SECOND CIRCULAR
SESSIONS AND EXCURSIONS
DETAILS

24TH COLLOQUIUM OF AFRICAN GEOLOGY (CAG24)
14TH CONGRESS OF GEOLOGICAL SOCIETY OF AFRICA (GSAf14)
40TH ANNIVERSARY OF GSAf

"40 YEARS OF GSAf (1973-2013): EARTH SCIENCES SOLUTIONS TO AFRICAN DEVELOPMENT CHALLENGES"

JANUARY 8-14, 2013
UNITED NATIONS CONFERENCE CENTRE
ADDIS ABABA, ETHIOPIA

Conference Website: http://www.CAG24.org.et

ORGANIZED BY
ETHIOPIAN GEOSCIENCE AND MINERAL ENGINEERING ASSOCIATION (EGMEA)
On behalf of the GEOLOGICAL SOCIETY OF AFRICA (GSAf)

PARTNERS

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INTRODUCTION

The "Colloquium of African Geology" (CAG) is a major biennial meeting organized under the auspices of the Geological Society of Africa (GSAf). Since the first colloquium in 1965, this Colloquium has been hosted by several European and African countries. The African countries that had a chance to organize this event were Swaziland, Zimbabwe, Morocco, Mozambique, Tunisia and South Africa. Based on the decision of the Geological Society of Africa (GSAf) General Assembly held on 14 January 2011 at the University of Johannesburg, South Africa (during the 23rd Colloquium), the organization of the next Colloquium of African Geology (CAG24) as well as the 14th Conference of the Geological Society of Africa and the 40th Anniversary of the Geological Society of Africa (1973-2013) was assigned to Ethiopia. This will be conducted at the United Nations Economic Commission Conference Center (UNECA) in Addis Ababa, Ethiopia from 8 to 14 January 2013. The CAG24 will be organized by the Ethiopian Geosciences and Mineral Engineering Association (EGMEA) in cooperation with governmental and non-governmental organizations under the auspices of the Geological Society of Africa (GSAf). The Theme of the Conference is: "40 Years of GSAf (1973-2013): Earth Sciences Solutions to African Development Challenges".

The Second Circular presents details of the sessions, workshops, short courses, roundtables and field excursions to be held during the conference.

ORGANIZING COMMITTEE

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GENERAL CONFERENCE PROGRAM

Pre-conference field trips: January 4-7, 2013
Registration and Reception: January 8, 2013
Scientific Sessions: January 9-13, 2013
Mid Conference Field Excursion or City Tour: January 11, 2013
GSAf 14th Congress and 40th Anniversary of GSAf : January 14, 2013
Post-conference field trips: January 15-22, 2013

REGISTRATION

Online Registration is active and will stay open till **30 September 2012**. Please visit the CAG24 web site **(www.cag24.org.et)** and complete the online form. Those of you, who prefer to register on a printed form, please access the printable registration form from the web page, print it, scan completed form and send the scanned copy to the Conference Secretariat (gwt_girma@yahoo.com) before 30 September, 2012.

CONFERENCE REGISTRATION FEES

Event	Fee in USD
Normal Full Registration	400
Accompanying person	150
GSAf members Registration	350
Late Full Registration*	450
Early Student Registration	150
Late Student Registration*	200
On site Full registration	500
On Site Student Registration	250

*After December 1, 2012

Conference registration fees will cover costs of reception, coffee/tea breaks and lunch during the scientific sessions, one day Mid Conference excursion or city tour and conference

materials. Pre-/post-conference excursion fees will cover costs of transportation, accommodation, meals, and guidebook. Participants are required to **pay registration fees by bank transfer before December 1, 2012 (see address below and the attached payment form)**. After this date, it will be possible to pay the registration fees at the conference registration desk with a 10% surcharge. Refund will be charged by 20% deduction. No refund will be made after **December 1, 2012.**

Bank Transfer address:

Commercial Bank of Ethiopia (CBE)
Arat Kilo Branch (A/C number: 0170959040900)
SWIFT CODE: CBETETAA
in favour of **CAG24-2013**

ABSTRACT SUBMISSION

Abstracts will be accepted for oral or poster presentation. Please indicate your preference when submitting. Abstracts are to be submitted by e-mail as an attached file in Word format to the Conference Secretariat at the following e-mail addresses (asfawossena@gmail.com /gwt_girma@yahoo.com). The deadline for abstract submission is **August 31, 2012**. Acceptance will be decided by the end of **September 2012**.

Abstract Format:

Abstract is limited to one A4-size page, text only without any figures or tables. Top, bottom, left, and right margins 25 mm.

Title: Upper and lower case, left justified, Times font, 14 pt bold.

Contributors' names: Upper and lower case, left justified, first name first, surname last, Times font, 11 pt.

Affiliation: Upper and lower case, left justified, Times font, 10 pt. Numbered superscripts should be used to indicate the affiliation of each contributor. E-mail address can be added in parentheses at the end of the corresponding contributor's affiliation.

Main text: Single-spaced text, Times 10 pt font, no section headings.

IMPORTANT DATES

August 31, 2012	Abstract submission Deadline
Sept. 30, 2012	Online Registration Deadline
Sept. 30, 2012	Decision on abstracts and fellowship requests communicated to applicants
October 31	Release of 3rd Circular
December 1, 2012	Deadline for payment of fees by bank transfer Deadline for money refund

CORRESPONDENCE

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LIST OF SESSIONS

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	1. 2.	Nature and Significance of the Pan-African Orogeny	J. P. Liegeois, A. Asrat, M. G. Abdel Salam, A. Mogessie, R. J. Stern	J. P. Liegeois
	1. 3.	Metamorphic Evolution and Tectonic Styles of the East African Orogens	H. Fritz, C. Hauzenberger	To be determined
	1. 4.	Neoproterozoic Chemostratigraphy, Deformation and Metamorphic History of the ANS and MB (Gondwana)	M. Alene, A. Asrat, M. Beyth	S. Muhongo
2. HISTORICAL GEOLOGY	2. 1.	Sedimentology, Stratigraphy, Palaeontology, Palaeoenvironments *(In Memory of the Late Dr. Mohammed Umer Mohammed)*	B. Atnafu, D. Lebenie, R. Bussert, A. Eisawi	To be determined
	2. 2.	Early Hominin Paleobiology, Taxonomy, and Associated Paleoecological Contexts between 4.5 and 3.0 Million Years Ago	Y. Haile-Selassie, B. Asfaw	Y. Haile-Selassie
3. THE EAST AFRICAN RIFT SYSTEM	3. 1.	The East African Rift System: Volcanism and Tectonics	G. Woldegabriel, B. Abebe	G. Woldegabriel
4. EARTH RESOURCES	4. 1.	Mineral Resources	H. Helmy, S. Tadesse, M. Gebreselassie, S. Gebreselassie	A. Mogessie
	4. 2.	Geothermal Resources	J. Varet, G. Demissie, A. Förster	G. Demissie
	4. 3.	Hydrocarbon Resources	K. Tadesse, L. Vasconcelos, W. Ahmed	L. Vasconcelos

