

# Space Weather Monitoring Centre of Egypt: Recent Consequences and Future Prospects

United Nations/Ecuador Workshop on the International Space Weather  
Initiative (ISWI), 8 - 12 October 2012, Quito, Ecuador

**Ayman Mahrous**

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# Contents

- Human Resources
- Infrastructure
- Funding
- Publications
- Sustainability and Future Plans
- Summary

# Contents

- **Human Resources**
- Infrastructure
- Funding
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# Human Resources



Small City!

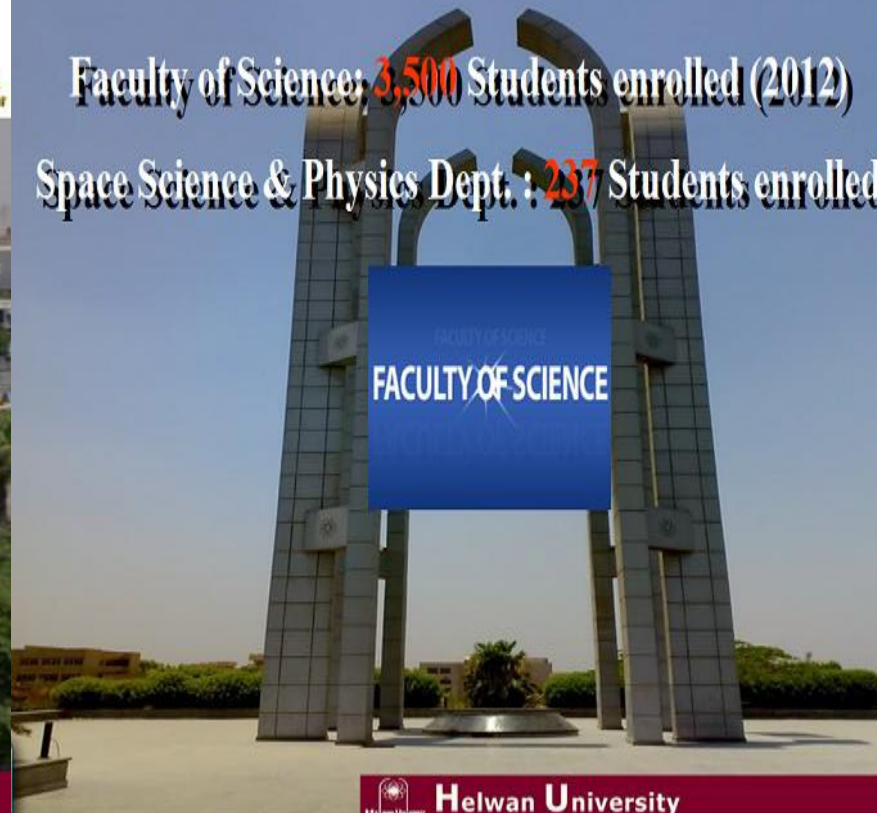


**121,300** Students enrolled (2012) in 22 Faculties



Faculty of Science: **3,500** Students enrolled (2012)

Space Science & Physics Dept. : **237** Students enrolled



# Contents

- Human Resources
- **Infrastructure**
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# Space Weather Monitoring Center (SWMC)



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Welcome to The Space Weather Center in Egypt

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# Events organized by SWMC



Helwan University / September 19 — October 3, 2010

METEOROLOGIE DE L'ESPACE  
Physique et utilisation des outils

SPACE WEATHER SCHOOL  
Basic theory and hands-on experience

Rapport/ Report




Coordination de l'école par/ Coordination of the school by



Christine Amory-Mazaudier (LPP) and Ayman Mahrous (SWMC)

# Events organized by SWMC

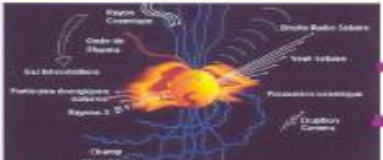


**2010 ANNEE EGYPT-FRANCE  
METEOROLOGIE DE L'ESPACE / SPACE WEATHER**

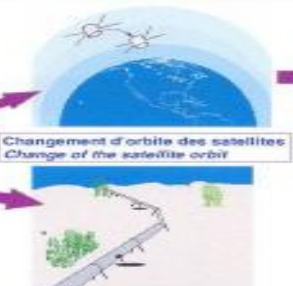
Space Weather Monitoring Center/ <http://www.helwan.edu.eg>    Laboratoire de Physique des Plasmas/ <http://www.lpp.fr>

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**Vie de tous les jours  
Daily life**




Le soleil agit sur l'environnement terrestre suivant des mécanismes physiques multiples  
The sun interacts with the earth environment following many physical processes



Changement d'orbite des satellites  
Change of the satellite orbit

Courants électriques induits dans les pipelines  
Induced electric currents in the pipelines



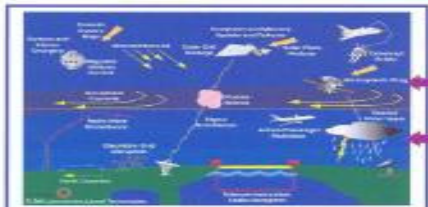
GPS GLOBAL POSITIONING SYSTEM

Navigation  
Navigation

---

**Recherche : Le signal émis par un satellite est modifié par les couches qui entourent la terre**  
**Research: The signal emitted by a satellite is modified by the layers surrounding the earth**

International Space Weather Initiative <http://www.iswi-secretariat.org>



**COUCHES QUI MODIFIENT LE SIGNAL GPS  
LAYERS WHICH MODIFY THE GPS SIGNAL**

**80-600 km IONOSPHERE**  
Ionization par les radiations EUV / Ionization by EUV solar radiation  
Contenu Total en Electron / Total Electron Content TEC

**0-11 km TROPOSPHERE**  
Contenu intégré en vapeur d'eau / Total integrated water vapor

L'ANALYSE DES SIGNAUX GPS PERMET DE CONNAITRE CERTAINES PROPRIETES DES COUCHES TRAVERSEES  
THE ANALYSIS OF THE GPS SIGNAL GIVES INFORMATION ON THE PROPERTIES OF THE CROSSED LAYERS

---

**Training Team  
Enseignants**


- Amory-Mazaudier C.
- Bessis D.
- Bouu T.
- Cottrel L.
- Dame L.
- Floury R.
- Lassadine Duchesne P.
- Nasson F.
- Pottelster M.
- Ziane M.


**Ecole de Météorologie de l'Espace  
School on Space Weather  
Université d'HELWAN**

20 Septembre au 2 octobre, 2010, September 20 to October 2, 2010  
Organisation : Ayman Mahrous et Christine Amory-Mazaudier

Enseignement / Training

**Sponsors  
Research**





Réseau GPS pour la Recherche  
GPS network for Research



# Events organized by SWMC

## SCHOOL ON HIGH ENERGY PHYSICS

20<sup>nd</sup> - 27<sup>nd</sup> November 2010

Organized by:

Egyptian Network of High Energy Physics (ENHEP)

Under the auspices of

The Academy of Scientific Research and Technology (ASRT), Egypt

Institute National de Physique Nucléaire et de Physique des

Particules (IN2P3 / CNRS), France

Istituto Nazionale Di Fisica Nucleare (INFN), Italy



The school will be held at Helwan University. The idea of this school is to give a series of extensive courses on basic topics of particle physics, cosmology and astrophysics

### The Organizing Committee

Prof. Tarek Hussein (CU-ASRT)  
Prof. Ludwik Dobrzynski (Ecole polytechnique)  
Prof. Shaaban Khalil (CTP-BUE)  
Prof. Philippe Miné (Ecole polytechnique)  
Prof. Giuseppe Iaselli (Bari - Italy)  
Prof. Ali Ellithi (Cairo University)  
Dr. Ayman Mahrour (Helwan University)  
Dr. Adel Awad (CTP-BUE)  
Dr. Amr Radi (CTP - BUE)

### The Invited Speakers

Prof. Ludwik Dobrzynski (Ecole polytechnique)  
Prof. Emidio Gabrielli (CERN)  
Prof. Shaaban Khalil (CTP-BUE)  
Prof. Maarten Boonekamp (Saclay, France)  
Prof. Nicola De Filippis (Bari, Italy)  
Prof. Giuseppe Iaselli (Bari, Italy)  
Prof. Guy Wormser (Institut des grilles, France)  
Prof. Daniel Denegri (Saclay, France)

### Topics

Latest results of LHC experiments.  
Standard model and beyond at LHC.  
Grid & analysis tools for an LHC experiment.  
Tracking detectors & RPC.

### Training Supervisors

Prof. Philippe Miné (Ecole polytechnique)  
Prof. Ali Ellithi (Cairo University)  
Dr. Amr Radi (CTP - BUE)  
Dr. Sherif El-Gamal (Ecole polytechnique)

Please visit: [http://ctp.bue.edu.eg/the\\_school\\_2010/Index/Index.htm](http://ctp.bue.edu.eg/the_school_2010/Index/Index.htm),

For more information contact: [ctp@bue.edu.eg](mailto:ctp@bue.edu.eg)

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# Events organized by SWMC

International Space Weather Initiative (ISWI)  
UN/NASA/JAXA Workshop  
November 6-10, 2010 Helwan, Egypt



Helwan, Egypt

November 6-10, 2010

Helwan University, Egypt

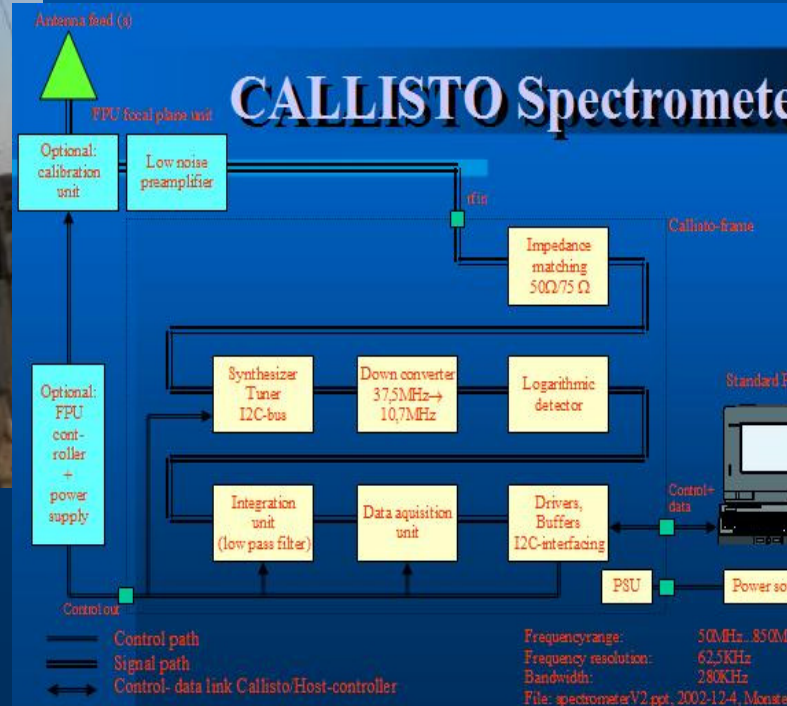
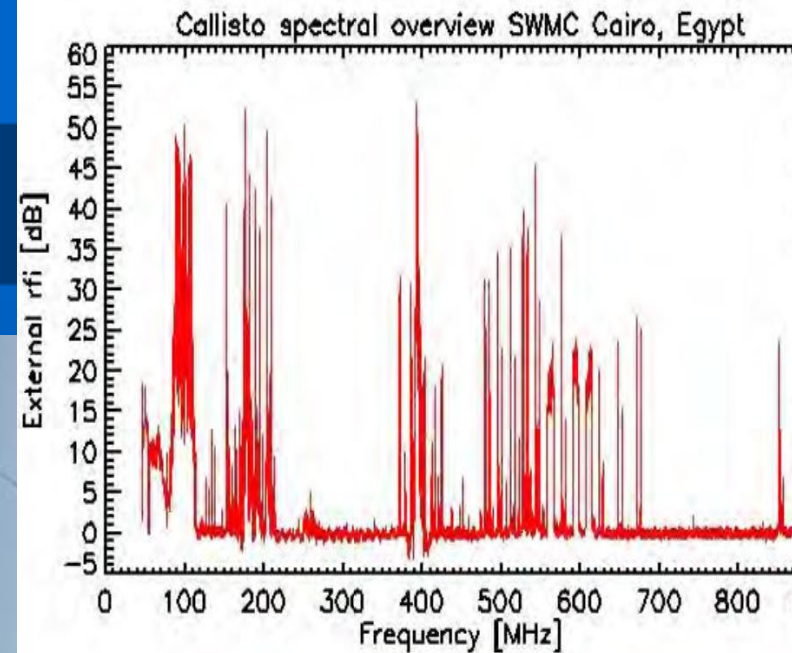


