

EIM2013



REPORT : 1st SCHOOL OF SPACE WEATHER
MAGHREB **EIM 2013**
Alger/Algeria [6-16 May 2013]

I.	Organizing and scientific committees	page 2
II.	Introduction	page 3
III.	Justifications	page 3
IV.	Professors	page 4
V.	Training and Schedule	page 5
VI.	Participants	page 7
VII.	Budget	page 8
VIII.	Organization and logistics	page 9
IX.	Conclusion : EIM 2013 benefits	page 19



Organization : N. Zaourar (USTHB/Algérie) et C. Amory-Mazaudier (LPP/ France)

I. COMMITTEES

- Organizing Committee

ZAOURAR Naima, (USTHB) President
AMORY Christine (UPMC) Vice president
DRIR Mahrez (USTHB)
OUABADI Azioz (USTHB)
EMRAN Anas (Université Mohammed V/Maroc)
BOUKERS Saad (INPTIC)
OUTEMZABET Rachid (INPTIC)
ABTOUT Abdessalam (GRAAG)
HAMOUDI Mohamed (USTHB)
DJEDDI Mohammed (USTHB)
DJEBLI Mourad (USTHB)
YAHIAI Yasmina (USTHB)
CHAFI Azzedine (USTHB)
ANAD Fatma (CRAAG)
BOUABDALLAH Hamza (SAG)
GUETTOUCHE Mohamed Said (USTHB)
BENTOURI Mansour (USTHB)
BOUNAB Mohamed (USTHB)

- Scientific Committee

HAMOUDI Mohamed (USTHB) President
MANDEA Mioara (CNES/France) Vice-president
AMORY Christine (LPP/UPMC/France)
ZAOURAR Naima, (USTHB)
ABTOUT Abdeslam (GRAAG)
DJEBLI Mourad (USTHB)
YAHIAI Yasmina (USTHB)
ABDELATIF Toufik (GRAAG)
ANAD Fatma (CRAAG)
BERGUIG M. Cherif (USTHB)

USTHB: Université des Sciences et de la Technologie Houari Boumediene

CRAAG: Centre de Recherche en Astronomie Astrophysique et Géophysique

INPTIC: Institut National de la Poste et des Technologies de l'Information et des Communications

SAG : Société Algérienne de Géophysique

CNES : Centre National d'Etudes Spatiales

LPP/UPMC : Laboratoire de Physique des Plasmas, Université Pierre et Marie Curie

II. INTRODUCTION

In the framework of the International Space Weather Initiative program (ISWI <http://www.iswi-secretariat.org>), a first School of Space Weather -called Space-Weather -ISWI Maghreb 2013 (EIM2013)- was organized at the USTHB (Alger) from 6 to 16 May 2013. For this first edition, we chose to give lectures and practical trainings on the Sun-Earth system physics. The *EIM2013* brought together 36 participants, researchers and scientists from the Maghreb that wanted to learn or acquire a new profile associated with the proposed theme. The main objectives were: 1) the use the existing data sets and tools related to Space Weather studies, 2) the participation and contribution to international projects. This first edition of the *EIM2013* will be perpetuated by other schools in the Maghreb with a 2-year period in order to update the knowledge of researchers / students high on the field edge.

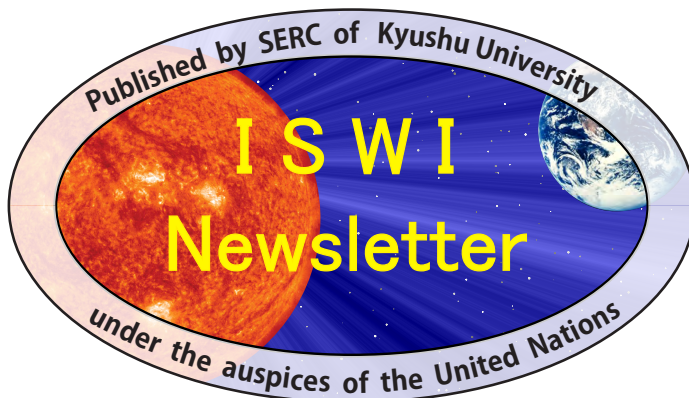
The benefits of this school are described in the last section of this report.