	4. 4.	Groundwater Resources	T. Ayenew, S. Kebede, A. Makarigakis, M. Razack	R. Callow
	4. 5.	Ethiopia's Mining Development	K. Hailu, G. Mekonnen, S. Chewaka	R. Chase, CEO, NYOTA
	4. 6.	Remote Sensing, Image Processing, Modeling and GIS Applications in Earth Resources Mapping and Mineral Exploration	T. Woldai, F. van Ruitenbeek	To be determined

5. ENVIRONMENTAL GEOLOGY, ENGINEERING GEOLOGY AND GEOHAZARDS	5. 1.	Geohazards	G. Mulugeta, G. Yirgu, A. Ayele, G. Mewa	To be determined
	5. 2.	Engineering Geology	K. Woldearegay, T. Raghuvanshi	
	5. 3.	Environmental and Health Impacts of Mining in Africa *(Special Session under the Auspices of IGCP/SIDA Projects 594 and 606)*	C. T. Davies, B. Mapani, B. Kribek	C. T. Davies
	5. 4.	Medical Geology *(In Memory of the Late Prof. Serrano Pinto, former Goodwill Ambasador of the GSAf)*	S. Kebede, E. F. da Silva	To be determined

6. GEOHERITAGES AND GEOTOURISM	6. 1.	Geoheritages and Geotourism in Africa	A. Asrat, E. Errami, M. Demissie, A. Mogessie	A. Asrat

7. EARTH SCIENCE EDUCATION IN AFRICA	7. 1.	Earth Science Education in Africa	F. Toteu, J. Martinez-Frias, S. Gaines, A. Mogessie	F. Toteu

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9. OPEN SESSION	9. 1.	Open Session	G. Woldetinsae, T. Alemu	

DESCRIPTION OF SESSIONS

SESSION 1: PRECAMBRIAN GEOLOGY

Session 1.1. Craton Formation and Destruction

Conveners:

Prof. Alfred Kröner, *Dept. of Geosciences, University of Mainz, Germany, and Chinese Academy of Geological Sciences, Beijing, China (kroener@uni-mainz.de)*

Prof. Jean-Paul Liègeois, *Free University of Brussels, Belgium (jplieg@ulb.ac.be)*

Prof. Axel Hofmann, *University of Johannesburg, South Africa (ahofmann@uj.ac.za)*

Dr. Abder Bendaoud, *University of Science and Technology Houari Boumedienne, Algiers, Algeria (abendaoud@gmail.com)*

The formation of cratons and their possible destruction is one of the most important events in the history of continental evolution, yet we neither fully understand the mechanisms of craton formation nor the cause and mechanism of craton destabilization and destruction. This multidisciplinary session is aimed at an exchange of ideas on a wide range of topics related to the formation and evolution of cratons in Africa and other Gondwana-derived continents and their relationship to tectonics, metamorphism, and mantle dynamics. The Kaapvaal craton of southern Africa is considered one of the oldest and most stable cratons, whereas the eastern part of the Tanzania may have been destroyed and reworked during the Pan-African orogeny, and the Sahara metacraton may be an example for partial craton destruction. Is the evolution of the North China craton a general model for craton destabilization?

Formation et destruction des cratons

La formation des cratons et leur possible destruction (partielle) est l'un des événements les plus importants de l'histoire de l'évolution d'un continent. Cependant, nous ne comprenons que partiellement les mécanismes de formation d'un craton et de leur déstabilisation ou destruction. Cette session pluridisciplinaire vise à un échange d'idées sur un large éventail de sujets liés à la formation et à l'évolution des cratons en Afrique et dans les autres continents constitutifs du Gondwana et leur relation avec la tectonique, le métamorphisme, et la dynamique du manteau. Le craton du Kaapvaal en Afrique australe est considéré comme l'un des cratons anciens les plus stables, la partie orientale de la Tanzanie semble avoir été détruite ou du moins largement remobilisée pendant l'orogenèse pan-africaine et le métacraton saharien est un exemple de destruction de masse d'un craton. Enfin, nous pouvons nous poser la question: l'évolution du craton en Chine du Nord peut-elle être considérée comme le modèle de la déstabilisation d'un craton?

Session 1.2. Nature and Significance of the Pan-African Orogeny

Conveners:

Prof. Jean-Paul Liègeois, *Royal Museum for Central Africa, Belgium (jplieg@ulb.ac.be)*

Dr. Asfawossen Asrat, *School of Earth Sciences, Addis Ababa University, Ethiopia (asfawossena@gmail.com)*

Prof. Mohamed G. Abdelsalam, *Department of Geological Science & Engineering, Missouri University of Science and Technology, USA (abdelsam@mst.edu)*
Prof. Aberra Mogessie, *Institute of Earth Sciences, Karl-Franzens University of Graz, Austria (aberra.mogessie@uni-graz.at)*
Prof. R. J. Stern, Geosciences Department, University of Texas at Dallas, USA *(rjstern@utdallas.edu)*

The Pan-African orogeny of Neoproterozoic and Early Paleozoic age shaped the African continent and a large part of the world because it is globally linked to the continental convergence that generated the Gondwana Supercontinent. Consequently, the expression "Pan-African" is also widely used outside Africa (in addition to Brasiliano, Cadomian, Vendian, etc). However, the term Pan-African orogeny is used by different authors in a wide number of ways, including referring to: (1) all Neoproterozoic (1000-542 Ma) orogenic events, (2) Ediacaran collisional and post-collisional events (630-570 Ma), (3) Ediacaran-Cambrian orogenic events (635-488 Ma). Consequently, nowadays, Precambrian geology researchers do not restrict the use of the term Pan-African orogeny to the original definition of Kennedy (1964), a ~500 Ma thermo-tectonic event based on K-Ar ages, which now must be regarded as cooling ages. These variations arise from the fundamental loose definition of an orogeny (that can include the early oceanic accretion phases preceding the main collisional phase) combined with the diachronic character of such a large orogenic event. We think it is time to redefine the term Pan-African orogeny, ~50 years after Kennedy's original but obsolete definition.

Refining the term Pan-African orogeny requires understanding its nature and significance within the entire African continent and in other continents that were part of the Gondwana Supercontinent. This requires a nested approach of acquiring multidisciplinary geoscientific records from continent-wide scale to detailed studies. The Colloquium of African Geology is a well-suited platform to advance our knowledge of the Pan-African orogeny through original presentations and share ideas on future research. All original as well as review contributions dealing with the Neoproterozoic are thus welcomed, provided a final conclusion is given concerning the definition of the Pan-African orogeny.