# Research Groups

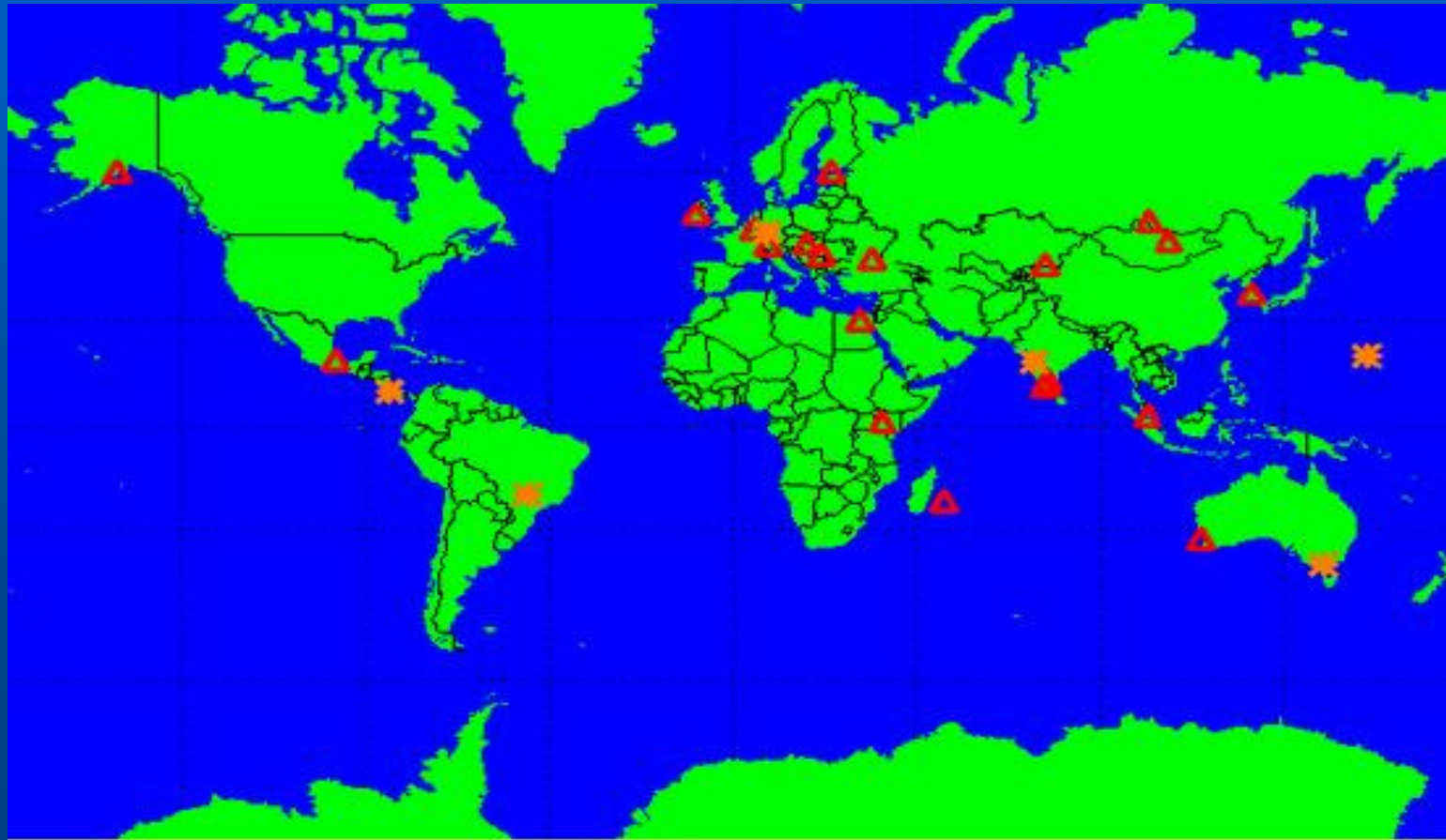


# Solar Physics Group

# CALLISTO Spectrometers

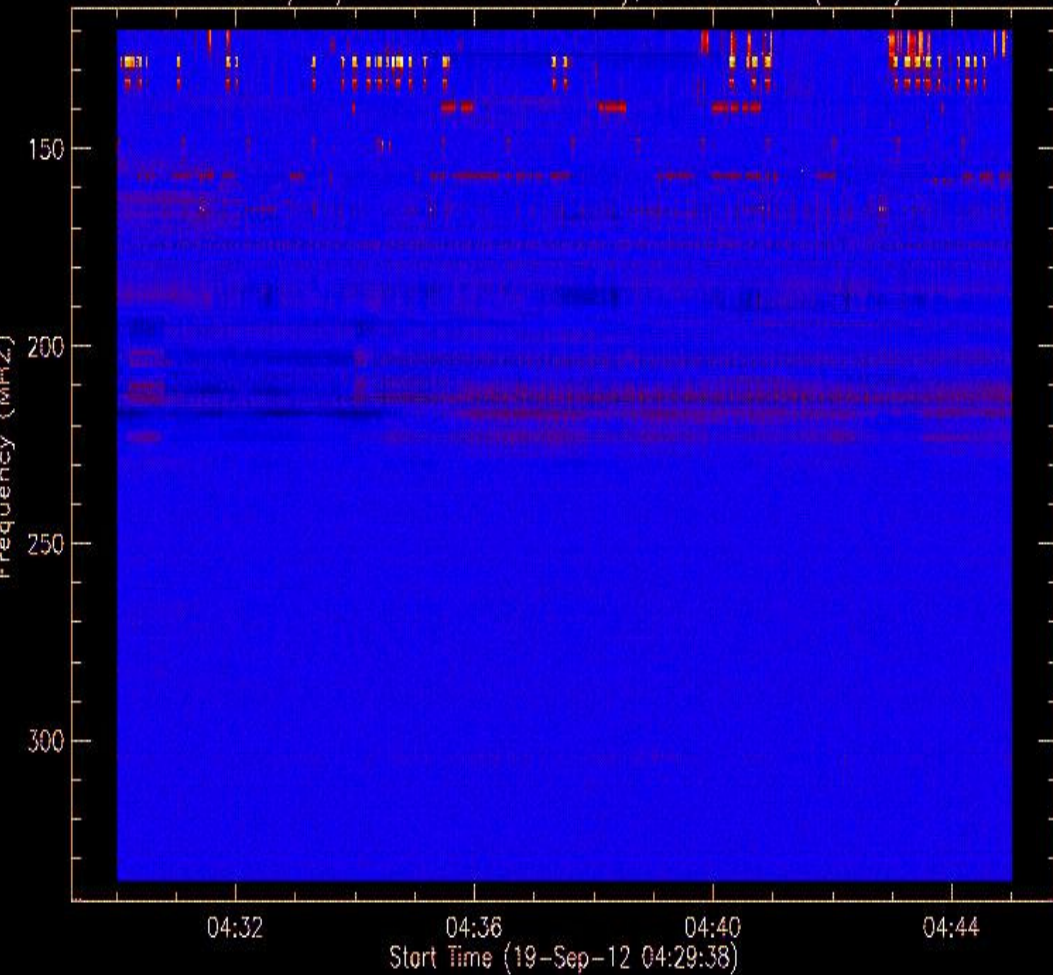


# CALLISTO Network

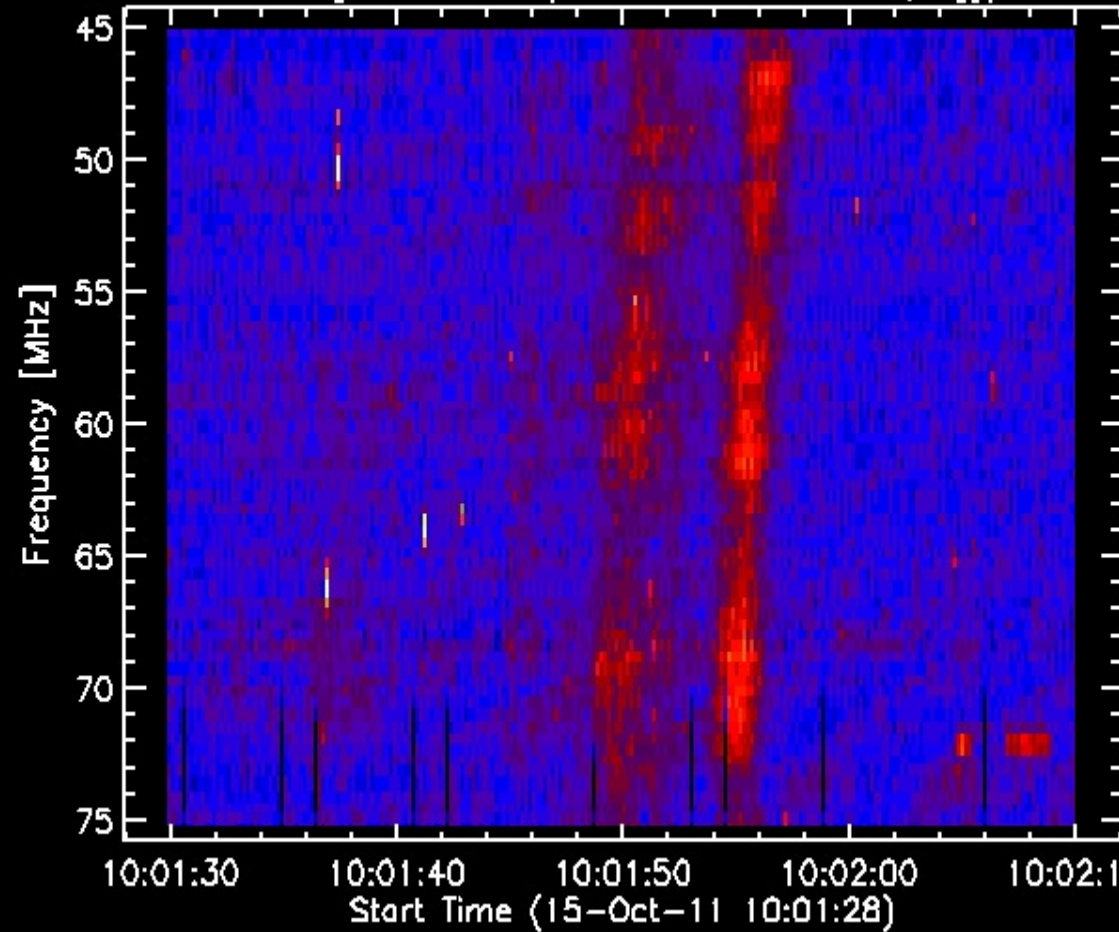


# Recent Results

2012/09/19 Radio flux density, e-CALISTO (SWMC)



First light Callisto spectrometer at SWMC, Egypt



# Data Archive

<http://soleil.i4ds.ch/solarradio/data/>

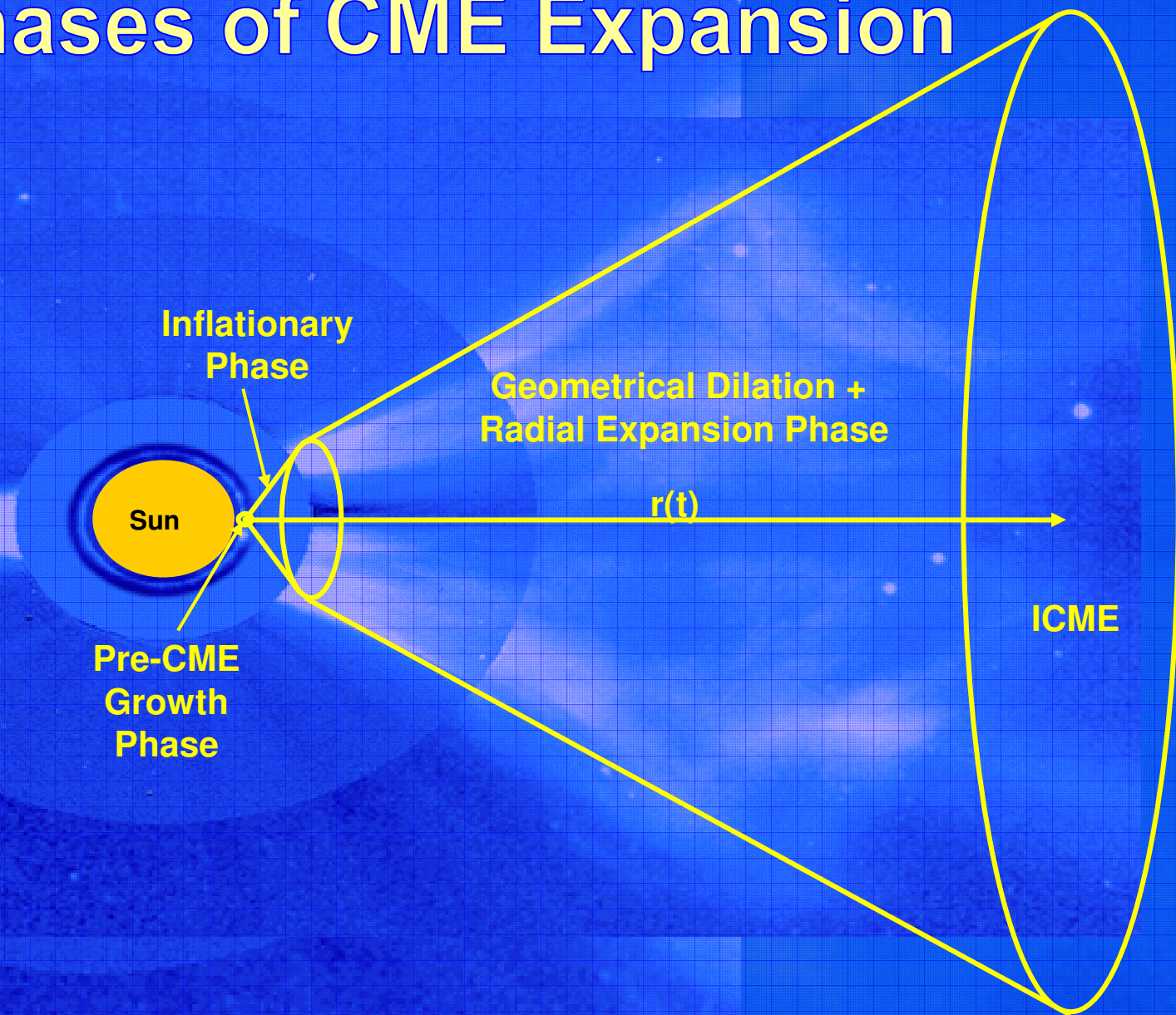
## Index of /solarradio/data/2002-20yy\_Callisto

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 <a href="#">Parent Directory</a>		-	
 <a href="#">2002/</a>	02-Jul-2010 09:30	-	
 <a href="#">2003/</a>	02-Jul-2010 09:31	-	
 <a href="#">2004/</a>	06-Jul-2010 10:51	-	
 <a href="#">2005/</a>	24-Jun-2012 22:21	-	
 <a href="#">2006/</a>	02-Jul-2010 09:49	-	
 <a href="#">2007/</a>	02-Jul-2010 09:54	-	
 <a href="#">2008/</a>	02-Jul-2010 09:55	-	
 <a href="#">2009/</a>	02-Jul-2010 10:30	-	
 <a href="#">2010/</a>	01-Dec-2010 08:32	-	
 <a href="#">2011/</a>	01-Dec-2011 01:32	-	
 <a href="#">2012/</a>	01-Sep-2012 02:32	-	

Apache/2.2.22 (Ubuntu) Server at soleil-web.cs.technik.fhnw.ch Port 80



# Three Phases of CME Expansion



# Publications (Solar Group)

The screenshot shows the SpringerLink interface for a journal article. At the top, there are navigation links for 'springer.com' and 'springerprotocols.com', a language dropdown set to 'English', and a 'GO' button. The SpringerLink logo is on the left. A search bar is present with a 'GO' button and an 'Advanced Search' dropdown. Below the search bar is a navigation menu with 'HOME', 'MY SPRINGERLINK', 'BROWSE', 'TOOLS', 'HELP', 'SHOPPING CART', and 'LOG IN'. The article title is 'Empirical model of the transit time of interplanetary coronal mass ejections' by A. Mahrous, M. El-Nawawy, M. Hammam and N. Ahmed. The journal is 'PHYSICS AND ASTRONOMY', Volume 43, Number 2 (2009), pages 128-135. The article is available as a PDF (222.2 KB) and has 32 references. The abstract discusses the correlation between near-Earth observations of interplanetary coronal mass ejections (ICMEs) and coronal mass ejections (CMEs) observed near the Sun.

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On the Aerodynamic Drag Force Acting on Interplanetary Coronal Mass Ejections Peter J. Cargill
- Journal Article  
On properties of radio-rich coronal mass ejections Joginder Sharma
- Journal Article  
Cyclical Behavior of Coronal Mass Ejections K. J. Li
- Journal Article  
The Relationship of Green-Line Transients to White-Light Coronal Mass Ejections S. P. Plunkett
- Journal Article  
Radio Emission of Flares and Coronal Mass Ejections Invited Review A.

PHYSICS AND ASTRONOMY

SOLAR SYSTEM RESEARCH  
Volume 43, Number 2 (2009), 128-135, DOI: 10.1134/S0038094609020051

**Empirical model of the transit time of interplanetary coronal mass ejections**  
A. Mahrous, M. El-Nawawy, M. Hammam and N. Ahmed

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REFERENCES (32) EXPORT CITATION ABOUT

**Abstract**

We study the correlation between near-Earth observations of interplanetary coronal mass ejections (ICMEs) detected by the *Wind* and *ACE* spacecrafts and their counterparts of coronal mass ejections (CMEs) observed near the Sun by the SOHO/LASCO coronagraph during 1996-2002. The results have been compared with an empirical model given by Gopalswamy, et al. (2000; 2001) to predict the 1-AU arrival time of CMEs. In this paper, we use an expected data set with a wider range with initial velocities than that considered in previous models. To improve the accuracy of the predicted arrival time, we divided the CME events into two groups according to their effective acceleration and deceleration. The results show that

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# Publications (Solar Group)

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Advances in Space Research

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**CME–flare association during the 23rd solar cycle**

A. Mahrous<sup>a</sup>, M. Shaltout<sup>b</sup>, M.M. Beheary<sup>c</sup>, R. Mawad<sup>c</sup>, M. Youssef<sup>b</sup>

<sup>a</sup> Physics Department, Faculty of Science, Helwan University, Ain Helwan 11795, Egypt

<sup>b</sup> National Research Institute of Astronomy and Geophysics, Helwan 11722, Egypt

<sup>c</sup> Physics Department, Faculty of Science, El-Azhar University, Nasr City 12311, Egypt

<http://dx.doi.org/10.1016/j.asr.2009.01.028>, [How to Cite or Link Using DOI](#)

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**Abstract**

The relation between coronal mass ejections (CMEs) and solar flares are statistically studied. More than

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Applications and tools

Workspace

# Publications (Solar Group)

The screenshot shows the ScienceDirect website interface. At the top, there are navigation links for 'Hub', 'ScienceDirect', 'Scopus', and 'Applications'. A user notification box indicates 'You have Guest access to ScienceDirect'. Below the navigation bar, there are links for 'Home', 'Publications', 'Search', 'My settings', 'My alerts', and 'Shopping cart'. The main content area features the journal 'Advances in Space Research' (Volume 49, Issue 7, 1 April 2012, Pages 1198–1202) with the Elsevier logo. The article title is 'The effects of the solar magnetic polarity and the solar wind velocity on Bz-component of the interplanetary magnetic field'. The authors listed are M. Youssef<sup>a</sup>, A. Mahrous<sup>b</sup>, R. Mawad<sup>b</sup>, E. Ghamry<sup>a, b</sup>, M. Shaltout<sup>a</sup>, and M. El-Nawawy<sup>b, c</sup>, A. Fahim<sup>b</sup>. The affiliations are: <sup>a</sup> National Research Institute of Astronomy and Geophysics (NRIAG), Helwan 11421, Cairo, Egypt; <sup>b</sup> Space Weather Monitoring Center, Helwan University, Helwan, Cairo, Egypt; <sup>c</sup> Faculty of Science, Cairo University, Cairo, Egypt. A 'View full text' button and a 'Purchase \$31.50' button are visible. On the right side, there is a search bar and a sidebar with a list of related articles, including 'Solar cycles: A tutorial', 'Predicting the Ap index from past be...', 'Preliminary search for cosmic radiati...', 'Space weather modelling with intellig...', and 'Prediction of daily average solar win...'. The sidebar also includes sections for 'Bibliographic information', 'Citing and related articles', 'Related articles', 'Applications and tools', and 'Workspace'.

