particular those related to the solar dynamo, solar and interplanetary magnetic field, solar radiation, solar wind, solar and interplanetary transients, solar energetic particles, extreme solar events, galactic cosmic ray modulation, as well as solar-stellar connections. The questions to be addressed include: How are solar magnetic fields generated and transported from the interior through the solar atmospheric layers? What processes control the transport and conversion of solar energy over a wide range of time scales? How does the solar wind originate and structure the heliosphere? What triggers and drives solar eruptions, and dictates their evolution throughout the heliosphere? What are the relative contributions from the different sources and mechanisms to the acceleration and transport of energetic particles on the Sun and in the Heliosphere?

Session 3. Solar Wind, Magnetosphere, and Ionosphere Coupling

Conveners: Rumi Nakamura, Harriet George, Yuki Harada, and Yiqun Yu

This session will focus on the topic of the cross-scale coupling of the solar wind with the magnetosphere and ionosphere mainly at Earth, but also at other planets and moons where the solar wind coupling with intrinsic and induced magnetospheres or with surface are relevant. Open questions include the following: How is the magnetosphere coupled with the solar wind through cross-scale coupling processes? How do magnetospheric disturbances develop through cross-scale coupling processes? How is the magnetosphere coupled with the ionosphere and atmosphere at various scales? 'How does cross-scale coupling with the solar wind and ionosphere/surface vary at magnetised/unmagnetised bodies throughout our solar system?' We solicit presentations on these topics, based on data analysis, models and coordinated multi-point measurements in space and on the ground.

Session 4. External Impacts and Internal Dynamics of the Earth Atmosphere

Conveners: Astrid Maute, Maria Graciela Molina, Laysa Resende, and Timofei Sukhodolov

The Earth's middle and upper atmosphere is driven by a complex interplay of external forcing – from solar radiation, solar wind, and magnetosphere- and internal drivers such as a rich spectrum of waves from the lower atmosphere, which couples to the upper atmosphere and the ionosphere. This region is intrinsically multi-scale in space and time, therefore, understanding and quantifying these cross-scale couplings as well as the coupling across atmospheric domains is pivotal for improving predictability across the atmosphere–geospace system, advancing space weather and space climate forecasts, and protecting critical infrastructure. This session invites observational, modeling, and theoretical contributions that illuminate novel methods and data analysis, physical processes and mechanisms across the atmosphere-geospace system, quantification and impact of variability across scales, and pathways to enhance prediction. Topics of interest include, but are not limited to: Magnetosphere-Thermosphere-Ionosphere dynamics and hemispheric asymmetries including the response to solar storm and disturbances, storm-time recovery and its predictability; atmospheric waves and vertical coupling such as impact of gravity waves, planetary waves and atmospheric tides, their role in atmospheric circulation and composition of the middle/upper atmosphere and geospace weather; the solar influence on climate and long-term variability including the interaction of internal variability and anthropogenic forcing; space weather impacts; and forecasting and predictability across scales in the atmosphere-geospace system.

Session 5. Modelling, Data Analysis Tools, and Data Science

Conveners: Maria Graciela Molina, Koki Chau, Bernd Funke, Mamoru Ishii, and Yenca Migoya-Orue

This session focuses on the development and implementation of advanced physical models and data science techniques in Solar-Terrestrial research. The goal is to contribute to the understanding of the physical processes within different subsystems on various scales, their interactions and impacts, and the improvement of the forecasting capabilities. The session invites contributions on advances in physical modeling and on the complete spectrum of data science stages/techniques: from data collection, preparation and management, data infrastructure, innovative analysis tools, AI/machine learning techniques/algorithms (applied to space weather forecasting, surrogate models, uncertainty quantification, monitoring and benchmarking, among many more). Presentations on modelling advancements, validation efforts, and benchmarking are also encouraged.

Session 6. Initiatives for Ground- and Space-Based Solar-Terrestrial Physics Research

Conveners: Renata Lukianova, Peter Pilewskie, Lucilla Alfonsi, and Valery Nakariakov

The interdisciplinary nature of studying, monitoring, and predicting solar–terrestrial physics requires close collaboration among scientists, engineers, and stakeholders within broad national and international initiatives. These initiatives bring together communities to tackle open scientific questions, carry out coordinated observational campaigns, train the next generation of researchers, and foster engagement with both the public and decision-makers.

At present, several initiatives are underway, ranging from theoretical investigations to operational space weather applications. Compared with the past, these efforts are increasingly interconnected, yet further coordination is still needed to maximize efficiency and avoid unnecessary duplication.

This session welcomes contributions on recent, ongoing, and planned initiatives that leverage ground- and space-based observations to advance our understanding and modeling of solar–terrestrial interactions.

STP-16 School (30-31 May 2026)

Conveners: Kazuo Shiokawa and Ioannis A. Daglis

STP-16 School will be organized two days prior to the STP-16 symposium, i.e., on 30-31 May 2026. The objective of this workshop is to invite eminent scientists from the STP community worldwide to give tutorials/lectures to students and early-career scientists on topics related to solar-terrestrial physics. The tentative topics include the following.

- Cross-scale coupling processes in the space weather and space climate sources
- Interplanetary disturbances as space weather drivers
- Cross-scale coupling processes of the solar wind, magnetosphere, and ionosphere
- Storms/substorms and energetic particles in geospace
- External impacts on the atmosphere (Magnetosphere-Thermosphere-Ionosphere dynamics)
- Cross-scale interactions / vertical coupling in the atmosphere

Lectures will be aimed at Ph.D. students and early career scientists working on STP-related topics. The lectures would provide a solid foundation for the participants who would be essentially non-specialists in these areas. This school is only for the registered participants of the STP-16 symposium