Session 1.3. Metamorphic Evolution and Tectonic Styles of the East African Orogens

Conveners:

Prof. Harald Fritz, *Karl-Franzens University of Graz, Austria (harald.fritz@uni-graz.at)*
Prof. Christoph Hauzenberger, *Karl-Franzens University of Graz, Austria (christoph.hauzenberger@uni-graz.at)*

The East African Antarctic Orogen, extending from the Mediterranean coast to Antarctica, forms the largest contiguous Neoproterozoic to Cambrian mobile belt on Earth. Gondwana fragments have been assembled through opening and closure of individual oceanic basins arising in complex patterns of spatially and temporally varying tectonometamorphic events. Each of these events may have been accompanied by distinctly different thermal and tectonic evolutionary paths related to extension, orogen growth and orogen decay.

Decryption of temporal relationships and definition of metamorphic conditions and tectonic styles is essential to define the different geodynamic settings that operated through time.

Contributions are invited that present research upon operational developments of the East African Orogen. Presentations on timing, metamorphic conditions and structural evolution throughout the orogen will help to define crustal domains with potential different modes of orogen growth and decay.

Session 1.4. Neoproterozoic Chemostratigraphy, Deformation and Metamorphic History of the ANS and MB (Gondwana)

Conveners:

Dr. Mulugeta Alene, *School of Earth Sciences, Addis Ababa University, Ethiopia (mulugeta_alene@yahoo.com)*

Dr. Asfawossen Asrat, *School of Earth Sciences, Addis Ababa University, Ethiopia (asfawossena@gmail.com)*

Prof. Michael Beyth, *Geological Survey of Israel, Israel (mbeyth@gmail.com, mbeyth@gsi.gov.il)*

Documenting the tectono-metamorphic history as well as the chemostratigraphic and geochronologic records of the Arabian-Nubian Shield (ANS) and the Mozambique Belt (MB) terrains is a key in the understanding of the nature of fragmentation and reconstitution of supercontinents in the Neoproterozoic. Interpreting the various perturbations of the marine carbon cycle during the formation of the ANS, elucidating collisional tectonics and metamorphism of the ANS and MB, together with geochronologic (& possibly paleomagnetic) constraints provide insight into the multiphase geotectonic evolution of the Gondwana supercontinent. Besides differentiating the various deformation and metamorphic phases, studies on stable isotope chemistry (namely $\delta^{13}C$ and $^{87}Sr/^{86}Sr$) of carbonate rocks are increasingly becoming useful tools to establish paleogeography and paleoclimate and make regional correlations. The objective of this session is therefore to dedicate a discussion platform for potential contributions on such topics as the C and Sr isotope record of the Neoproterozoic sediments, and the timing and sequence of Neoproterozoic magmatism, deformation and metamorphism. The contributions will help advance our understanding particularly on the relationship between the ANS and the MB, and demonstrate the significance of results on the evolution of the Neoproterozoic supercontinent cycle.

SESSION 2: HISTORICAL GEOLOGY

Session 2.1. Sedimentology, Stratigraphy, Palaeontology, Palaeoenvironments
(In Memory of the Late Dr. Mohammed Umer Mohammed)

Conveners:

Dr. Balemwal Atnafu, *Addis Ababa University, Ethiopia (balemwal@yahoo.com)*
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Dr. Ali Eisawi, *School of Applied Earth Sciences, Al Neelain University, Sudan (eisawia@yahoo.com)*

The 24th Colloquium on African Geology provides an opportunity to address the much debated and controversial issues in the sedimentology and stratigraphy of Africa. For instance, there exists a widespread belief that Karoo sediments represent the oldest sediments in the continent although Early Paleozoic sediments are widespread in northern Africa and extend south to Ethiopia. This indicates that the southern extension of transgressions from the Paleotethys in the North is ill-defined. Similarly, the northern extension of Karoo rift sediments and their regional correlation, as well as the Permo-Carboniferous glacial sediments, their depositional environment and ice movement direction are still debated.

The Mesozoic break-up of Gondwana and the formation of the Tethyan passive margin is another controversial issue. On the one hand, the breakup of Gondwana along the former East African Orogen is widely interpreted to have started in the Late Palaeozoic, suggesting the rift and drift phases as a transitional process, starting in the Late Permian and finishing in the Callovian. On the other hand, there are studies that indicate the separation of Madagascar to have occurred in the Late Liassic and this event was relatively short-lived, with a distinct episode of rifting followed by separation and continental drift.

Other debated issues include the stratigraphic imprint of the Mid Cretaceous Opening of the South and Central Atlantic, the timing of uplift and widespread lateralization in the late Cretaceous or Early Tertiary, the African stratigraphic record of major global extinction events (P-T boundary and K-T boundary), etc. Moreover, Quaternary Palaeoenvironmental and paleoclimatic reconstruction in Africa has been a major field of research in order to understand the ecological and climatic context of the rich and diverse palaeoanthropological and archaeological record of Africa, as well as to understand the global climatic system of the past.

This session will attempt to concentrate on the above interesting issues under the following topics:

1. Rift-related sedimentation and stratigraphy: Patterns of siliciclastic sedimentation in an active vs. passive tectonic settings, ancient and modern examples from Africa
2. Lacustrine vs. marine evaporites in Africa: Indicators of aridity? Evaporite Texture, Depositional Models and Hydrology

3. Shallow marine carbonate platforms and reefs: lithological, paleontological and stratigraphical characteristics
4. Glacial sedimentation in Africa: lithofacies, depositional environments, extent of glaciations, ice movement directions and regional correlation
5. Deep sea sedimentation in Africa: erosional, transport and depositional processes, geological controls and lithofacies
6. Palynology and micropaleontology: Biozonation trends and correlation of African strata
7. Quaternary paleoenvironments and palaeoclimates of Africa

All original as well as review contributions covering any of the above themes are welcome in this session. Subsequently, a peer-reviewed publication of selected papers presented in this session is possible.