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**Advances in Space Research** Volume 49, Issue 7, 1 April 2012, Pages 1198–1202

**The effects of the solar magnetic polarity and the solar wind velocity on Bz-component of the interplanetary magnetic field**

M. Youssef<sup>a</sup>, A. Mahrous<sup>b</sup>, R. Mawad<sup>b</sup>, E. Ghamry<sup>a, b</sup>, M. Shaltout<sup>a</sup>, M. El-Nawawy<sup>b, c</sup>, A. Fahim<sup>b</sup>

<sup>a</sup> National Research Institute of Astronomy and Geophysics (NRIAG), Helwan 11421, Cairo, Egypt  
<sup>b</sup> Space Weather Monitoring Center, Helwan University, Helwan, Cairo, Egypt  
<sup>c</sup> Faculty of Science, Cairo University, Cairo, Egypt

<http://dx.doi.org/10.1016/j.asr.2011.07.023>, How to Cite or Link Using DOI  
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# Publications (Solar Group)

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Space Physics**

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JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 117, A07309, 8 PP., 2012  
doi:10.1029/2012JA017753

## **Signature of the coronal hole near the north crest equatorial anomaly over Egypt during the strong geomagnetic storm 5 April 2010**

### **Key Points**

- Coronal hole impacts on TEC
- Coronal hole impacts on the Earth's magnetic field
- Anti Sq circulation observed during four days

### **A. Shimeis**

Space Weather Center, Faculty of Science, Helwan University, Helwan, Egypt

LPP/CNRS/UPMC, UMR 7648, Saint-Maur-des-Fossés, France

### **I. Fathy**

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LPP/CNRS/UPMC, UMR 7648, Saint-Maur-des-Fossés, France

### **C. Amory-Mazaudier**

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### **R. Fleury**

National School of Telecommunications of Brest, Brest, France

### **A. M. Mahrous**

Space Weather Center, Faculty of Science, Helwan University, Helwan, Egypt

### **K. Yumoto**

Department of Earth and Planetary Sciences, Kyushu University, Fukuoka, Japan

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**Keywords**

- TEC
- magnetic field
- magnetic storm

**Index Terms**

- Magnetospheric Physics: Instruments and techniques

# Geomagnetism Group

# MAGDAS Project 2009





## Installation of MAGDAS at FYM

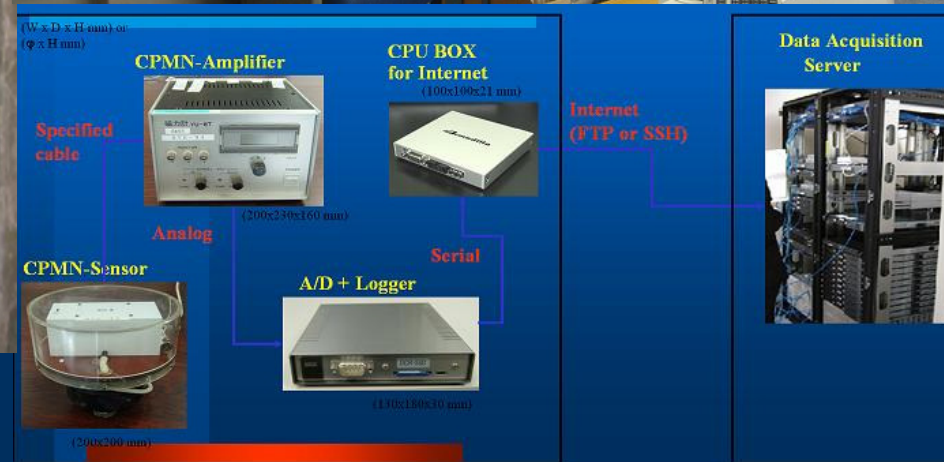




# MAGDAS-II installation at ASW & FYM

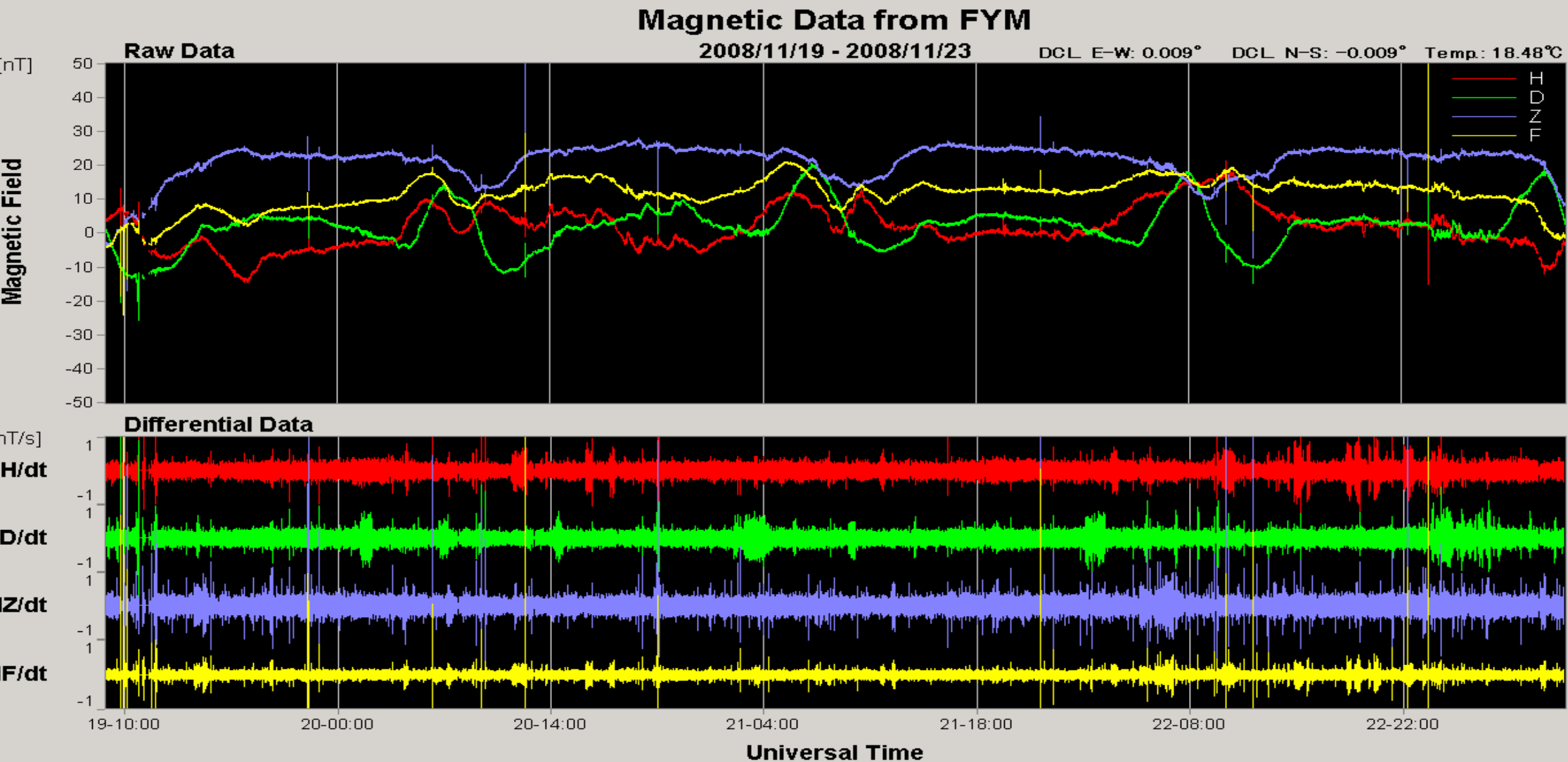


on,



# Real-time Monitoring Data from FYM Station

ContentsViewer - playing



# Data Archive

<http://magdas.serc.kyushu-u.ac.jp/>



## Welcome to SERC MAGDAS Data Archive

[About MAGDAS](#)

[Station Map and List](#)

[Realtime Quick Look](#)

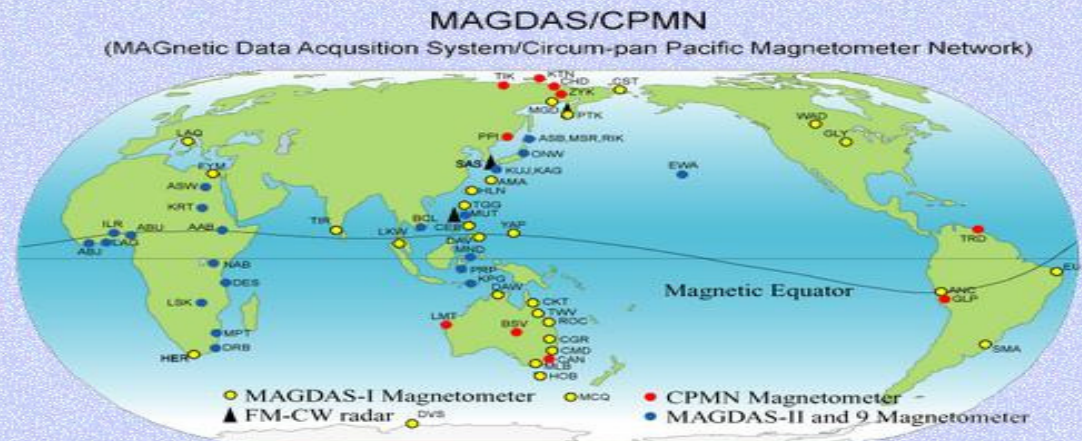
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[Data during WHI](#)

[Requesting Data](#)

[Rules for Data Usage](#)

[Link](#)



<http://magdas2.serc.kyushu-u.ac.jp/realtime/index.html>

# Publications (Geomagnetism Group)

The screenshot shows the ScienceDirect website interface. At the top, there are navigation links for 'Hub', 'ScienceDirect', 'Scopus', and 'Applications'. A user notification box indicates 'Guest access to ScienceDirect'. The main article title is 'Advances in Space Research', Volume 46, Issue 5, 1 September 2010, Pages 613–617. The article title is 'First MAGDAS installation at Fayum in Egypt'. The authors listed are A. Mahrous, E. Ghamry, R. Elhawary, I. Fathy, Y. Yamazaki, S. Abe, T. Uozumi, and K. Yumoto. A 'View full text' button is visible, along with a 'Purchase \$31.50' button. On the right side, there is a search bar and a sidebar with various options like 'Bibliographic information', 'Citing and related articles', and 'Related articles'. The sidebar also contains advertisements for 'Ellipsometry Tutorial' and 'FRAPPA'.

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 **Advances in Space Research**   
Volume 46, Issue 5, 1 September 2010, Pages 613–617

**First MAGDAS installation at Fayum in Egypt**

A. Mahrous<sup>a, b</sup>, E. Ghamry<sup>a, c</sup>, R. Elhawary<sup>a</sup>, I. Fathy<sup>a</sup>, Y. Yamazaki<sup>d</sup>, S. Abe<sup>e</sup>, T. Uozumi<sup>e</sup>, K. Yumoto<sup>d, e</sup>

<sup>a</sup> Space Weather Monitoring Center, Helwan University, Ain Helwan 11795, Egypt  
<sup>b</sup> Department of Physics, Faculty of Science, Helwan University, Ain Helwan 11795, Egypt  
<sup>c</sup> National Research Institute of Astronomy and Geophysics, Helwan 11722, Egypt  
<sup>d</sup> Department of Earth and Planetary Sciences, Kyushu University, Japan  
<sup>e</sup> Space Environment Research Center, Kyushu University, Japan

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The Sentinel Missions: New

Applications and tools  
Workspace

# Publications (Geomagnetism Group)

Sun and Geosphere, 2011; 6(2): 84 - 87

ISSN 1819-0839

## First Investigation of Geomagnetic Micropulsation, Pi 2, in Egypt

Essam Ghamry<sup>1, 2</sup>, A. Mahrous<sup>2</sup>, N. Yasin<sup>3</sup>, A. Fathy<sup>3</sup> and K. Yumoto<sup>4</sup>

<sup>1</sup> National Research Institute of Astronomy and Geophysics (NRIAG), Helwan, Egypt

<sup>2</sup> Space Weather Monitoring Center (SWMC), Helwan University, Ain Helwan, Egypt.

<sup>3</sup> Physics Department, Faculty of Science, Fayum University, Egypt.

<sup>4</sup> Space Environment Research Center (SERC), Kyushu University, Japan.

Email: [essamgh@yahoo.com](mailto:essamgh@yahoo.com)

Accepted: 14 September 2011

**Abstract** We present first investigation of Pi 2 pulsations observed from MAGnetic Data Acquisition System (MAGDAS) at Fayum and Aswan stations (FYM and ASW) in Egypt. MAGDAS is an important component of the International Space Weather Initiative (ISWI). We carried out our analysis through a visual inspection comparing our events with burst in AE index during the period from November 2008 to October 2009. We used two different methods: (i) Fourier transformations and (ii) Wavelet power spectrum. Pi 2 events of H component, at FYM and ASW, have the same waveform and the same frequency, and some times the same amplitude, but in some cases FYM has relatively higher amplitude than ASW

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**Keywords:** Pi 2 pulsation, MAGDAS, ISWI, Wavelet.

### Introduction

Pi 2 pulsation is magnetic fluctuations with period [40:150 seconds]. It considers the most common pulsations used in substorm research [1]. Pi 2 pulsations at low latitude are a good indicator to substorm onset because it observed not only in the nightside but also in the dayside [2]. With some cautions due to gradual increase in the Pi 2 amplitude and the onset delay within 1 - 3 minute from the auroral breakup [3] and [4].

Environment Research Center (SERC) is Professor K. Yumoto of Kyushu University, Japan [12]. This system is one of many tools are now being deployed in order to carry out space weather studies in the Space Weather Monitoring Center (SWMC) in Egypt [13]. The geomagnetic and geographic locations of both stations are given in Table (1).

MAGDAS/CPMN

# Publications (Geomagnetism Group)

Sun and Geosphere, 2011; 6(2): 50 - 52

ISSN 1819-0839

## Behavior of the Sq Diurnal Magnetic Variation over Egypt

Essam Ghamry<sup>1, 2</sup>, A. Mahrous<sup>2, 3</sup>, R. El-Hawary<sup>2</sup> and K. Yumoto<sup>4</sup>

<sup>1</sup> National Research Institute of Astronomy and Geophysics (NRIAG), Helwan, Egypt

<sup>2</sup> Space Weather Monitoring Center (SWMC), Helwan University, Ain Helwan, Egypt.

<sup>3</sup> Physics Department, Faculty of Science, Helwan University, Ain Helwan, Egypt.

<sup>4</sup> Space Environment Research Center (SERC), Kyushu University, Japan.

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Accepted: 7 October 2011

**Abstract:** The diurnal variation of the solar quiet (Sq) in the geomagnetic north-south component (H) and geomagnetic east-west component (D), along the Magnetic Data Acquisition System (MAGDAS) stations in Egypt during year 2009 have been studied. MAGDAS was successfully installed at two stations in Egypt Fayum (FYM) and Aswan (ASW). Several forms of Abnormal Quiet Days (AQDs) have been found in both of Sq (H) and Sq (D). These AQDs of Sq (H) are expected to be related to counter or reversed electrojet while AQDs of Sq (D) is presumably due to the currents of the (2, 3) mode.

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**Keywords:** Solar quiet (Sq), MAGDAS, Abnormal Quiet Days (AQDs).

### Introduction

[1] postulated that the daily oscillations in ground magnetic records originate from dynamo action in the upper atmosphere. The daily variation in the magnetic field at the Earth's surface during the geomagnetic quiet condition is generated by the mid-latitude ionospheric current system driven by solar heating and forcing from tidal winds in the E-region of the ionosphere. [2] suggested that the day-to-day variability of Sq is due to the variations in dynamo driving force rather than variations in conductivity. [3] showed a reversal of daily

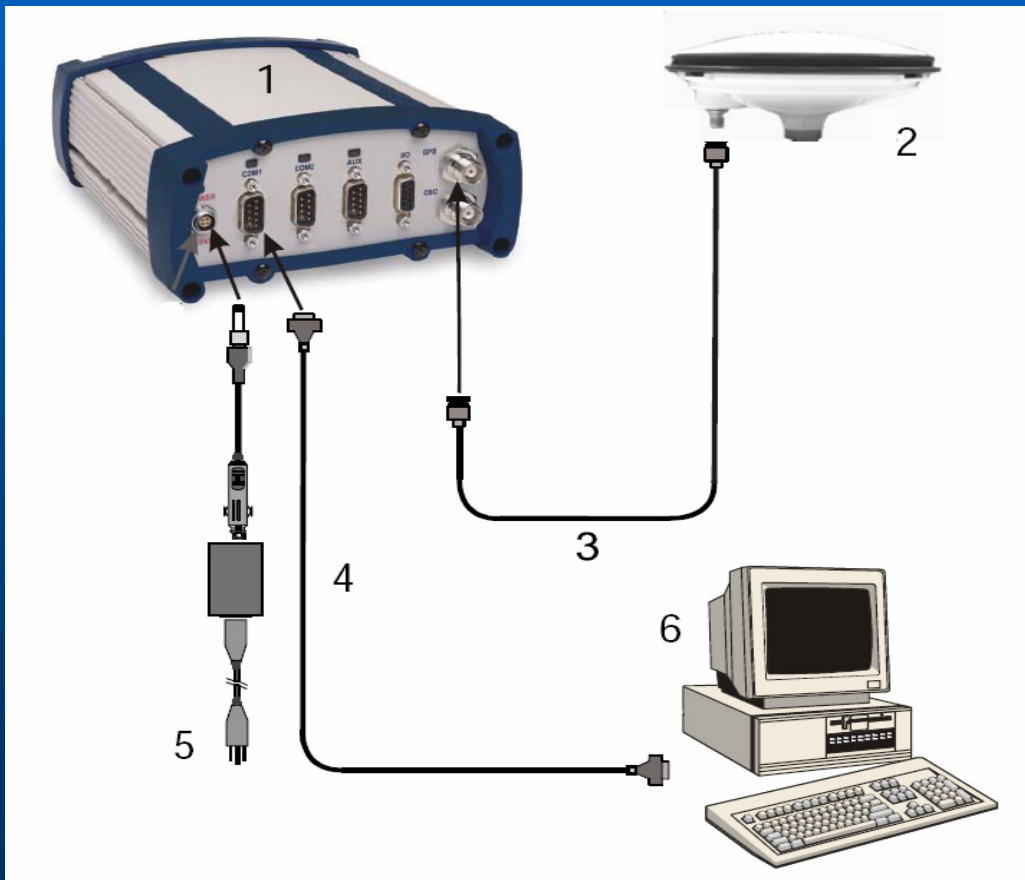
days in 2009 because of gaps or missed data occurred in both stations.



