

*A public-private partnership for
geoscience training & research in Africa
<http://africaarray.psu.edu>*



5th Annual AfricaArray workshop - July 6-7, 2009

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

SUNDAY JULY 5

5.00 pm Welcoming party (Geosciences Museum) Bleloch Museum, Geosciences Building

GLT Lecture Theatre, Geosciences Building, Wits

MONDAY JULY 6

08:00-08:45 REGISTRATION – Tea and Coffee

08:45-08:50
5 min WELCOMING REMARKS
Dean Faculty of Science, Univ. of Witwatersrand, S (tbc)

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

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

09:15-09:20
5 min AFRICAARRAY INTERNATIONAL FIELDSCHOOL
Sue Webb (Univ. of Witwatersrand, SA)

09:20-09:30
10 min Seismic Hazard studies and the GEMS initiative
Ray Durrheim (Univ. of Witwatersrand, SA/CSIR)

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

09:30-10:10
40 min KEYNOTE LECTURE: Imaging lithospheric thickness in Africa using S Receiver Functions
Samantha Hansen (Penn State University)

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

10:40 - 11:00
20 min Upper mantle structure beneath Eastern Africa from body-wave tomography
Gabriel Mulibo (Uni Tanz/Penn State)

11:00 - 11:20
20 min Rayleigh wave group velocity tomography for southern Africa
Azangi Mangongolo (Geological Survey, Namibia)

11:20 -11:40 Upper crustal structure of the Bushveld Complex using high-frequency Rayleigh wave tomography

20 min	Eldridge Kgaswane (<i>Council for Geoscience, SA / Wits</i>)
11:40 - 12:00 20 min	Developing ground truth criteria for seismic event locations using data from South African gold mines Karen Boomer (<i>Penn State</i>)
12:00 -12:20 20 min	Tomography - sensitivity studies on the African Superplume Martin Brandt (<i>Council for Geoscience, SA / Wits</i>)
12:20- 2:00pm 100 min	Lunch break
2:00 - 2:40 pm 40 min	KEYNOTE LECTURE: Promoting geoscience education through a simple seismic monitoring programme for schools Tom Blake (<i>DIAS, Dublin</i>)
2:40 - 3:00 pm 20 min	Second and third order stress pattern in the African plate from formal inversion of focal mechanism data Damien Delvaux (<i>Africa Museum, Tervuren, Belgium</i>)
3:00 - 3:20 pm 20 min	Source locations and mechanisms for seismic events in the Carletonville Mining District Binyam Bayene (<i>Wits University</i>)
3:20-4:00 pm 40 min	Tea break
4:00-4:20 pm 20 min	Crustal structure in Uganda from receiver functions Fred Tugume (<i>Geol. Survey of Uganda /Penn State University</i>)
4:20-4:40 pm 20 min	Upper mantle structure beneath southern Africa from Rayleigh wave tomography Aubrey Adams and Andy Nyblade (<i>Penn State</i>)
4:40-5:00 pm 20 min	Unexpected response of active volcanoes of the Virunga to the shaking from a regional earthquake: Intermediate - term earthquake - volcanoes. N'yombo, Lukaya (<i>C.R.S.N / DRC</i>)
5:00-5:10 pm 20 min	A wavelet analysis of geophysical borehole data from the Bushveld Complex Celeste Johnson (<i>Wits University</i>)
5:20-6:00 pm	Break
6.00-8.00 pm	POSTERS and RECEPTION (snack and drinks provided) Bleloch Museum, Geosciences Building

The seismic equipment for secondary schools as presented by Tom Blake from DIAS (Dublin) will be demonstrated for all those interested.

GLT Lecture Theatre, Wits

TUESDAY JULY 7**Theme: GEOPHYSICAL APPLICATIONS IN AFRICA**

- 08:00 – 08:30 Tea and Coffee
- 08:30 -09:10
40 min KEYNOTE LECTURE: hydrogeology and geophysics
Torleif Dahlin (*University of Lund, Sweden*)
- 09:10 - 09:30 deep reflection seismics over Beattie Anomaly and Cape Conductivity Belt
20 min **Letitia Loots** (Wits) -
- 09:50-10:10 Preliminary analysis of the Okavango Delta, August 16 2008 Earth quake
20 min **James King** (*University of Botswana*)
- 10:10-10:40 **Tea break**
30 min
- 10:40-11:00 Pn and Sn velocities beneath the Main Ethiopian Rift
20 min **Stewart Rouse** (*Penn State*)
- 11:00-11:20 The history and development of Nigerian National Network of Seismic Stations
20 min **Ologun, Olufemi** (*Centre for Geodesy and Geodynamics, Nigeria*)
- 11:20-11:40 A geophysical interpretation of the high resolution aeromagnetic data in the Limpopo region
20 min **Marinda Havenga** (*Council for Geoscience, SA / Wits*)
- 11:40-12:00 Characteristics of mine tremor aftershocks
20 min **Thabang Kgarume** (*CSIR/Wits*)
- 12:00-12:20 Probabilistic seismic hazard assessment for the Democratic Republic of Congo and surrounding
20 min areas, Western Rift Valley of Africa
Georges Mavonga Tuluka (*Centre de Recherche en Sciences Naturelle, DRC / Wits*)
- 12:20-12:30 The use of geothermal energy in South Africa
10 min **Derek Ramsay** (*Council for Geoscience, SA / Wits*)
- 12:30- 2:00 pm **Lunch break**
90 min
- 12:30- 2:00 pm **Lunch time meeting: Possible projects in Geothermal energy**
- (VENUE: Geosciences building 119; Honours Geophysics room)**
- 90 min **Mike Jones**
- 2:00 - 2:40 pm KEYNOTE LECTURE: New Developments in Probabilistic Seismic Hazard Analysis
40 min **Andrzej Kijko** (*Aon-Benfield Natural Hazards Centre, U. Pretoria*)
- 2:40 - 3:00 pm Seismicity and Seismic Hazard: The case of Ghana
20 min **Paulina Amponsah** (*Ghana Geological Survey*)

