



International Space Weather Initiative Meeting, November 6 – 10, 2010, Helwan University, Egypt

The Nairobi MAGDAS Station: Study of the Night Time F-Region Current Using MAGDAS and CHAMP Satellite data

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Outline of Presentation

- About the Magdas Nairobi Station
- Magdas (& Scinda) Research Group
- Research Themes
- Challenges

- Acknowledgement

1. The Nairobi Magdas Station



Signing of the MOU at the Vice Chancellor's boardroom, September 2008



Heads of Geology & Physics Departments (joint hosts of The Magdas facility)







Magdas Data Acquisition System Room











Data Analysis PC

2. Space Physics (Magdas & Scinda) Research Group

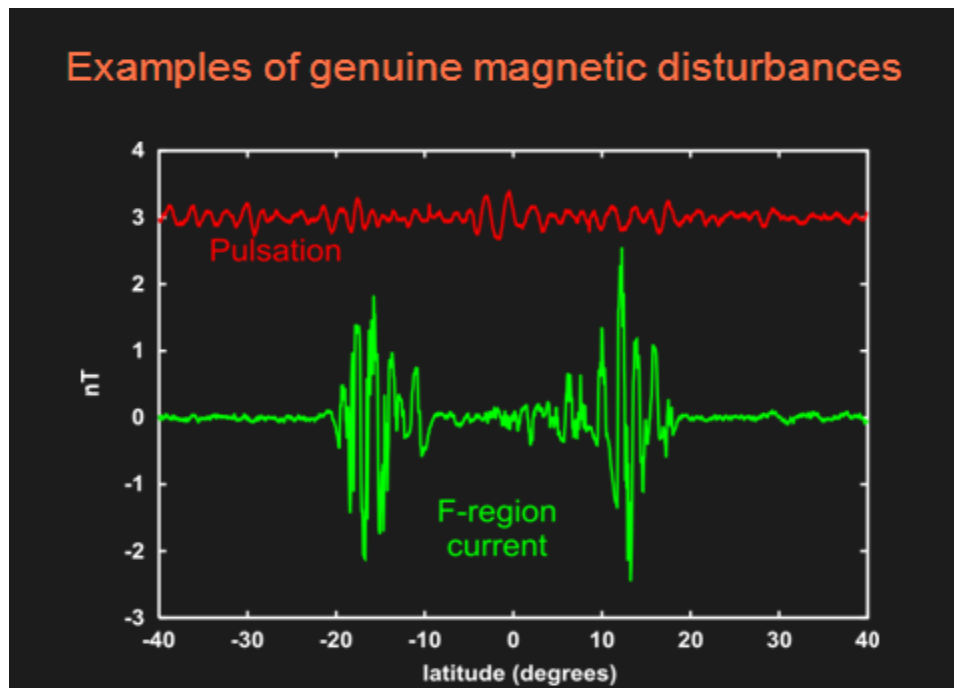
- Five Students : 2 PhDs, MSc , 1 BSc (Lady)
- Projects: Scintillations – 1

F- Region Current System – 2 (One completed BSc project)

3. Using Magdas Data

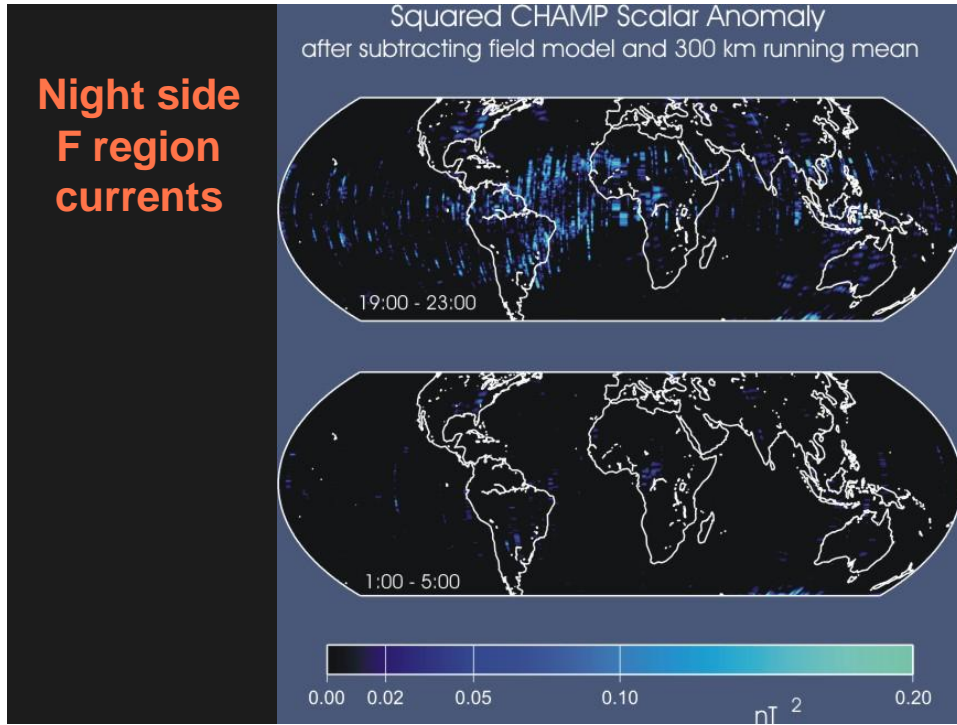
- To be used alongside GPS and Champ data
- Exclusive Magdas research project now possible with availability of all African stations data on DVD (Could SERC propose research themes for joint supervision?)