# Ionosphere Group

GPS Sub-group

# GPS System at Helwan



1: GPS receiver

2: GPS dual frequency antenna

3: Antenna cable (30 meter maximum)

4: Serial cable

5: Power cable

6: Personal computer running Linux

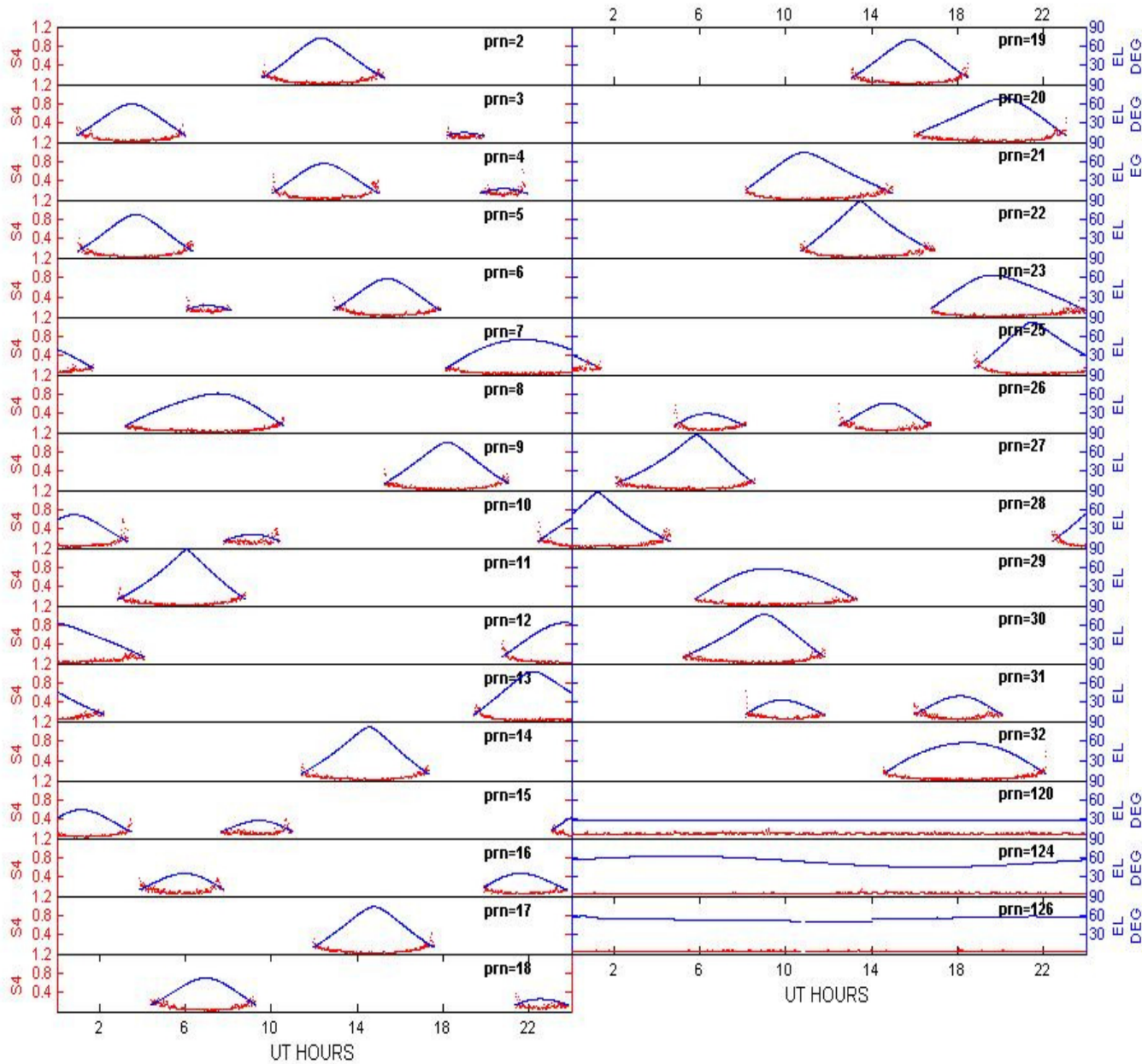


GPS dual frequency antenna

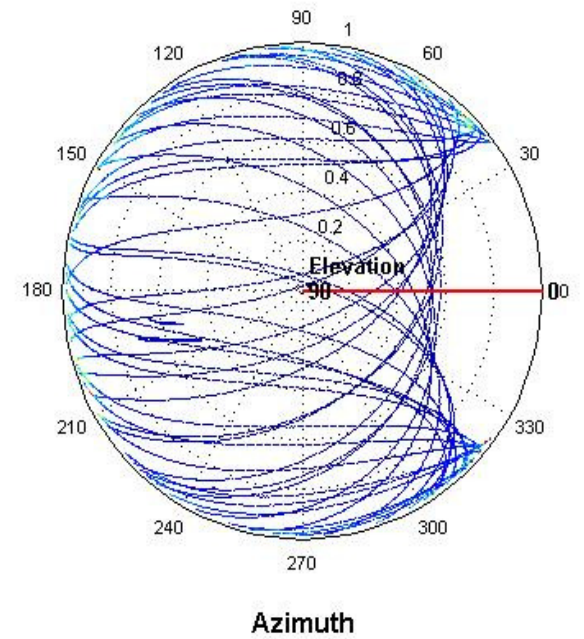
Helwan University



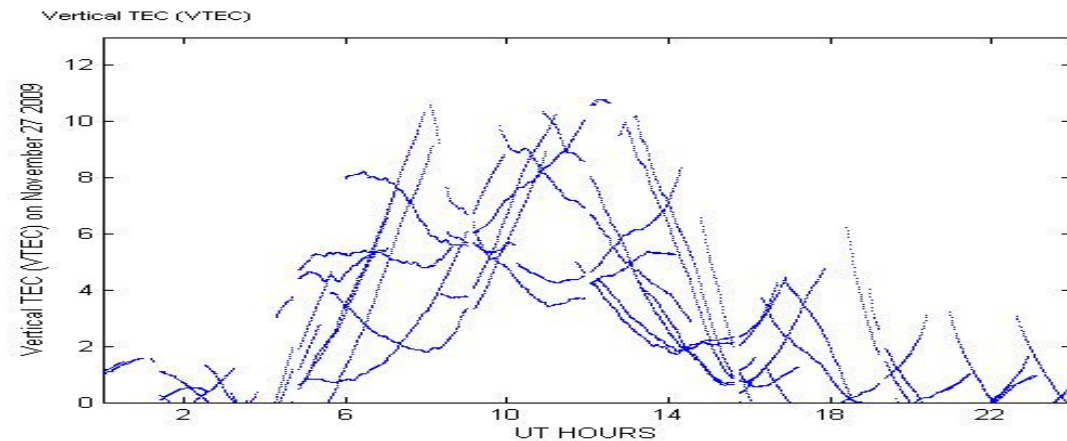
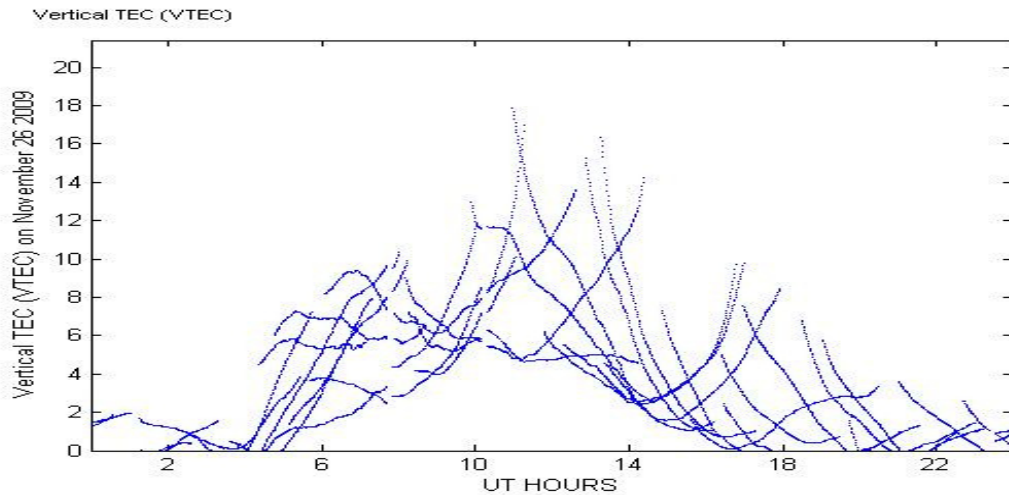
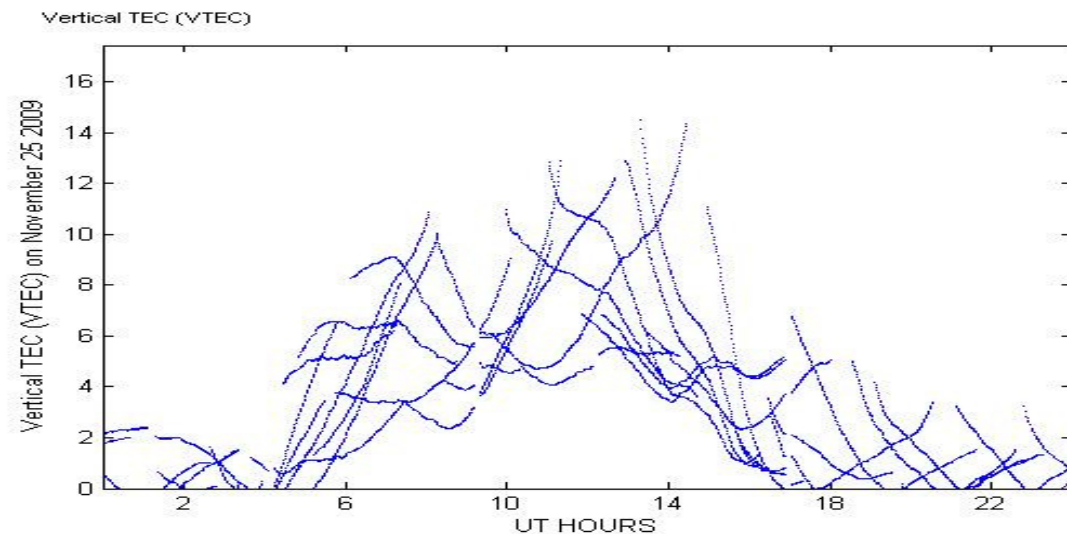
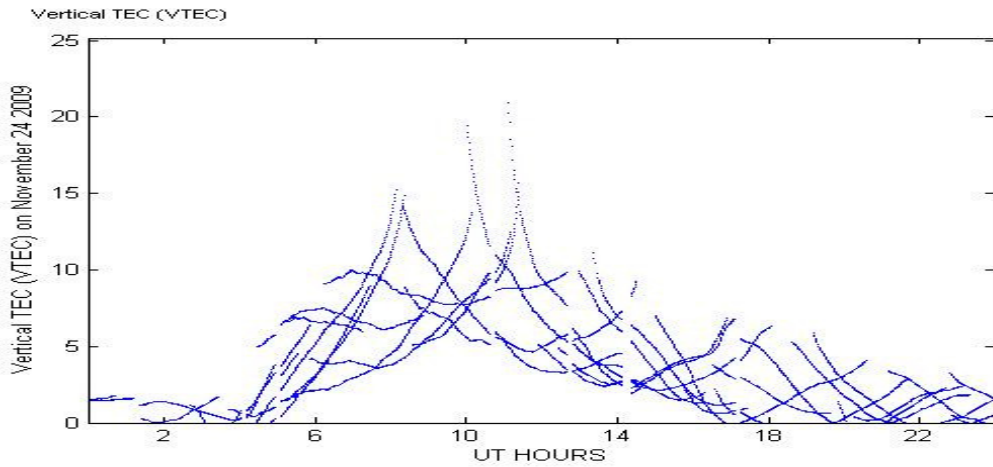
S4 AND ELEVATION ANGLE  
on November 24 2009



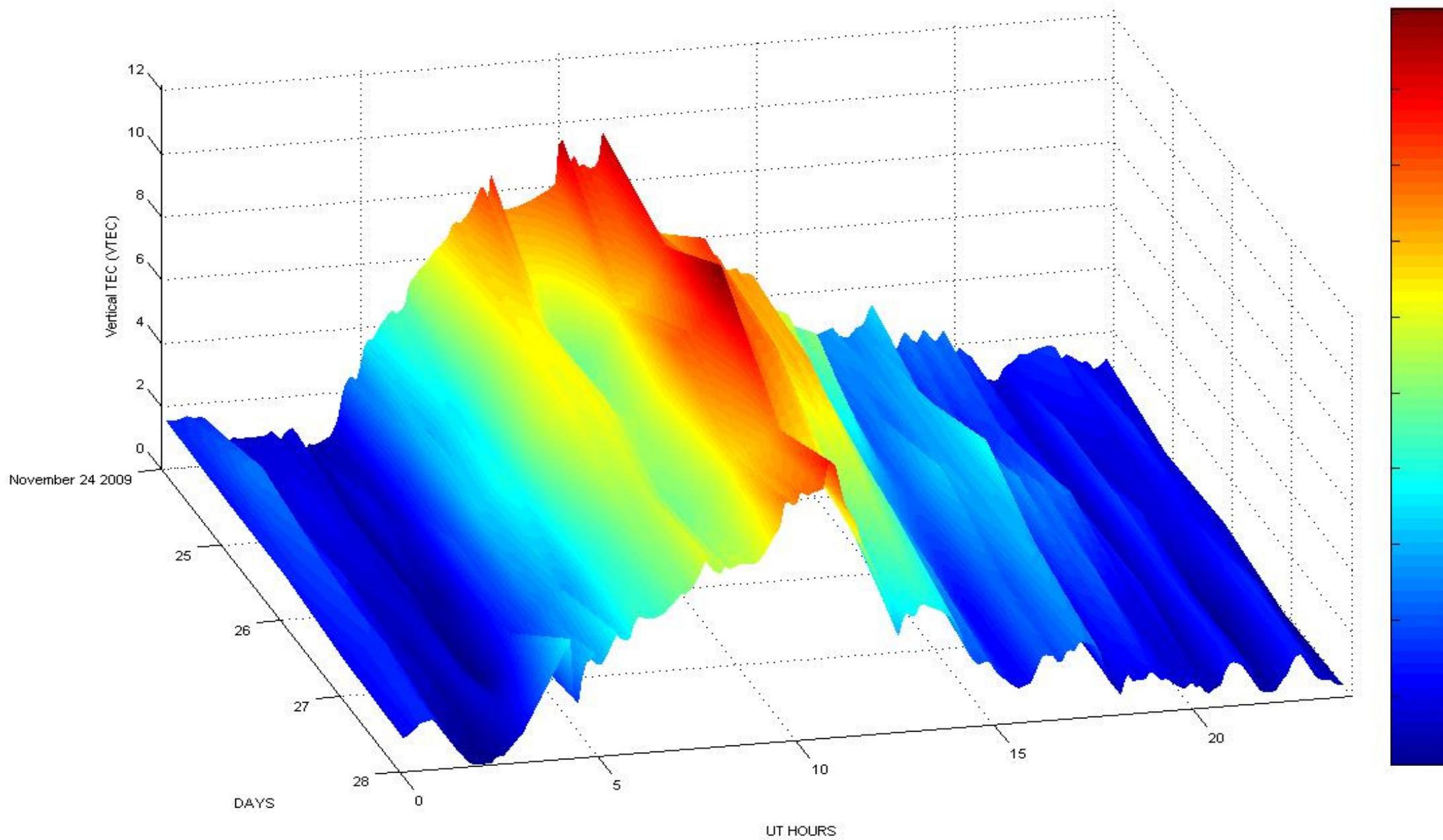
Scintillation Index(s4)