3:00 - 3:20 pm 20 min	Rockburst damage mechanisms at Impala Platinum mine Lesiba Ledwaba (CSIR/Wits)
3:20-4:00 pm 40 min	Tea break
4:00-4:20 pm 20 min	Developing a 3D potential field model of the Bushveld Complex Janine Cole (Council for Geoscience, SA / Wits)
4:20-4:40 pm 20 min	Determination of the Mozambique Offshore Seismic Source Paulino Feitio (National Directorate of Geology, Mozambique)
4:40-5:00 pm 20 min	Changes in the palaeo-stress field leading to gold mineralisation in the Archean Barberton greenstone belt, SA Richard Munyai (Wits University)

POSTERS

Dr Bekoa Ateba (Inst of Geol & Mining Research, Cameroon):
3-D velocity model of Mount Cameroon using local earthquakes: preliminary results

Winstone Kapanje (Geol. Surv., Malawi)
AfricaArray stations in Malawi, effects and improvements on our database

Blessing Shumba (Seismologist Goetz Observatory, Zimbabwe)
The focal mechanism solution of the 2008 Nyamandlovu earthquake

Isaac Mulamba (Wits University)
The use of p-receiver function analysis and the H - k stacking method to get at Moho depth and crustal Vp/Vs estimates for the Angola Project Stations

Tumwikirize, Isaiah (Uganda Geological Survey)
Seismic Hazard Vulnerability and Risk Assessment for Kampala: a Proposal

Kadima Etienne (Univ. of Lubumbashi, DRC)
Seismostratigraphy of the Congo basin

Mokawthai Moidaki (University of Botswana)
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Alfred Yen-Wong Fai (CSIR)- non-destructive testing

Hlopho Malephane (Water Authority, Lesotho) - Lesotho seismicity

Zet Gumede (AA, Wits) - Extended Euler deconvolution

Nada El Tahir (Geol Surv, Sudan) - Sudan seismicity

Musa Manzi (Wits) - Far West Rand reflection seismics.

Meetings to be organized

1. GEM Africa initiative: meeting between AfricaArray & ESARSWG
Ray Durrheim to lead
2. Nyblade, Dirks, Graham, Durrheim: directors meeting AfricaArray
3. Nyblade, Dirks Gibson: discuss extension of field programme to other Geosciences fields

5:30- 6:30 pm AFRICAARRAY BUSINESS MEETING – PARTNER REPORTS : ANGOLA CRATON PROJECT
60 min **Paul Dirks and Andy Nyblade**

representatives to meet

INAMET (Angola)	(Jose)
ANU (Angola)	(Wanassi)
BHPBilliton	(Pettit)
RioTinto	(Alderman)
DeBeers	(Jelsma/Vorster)
AfricaArray reps	(Dirks/Nyblade/Durrheim/Gumede)
Council for Geoscience	(Graham/Grobbelaar/van Aswegen)
Namibia Geological Survey	(Mangogolo)
Univ of Botswana	(King)
Zambia Geological Survey	(Muluwesi)

(VENUE: Geosciences building 119; Honours Geophysics room)

SPECIALIST WORKSHOP(S)

COUNCIL FOR GEOSCIENCE, PRETORIA

WEDNESDAY JULY8 – FRIDAY JULY24

TRAINING FOR SEISMIC NETWORK OPERATORS (participation by prior arrangement only)

Honours room, Geosciences, Wits

MONDAY JULY 6-FRIDAY JULY10

GROUNDWATER MANAGEMENT FOR WATER MANAGERS: THE ROLE OF HYDROGEOLOGICAL SCIENCE FOR WATER MANAGERS (participation by prior arrangement only)

NOTES:

- 1) Jordi's might not make the workshop so better to remove him for now.
- 3) If Daniel Mutamina from Zambia is coming, you can ask him to give a talk on crustal structure in Zambia (Kitwe, Tezi, Lusaka and Mongu) from receiver function analysis.
- 5) Both David Khosa and Pieter Ewald-Share are still in Dublin at that time.
- 6) Dorcas Nhiwatiwa from Harare will do MSc at Fort Hare.
- 7) Marcos Severino – Talk: Seismicity in Mozambique / Poster: Damages of the 22nd of February 2006 earthquake