Example of project at the University of Nairobi

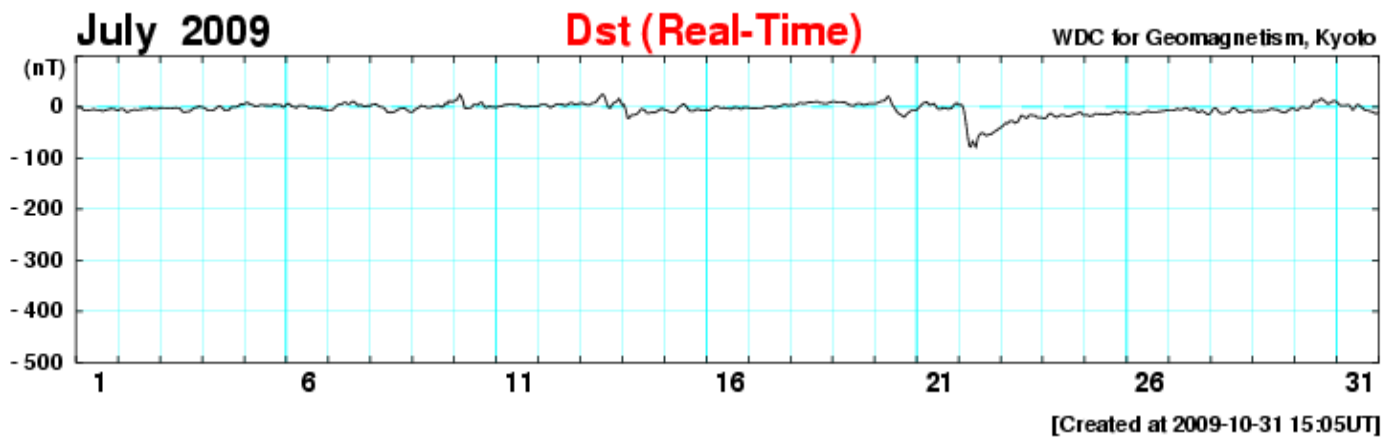


CHAMP Satellite Data (In situ Measurements)

How is the current structure on Disturbed days? Need to find out!



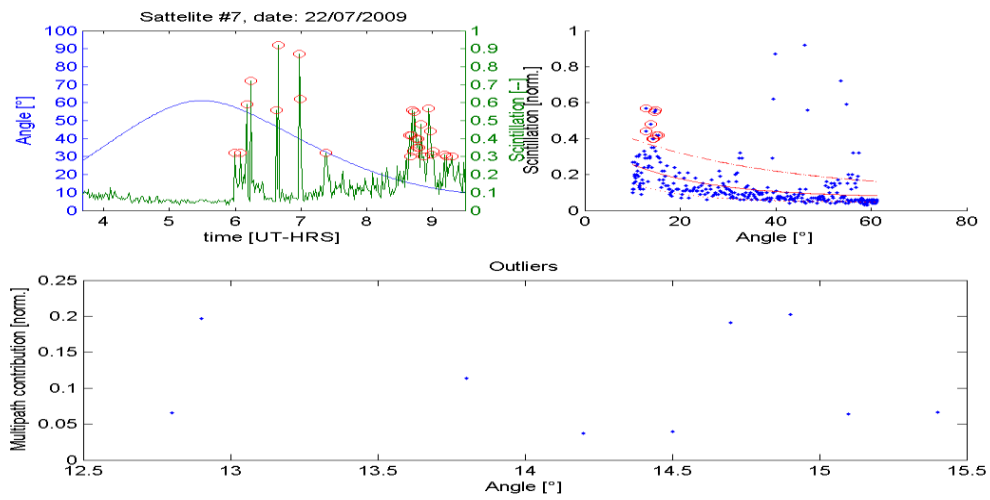
Geomagnetic Storm time index



Dst approx -80nT (Minor storm)