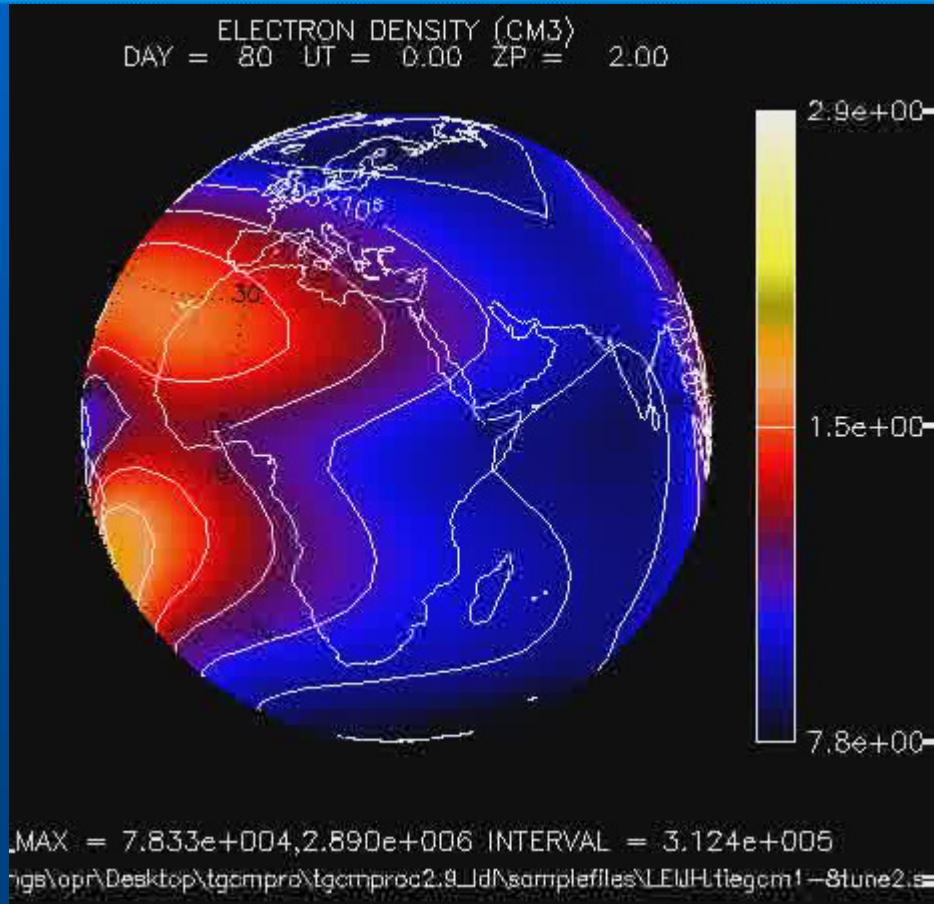
# TEC Profile



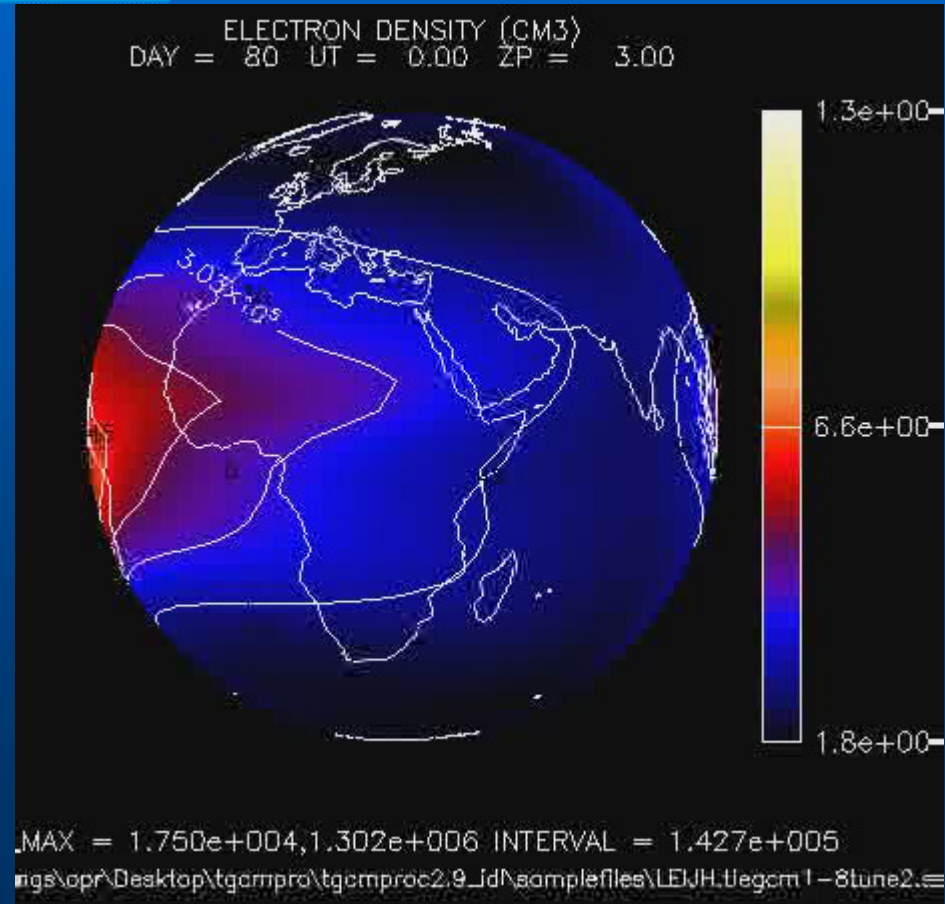
Vertical TEC (VTEC)



# TIEGCM Simulation Results

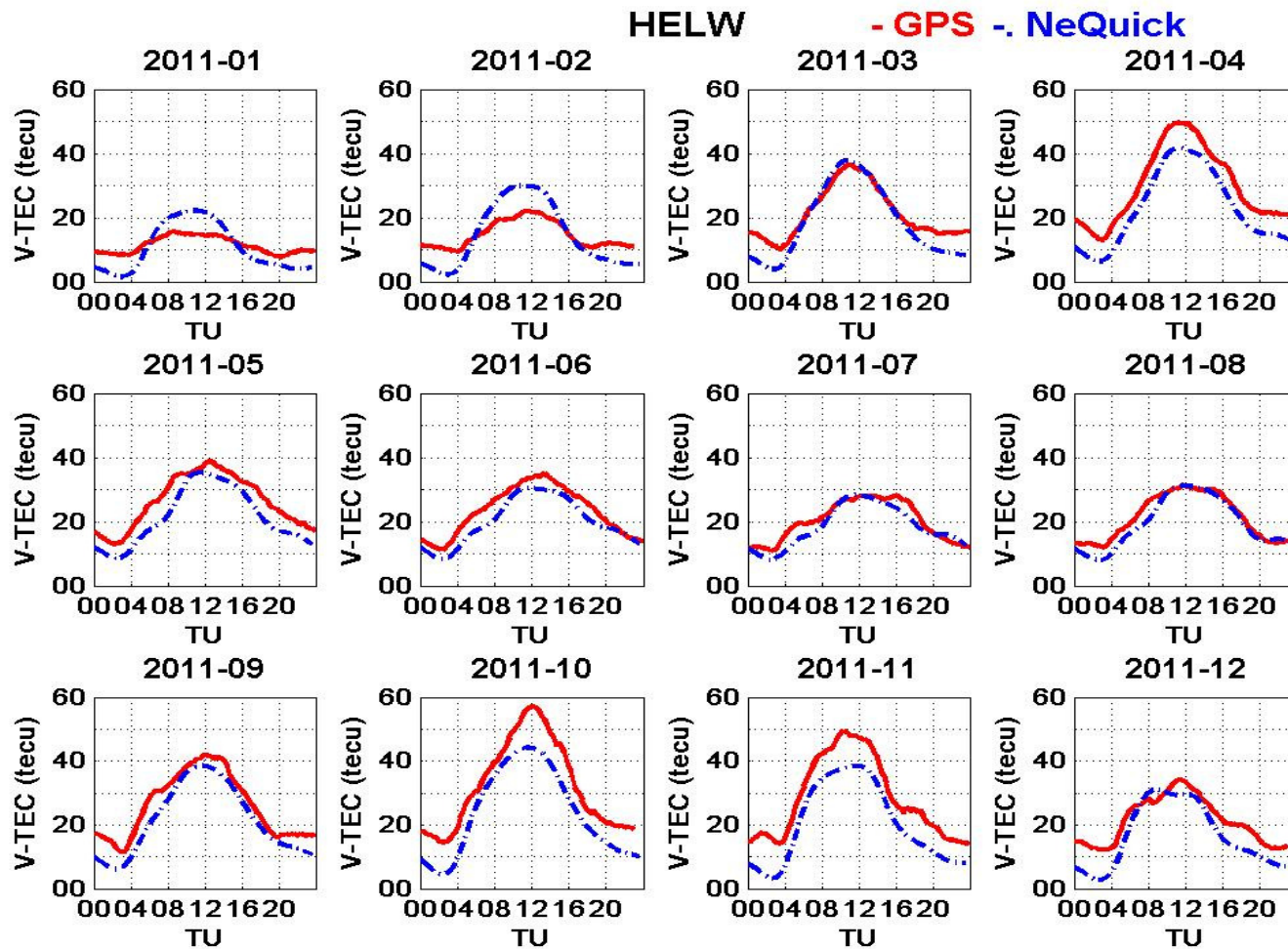


**Energetic Event**



**Quite Day**

# NeQuick Simulation Results



# Ionosphere Group

CIDR Sub-group

# Coherent Ionospheric Doppler Receivers (CIDR) Project 2008





# Egypt is Located in Equatorial Anomaly Region (Crest and Trough)

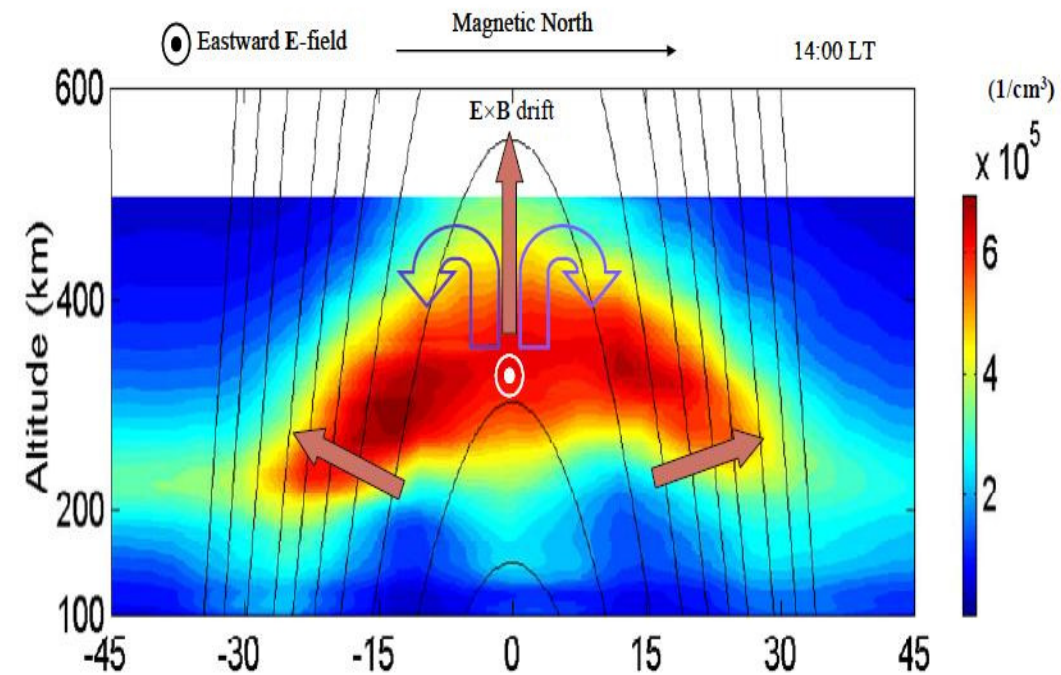
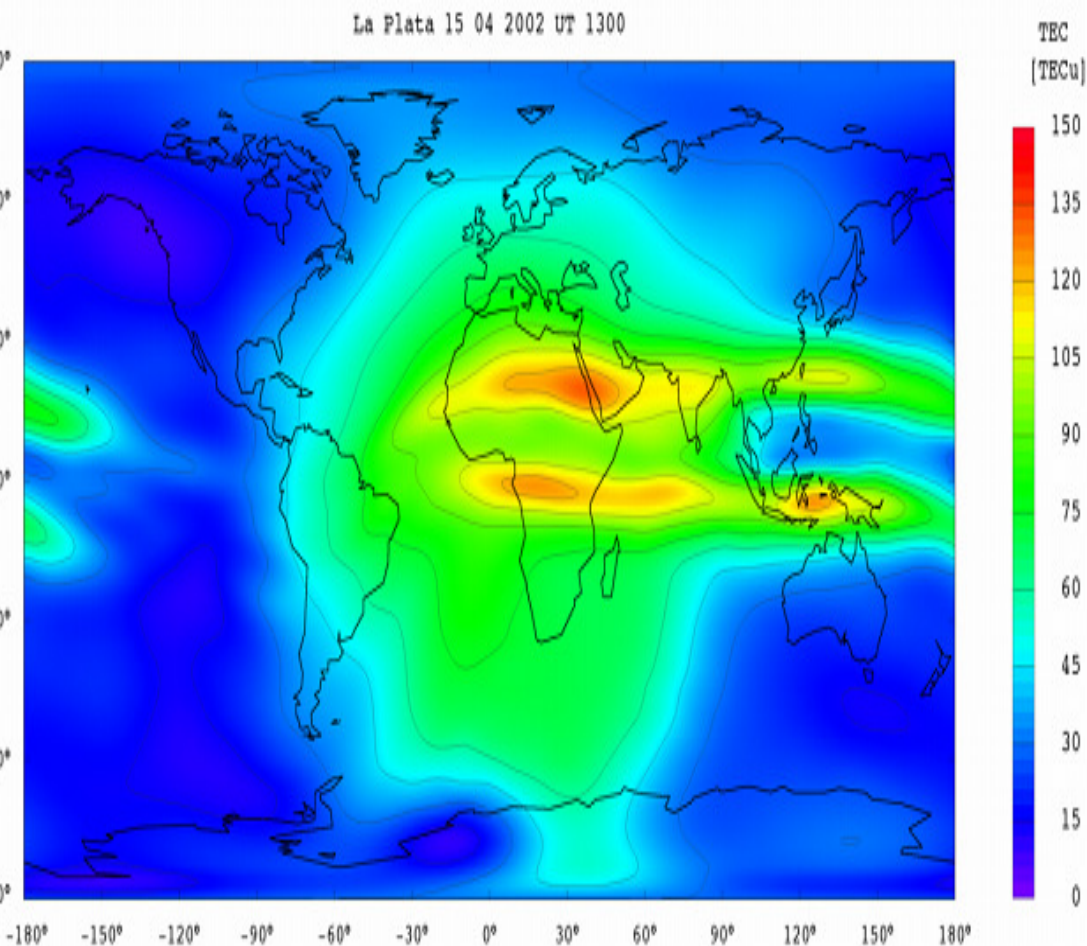
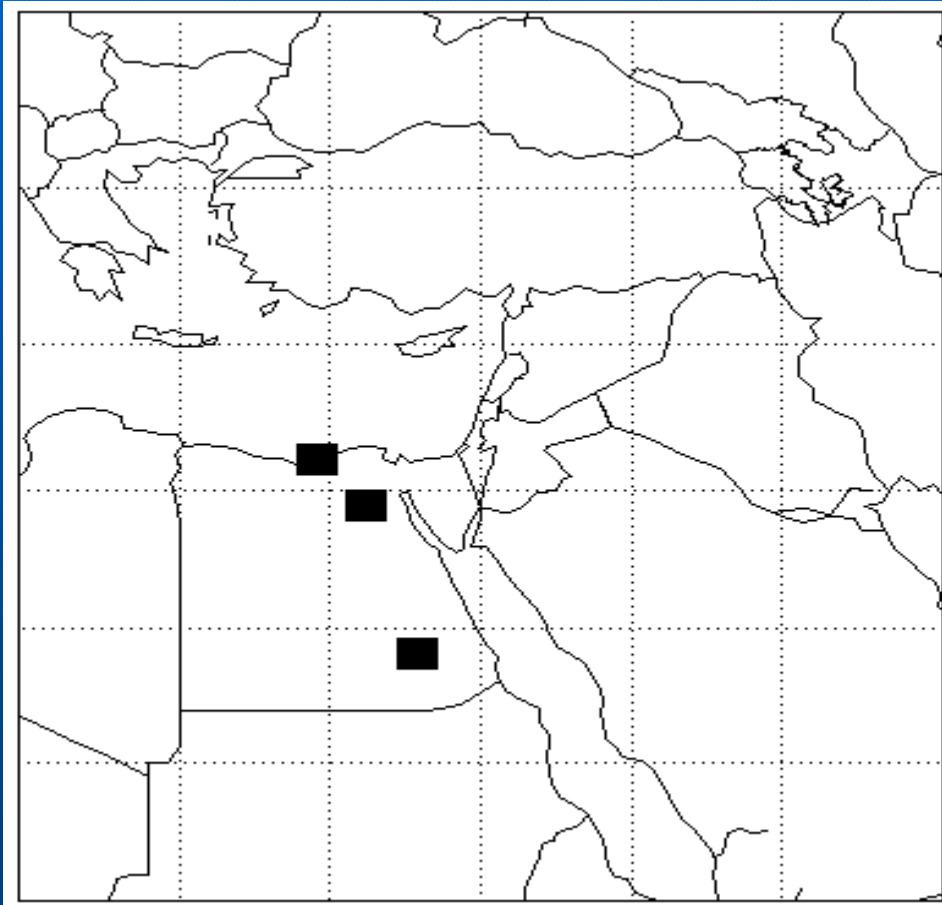


Figure 1.5. Contour is the altitude profile of plasma density at 14LT, black lines are magnetic field lines and arrows stand for the directions of ion drifts [courtesy of Liu and Lin, 2006].

