



A public-private partnership supporting geophysics training and research in Africa  
<http://africaarray.psu.edu/>

## 3rd Annual AfricaArray workshop

July 17-18, 2007

**School of Geosciences; Geosciences Building,  
 The University of the Witwatersrand  
 Johannesburg, South Africa**

Council for Geoscience, Pretoria

**MONDAY JULY 16**

08:00-5.00 pm Technical Training session for AfricaArray station operators at the Council for Geoscience in Pretoria.

**Transport between Univ of Witwatersrand and the Council will be provided.**

GLT Lecture Theatre, Wits

**TUESDAY JULY 17**

08:00-08:45 REGISTRATION

08:45-08:50 WELCOMING REMARKS  
 5 min **Paul Dirks** (Univ. of Witwatersrand, SA)

08:50-09:05 AFRICAARRAY STATUS REPORT - Review : development plan and network activities  
 15 min **Andy Nyblade** (Penn State Univ., USA)

09:05-09:20 AFRICAARRAY STATUS REPORT - Review : educational activities  
 15 min **Paul Dirks** (Univ. of Witwatersrand, SA)

09:20-09:30 AFRICAARRAY ORGANIZATIONAL STRUCTURE – update  
 10 min **Dirks and Nyblade**

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

09:30-10:10 KEYNOTE LECTURE: The Kaapvaal Project; what have we learned and where next ?  
 40 min **Ray Durrheim** (AfricaArray, Research Chair in Exploration, Earthquake & Mining Seismology, Univ. of Witwatersrand / CSIR, SA)

10:10 - 10:40 **Tea break**  
 30 min

GLT Lecture Theatre, Wits

**TUESDAY JULY 17 cont**

- 10:40 - 11:20      KEYNOTE LECTURE: OUT OF AFRICA - the evolution of the African plate and its intracratonic basins in the past 200 Ma.  
40 min              **Trond Torsvik** (*Center for Geodynamics/PGP Geological Survey/Univ. of Oslo, Norway*)
- 11:20 -11:40      Upper mantle structure of southern Africa  
20 min              **Martin Brandt** (*Council for Geoscience, SA / Wits*)
- 11:40 - 12:00      Crustal structure of southern Africa  
20 min              **Eldridge Kgaswane** (*Council for Geoscience, SA / Wits*)
- 12:00 -12:20      Gravity and African tectonics  
20 min              **Mark van der Meijde** and **Getachew Ebuy Tedla** (*ITC, Netherlands*)
- 12:20- 2:00pm      **Lunch break**  
100 min
- 2:00 - 2:20 pm      Results from the southern African MT experiment  
20 min              **Mark Hamilton** (*School of Cosmic Physics - Dublin Institute for Advanced Studies, Ireland / Univ. of Witwatersrand, SA*)
- 2:20 - 2:40 pm      Tectonic evolution of the Bushveld Complex  
20 min              **Sue Webb** (*Univ. of Witwatersrand, SA*)
- 2:40 - 3:00 pm      Imaging the Bushveld Complex  
20 min              **Stephen Coomber** (*Univ. of Witwatersrand, SA*)
- 3:00 - 3:20 pm      Evolution of the Zambezi Rift and new geophysical constraints of the Limpopo Belt  
20 min              **Oswald Gwavava** (*Univ. of Zimbabwe, Zimbabwe*)
- 3:20-4:00 pm      **Tea break**  
40 min
- 4:00-4:20 pm      Current geophysical activities in Ethiopia  
20 min              **Binyam Beyene** (*Addis Ababa Univ., Ethiopia*)
- 4:20-4:40 pm      Seismic hazards in Arusha, Tanzania  
20 min              **Richard Ferdinand** (*Univ. of Dar es Salaam, Tanzania*)
- 4:40-5:00 pm      Seismicity related to the development of the Okavango delta  
20 min              **James King** (*Univ. of Botswana, Botswana*)
- 5:00-5:20 pm      Network Performance and Operations Supporting Test-Ban Treaty Monitoring in Africa  
20 min              **Mr. Lassina Zerbo** (*director, International Data Center, CTBTO Austria*)
- 5:20-5:40 pm      Earthquake and tsunami training in Africa  
20 min              **Dr Walter Mooney** (*USGS, USA*)
- 5:40-6:00 pm      **Break**

6.00-8.00 pm **POSTERS and RECEPTION** (food and drinks provided)

**Posters include:**

Amponsah, *Paulina (Geol. Surv. Ghana)*: Seismicity in Ghana; Modeling Seismic Ground Motion in Accra

Barker, *Oliver (Banzi Geotechnics, SA)*: Neotectonics in South Africa

Brazier/Nyblade (*Penn State Univ., USA*): Seismicity and Pn velocities in Ethiopia

Grobbelaar, *Michelle (Council for Geoscience, SA)*: Blast measurements and Interpretation

Hartnady, *Chris & Benouar, D. (Umvoto Africa (Pty) Ltd)*: African catalogue of earthquakes (ACE) project: towards earthquake risk reduction in active plate-boundary zones.

Hlatywayo, *Dumisani (NUST, Zimbabwe)*: The Bulawayo city Earthquake: a case for the Nyamandhlovu aquifer induced seismicity.