III. JUSTIFICATIONS

After the "International Heliophysics Year" (AHI-<http://ihy2007.org>) project from 2007 to 2009, the International Space Weather Initiative program has continued the deployment of instrument networks in Africa. All data acquired by these instruments document physical phenomena not studied before in Africa due to the lack of observations. It is essential to train scientists in the use of these data and to introduce new disciplines in the Maghreb universities in order that young researchers could be involved in the ISWI project. We hope that this school is at the Maghreb scale with the aim of a better South-South interaction and the supervision of thesis of young North-African and African scientists. Part of the program of the *EIM2013* was devoted to the understanding of solar physical processes and their actions on the terrestrial environment: magnetosphere, ionosphere and atmosphere.

IV. PROFESSORS

ABDELATIF Tewfik (GRAAG)
ABTOUT Abdessalam (GRAAG)
AMORY Christine (LPP/Polytechnique/UPMC/France)
BOCCHIALINI Karine (Orsay/France)
BLANC Elisabeth (CEA/France),
DJEBLI Mourad (USTHB)
DOUMBIA Vafi (Univ. Cocody/Côte d'Ivoire)
ELMAOUHAB Aouaouche (CERIST/ Algérie)
FONTAINE Dominique (LPP/Polytechnique/UPMC/France)
HAMOUDI Mohamed (USTHB)
KLEIN Karl-Ludwig (LESIA/ France)
MANDEA Mioara (CNES/France)
OUATTARA Frédéric (Univ. Kougoudou/Burkina Faso)
PITOUT Frédéric (IRAP/Toulouse/France)
PETITDIDIER Monique (LATMOS/France)
RICHMOND Art (NCAR/USA)
TROTET Gérard (LESIA/ France)
VILMER Nicole (LESIA/ France)



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V. COURSES & PRATICAL WORKS

1	ABDLATIF Toufik tabdelatif@yahoo.com	The genesis of solar active regions
2	ABTOUT Abdeslam abtout@yahoo.com	History on Geomagnetism in Algeria
3	AMORY-MAZAUDIER Christine Christine.amory@lpp.polytechnique.fr	Transient variations of the Earth's magnetic field
4	BOCCHIALINI Karine Karine.bocchialini@ias.u-psud.fr	Sun/ General presentation
5	BLANC Elisabeth Elisabeth.blanc@cea.fr	Atmosphere / Dynamics and perturbations
6	DJEBLI Mourad mdjebli@usthb.dz	Non linear structures in the ionosphere
7	DOUMBIA Vafi vafid@yahoo.fr	Equatorial ionosphere
8	FONTAINE Dominique Dominique.fontaine@lpp.polytechnique.fr	Magnetosphere
9	HAMOUDI Mohamed hamoudi@usthb.dz	Planetary magnetism
10	KLEIN Karl-Ludwig Ludwig.klein@obspm.fr	Sun : Radio Observations
11	TROTTET Gérard gerard.trottet@obspm.fr	
12	MIOARA Manda Mioara.manda@cnes.fr	Earth Observation from space
13	OUATTARA Frederic fojals@yahoo.fr	GNSS: use of GPS
14	PITOUT Frédéric frederic.pitout@cesr.fr	Ionosphere / magnetic storms
15	PETITDIDIER Monique monique.petitdidier@lamos.ipsl.fr EL MAOUHAB Aouaouche elmaouhab@wissal.dz	Compute Grid
16	RICHMOND Art richmond@ucar.edu	Ionosphere / Electrodynamics
17	VILMER Nicole Nicole.vilmer@obspm.fr	Sun : Solar Activity