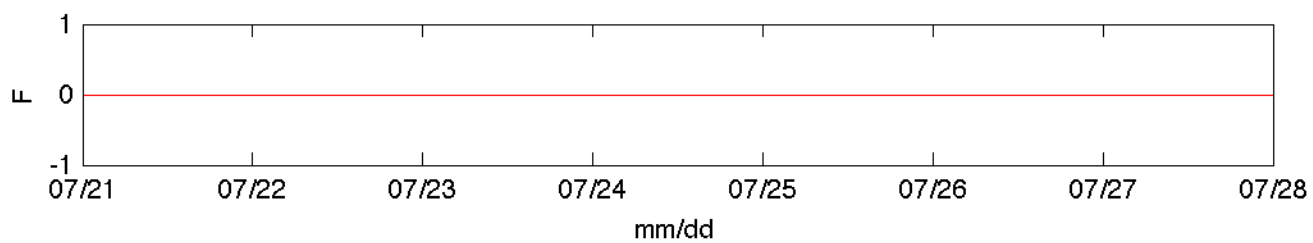
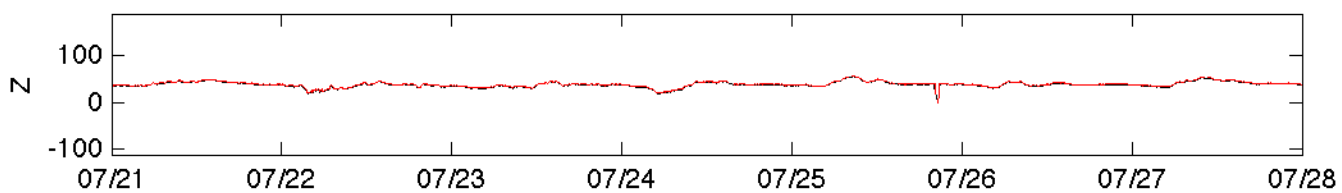
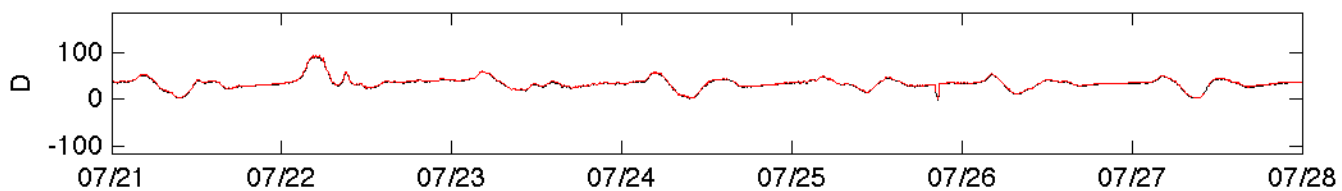
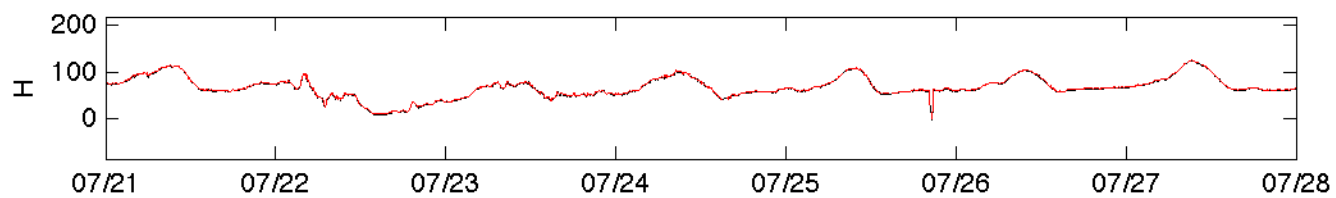
Observations of The Ionosphere during a Minor Storm (July 22)

Scintillations During Storm Time (July 22, 2009)



Magdas Plots for the Period July 21- 27, 2009

NAB:2009/07/21-2009/07/27



mm/dd

4. Challenges

- Previously worked in a different thematic area of physics; therefore had to change to use new facilities such as magdas and SCINDA-GPS and to guide students using them for research.
- Initially had poor programming skills (e.g in Matlab etc) and even lack of the software itself! Situation is improving.
- Consultancy services by Kenya Civil Aviation Authority (KCAA) but local expertise on data acquisition and analysis still weak. Also need portable magnetometers to carry out magnetic measurements on airports across the Country.
- Lack of funding to support self sponsored Post graduate students wanting to join the research group.
- MOU skewed in favour of SERC; therefore no enthusiasm to maintain the system.

5. Suggestions on Way forward

- SERC to take a more proacting role in capacity building by way of workshops geared towards data analysis and interpretation.
- Co-suprvision of research projects both with SERC and other experts within the continent.
- Deployment of more magnetometers in the Nothern part of Kenya.

Acknowledgement

- SERC for providing travel and local support.
- NASA for providing local hospitality.
- Organizing committee for all the logistics