Idris, *Ali (Univ. of Witwatersrand, SA)*: Mine seismicity in W Rand, SA

Kianji, *Gladys (Univ. Nairobi, Kenya)*: Seismicity in Kenya

Larson/Nyblade (*Penn State Univ., USA*): Preliminary results from Cameroon project

Mangongolo, *Azangi (Geol. Surv. Namibia)*: Seismicity in Namibia

Marcos, *Severino (DNG, Mozambique)*

Midzi, *Vunganai (NUST, Zimbabwe)*: AfricaArray in Zimbabwe

Muiuane, *Elonio (Eduardo Mondlane Univ., Mozambique)*: Seismological network in Mozambique – current status and future developments.

Mulibo, *Gabriel & Nyblade, Andy (Penn State University, USA)*: Seismicity and depth distribution of earthquake swarms in Northern and Central Tanzania, along the eastern branch of the the East African Rift system.

Mulowezi, *Annie (Geol. Surv. Zambia)*: The Zambia seismic network

Mutamina, *Daniel & Chimlambe, Baxter (Addis Ababa University, Ethiopia)*: Graduate program in geophysics at Addis Ababa University

Raveloson, *Ranto*: Seismicity in Madagascar

Shumba, *Blessing (Goetz Observatory, Zimbabwe)*: Relocation of earthquakes along the East Africa rift system and Lake Kariba in Zimbabwe and estimation of fault planes.

Wanassi, *Jose Maria (Agostinho Neto Univ. Angola, Wits)*: The new Angola seismic network

Zhao, *Baojin (Fort Hare Univ., SA)*: Neotectonics and its application to water exploration in the fractured Karoo aquifer; a geophysics interpretation.

GLT Lecture Theatre, Wits

**WEDNESDAY JULY 18**

**Theme: The African Super-Plume and the African Super-Swell**

08:30 -09:10 KEYNOTE LECTURE: Mantle tomography of the African Super-Plume  
40 min **Andy Nyblade (Penn State Univ., USA)**

09:10 - 09:50 KEYNOTE LECTURE: The Superplume, the Superswell and Neotectonics of southern Africa  
40 min **Marco Andreoli (Nuclear Energy Corporation of South Africa / Univ. of Witwatersrand, SA)**

09:50-10:30 **Tea break**

40 min

- 10:30-10:50 Mine seismicity  
20 min **Lindsay Linzer** (*Council for Scientific and Industrial Research, SA / Wits*)
- 10:50-11:10 Intracratonic seismic events  
20 min **Mayshree Bejaichund-Singh** (*Council for Geoscience, SA / Wits*)
- 11:10-11:30 Martial Plumes and the African Superswell – is there a basis for comparison ?  
- review of current knowledge  
20 min **Motsotse Modisi** (*Univ. of Botswana, Botswana*)
- 11:30-11:50 Seismic monitoring of critical structures  
20 min **Johan Steyn** (*Council for Geoscience, SA; co-authors A Kijko and I Saunders*)

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**WEDNESDAY JULY 18** cont

- 11:50-12:30 - Breakout groups  
40 min  
a) AA organizational structure - setting up an advisory board - **Dirks**  
b) Network operation - problems and solutions - **Nyblade/Grobbelaar**  
c) AA educational activities and student supervision - **Durrheim/Jones**  
d) Data accessing from IRIS and data products - **Kgaswane/Brandt**
- 12:30- 2:00 pm **Lunch break**  
90 min
- 2:00-2:20 pm Wavelet based phase-weighted stacking  
20 min **Gordon Cooper** (*Univ. of Witwatersrand, SA*)
- 2:20-2:40 pm Tectonic background in mining districts and source dynamics - examples  
20 min **Artur Cichowicz** (*Council for Geoscience, SA*)
- 2:40-3:00 pm Seismic monitoring of Mount Cameroon, an active volcano in West Africa  
20 min **Ateba Bekoa** (*Inst. Geological and Mining Research, Cameroon*)
- 3:00-3:20 pm Seismicity of Mt. Nyiragongo, Democratic Republic of Congo  
20 min **Georges Mavonga** (*Centre de Recherche en Sciences Naturelle, DRC / Wits*)
- 3:20-4:00 pm **Tea break**  
40 min
- 4:00-4:20 pm Tsunami[s]: what have we learned ?  
20 min **Emile Okal** (*Northwestern University, USA*)
- 4:20 - 4:40 pm The Geodetic Investigation of Torfajokull volcano, Iceland  
20 min **Stephanie Scheiber** (*Univ. of Witwatersrand, SA*)
- 4:40 – 5:00 pm Petroleum exploration activities in Zambia  
20 min **Daniel Lombe** (*Geological Survey, Zambia*)
- 5:00 – 5:20 pm Seismicity in Namibia from 1900-2006

20 min **Azangi Mangongolo** (*Geological Survey, Namibia*)

5:20- 5:50 pm AFRICAARRAY BUSINESS MEETING – Brief reports from partners : review of where we are headed, challenges for the future etc.

30 min **Paul Dirks and Andy Nyblade**

#### SPECIAL MEETING

6:00- 7:00 pm AFRICAARRAY BUSINESS MEETING: ANGOLA CRATON PROJECT

60 min **representatives to meet**

INAMET	(Jose)
ANU	(Wanassi)
BHPBilliton	(Pettit)
RioTinto	(Cunion)
DeBeers	(Doucoure/Vorster)
AfricaArray reps	(Dirks, Nyblade, Durrheim)
Council for Geoscience	(Grobbelaar)
Namibia Geological Survey	(Mangogolo)
Univ of Botswana	(King)
Zambia Geological Survey	(Lombe)