



A public-private partnership supporting training and research in earth,  
atmospheric and space sciences in Africa  
<http://africaarray.psu.edu/>

# **7<sup>th</sup> Annual AfricaArray Workshop**

**School of Geosciences  
University of the Witwatersrand,  
Johannesburg, South Africa**

**17-22 November 2011**

## **Programme**

***Preliminary version (11 Nov. 2011)***



## 7th Annual AfricaArray Workshop – 17-22 November 2011

School of Geosciences, University of the Witwatersrand, Johannesburg, South Africa

14-18 November	<b>Council for Geoscience Annual Training Workshop: Operating a national seismograph network (at CGS in Pretoria)</b>
17-19 November	<b>GPS data processing course</b>
20-21 November	<b>AfricaArray scientific meeting</b>
21-22 November-	<b>IGCP 565 Workshop 4: Integration of geodetic observations and products in models of the hydrological cycle</b> <a href="http://www.igcp565.org/workshops/Johannesburg_2011/ws4_full_program.php">http://www.igcp565.org/workshops/Johannesburg_2011/ws4_full_program.php</a>
22 November	<b>GEM Workshop</b>

GLT Lecture Theatre, Geosciences Building, Wits

**Sunday November 20**

08:00 - 08:30	REGISTRATION – Tea and Coffee
08:30 - 08:50	AFRICAARRAY STATUS REPORT - network activities and development plan <b>Andy Nyblade</b> (Penn State Univ., USA)
08:50 - 09:00	EDUCATIONAL & COMPLEMENTARY ACTIVITIES <b>Ray Durrheim</b> (University of the Witwatersrand/CSIR, SA)

### **Theme: Structure and Tectonics of the African Plate**

09:00 - 9:30	KEYNOTE: Superplumes and diamonds <b>ASHWAL, Lew</b> (University of the Witwatersrand, SOUTH AFRICA)
9:30 – 9:45	Seismic investigations of the African superplume and its effects <b>BRANDT, Martin</b> (PhD candidate, University of the Witwatersrand & Council for Geoscience, SOUTH AFRICA)
9:45 - 10:00	Surface wave tomography and shear wave velocity structure of the SW margin of the Congo craton <b>MANGONGOLO, Azangi</b> (MSc candidate, University of the Witwatersrand & Council for Geoscience, SOUTH AFRICA)
10:00 - 10:15	Magnetotelluric investigations of the southern African lithosphere, with special reference to the modelling of DC current flow between the Otjiwarongo and Katima Mulilo regions, Namibia <b>SHARE, Pieter</b> (MSc candidate, University of the Witwatersrand & CSIR, SOUTH AFRICA)
10:15 – 10:45	<b>Tea break</b>
10:45 - 11:00	Nature of the 520km discontinuity under Africa: A receiver function approach <b>JULIA, Jordi</b> (Universidade Federal do Rio Grando do Norte, BRAZIL)

## AfricaArray Workshop 2011 – Programme

- 11:00 - 11:15 Upper Mantle-crustal structure of Egypt by applying receiver function and joint inversion techniques  
**HOSNY ALI, Ahmed** (*National Research Institute of Astronomy and Geophysics, EGYPT*)
- 11:15 - 11:30 The challenge of imaging the Bushveld Complex using teleseismic data  
**KGASWANE, Eldridge** (*PhD candidate, University of the Witwatersrand & Council for Geoscience, SOUTH AFRICA*)
- 11:30 - 11:45 Salt tectonics features in the Congo basin: 2-D seismic and potential field constraints  
**KADIMA KABONGO, Etienne** (*University of Lumumbashi, DR Congo*)
- 11:45 - 12:00 3D reflection seismic imaging of the down-dip extension of Witwatersrand basin ore bodies  
**MANZI, Musa** (*PhD candidate, University of the Witwatersrand, SOUTH AFRICA*)
- 12:00-12:15 Potential field modeling of the Bushveld Complex  
**COLE, Janine** (*PhD candidate, University of the Witwatersrand & Council for Geoscience, SOUTH AFRICA*)

### **Theme: Initiatives allied to AfricaArray (1)**

- 12:15-12:30 IGCP: Seismotectonic atlas for Africa  
**MIDZI, Vungana** (*Council for Geoscience, SOUTH AFRICA*)
- 12:30-12:45 Inkaba ye Afrika & Africa Earth Observatory Network  
**DE WIT, Maarten** (*Nelson Mandela Metropolitan University, SOUTH AFRICA*)
- 12:45 - 14:00 **Lunch break**