# Coherent Ionospheric Doppler Receivers (CIDRs)



## Three CIDRs will be deployed to Egypt as part of IHY

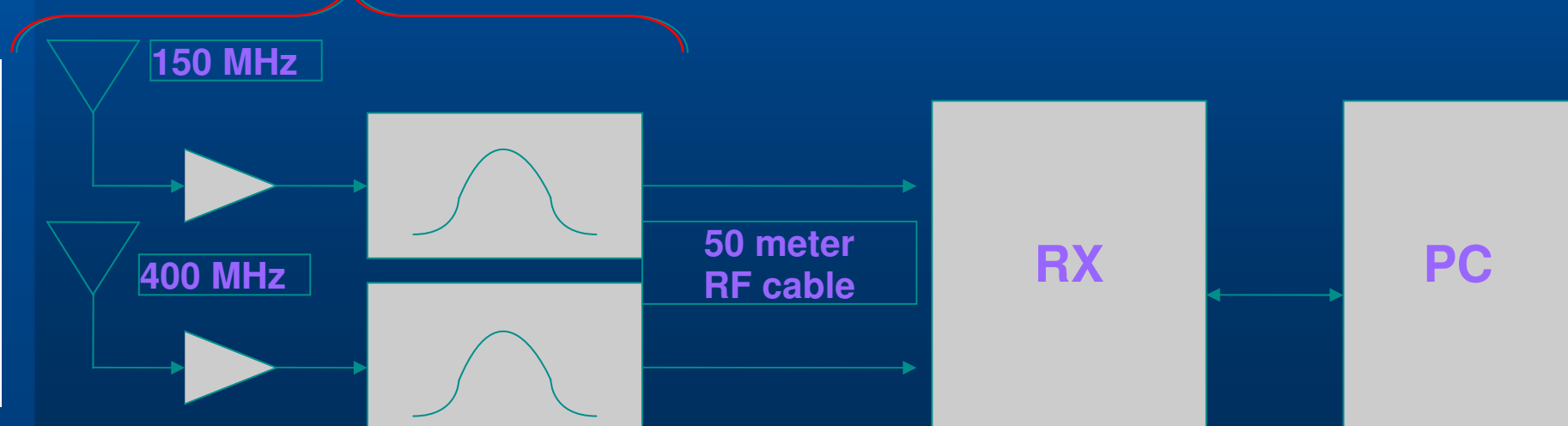
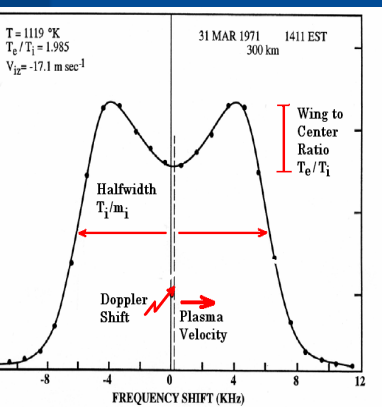
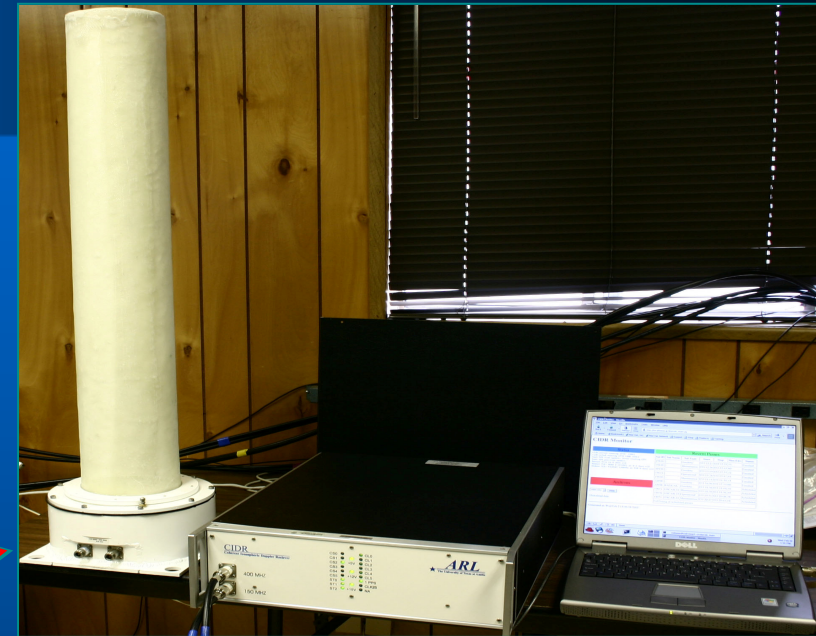
- US coordinator (**Dr. Trevor Garner**), Texas University
- Egyptian coordinator (**Dr. Ayman Mahrous**), Helwan University.

The CIDR will be operated jointly by :

- 1- Helwan University
- 2- South Valley University
- 3- Alexandria University

# Coherent Ionospheric Doppler Receivers (CIDRs)

- Designed to track 150/400MHz LEO beacons (Transit/NIMS, GFO)
- Provides relative TEC and phase scintillation measurements at 50 Hz
- Useful for examining spatial structure with a relatively sparse receiver network and conducting ionospheric tomography



## **RADCAL/GFO Beacon Satellites**



- **3 RADCAL/GFO Satellites**
- **20 RADCAL Ground Stations**
  - **Archived Data 1993 to Present**
  - **5 Second Samples**
  - **Maintained by AF Western Test Range Vandenberg**

### **Radio Altimetry and Ephemeris Satellites**

- **150/400 MHz Radio Beacon**
- **Ionospheric TEC Correction Data**



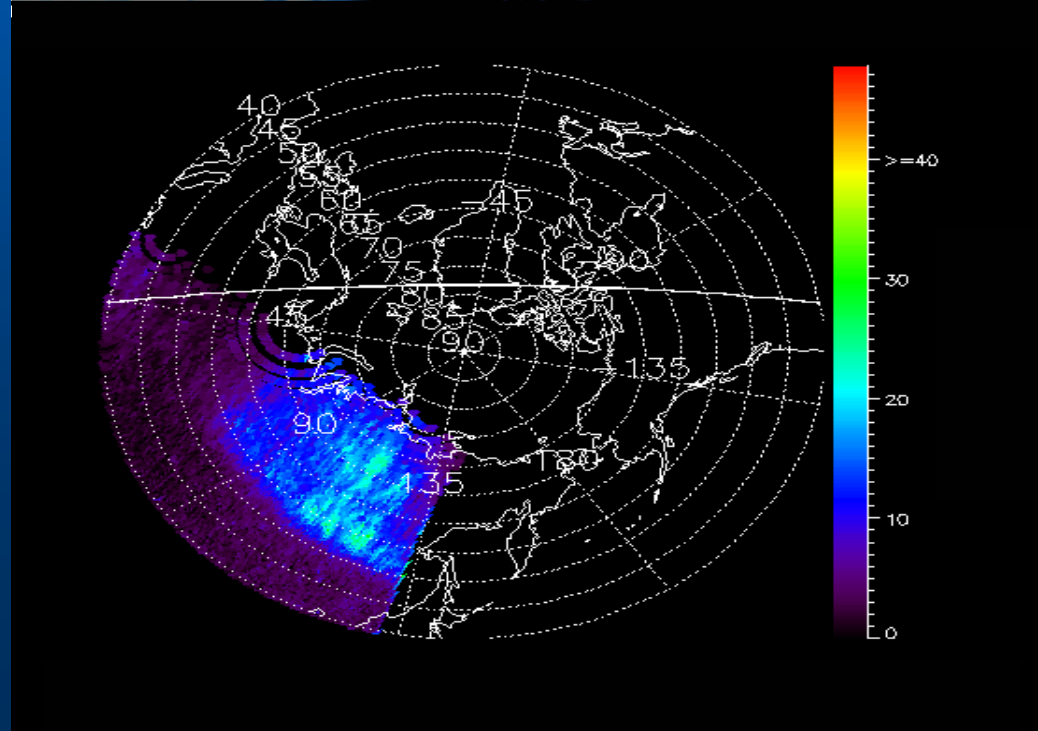
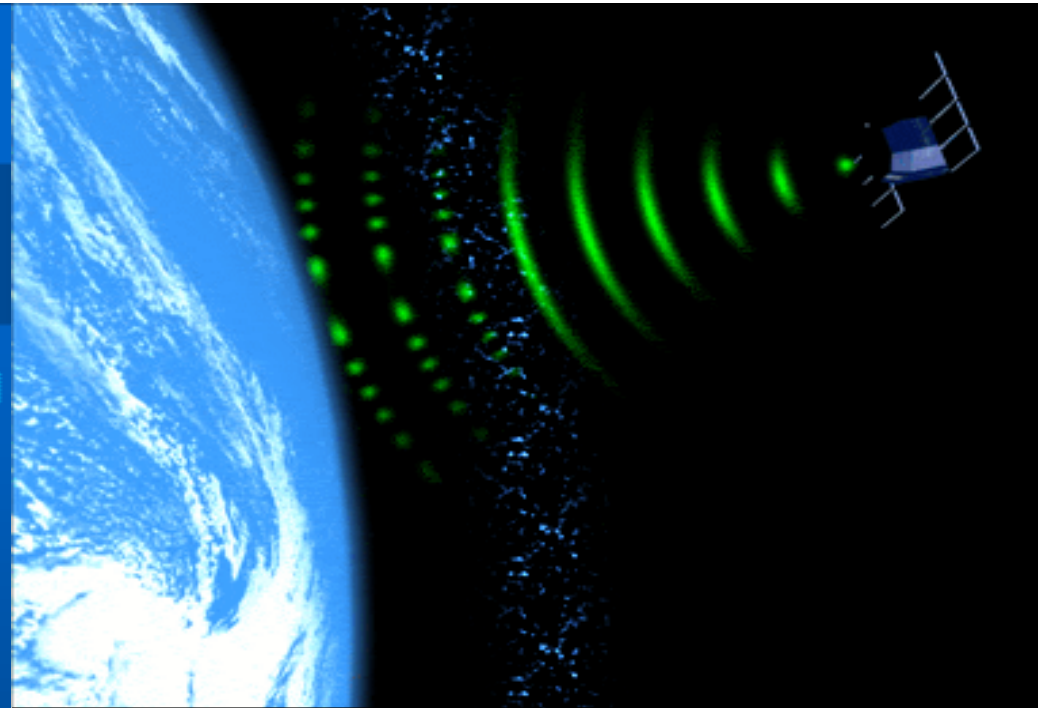
**GFO (1998 to Present)**

### **OSCAR and DMFS Spacecrafts**

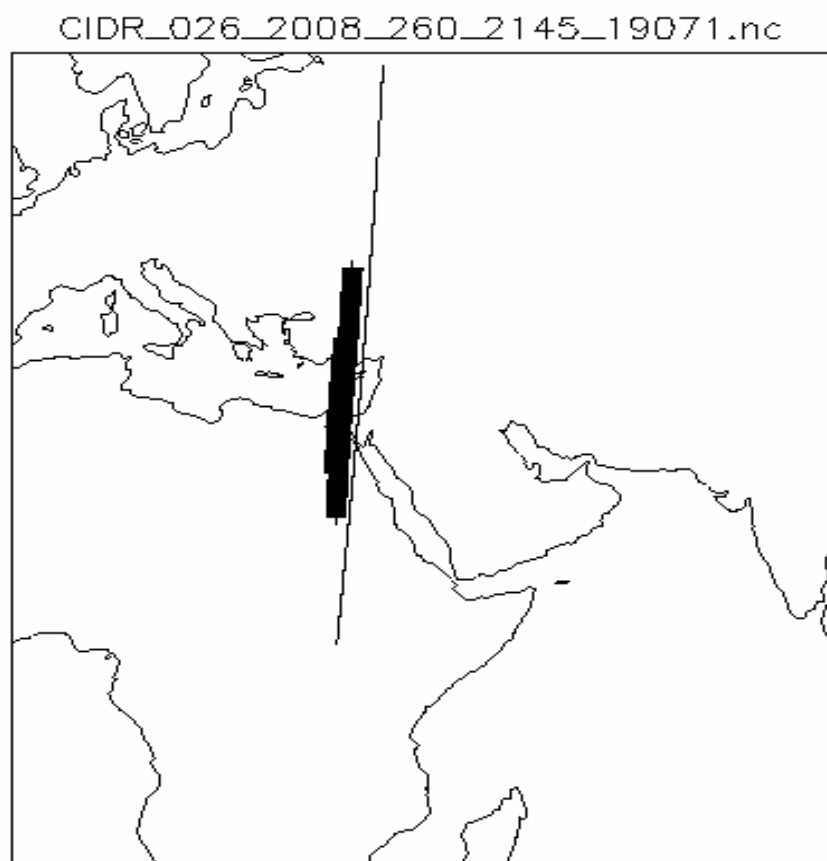
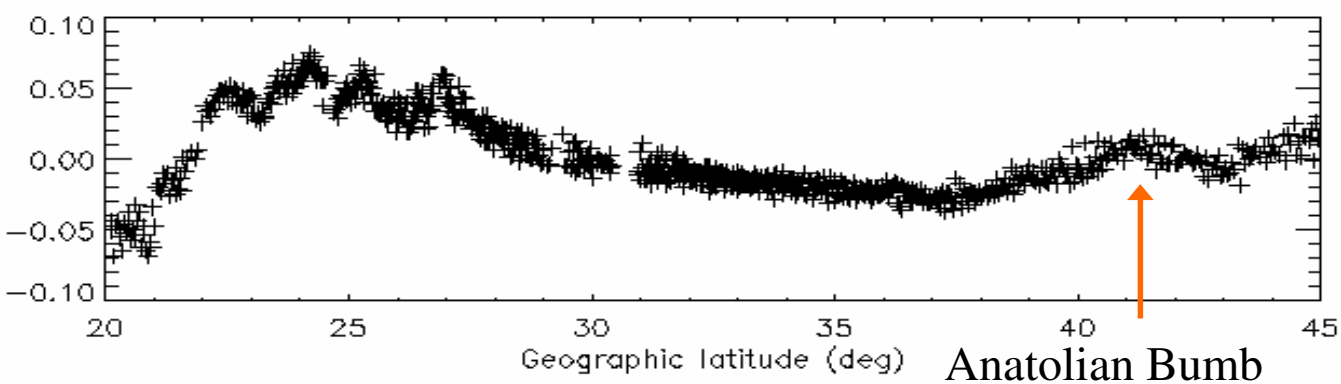
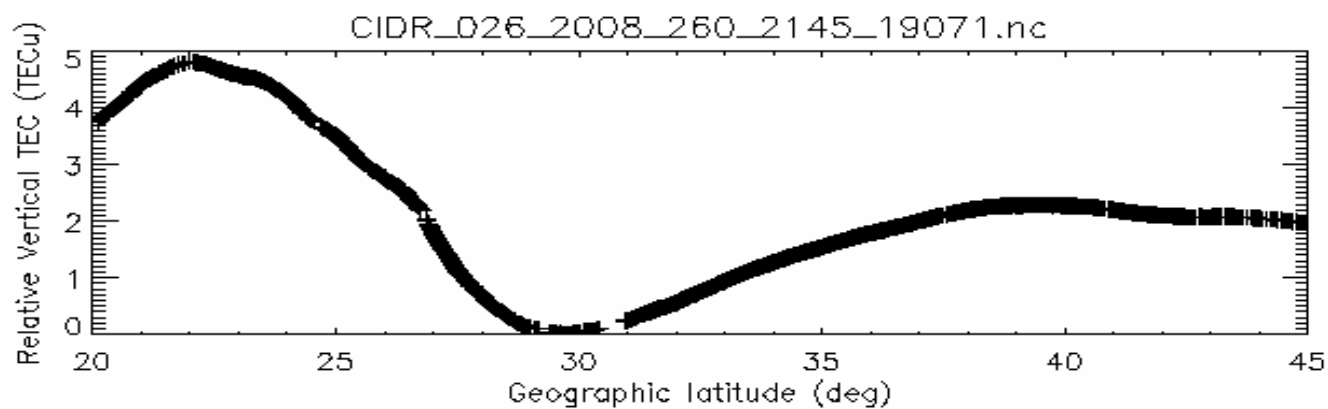


# Advantages Over GPS

- More accurate, no need for plasmaspheric corrections by using LEO satellites (300~1100 km), while GPS orbital height (20,000 Km)
- Can measure the spatial structure of the ionosphere.
- A powerful tool for topographic image of the ionosphere



# CIDR Observations



# Publications (Ionosphere Group)

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**Abstract** **Cited By (1)**

SPACE WEATHER, VOL. 8, S07002, 6 PP., 2010  
doi:10.1029/2009SW000548

**First results of Coherent Ionospheric Doppler Receiver measurements over Egypt**

**Ayman Mahrous**  
Space Weather Center, Faculty of Science, Helwan University, Ain Helwan, Egypt

**Amira Shimeis**  
Space Weather Center, Faculty of Science, Helwan University, Ain Helwan, Egypt

**Trevor Garner**  
Space and Geophysics Laboratory, Applied Research Laboratories, University of Texas at Austin, Austin, Texas, USA

This paper presents the first results of total electron content (TEC) measurements over Egypt taken by UHF/VHF receivers. Such ionospheric measurements over the Middle East and north Africa have been previously unable to the scientific community but are now available for ionospheric studies. In particular, these receivers are well situated to study the northern peak of the equatorial anomaly. This initial study examines the behavior of the equatorial anomaly during a weak magnetic storm of 12 July 2008. The response of the northern equatorial anomaly crest is examined during the storm time, using the TEC measurements from the Coherent Ionospheric Doppler Receivers (CIDR) at Helwan, Egypt (29.8641°N, 31.3172°E). Particular attention is shown to diurnal changes in the crest structure and its response to the minor magnetic storm.