ISWI Maghreb school in Algeria- Schedule of the first week 6 - 11 May 2013

Timing	Monday 6 May	Tuesday 7 May	Wednesday 8 May	Thursday 8 May	Friday 10 May	Saturday 11 May
9h-10h30	Opening Ceremony	Magnetosphere D. Fontaine	Sun : genesis of active regions T. Abdelatif	Sun : radio observation L. Klein	EXCURSION	Electrodynamics/upper Atmosphere A. Richmond
10h30-11h	Coffee break	Coffee break	Coffee break	Coffee break		Coffee break
11h-12h30	Sun : general introduction K. Bocchialini	Internal magnetic field M. Hamoudi	Sun : radio observations L. Klein G. Trottet	Magnetosphere D. Fontaine	EXCURSION	TP/Ionosphere F. Pitoux TP/ GNSS F. Ouattara
12h30-14h	Lunch	Lunch	Lunch	Lunch		Lunch
14h-15h30	Sun : radio observations L. Klein	TP/ Sun K. Bocchialini TP/ GNSS F Ouattara	Sun : solar activity N. Vilmer	Sun : genesis of active regions T. Abdelatif	EXCURSION	TP/ionosphere F. Pitoux TP/ magnetic indices Christine Amory-Mazaudier
15h30-16h	Coffee break	Coffee break	Coffee break	Coffee break		Coffee break
16h30-18h00	Sun : solar activity N. Vilmer	TP/ Sun K. Bocchialini TP/ GNSS F. Ouattara	Magnetosphere D. Fontaine	Ionosphere : magnetic storms F. Pitoux	EXCURSION	Posters Session

2nd week 12-16 May – 3 posters sessions are planed from 18h to 19h30

Timing	Sunday 12 May	Monday 13 May	Tuesday 14 May	Wednesday 15 May	Thursday 16may
9h-10h30	Electrodynamics/upper Atmosphere A. Richmond	Observations spatiales de la Terre M. Mandéa	Ionosphere : non linear structures M. Djebli	External field C. Amory-Mazaudier	History on geomagnetism in Algeria A. Abtout
10h30-11h	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
11h-12h30	Compute Grid and applications M. Petitdidier A. El Maouhab	Electrodynamics/ upper Atmosphere A. Richmond	Equatorial Ionosphere V. Doumbia	Equatorial Ionosphere V. Doumbia	Visit of the CRAAG
12h30-14h	Lunch	Lunch	Lunchs	Lunch	Lunch
14h-15h30	Ionosphere : magnetic storms F. Pitoux	External field C. Amory- Mazaudier	TP/magnetic indices C. Amory-Mazaudier	Closing Ceremony	Visit of the CRAAG
15h30-16h	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
16h30-18h00	Ionosphere : non linear structures M. Djebli	Compute Grid and applications M. Petitdidier A. El Maouhab	TP/magnetic indices C. Amory-Mazaudier		

VI. PARTICIPANTS (36)

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Mouley Ali Ali ali_chama@yahoo.fr	Zouaouia Esma FP esmaphysic@gmail.com

VII. BUDGET

Furnishing	Amount (DA)	Sponsors
Rooms for lectures and practical works	Provided free of charges	USTHB
Tickets 5 Paris- Alger A/R 4 Paris Alger A/R 1 Denver – Alger A/R 2 Rabat –Alger A/R 1Ouagadougou-Alger A/R Abidjan- Alger A/R	1 800 euros 1 600 euros Total : 352 000 DA 120 000 DA 50 000 x 2 = 100 000 DA 200 000 DA 90 000	CNRS French Embassy CRAAG CRAAG CRAAG USTHB
Total for Tickets	~ 862 000 DA	
Lodging of Professors Hotels IBIS - Mercure	1 600 000 DA	CRAAG
Lodging for participants	Provided free of charges	INPTIC
Lunch + Coffee break	1 867 600 DA	DGRSDT+ LGAT
Local transport + Excursion	500 000 DA	USTHB
Satchels.....	300 000 DA	ATRST
Gala	500 000 DA	LGEOP
Impressions	500 000 DA	LGEOP
TOTAL	5 267 600 DA	