Session 2.2. Early Hominin Paleobiology, Taxonomy, and Associated Paleoecological Contexts between 4.5 and 3.0 Million Years Ago

Convener:

Dr. Yohannes Haile-Selassie, *Cleveland Museum of Natural History, USA (yhailese@cmnh.org)*

Dr. Berhane Asfaw, *Rift Valley Research Center, Addis Ababa, Ethiopia (ramideth@gmail.com)*

This session will bring together paleoanthropologists, paleoecologists, and specialists from other related disciplines interested in addressing the paleobiology, phylogeny, diversity, and paleoecology of early human ancestors that lived between 4.5 and 3 million years ago. Currently, there are at least five early hominin species named from approximately 4.5 to 3 million years ago (Ma): *Ardipithecus ramidus* (4.4 Ma), *Australopithecus anamensis* (4.2 – 3.9 Ma), *Australopithecus afarensis* (3.7–2.9 Ma), *Kenyanthropus platyops* (3.5 Ma), and *Australopithecus bahrelghazali* (3.5 Ma). The vertebrate fossils associated with these hominins have been used to reconstruct their paleoenvironmental contexts using different analytical methods. Recent discoveries indicate that there could even be more, yet unnamed, hominin species in eastern Africa between 4 and 3 Ma. Some of these species are better known than others in terms of their paleobiology, phylogentic relationships, and paleoenvironmental contexts, while others are poorly known because they are either known from a single specimen, their holotypes are poorly preserved, or their fossil record and the associated fauna is scrappy. These, added to the lack of adequate paleoenvironmental explanations for such diversity, have been the major reasons for some researchers to doubt the presence of multiple hominin species that contemporaneously inhabited the African landscape between 4 and 3 million years ago. Presentations in this session will highlight the various lines of evidence (paleontological, paleoecological, geological, etc.) available to address the presence or absence of early hominin diversity between 4 and 3 million years ago and discuss early hominin paleobiology and phylogenetic relationships based on recent fossil discoveries in eastern Africa. It is also hoped that this session will create new venues for international scientific collaborations and open significant discussion forums for participant scientists.

SESSION 3: THE EAST AFRICAN RIFT SYSTEM

Session 3.1. The East African Rift System: Tectonics and Volcanism

Conveners:

Dr. Giday Woldegabriel, *Los Alamos National Laboratory, USA (wgiday@lanl.gov)*

Dr. Bekele Abebe, *School of Earth Sciences, Addis Ababa University, Ethiopia (bekelino_abe@yahoo.com)*

This session will address the following topics:

I. State of knowledge: Eastern African Rift System - Volcanism and Tectonics

II. Regional synthesis: Similarities and differences within the "Rift Basins"
   i. Volcanism
   ii. Tectonics

III. Volcanism, Geophysics, Geochemistry, Petrology, Geochronology, etc.
   i. Extrusive
      1. Explosive Volcanism and Calderas
      2. Lava Flows
   ii. Intrusive Rocks

IV. Tectonics
   i. Neotectonics
   ii. Syn-rift tectonics
   iii. Pre-rift versus syn-rift tectonics

Original contributions dealing with the above topics are welcome in this session.

SESSION 4: EARTH RESOURCES

Session 4.1. Mineral Resources

Conveners:

Prof. Hassan Helmy, *Department of Mineralogy, Minia University, Egypt (hmhelmy@yahoo.com)*
Prof. Solomon Tadesse, *School of Earth Sciences, Addis Ababa University, Ethiopia (tadefanta@yahoo.com)*
Mr. Masresha Gebreselassie, *Geological Survey of Ethiopia, Ministry of Mines, Ethiopia (mgselassie2003@yahoo.com)*
Dr. Solomon Gebreselassie, *Department of Earth Sciences, Mekelle University, Ethiopia (sol1703@yahoo.com)*

Mineral resources have played a key role in the development of human civilisations and technologies. Humans have been exploiting the properties of rocks and minerals since the Stone Age while the Bronze Age and the Iron Age marked the advent of metallurgy and required the mastery of high-temperatures furnaces, respectively to make bronze, iron alloys and steel artifacts. Raw materials are the backbone of every economy. Products from the mineral industry can be found in all sectors of today's society and the worldwide demand for fossil and mineral resources continues to grow. The availability of many reserves is declining as the world population grows and demand for raw materials rises. At the end, our society needs better knowledge of how non-renewable resources can contribute to a sustainable economy while managing the use of resources within the Earth's environmental limits.

This session welcomes papers on the evaluation, extraction and management of natural resources in the sub-surface of the Earth including gold and base metals, industrial minerals, gem and dimension stones and may concern individual deposits or prospects and describe their geological and tectonic features, metal content, isotopic signatures, genesis, exploration potential etc., or it may embrace whole belts and provinces: simple or complex, in terms of their ore types and geological evolution. We also welcome papers on the metallogeny with overviews of ore-forming processes and the geological evolution in space and time. Papers on advances on small scale mining are of special interest in the session.

Session 4.2. Geothermal Resources

Conveners:

Prof. Jacques Varet, *BRGM, France (j.varet@brgm.fr)*
Mr. Getahun Demissie, *GEOMET Plc., Ethiopia (geomet@ethionet.et)*
Prof. Andrea Förster, *GFZ, Germany (for@gfz-potsdam.de)*

This session will cover the following topics:

1. Reconnaissance of geothermal resources
2. Prefeasibility studies of given sites

3. Feasibility studies
4. Development of HE sites
5. LE and cascade use projects

Approaches by disciplines (volcanology, geochemistry, geophysics, reservoir engineering, etc.) would be integrated as subtitles in the above mentioned topics. All original contributions covering the above topics are welcome in this session.

Session 4.3. Hydrocarbon Resources

Conveners:

Dr. Ketsela Tadesse*, Ministry of Mines, Ethiopia (ktadesse22@yahoo.com)*
Prof. Lopo Vasconcelos, *Department of Geology, Eduardo Mondlane University, Mozambique (lopovasconcelos@gmail.com)*
Dr. Wolela Ahmed, *Ministry of Mines, Ethiopia*

The aim of this session is to foster insights about hydrocarbon resources, the structure and development of sedimentary basins, oil and gas discoveries and prospects in different basins in Africa and analogies from the rest of the world. Oral and poster presentations submitted for this session should address methods and parameters used in assessing petroleum systems, including proven systems and current hydrocarbon production with emphasis on Paleozoic, Mesozoic and Cretaceous and Neogene rift basins. Reservoir characterization studies, source rock potential, seal analysis, stratigraphic studies, such as sequence stratigraphy, biostratigraphy, chemostratigraphy and depositional models can be included. Papers on hydrocarbon (petroleum, oil shale and coal) exploration (geophysics and geochemistry, etc), reservoir geology, reservoir petrology, hydrocarbon charge mechanisms can be presented.