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**Keywords**


- equatorial anomaly
- ionospheric disturbances
- total electron content

**Index Terms**

- Ionosphere: Equatorial ionosphere
- Radio Science:

# Publications (Ionosphere Group)

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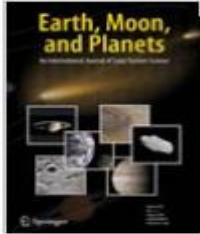
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**PHYSICS AND ASTRONOMY**

**EARTH, MOON, AND PLANETS**  
Volume 104, Numbers 1-4 (2009), 227-235, DOI: 10.1007/s11038-008-9286-3


 **Ionospheric Tomography Network of Egypt: A New Receiver Network in Support of the International Heliophysical Year**  
T. W. Garner, T. L. Gaussiran, J. A. York, D. M. Munton, C. M. Slack and A. M. Mahrous  
From the issue entitled "International Heliophysical Year 2007: Second European General Assembly, Italy | Third UN/ESA/NASA Workshop, Japan"

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**Abstract**

The International Heliophysical Year (IHY) 2007 is an international scientific program designed to coordinate observations of the heliosphere, the region of space from the solar surface through the solar wind and various planetary magnetospheres to the planetary upper atmospheres. A particular emphasis is given to the development of long-term international collaborations that will study the external drivers to the space environment and climate. The Ionospheric Tomography Network of Egypt (ITNE) is one such collaboration. It is a new chain of ionospheric tomography receivers that will be deployed to investigate the equatorial regions of the Earth's ionosphere. The distribution of plasma density within 20° of the





# Publications (Ionosphere Group)

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RADIO SCIENCE, VOL. 46, RS0D16, 7 PP., 2011  
doi:10.1029/2011RS004653

### Ionospheric structures correlated with Anatolian surface features

**Key Points**

- Ionospheric perturbations are common over Anatolia
- The perturbation are over sharp topographic features
- The surface winds indicate orographic lift

**T. W. Garner**  
Space and Geophysics Laboratory, Applied Research Laboratories, University of Texas at Austin, Austin, Texas, USA






**C. M. Slack**  
Space and Geophysics Laboratory, Applied Research Laboratories, University of Texas at Austin, Austin, Texas, USA

**K. Mehta**  
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**A. M. Mahrous**  
Space Weather Monitoring Center, Helwan University, Helwan, Egypt

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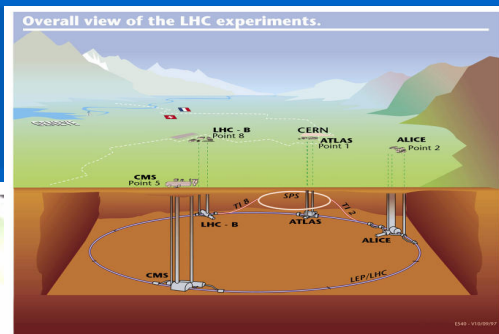
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- Ionosphere: Ionospheric irregularities
- Ionosphere: Plasma waves and instabilities (2772)

# Cosmic Ray Group

Experimental Sub-group

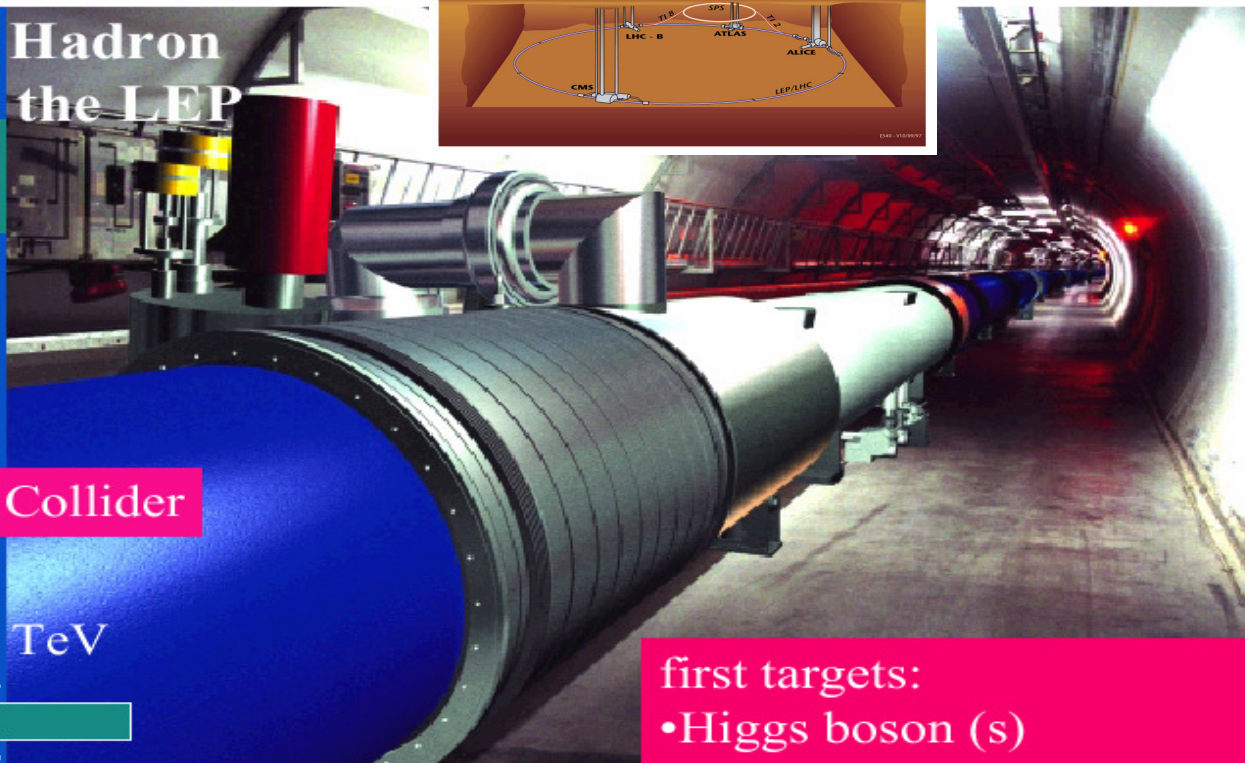


# LHC



**A superconductive disk on the bottom, cooled by liquid nitrogen, causes the magnet above to levitate. The floating magnet induces a current, and therefore a magnetic field, in the superconductor, and the two magnetic fields repel to levitate the magnet.**

## The Large Hadron Collider in the LEP Tunnel



**Proton- Proton Collider**

7 TeV + 7 TeV



**Luminosity =  $10^{34} \text{cm}^{-2} \text{sec}^{-1}$**

**first targets:**

- Higgs boson (s)
- Supersymmetric Particles
- Quark-Gluon Plasma
- CP violation in B



# CMS Outreach

37 Countries, 155 Institutes, 2000 scientists (including about 400 students)    October 2006

### TRIGGER, DATA ACQUISITION & OFFLINE COMPUTING

Austria, Brazil, CERN, Finland, France, Greece, Hungary, Ireland, Italy, Korea, Poland, Portugal, Switzerland, UK, USA

### TRACKER

Austria, Belgium, CERN, Finland, France, Germany, Italy, Japan\*, Mexico, New Zealand, Switzerland, UK, USA

### CRYSTAL ECAL

Belarus, CERN, China, Croatia, Cyprus, France, Italy, Japan\*, Portugal, Russia, Serbia, Switzerland, UK, USA

### PRESHOWER

Armenia, CERN, Greece, India, Russia, Taiwan

### RETURN YOKE

Barrel: Czech Rep., Estonia, Germany, Greece, Russia  
Endcap: Japan\*, USA

### SUPERCONDUCTING MAGNET

All countries in CMS contribute to Magnet financing in particular:  
Finland, France, Italy, Japan\*, Korea, Switzerland, USA

### FEET

Pakistan, China

### FORWARD CALORIMETER

Hungary, Iran, Russia, Turkey, USA

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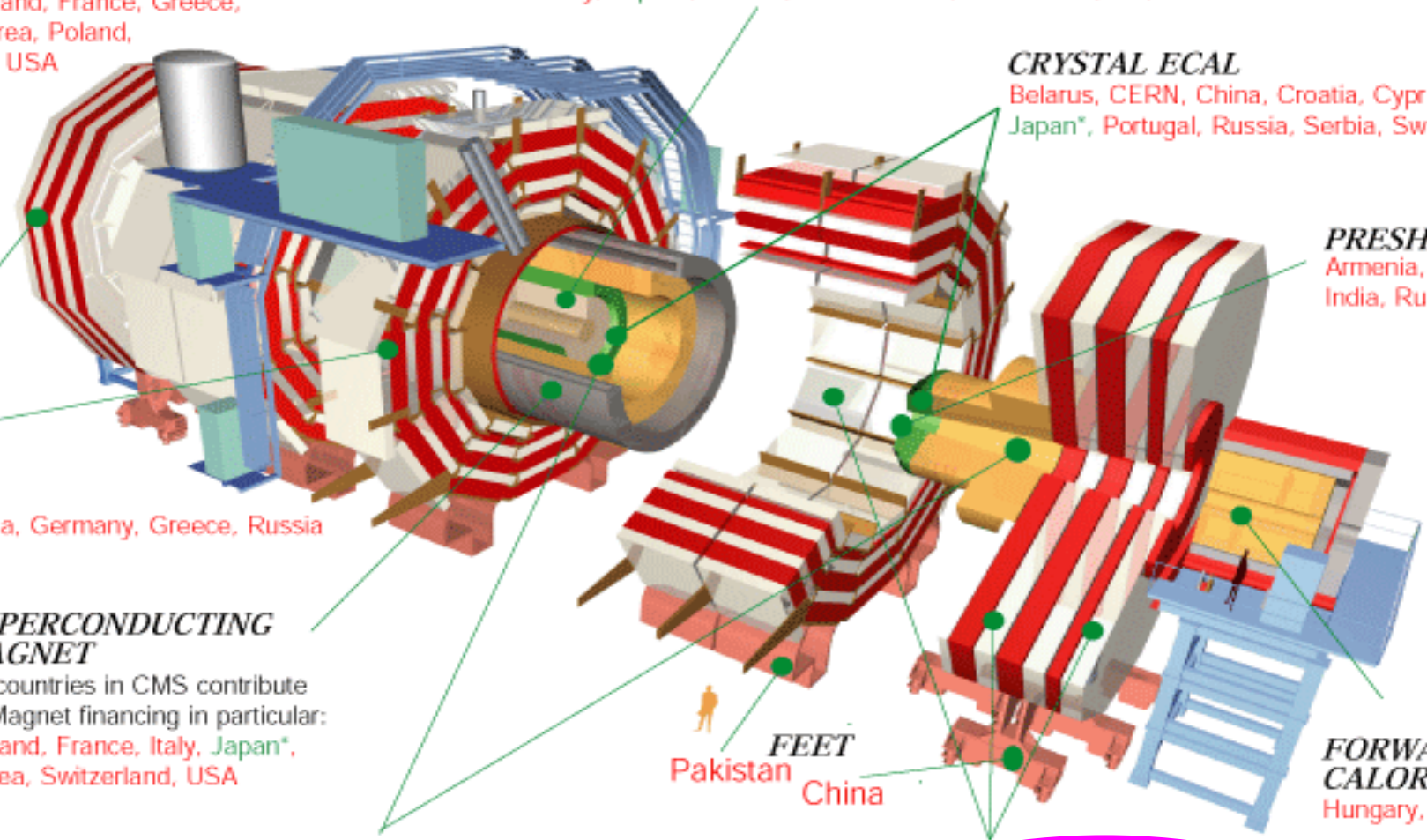
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Endcap: Belarus, Bulgaria, Georgia, Russia, Ukraine, Uzbekistan  
HO: India

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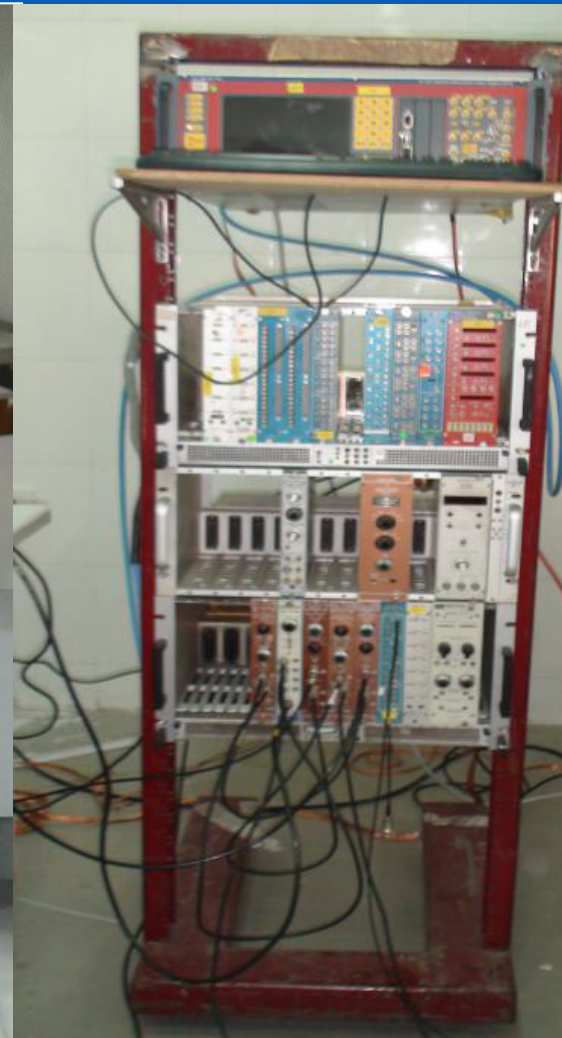
Barrel: Austria, Bulgaria, CERN, China, Germany, Hungary, Italy, Spain,  
Endcap: Belarus, Bulgaria, China, Colombia, Korea, Pakistan, Russia, USA

total weight : 12500 T  
overall diameter : 15.0 m  
overall length : 21.5 m  
magnetic field : 4 Tesla

\* Only through industrial contracts



# Testing of RPC at SWMC Lab.

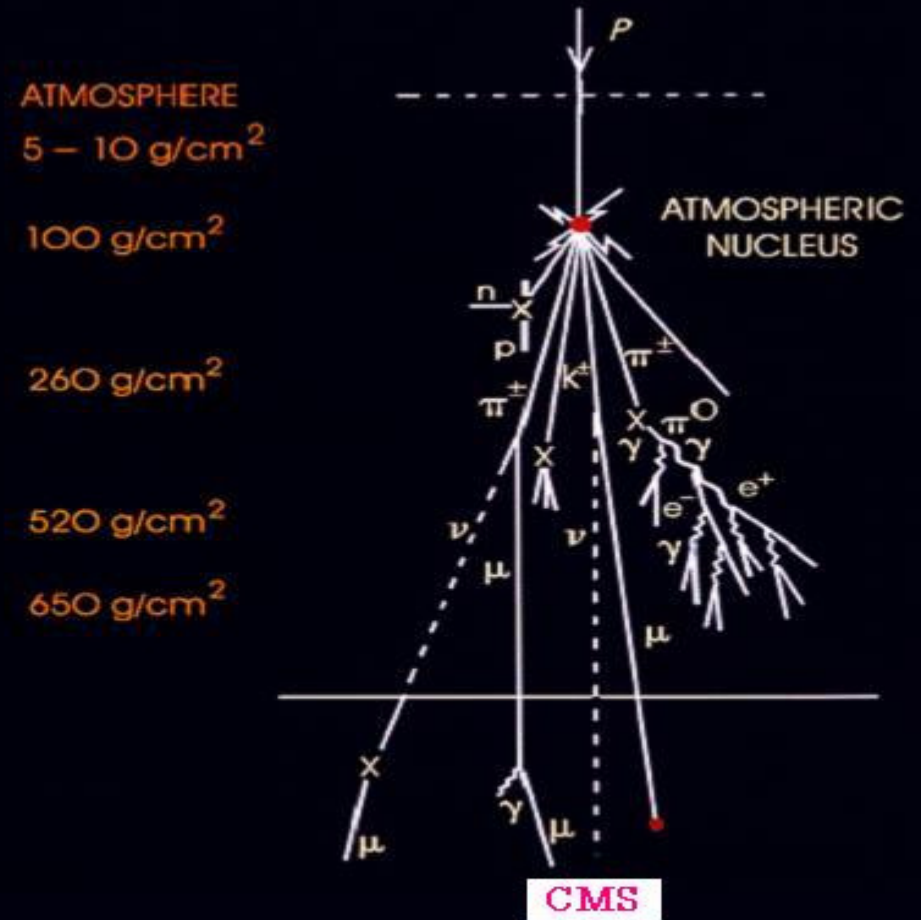


# Cosmic Ray Muons

The interaction of cosmic ray particles in the upper atmosphere (primarily 9~15 Km above Earth's surface) usually produces pions (Duldig, 2000), a bound state of an up and anti-down quark.