### **Theme: African Geodesy, Hydrology and Space Weather**

- 14:00 - 14:15 Velocity field for Africa from combined GPS R Doris solution: a contribution to AFREF  
**SARIA, Elifuraha** (*PhD candidate, Perdue University USA & Ardhi University, TANZANIA*)
- 14:15 - 14:30 Analysis of Trignet data to monitor micro-deformation due to the 2006 Mozambique earthquake  
**BALOYI, Vukosi** (*University of KwaZulu-Natal, SOUTH AFRICA*)
- 14:30 – 14:45 Geodetic Monitoring around Nyiragongo and Nyamulagira volcanoes. North Kivu, DR Congo.  
**RUKEZA LOUIS DE MONTFORT, Bagalwa** (*Goma Volcanic Observatory, DR CONGO*)
- 14:45 - 15:00 An evaluation of some global ionospheric error mitigation approaches used in single frequency precise point positioning (SFPPP) in the low equatorial African region  
**ISIOYE, Olalekan Adekunle** (*Ahmadu Bello University, NIGERIA*)
- 15:00 – 15:15 Variability of Total Electron Content in the Equatorial Region  
**MUTONYI D'UJANGA, Florence** (*Makerere University, UGANDA*)
- 15:15 - 15:45 **Tea break**
- 15:45 - 16:00 Measured Total Electron Content (TEC) over Kampala, Uganda: Using GPS SCINDA Receiver Data  
**TWINIMASIKO, Benon Fred** (*PhD candidate, Makerere University, UGANDA*)
- 16:00 - 16:15 Tropospheric delay modelling on the Nigerian Permanent GNSS Network (NIGNET)  
**DODO, Joseph** (*Centre for Geodesy and Geodynamics, NIGERIA*)
- 16:15 - 16:30 SEG Geophysicists without Borders project: Dayspring groundwater investigation  
**NGOBENI, David** (*MSc candidate, University of the Witwatersrand, SOUTH AFRICA*)

## AfricaArray Workshop 2011 – Programme

- 16:30 - 16:45 Modelling subsurface geology and groundwater in the Bulawayo Metropolitan area.  
**HLATYWAYO, Dumisani John** (*National University of Science & Technology, Zimbabwe*)
- 17:00 - 19:00 POSTERS: **Snacks and drinks in Bleloch Museum**

GLT Lecture Theatre, Geosciences Building, Wits

**Monday November 21**

- 08:30 - 08:40 WELCOME  
**Professor Helen Laburn** (*DVC Research, University of the Witwatersrand*)
- 08:40 - 09:00 AfricaArray International Field School 2011  
**WITS students** (*University of the Witwatersrand, SOUTH AFRICA*)
- Theme: Seismic hazard**
- 9:00 - 9:30 KEYNOTE The Great Eastern Japanese earthquake and tsunami of 11 March 2011 and its connection to the research we are doing in South African gold mines  
**OGASAWARA, Hiroshi** (*Ritsumeikan University, JAPAN*)
- 9:30 - 9:45 Observational studies to mitigate rockbursts in South African gold mines  
**DURRHEIM, Ray** (*CSIR & University of the Witwatersrand*) & **OGASAWARA, Hiroshi** (*Ritsumeikan University, JAPAN*)
- 9:45 - 10:00 Rockburst damage mechanisms at Impala platinum mine  
**LEDWABA, Lesiba** (*MSc candidate, University of the Witwatersrand, SOUTH AFRICA*)
- 10:00 - 10:30 **Tea break**
- 10:30 - 10:50 Recent Progress in Stress & Palaeostress research in South Africa  
**ANDREOLI, Marco** (*Consultant & University of the Witwatersrand, SOUTH AFRICA*)
- 10:50 - 11:10 Active Tectonics in the Rukwa rift, western Tanzania, a review  
**DELVAUX, Damien** (*Royal Museum for Central Africa, BELGIUM*)
- 11:10 - 11:30 Rift basin earth fissure developments and hazard implications  
**AYELE, Atalay** (*GEM sub-Sahara & University of Addis Ababa, ETHIOPIA*)
- 11:30 - 11:50 Some geological ideas on crustal strength, stress, fault segmentation, and mechanics of the Malawi Rift  
**FAGERENG, Ake** (*University of Cape Town, SOUTH AFRICA*)
- 11:50 - 12:10 Statistical analysis of the seismicity and relationship to eruptions of Mount Cameroon  
**ATEBA, Bekoa** (*Institute of Geological and Mining Research, CAMEROON*)
- 12:10 - 12:30 TBC  
**FERDINAND, Richard** (*University of Dar Es Salaam, TANZANIA*)
- 12:30 - 14:00 **Lunch break**

**Theme: Joint AfricaArray and IGCP 565**

- 14:00 - 14:15 Wits Global Change and Sustainability Institute  
**CROUCH, Andrew** (*Dean, Faculty of Science, University of the Witwatersrand, SOUTH AFRICA*)
- 14:15 – 14:20 Introduction to the IGCP 565 Project  
**PLAG, Hans-Peter** (*University of Nevada - Reno, USA*)
- 14:20 – 14:50 Where are the measurement and evaluation data gaps for Africa hydrology?  
**MILLER, Norm** (*University of California – Berkeley & University of Arizona – Tucson, USA*)
- 14:50 – 15:20 Hydrology of Okavango Delta  
**WOLSKI, Piotr** (*Okavango Research Center, BOTSWANA*)
- 15:20-15:40 ACCESS talk – speaker TBC
- 15:40 – 16:00 **Tea break**
- After break run parallel sessions between IGCP and AfricaArray