Session 4.4. Groundwater Resources

Conveners:

Prof. Tenalem Ayenew, *School of Earth Sciences, Addis Ababa University, Ethiopia (Tenalema@yahoo.com)*
Dr. Seifu Kebede, *School of Earth Sciences, Addis Ababa University, Ethiopia (seifukebede@yahoo.com)*
Prof. Alexandros Makarigakis, *UNESCO Addis Ababa, Ethiopia*
Prof. M. Razack, *University of Poitiers, France*

The amount of groundwater on Earth is much more than the fresh surface water resources. Groundwater plays very important role in supplying drinking water for communites and irrgiation development. Groundwater is vital in supporting the livelihood of the people of Africa and the world at large. Judicious utilization of groundwater demands undertsnding the movment and occurrence of groundwater and the amount and mechanism of recharge. It is also important to study the hydraulic charaterstics and extent of water bearing geological formations (aquifers) which in turn demands detailed hydrogeological mapping and evaluatinion of the role of the complex geological and geomorphological environments

in localizing groundwater. It is also important to understand the quality of groundwater. In most of Africa, the hydrogeology is quite complex and geogenic water quality problems such as fluoride affected millions of people in many countries. Due to lack of understanding of the hydrogeology many drilled boreholes were found to be dry or failed to supply sufficient water. This is apparently the case in most of the Great East African Rift System and peripheral lowlands and semi-arid regions of Africa. The complexity of the geology and the limited hydrogeological knolwedge, poor groundwater quality and lack of financial reosources for detailed hydrogeological mapping and exploration hindered the judicious utilization of the groundwater resources. In recent years, many African countries gave great empahsis to develop groundwater for community water supply and irrigation. This noble effort has to be supported by knowledge-based groundwater utilization and managment. The groundwater resources session is expected to adress the current state of knowledge of the hydrogeology and the challenges and prospects of groundwater development in Africa. Best experiences from other countries are also expected to be presented. It also explores the role that hydrogeology and hydrogeologists can play in making groundwater exploration and development projects more successful and cost effective. We welcome also case studies from water well drilling industry on advances in water well drilling technology, water quality testing and groundwater monitoring.

Session 4.5. Ethiopia's Mining Development

Conveners:

Dr. Kebede Hailu, *NYOTA Minerals Ltd., Addis Ababa, Ethiopia (kebede.belete@nyotaminerals.com)*
Mr. Gebregziabher Mekonnen, *Ministry of Mines, Addis Ababa, Ethiopia (gebremw@yahoo.com)*
Mr. Senbeto Chewaka, *National Mining Corporation, Addis Ababa, Ethiopia (c.senbeto@yahoo.com)*

The history of mineral resources exploration and mining in Ethiopia has been known at least for over a century. The major actors who are the government Geological Survey, the international companies, multinational organizations and academic and research institutions, have played significant role in exploring and developing the mineral resources of the country.

Following the 1993 Mining proclamation, which acknowledged the participation of private investment in the mineral sector; and subsequent promulgation of the mining regulation of 1994 considerably enhanced the inflow of foreign direct investment, in addition to enhancing local investments in specific commodities. During the last decade, there has been an explosion of mineral exploration activities in Ethiopia by private players in the mineral sector resulting in new findings, interesting from both economic and academic contexts.

To date, regional to detailed exploration works have shown the occurrences and/or economic deposits of different mineral commodities including precious minerals such as gold, silver, platinum, precious gemstones, base metals such as copper, lead, zinc with or without association of precious metals (gold/silver), Industrial minerals such as rare metals, soda ash, potash, various cement raw materials (limestone, clay, gypsum, pumice,

sandstone, marl, etc.), energy minerals of both fossil fuel and coal, and other energy minerals, as well as construction minerals and ornamental stones which are the main supply of the country's booming infrastructure and construction industries.

The forthcoming 24th Colloquium of African Geology would definitely be a good opportunity and platform for the mineral developers (private and government) to reveal these developments in the mineral resources endowment of the country. This session is expected to bring together all involved in the fast track way forward business (explorers, developers, brokers, researchers, financers) and would serve as a forum of information and experience exchanges and networking.

All interested are invited to participate in this session by presenting their findings and works so far achieved for the geological community of the world.

Session 4.6. Remote Sensing, Image Processing, Modeling and GIS Applications in Earth Resources Mapping and Mineral Exploration

Conveners:

Prof. Tsehai Woldai, *ITC, the Netherlands (woldai@itc.nl)*
Prof. Frank van Ruitenbeek, *ICT, the Netherlands (vanruitenbeek@itc.nl)*

Many countries, but particularly those with under explored mineral resources, need efficient methods for upgrading their geoscience knowledge base, which primarily includes updating of the national geological map coverage. Geologists the world over make use of various remotely sensed data (optical, microwave, hyperspectral including airborne geophysics) and GIS tools at their disposal to increase the efficiency of geologic mapping and exploration campaigns. This, in combination with strategically planned field follow-ups that exploit Mobile GIS for rapid and consistent field data acquisition, provides enormous efficiency gains in updating the geoscience knowledge base of a region or country. Furthermore, the standardized and seamless format of the resulting map databases provides a base archive that warrants streamlined updates in the future. Papers related to remotely sensed applications on the following topics are highly welcome: Geological mapping, Mineral and Petroleum exploration, Geothermal exploration, Groundwater exploration, Mineral prospectivity modelling, hydrothermal alteration mapping, Anomaly mapping from geochemical and other data sets, and Data Integration and fusion.

SESSION 5: ENVIRONMENTAL GEOLOGY, ENGINEERING GEOLOGY AND GEOHAZARDS

Session 5.1. Geohazards

Conveners:

Prof. Genene Mulugeta, *Uppsala University, Sweden (gmulugeta@hotmail.com)*
Prof. Gezahegn Yirgu, *School of Earth Sciences, Addis Ababa University, Ethiopia (gezahegnyirgu@yahoo.com)*
Dr. Atalay Ayele, *Institute of Geophysics, Space Science and Astronomoy, Addis Ababa University, Ethiopia (atawon@yahoo.com)*
Dr. Getnet Mewa, *Geological Survey of Ethiopia, Addis Ababa, Ethiopia (getmewa@gmail.com)*

The aim of the geohazards session is to offer participants a forum for scientific discussion, where they can present current research and be encouraged to develop important lines of research within this field. With a few exceptions countries in sub-Saharan Africa have limited capacity to conduct research on geohazards, or to apply the knowledge and deploy technologies to mitigate geohazards**.** There is therefore an urgent need to improve our basic understanding of the social, environmental and economic risks posed by geohazards, the relationships between those risks, and our ability to cope with them. Understanding the full scope of geohazards is a prerequisite for disaster risk reduction and increased resilience to these events. This requires both a solid scientific understanding of geohazards, as well as addressing the full risk management cycle, necessary for appropriate policy and decision making.

Several factors contribute to Africa´s high vulnerability to hazards, including climate change, high levels of poverty and food insecurity, increase in population density, poor land use management practices, urbanization, and failures of policy and institutional frameworks. Despite the damaging effect of geohazards, little is done to prevent them. The effects of global climate change will most probably aggravate this situation. In addition, there is a clear disparity between current development activity and understanding of impending natural hazards in the continent. The level of awareness of the potential impacts of geohazards that can disrupt social and economic activity of the people is low and not properly captured by decision makers, investors and the public at large. Ground and space based observation technologies combined with Geographical Information Systems (GIS) of impending geohazards are advancing to date and are being applied to mitigate and assess catastrophic events like drought and desertification, fires, flooding, pest infestations, earthquakes, volcanic eruptions, ground water movement and landslides. Space based techniques are especially suitable for inaccessible and hostile places in Africa and can serve the continent very well. Several research activities of the kind outlined above are ongoing in the continent and contributors are encouraged to submit their recent findings to this session.