With lifetime of ( $2.6 \times 10^{-8}$  s), the pion travels only hundreds of meters at velocities between (0.966 C and 0.977 C) before decaying into a muon and mu-neutrino .

The muons produced in that reaction descend to Earth's surface with ample supply of muons at sea level which facilitates the study of these particles (Caso et al., 2000).



# Data Analysis by Cosmic Ray Group



**EUMED Grid**  
[empowering eScience across the Mediterranean]

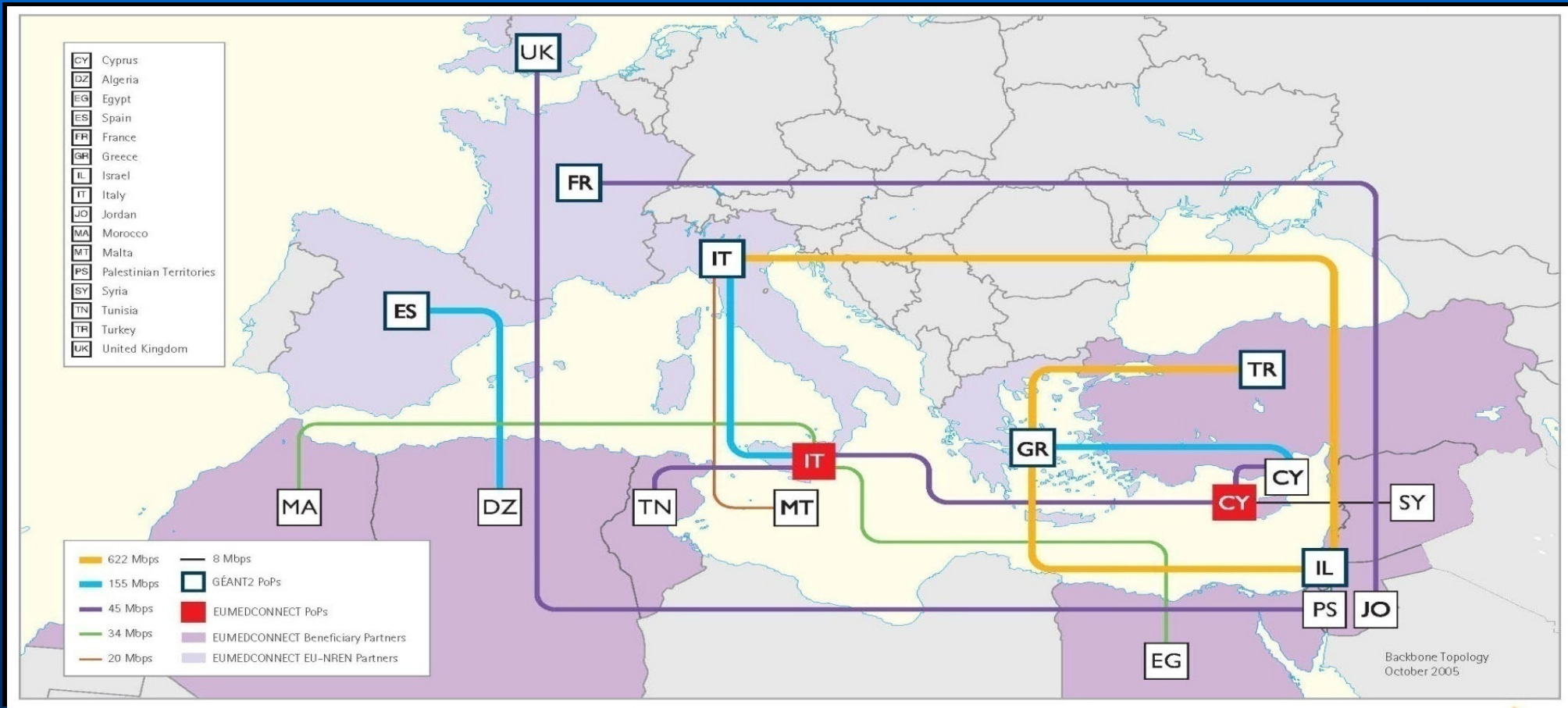
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- ▶ **country:** Egypt
- ▶ **author:** Prof. Mohamed Saleh
- ▶ **institute:** Helwan University
- ▶ **domain:** Bio-Informatics
- ▶ **contacts:**
- ▶ **description:** That application was a grid application running BLAST an algorithm for comparing primary biological sequence information (amino acid sequences of different proteins or the nucleotides of DNA sequence)
- ▶ **requirements:** The application requires BLAST software. It has been installed on EUMEDGRID e-Science Infrastructure and allowed CEs are

<http://www.eumedgrid.org/application/hero.html>

# EUMED GRID at SWMC





# Publications (Cosmic Rays Group)

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PHYSICS AND ASTRONOMY

PHYSICS OF PARTICLES AND NUCLEI LETTERS  
Volume 6, Number 3 (2009), 246-250, DOI: 10.1134/S1547477109030108

METHODS OF PHYSICAL EXPERIMENT  
**Simulation of muon-induced air showers affecting CMS tracking detectors**  
A. Mahrous, M. Sherif and M. Soliman

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**Abstract**

We study the propagation of energetic muons produced by ultrahigh energy cosmic rays which could penetrate the cavern of a giant experiment called Compact Muon Solenoid (CMS) at CERN. The present work is based on our previous simulation model proposed in [1]. We have improved this model by (1) eliminating the ambiguity via adding Landau-Pomeranchuk-Migdal effect to the Monte-Carlo code, (2) using different incidence angles of the simulated air showers, (3) defining the actual contents of the CMS

# Publications (Cosmic Rays Group)

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Physics Letters B  
Volume 716, Issue 1, 17 September 2012, Pages 30–61

ELSEVIER

## Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC ☆

Universally Available

This paper is dedicated to the memory of our colleagues who worked on CMS but have since passed away. In recognition of their many contributions to the achievement of this observation.

CMS Collaboration\*  
CERN, Switzerland

S. Chatrchyan, V. Khachatryan, A.M. Sirunyan, A. Tumasyan  
Yerevan Physics Institute, Yerevan, Armenia

W. Adam, E. Aguilo, T. Bergauer, M. Dragicevic, J. Erö, C. Fabjan<sup>1</sup>, M. Friedl, R. Frühwirth<sup>1</sup>, V.M. Ghete, J. Hammer, M. Hoch, N. Hörmann, J. Hrubec, M. Jeitler<sup>1</sup>, W. Kiesenhofer, V. Knünz, M. Krammer<sup>1</sup>, I. Krätschmer, D. Liko, W. Majerotto, I. Mikulec, M. Pernicka<sup>†</sup>, B. Rahbaran, C. Rohringer, H. Rohringer, R. Schöfbeck, J. Strauss, F. Szoncsó, A. Taurok, W. Waltenberger, G. Walzel, E. Widl, C.-E. Wulz<sup>1</sup>

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ampliPHOX for Microarrays  
Equivalent sensitivity to

Applications and tools

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- Human Resources
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# Joint Projects

Three European Union TEMPUS  
380,000 Euro

US-Egyptian Joint Board  
180,000 US\$

FP7-IRSES-2012  
1,800,000 EURO

Cyprus-Egyptian Joint Board  
90,000 EP

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Shimeis, A.; Fathy, I.; Amory-Mazaudier, C.; Fleury, R.; Mahrous, A. M.; Yumoto, K.; Groves, K.	Signature of the coronal hole near the north crest equatorial anomaly over Egypt during the strong geomagnetic storm April 2010		
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Youssef, M.; Mahrous, A.; Mawad, R.; Ghamry, E.; Shaltout, M.; El-Nawawy, M.; Fahim, A.	The effects of the solar magnetic polarity and the solar wind velocity on Bz-component of the interplanetary magnetic field		
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# Project (I) : Monitoring of WV over Nile

## MONITORING OF THE WATER VAPOUR IN THE TROPOSPHERE ALONG THE NIL

Prof. Ayman Mahrous

Space Weather Monitoring Centre, Helwan University, Egypt

Prof. Cheristine Amory

Latmos institute, ISWI Africa, Egypt

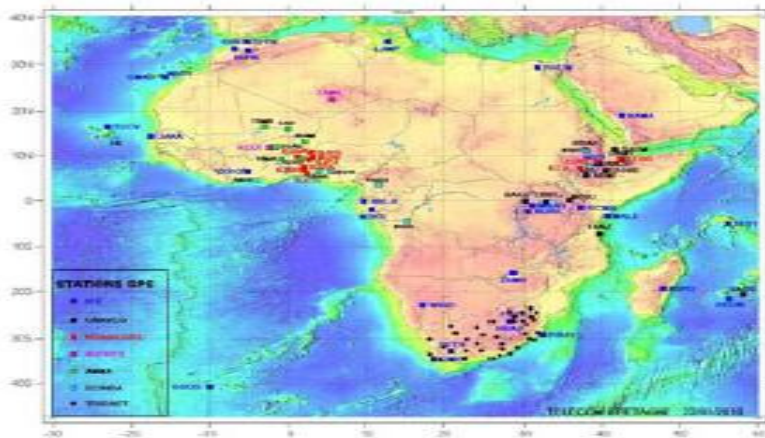
### PROJECT

#### MONITORING OF THE WATER VAPOUR IN THE TROPOSPHERE ALONG THE NIL

By using GPS and meteorological stations located in the different countries along the Nil, we can survey the water vapour and develop climatic studies of this area.

In the international programme ISWI (International Space Weather Initiative), the deployment of GPS receivers over Africa is planned.

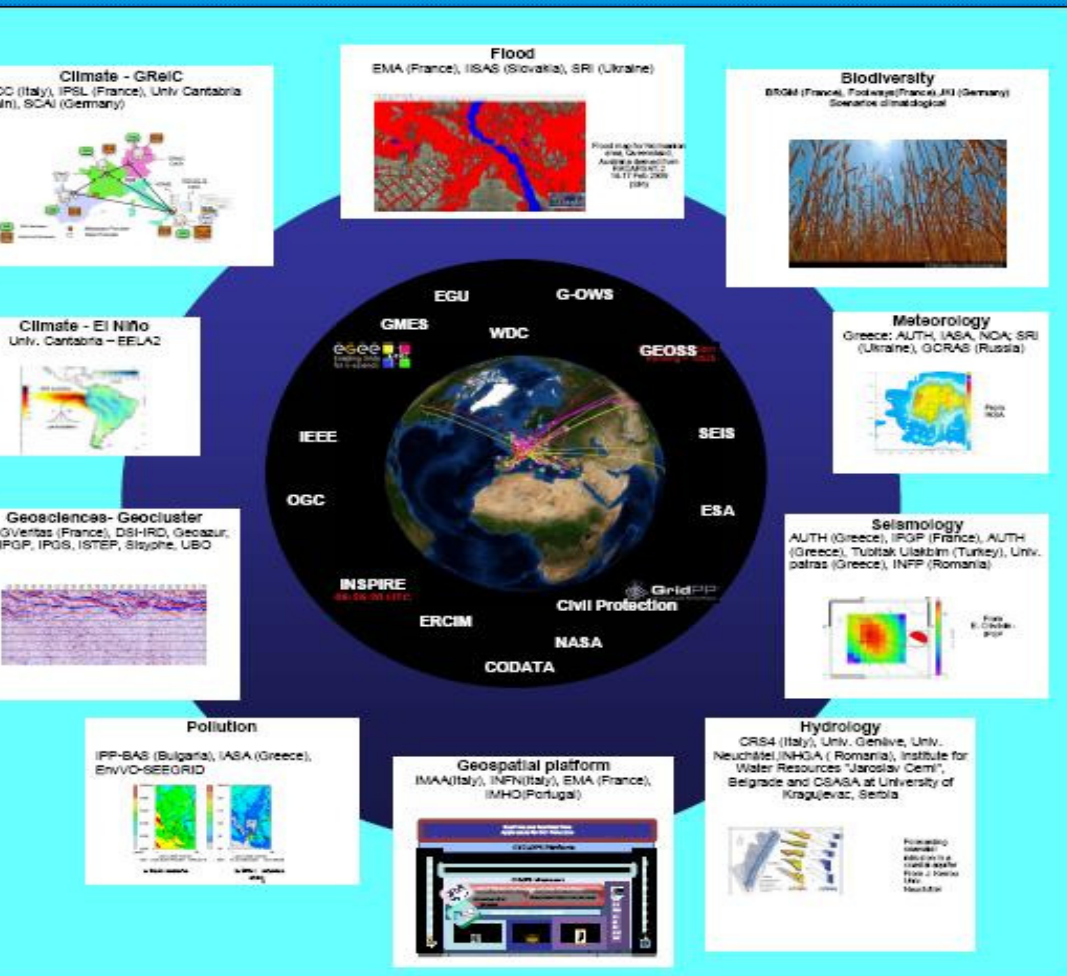
Therefore it is a necessity to organize training school for the use of GPS data.



GPS Network over AFRICA



# Project (II) : Euro-Egyptian GRID



**GRID Project at the Space Weather Monitoring Center (SWMC)(Egypt)**  
**M. Petitdidier (IPSL/LATMOS)**  
 deputy coordinator of the Grid Earth Science activity in EGEE  
**A.Mahrous (SWMC)**  
 Director of Space Weather Monitoring Center (SWMC)

Grid: Sharing of geographically distributed computing resources (computer and storage) in a secure way



# Summary

- **(2007)** Egypt has taken the lead to establish the **Space Weather Monitoring Centre (SWMC)** at Helwan University to support the Egyptian Space Programme through monitoring space weather
- **(2008)** SWMC started to deploy many instruments regarding UN/IHBY/ISWI initiative such as **(CIDR, MAGDAS, SID, SCINDA, CALLISTO)** with a training on the maintenance and software installation during deployment
- **(2009)** the National Egyptian Universities Council (NEUC) approved the establishing of **Space Department** at Faculty of Science of Helwan University, the approval was referred to the facilities of SWMC and the well-prepared modern courses curriculum such as Space Weather, the first graduated students got their **Bachelor Degree of Space Science in May 2012**

# Summary

- **(2010)** Organizing many events such as **UN/Egypt Workshop on ISWI** (Helwan, Egypt, 6-10 November 2010) , **French-Egyptian Space Weather School** and **Italian-Egyptian High Energy School** and many public lectures on Space Weather
- **(2011)** UN/Nigeria Workshop on ISWI (Abuja, Nigeria, 17-21 October 2011), **SWMC is offering to act as a regional center for space weather science and education in Egypt** to sustain space weather disciplines, not only in Egypt but in the region of the Middle East. We make available all facilities and capacities that enable Egypt to act as such a center
- **(2012)** UN/Ecuador Workshop on ISWI (Quito, Ecuador, 8-12 October 2012), **we renew our interest to UN/ISWI to act as a regional center for space weather science and education in Egypt**



**Are we really a Success Story of  
UN/IHRY/ISWI (2007-2012) ?**

**Yes we are .....**

**Thank you 😊**