TOTAL AMOUNT = 6 129 600 DA

Algeria : 94,3%

France : 5,7%

VIII. ORGANISATION AND LOGISTICS

The school was held in the cyberspace of the University of Sciences and Technology Houari Boumedienne (USTHB). In a classroom and two rooms for practical works, 50 computers (at least 'Dual-Core' running Ubuntu 12.04) were available. The Office suite is also installed there.

In addition, the Center for Computer Resources (CRI) made available a ftp server with a 50Gb storage capacity, expandable if necessary, and whose name is ftp.usthb.dz.

Monday 06 May: Opening Ceremony



From right to left: Pr F. Chafa : Dean of the Faculty of Physics, Pr M. Drir : Deputy Dean, Pr A.Yelles : Director of the CRAAG, Dr A. Touzi : Representant of DGRSDT, Dr S Boukers : Director of INPTIC, Dr C. Amory-Mazaudier : Vice President of *EIM2013*, Pr M. Hamoudi : President of the Scientific Committee. Pr N Zaourar, President of the organizing Committee

Photo of the team at the Cyberspace of USTHB



Reception of the participants: badges



Poster session



Room for practical works



Room for lectures

Introductory lecture on the Sun



Transportation for students and professors

2 buses



Visit of the CRAAG on May 16 2013

Presentation of the CRAAG by the Director:
A. YELLES-CHAOUCHE



Presentation of the observatory of TAMANRASSET

By the Professor A. ABTOUT



Visit of the center of seismology of the CRAAG



Gala dinner



Visit of Alger: Professors



Excursion on Friday 13 May 2013



IX. CONCLUSION : BENEFITS OF THIS SCHOOL

- **ISWI SCHOOLS**

1°) School in Burkina Faso in 2014

2°) Preparation of the second ISWI-Maghreb School in Rabat (Morocco) in 2015 by the Rabat-CRASTE-LF, the organizer being Professor Anas Emran.

3) Preparation of the School in Marrakech (Morocco) on the theme: solar physics and solar-terrestrial environment, by Professor A. Bounhir. During *EIM2013*, fruitful discussions with A. Bounhir, C. Mazaudier-Amory, A. Emran and N. Zaourar led to a first outline of the courses and to a direct contact with the teachers involved.

- **COLLABORATION**

1°) Establishment of Co-directions of doctoral thesis:

- | | |
|----------------------|--|
| - Bessaoudi Rachid : | N. Zaourar – F. Pitoux (France) |
| - Tair Sabrina : | Y. Yahiat- N. Zaourar – F. Pitoux (France) |
| - Benaissa Mohamed | M.C. Berguig – V. Doumbia (Côte d’Ivoire) |
| - Fatma Anad | M. Hamoudi- M. Mioara (France) |

2°) Proposed topics for future doctoral thesis, especially for graduated students who follow the new Master of Earth Physics.

- **POSITIONS**

Opening research positions in Space Weather proposed by the Director of CRAAG, Mr. A. Yelles Chaouche-.

- **INTENSIVE COMPUTING AND COMPUTE GRID**

- Mme A. El Maouhab, Network Responsible at CERIST, Training and help to deploy applications

- **COOPERATION**

- Proposal for establishment of a cooperation with Burkina Faso in the field of GNSS / GPS with the Professor F. Ouattara
- With the approval of the CRAAG management: updating the assessment of all the data from TAMANRASSET (ionospheric soundings, magnetograms, etc ...) and scanning of all the analog data.

- Resumption of telluric measurements
- Twice-a-year Meeting of the Algerian ISWI group
- Library of Space Meteorology at CRAAG organized for all students in Space Weather.

Participation Certificate to the EIM2013 school
all courses provided on a USB key