**Theme: Initiatives allied to AfricaArray (2)**

- 16:00 - 16:20 Global Earthquake Model Initiative  
**AYELE, Atalay** (*GEM sub-Sahara & University of Addis Ababa, ETHIOPIA*) & **EL GABRY, Mohammed** (*GEM North Africa, EGYPT*)
- 16:20 – 16: 40 IASPEI - AFRICA  
**GROBBELAAR, Michelle** (*Council for Geoscience, SOUTH AFRICA*)
- 16:40 – 17:00 Society of Exploration Geophysicists  
**WEBB, Sue** (*University of the Witwatersrand, SOUTH AFRICA*)

**Posters: on display from 19-22 November 2011 in Bleloch Museum**

Seismological and geodetic investigations in Nigeria for earthquake hazards for siting of critical facilities  
**AKPAN, Ofonime Umo** (*Centre for Geodesy and Geodynamics, Toro, NIGERIA*)

AfricaArray seismic stations, GPS and weather stations (UNAVCO). The national satellite seismic networking system, seismicity of Ghana, the most destructive earthquake in Ghana, etc.  
**AHULU, Sylvanus Tetteh** (*Ghana Geological Survey Department, Accra, GHANA*)

Preliminary studies on estimation of Ambient Radon Gas Concentration and its Potential Health effects at some Faulted areas in Accra  
**ASUMADU-SAKYI, Akwasi Bonsu** (*Ghana Atomic Energy Commission, GHANA*)

Analysis of Trignet data to monitor micro-deformation due to the 2006 Mozambique earthquake  
**BALOYI, Vukosi** (*University of KwaZulu-Natal, SOUTH AFRICA*)

Seismic atlas for Malawi  
**CHINDANDALI, Patrick** (*Geological Survey of Malawi, MALAWI*)

Upper mantle velocity structure beneath eastern and southern Sudan from modeling regional seismic data  
**EL TAHIR, Nada** (*PhD candidate, University of the Witwatersrand & Geological Authority, SUDAN*)

Evidence for Quaternary Neotectonics in Pleistocene Aeolinites: Blomerus, Southern Cape  
**HODGE, Matthew** (*BSc Hons candidate, University of Cape Town, SOUTH AFRICA*)

Analysis of the Proterozoic rifting and subsidence of the Congo Basin  
**KADIMA KABONGO, Etienne** (*University of Lumumbashi, DR CONGO*)

Rift valley seismicity  
**KIANJI, Gladys** (*University of Nairobi, KENYA*)

Seismicity of the arid regions of the western South Africa  
**LOOTS, Letticia** (*MSc candidate, University of the Witwatersrand & Council for Geoscience, SOUTH AFRICA*)

Seismicity of the arid regions of the western South Africa  
**MALEPHANE, Hlompho** (*PhD candidate, University of the Witwatersrand, SOUTH AFRICA*)

Seismicity of Zimbabwe  
**MANZUNZU, Brassnavy** (*Goetz Observatory, Meteorological Services Department, ZIMBABWE*)

Seismicity of Zambia  
**MULOWEZI, Annie** (*Geological Survey Department, ZAMBIA*)

AfricaArray activities in Uganda  
**NYAGO, Joseph** (*Department of Geological Survey and Mines, UGANDA*)

Seismicity of Ghana  
**OPOKU, Nicholas** (*Geological Survey Department, GHANA*)

Geodetic Monitoring around Nyiragongo and Nyamulagira volcanos. North Kivu, D.R.Congo.  
**RUKEZA LOUIS DE MONTFORT, Bagalwa** (*Goma Volcanic Observatory, DR CONGO*)

Issues of climate change on the evolution of rainfall in the Lwiro region from 1966 to 2006  
**SAMBA VIKANDI SILSAWA, Christian** (*Goma Volcanic Observatory, DR CONGO*)

Gravity modeling of the Karoo basin  
**SCHEIBER, Stephanie** (*PhD candidate, University of the Witwatersrand, SOUTH AFRICA*)

## AfricaArray Workshop 2011 – Programme

Microseismic measurements in the Ceres/Tolbagh earthquake zone

**SMIT, Louis** (*BSc Hons candidate, University of Cape Town, SOUTH AFRICA*)

Seismicity of Malawi

**TAMBULASI, Luciano** (*Geological Survey, MALAWI*)

Imaging lithosphere beneath Cameroon and Implications to the origin of the Cameroon Volcanic Line

**TOKAM KAMGA, Alain-Pierre** (*University of Yaounde, CAMEROON*)

Magnetic susceptibility characterisation of mineralised and non-mineralised rocks from the Subenso concession of Newmont Ghana Gold Limited

**WEMEGAH, David Dotse** (*Kwame Nkrumah University of Science Technology, GHANA*)

Simulation of mining-induced seismicity

**YENWONG FAI, Alfred** (*PhD candidate, University of the Witwatersrand, SOUTH AFRICA*)

---