Session 5.2. Engineering Geology

Conveners:

Dr. Kifle Woldearegay, *Department of Earth Sciences, Mekelle University, Ethiopia (kiflewold@yahoo.com)*

Dr. Tarun Raghuvanshi, *School of Earth Sciences, Addis Ababa University, Ethiopia (tarunraghuvanshi@yahoo.com)*

In most parts of the world in general and in Africa in particular there is a boom in the construction industry especially in large-scale projects such as dams, buildings, and roads. Moreover, various geo-hazards have been increasing at an alarming rate, affecting human lives, engineering projects, agricultural lands and the environment. Resource extraction (such as mining) is also increasing, especially in Africa. With the increase in economic development in Africa, the construction industry (including dams, buildings, railways, tunnels, etc) is expected to increase at a much faster rate. With the increase in population and climate change, geohazards are expected to increase. There is, therefore, a great demand for quantitative geological information and recommendations in order to ensure that geologic factors affecting the planning, design, construction, operation, and maintenance of construction works are adequately recognized, interpreted, and presented for use in engineering, mining, and related practice. This session welcomes papers in any of the following themes:

Theme 1: Engineering Geology and Structures – Dams, Building, bridges: (i) Foundation condition assessment for existing and anticipated adverse conditions; (ii) Advancement in analytical techniques for foundation condition appraisal; (iii) Foundation improvement methods.

Theme 2: Geo-hazards - Role of Engineering Geology: (i) Geohazard mapping and zonation; (ii) Risk analysis of geohazards; (iii) Innovative mitigation methods.

Theme 3: Roads and railways in difficult ground: (i) Roads and railways in expansive soils; (ii) Roads and railways in mountainous terrains; (iii) Roads and Railways in tectonically active areas.

Theme 4: Engineering geology in underground openings and mining: (i) Rock mass characterization and support assessment for underground openings; (ii) Engineering geological challenges of tunnelling in fault zones and soft ground; (iii) Slope stability studies and open pit mine planning.

Theme 5: Geological construction materials: (i) Mapping and resource evaluation of geological construction materials; (ii) Quality of geological construction materials

Case studies in the above themes and topics are also welcome.

Session 5.3. Environmental and Health Impacts of Mining in Africa

(Special Session under the Auspices of IGCP/SIDA Projects 594 and 606)

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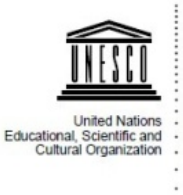


Conveners:

Prof. Theo C. Davies, *University of Venda, South Africa (daviestheo@hotmail.com)*
Prof. Benjamin Mapani, *University of Namibia (bmapani@unam.na)*
Prof. Bohdan Kribek, *Czech Geological Survey, Czech Rep. (bohdan.kribek@geology.cz)*

As the demand for mineral resources and fossil fuels continues to grow worldwide, the impact of mining will be an increasingly important concern in the field of environmental science. In addition, the legacy of mining has left thousands of sites in Africa contaminated by mining and associated practices such as tailings processing and disposal. In this session, we will explore the geochemistry, mineralogy, and microbiology of metals and trace elements in mining-impacted environments. Acid, neutral, and alkaline systems will be considered.

Topics of this Session would include:

1. Evaluation of potential links between contamination and health in mining districts;
2. Soils and surface contamination by metals and gaseous emissions in mining and mineral processing districts;
3. Response of plants to heavy metal stress and bioremediation;
4. Contamination of wetlands, surface and groundwaters;
5. Modelling of dispersion of dust and gaseous emissions from mining operations and smelters;
6. Geochemistry, mineralogy and microbiology of solid mine wastes;
7. Recycling, Reuse and rehabilitation of mine wastes;
8. Geochemical modelling of contaminant transport near cultivable areas;
9. Environmental issues related to small-scale and artisanal mining; and
10. Environmental policy and legislation – impact assessments, best practices, etc.

The session is designed (1) to correlate and integrate the results of multidisciplinary studies carried out in contaminated sites and areas using the best contemporary procedures for statistical analysis, management and compilation of the geochemical data; (2) to strengthen the capacity of African institutions in environmental geochemistry by cooperation with foreign experts and organizations, (3) to raise public awareness of the impacts of mining on the environment and human health, and (4) to facilitate cooperation among geoscientists and medical scientists.

You are invited to submit a full version of your oral or poster presentation to the Special Issue on "Environmental and Health Impacts of Mining in Africa", which will be published in

the Journal of Geochemical Exploration (IF: 2.12). Please read over the journal's Author Guidelines at (http://www.journals.elsevier.com/journal-of-geochemical-exploration). The Special Issue is open to both original research articles as well as review articles. The deadline for submission is April 30th, 2013. If you have any questions about this Special Issue, please do not hesitate to contact us.

Session 5.4. Medical Geology

(In Memory of the Late Prof. Serrano Pinto, former Goodwill Ambasador of the GSAf)

Conveners:

Dr. Seifu Kebede, *School of Earth Sciences, Addis Ababa University, Ethiopia (seifukebede@yahoo.com)*
Prof. Eduardo Ferreira da Silva, *Aveiro University, Portugal (eafsilva@ua.pt)*

Every day we eat, drink and breathe minerals and trace elements, never giving a thought to what moves from the environment and into our bodies. For most of us this interaction with natural materials is harmless, perhaps even beneficial, supplying us with essential nutrients. However, for some, the interaction with minerals and trace elements can have devastating, even fatal effects. These interactions are the realm of medical geology, a fast-growing field that not only involves geoscientists but also medical, public health, and veterinary, agricultural, environmental and biological scientists ***(The Elements Magazine, 3: 369-440).*** This particular session will deal with geology related health issues including causal link between geology and health, climate and animal or human health, their inventory, pathway of geological materials of health significance to human metabolism, and social and economic effects of the diseases.

SESSION 6: GEOHERITAGES AND GEOTOURISM

Session 6.1. Geoheritages and Geotourism in Africa

Conveners:

Dr. Asfawossen Asrat, *School of Earth Sciences, Addis Ababa University, Ethiopia (asfawossena@gmail.com)*

Prof. Ezzroua Errami, *Chouaïb Doukkali University, Morocco (erramiezzoura@yahoo.fr)*

Mrs. Metasebia Demissie, *Addis Ababa, Ethiopia (metasebia.demissie55@gmail.com)*

Prof. Aberra Mogessie, *Institute of Earth Sciences, Karl-Franzens University of Graz, Austria (aberra.mogessie@uni-graz.at)*

Geoheritage and geoconservation as well as the related terms geodiversity, geoparks and geotourism are recently conceived and developed concepts. In the current world where economic developments in many parts of the world are mostly driven by large scale exploration and exploitation of earth resources, sustainable development could be at risk without concerted effort of all concerned to preserve geological heritages. As a result, only recently have geoheritages been given due attention and geoconservation initiatives being recognized by many international institutions as of global importance. It is now largely recognized that earth systems are linked to the on-going history of human development, providing the resources for development, and a sense of place, with aesthetic, historical, cultural and religious values. The fact that geoheritages represent both discovered and yet undiscovered information about earth's history call for their protection, because if not conserved, they will be lost to future generations. It is also time that this fact be recognized in Africa, a continent strewn with varied and diversified geoheritage which should be conserved and used for sustainable tourism (geotourism).

