Research and Training at
Washera Geospace and Radar
Science Laboratory
(WaGRL)

Bahir Dar University
Department of Physics
Bahir Dar, Ethiopia

WaGRL Group
June 2009, Tunis
Members

There are 12 members:

- 4 PhD candidates
- 3 MSc candidates
- 4 Staff members of BDU
- 1 system administrator

WaGRL website:
http://www.sgo.fi/~baylie/
Objectives of WaGRL

- Creating research Environment
- Motivating collaborate Researches
- Producing research outputs

Center of Excellence in Scientific Research
Research Units

Ionospheric Unit

Virtual Physics Unit

Radar System analysis Unit
Instruments in WaGRL

Two dual frequency receivers one in Addis Ababa (Central) and one in Bahir Dar (North west Ethiopia).

GPS Signal Receiver

Data Acquisition

GPS Antenna
Instruments in WaGRL.... Contd.

- Pulsation magnetometer station at Bahir Dar
- One ordinary magnetometer at Addis Ababa
- VLF receiver (AWESOME instrument)
- SID measuring instrument
Instruments in WaGRL…. Contd.

- One magnetometer at Adigrat (North Ethiopia)
- Virtual Physics Laboratory
- Weather Radar, the first in Ethiopia will install at Bahir Dar (world bank funded)
WaGRL’s Activities

- Establishing Virtual Physics Laboratory (VPL)
WaGRL’s activities.... Contd.

- Training on Computational Science
Establishing the NCSE
WaGRL's activities.... Contd.

VLF instrument installation

[Image of VLF instrument installation]
WaGRL’s activities.... Contd.

A WORKSHOP ON
VLF REMOTE SENSING OF THE EARTH'S
IONOSPHERE, Sept 1-2
WaGRL’s activities…. Contd.

On going researches

- Ionospheric Scintillation model over Ethiopia
- Optimization of coding and decoding of the Radar signals
- The Physics of Equatorial Electron Jet in the Ethiopian longitudinal sector
- Characterizing the longitudinal and temporal variations of equatorial ionospheric scintillation in Africa
- Three dimensional shear-wave velocity and attenuation structures of the Main Ethiopian Rift from local, regional and teleseismic earthquake data
- Matching and Locating lightning strike from VLF data
Transmitters Received

- HWU
- NAA
- NAU
- NLK
- NLM
- NPM
- NRK
- DHO
Sample Broadband plots

Bahir Dar 01-Oct-2008 UT  N/S Antenna

Frequency (kHz)

Time (seconds) after 00:00:00 UT

Bahir Dar 01-Oct-2008 UT  E/W Antenna

Frequency (kHz)

Time (seconds) after 00:00:00 UT

Bahir Dar N-S

Magnitude

Frequency (kHz)

Magnitude

Frequency (kHz)

Contd........
Sample narrowband plot

Bahir Dar 01-Feb-2009 DHO Amplitude

Amplitude (dB)

Time (UT)
Contd.......
Thanks for your attention !!!

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