In this session we accept original research papers as well as reviews dealing with the above concepts. Papers on any part of Africa are especially encouraged. The objective in this session is to provide a forum of discussion for all researchers working on geoheritages, geoconservation, geoparks and geoutorism. It is hoped that the results of the deliberations could provide scientific basis for policy makers to define the necessary legislation, policy and regulations for selecting and prioritizing among the most important geoheritages and geosceneries in the continent for geoconservation programs and for the establishment of geoparks, in some of the geoheritage sites.

SESSION 7: EARTH SCIENCE EDUCATION IN AFRICA

Session 7.1. Earth Science Education in Africa

Conveners:

Prof. S. Felix Toteu, *Earth Sciences Unit, UNESCO Nairobi (sf.toteu@unesco.org)*
Prof. Jesus Martinez-Frias, *Chair of the IUGS/COGE, Spain (jmfrias@cab.inta-csic.es)*
Mrs. Sarah Gaines, *UNESCO Paris (s.gaines@unesco.org)*
Prof. Aberra Mogessie, *Institute of Earth Sciences, Karl-Franzens University of Graz, Austria (aberra.mogessie@uni-graz.at)*

This session is an opportunity to evaluate and discuss progresses in Earth science education in Africa since the CAG23 in Johannesburg in 2011. The session will also build on the new impetus given by the African Delegations to UNESCO in support of UNESCO's Earth Science Education Initiative in Africa (ESEIA) at the earth science education event held during the 40th anniversary of IGCP in February 2012 in Paris. Participants are welcomed to submit abstracts on the experience of individual country or institution on Geo-education, with a focus on practical experiences, models and collaborations. We expect the participation of UNESCO, GSAf, AAWG, GIRAF, CGMW, OneGeology, AEGOS and IUGS-COGE, plus other partners interested to join. An important part of the session will be devoted to the discussion and the launching of the African Network of Earth Science Institutions (ANESI) as part of the first three initial activities to start implementing the ESEIA.

SESSION 8: GEOSCIENCE INFORMATION IN AFRICA

Session 8.1. Geoscience Information in Africa

Conveners:

Mr. Ketema Tadesse, *AEGOS (ketema@seamic.org)*
Dr. Marc Urvois, *AEGOS (m.urvois@brgm.fr)*
Dr. Kristin Asch, GIRAF *(Kristine.Asch@bgr.de)*
Dr. G. Schneider, *OneGeology*
Dr. Ian Jackson, *OneGeology (ij@bgs.ac.uk)*

Managing and providing access to geoscience data and knowledge underpins public policy-making across various levels of governance as well as investment, research and education. Each geoscience organisation, in Africa and beyond, possesses essential geology-related information but it could be better accessible and interoperable, and is hardly ever connected to its extensions in the neighbouring countries. Very rarely, it is linked in with the global geoscience community activities and provisions, e.g. by contributing to and using of global standards.

The scope of this session encompasses spatial data infrastructure and regional geoinformation initiatives; interoperability and standards; delivery, dissemination and exploitation of geoscience data and information; best practices and progress to date. Participants are welcome to submit abstracts on their experience of individual countries or institutions on these topics, with a focus on Africa. We expect the participation of GSAf, GIRAF, OneGeology, AEGOSUNECA, AAWG, YES and other partners interested to join.

The Session will encompass up-to-date presentations on geoinformation projects, initiatives and organization in Africa and discussions in depth on specific issues. In particular contributions concerning: geothermal energy, groundwater and surface water issues, mineral resources and mining are invited to be presented within the Session. However, any thematic contributions on geoscience information projects and issues in Africa are invited to present.

SESSION 9: OPEN SESSION

Convener:

Dr. Girma Woldetinsae, Ministry of Mines, Addis Ababa, Ethiopia
(gwt_girma@yahoo.com)
Mr. Tadesse Alemu, *Geological Survey of Ethiopia, Addis Ababa, Ethiopia*
(tadessealemu@yahoo.com)

All other contributions which might not fit to any of the above sessions and sub-sessions can be submitted to the open session.

LIST OF WORKSHOPS AND SHORT COURSES

WORKSHOP/ SHORT COURSE	TITLE	INSTRUCTORS	DATES	FEE (USD)		MAX. No. OF PARTICIPANTS
				STUDENTS	OTHERS	
WORKSHOP 1	Geoparks	Patrick Mc Keever, Ezzourra Errami, Felix Toteu,	8 JAN. 2013	50	100	20
WORKSHOP 2	Application on Ammonites and other Invertebrates: Morphometric analysis using the software PAST (Paleontological statistic)	Hasina Nirina Randrianaly	11 JAN. 2013	25	50	20
WORKSHOP 3	Hyperspectral Remote Sensing for Mineral Exploration	Tsehai Woldai, F. van Ruitenbeek	11-12 JAN. 2013	100	200	20
WORKSHOP 4	Geological and Environmental Remote Sensing	Mohammed Abdel Salam	11-12 JAN. 2013	100	200	20
WORKSHOP 5	Non-destructive Analyses of Gems and Lapidary Materials	Vera M. F. Hammer	14-16 JAN. 2013	100	200	20

DESCRIPTION OF WORKSHOPS AND SHORT COURSES

WORKSHOP 1: GEOPARKS

Instructors:

Prof. Patrick Mc Keever, *UNESCO Paris*

Prof. Ezzroua Errami, *Chouaïb Doukkali University, Morocco (erramiezzoura@yahoo.fr)*

Prof. S. Felix Toteu, *Earth Sciences Unit, UNESCO Nairobi (sf.toteu@unesco.org)*

The Geopark concept has grown rapidly during recent years and today the Global Geopark Network (GGN, www.globalgeopark.org) counts 88 members worldwide, but still none in the African continent. Luckily, there are several ongoing initiatives in many African countries. The one-day pre-conference workshop jointly organized by UNESCO and the African Association of Women in Geosciences (AAWG) during the 24th Colloquium of African Geology (CAG-24) in Addis Ababa (Ethiopia) is designed to support the efforts being made in various countries in the area of geo-conservation in general and in that of geopark in particular. The geopark concept with illustration from GGN experiences, the status of the concept in Africa, the challenges in creating a geopark in Africa and discussions around one or two promising projects in Africa will form the architecture of the workshop. A call for participation setting the requirements will be sent in July and about 20 applicants among the already registered participants to the CAG24 will be selected for the workshop.

WORKSHOP 2: APPLICATION ON AMMONITES AND OTHER INVERTEBRATES: MORPHOMETRIC ANALYSIS USING THE SOFTWARE PAST (PALEONTOLOGICAL STATISTIC)

Instructor:

Dr. Hasina Nirina Randrianaly, *Department of Paleontology and Biologic Anthropology, University of Antananarivo, Madagascar (ammonitesfashion@yahoo.fr; rhasinanirina@yahoo.fr)*

The goal of the course is teaching students how to apply the software PAST (Paleontological statistic) for using a morphometric analysis. The course program will be based on the following topics:

i. Morphology: as example the study of Ammonites shell Morphology and Intraspecific variation based on ontogeny and dimorphism;
ii. Morphometric analysis will teach the students how to apply the software Past (free software Paleontological statistic);
iii. Morphometric analysis by univariate, bivariate and multivariate will demonstrate the intraspecific variation;
iv. Consequence of the result in the biostratigraphy framework.

WORKSHOP 3: HYPERSPECTRAL REMOTE SENSING FOR MINERAL EXPLORATION

Instructors:

Prof. Tsehai Woldai, *ITC, the Netherlands (woldai@itc.nl)*
Prof. Frank van Ruitenbeek, *ICT, the Netherlands (vanruitenbeek@itc.nl)*

Hyperspectral remote sensing has become widely used for the detection and mapping of minerals using field spectrometers, drill core scanners and airborne sensors. It involves measurements of reflected visible and near-infrared radiation and is used for the characterization of host lithologies and mapping of hydrothermal alteration minerals that are associated to mineralization. Hyperspectral remote sensing and near infrared spectroscopy are commonly applied on a regional scale for exploration target generation and at prospect scale for detailed evaluations. In this course, participants will i) learn the basics of hyperspectral remote sensing for mineral exploration, ii) experience the interpretation of hyperspectral data with dedicated software and iii) get an overview of the challenges, opportunities and limits of the method through interactive theory sessions and hands on computer exercises.

Topics include:

- Near infrared spectroscopy of rock and minerals;
- Interpretation of hyperspectral data sets;
- Field spectra, high-resolution drill-core imagery, remote sensing imagery;
- Exploration and geological case studies.

WORKSHOP 4: GEOLOGICAL AND ENVIRONMENTAL REMOTE SENSING

Instructor:

Prof. Mohamed G. Abdelsalam, *Department of Geological Science & Engineering, Missouri University of Science and Technology, USA (abdelsam@mst.edu)*

The workshop will provide theoretical background on the characteristics of sub-orbital and orbital optical and radar remote sensing data (spectral, spatial, temporal, and radiometric) as well and Digital Elevation Model (DEM) data. This will be followed with giving examples of popular remote sensing platforms. The course will ends with giving hands-on training on remote sensing digital image processing for geological and environmental applications geological and geomorphological mapping, mineral exploration, and water resource management.

WORKSHOP 5: NON-DESTRUCTIVE ANALYSES OF GEMS AND LAPIDARY MATERIALS

Instructor:

Dr. Vera M.F. Hammer, *State Gem Institute, Natural History Museum Vienna, Austria (vera.hammer@nhm-wien.ac.at)*

The three days Short Course and training will help the participants to get familiar with the identification of the common and even some unusual gemstones, treatments, synthetics and imitations. The course needs knowledge on fundamentals concepts in mineralogy and crystallography as background. **The maximum number of participants is 20.** The course deals on the following topics. **Introduction to Gem Materials I** (Classifying Gems: Definitions, Coloured Gems and Diamonds, The Gemstone Book (CIBJO), Natural Materials, Modified Gemstones Treatments, Artificial Products); **Introduction to Gem Materials II (**Non-transparent Gems, Optical Effects, Glass, Plastics, Organic Gems, Ornamental Stones); **Introduction to Gem Materials III (**Special Equipment for Gem Testing, Scientific Methods); **Introduction to Gem Materials IV: (**Geology of Gemstone Deposits, Colour of Gemstones, Typical Inclusions); **Introduction to Gem Materials V** (Different Syntheses, Diamond: natural - treated - synthetic or imitation? Mussels - Snails - Corals (CITES), Pearls); **Introduction to Gem Materials VI (**Gemstones and Culture); **Introduction to Gem Materials; VII: (**Tutorial and hands-on training).

LIST OF ROUNDTABLES

ROUNDTABLE	TITLE	CONVENERS	MODERATORS	RAPPORTEUR	DATES
ROUNDTABLE 1	Geoheritage & Geoparks: a tool for local sustainable development	Ezzourra Errami, Asfawossen Asrat	Ezzourra Errami, Asfawossen Asrat	Lala Andrianaivo	11 JAN. 2013
ROUNDTABLE 2	Women in Geosceinces	Ezzourra Errami, Aster Gebremariam Monica Omulo	Ezzourra Errami, Aster Gebremariam	Monica Omulo	11 JAN. 2013

DESCRIPTION OF ROUND TABLES

ROUNDTABLE 1: GEOHERITAGE & GEOPARKS: A TOOL FOR LOCAL SUSTAINABLE DEVELOPMENT

Conveners and Moderators:

Prof. Ezzroua Errami, *Chouaïb Doukkali University, Morocco; African Geoparks Network & African Association of Women in Geosciences (erramiezzoura@yahoo.fr)*

Dr. Asfawossen Asrat, *School of Earth Sciences, Addis Ababa University, Ethiopia; African Geoparks Network & Geological Society of Africa (asfawossena@gmail.com)*

Rapporteur:

Lala Andrianaivo, African Geoparks Network *(andrianaivol@gmail.com)*

The African Geoparks Network "AGN" was initiated by the African Association of Women in Geosciences "AAWG" during its pre-conference meeting held in Abidjan, Ivory Coast in May 2009. The AGN aims to identify and make an inventory of the geological sites of outstanding value in Africa; to promote and increase the awareness among policy makers and the general public in Africa, particularly local communities about the necessity of the protection and the valorization of African geological heritage through the creation of geoparks for a sustainable local development; and to build the capacity of local population in the field of geoheritage through a strong networking and the organization of conferences, seminars, symposia, training courses and workshops. In that framework, the AGN and the AAWG in collaboration with the GSAf decided as a follow up of the First International Conference on African and Arabian Geoparks, held in 2011 in Morocco, to organize a series of workshops and roundtables in order to continue to promote the geoheritage and geoparks as a tool for local sustainable development in Africa. This roundtable will focus on the role geoparks could play in the local sustainable development in Africa and also will be an opportunity to create multidisciplinary task groups to promote and implement the AGN objectives in different African countries.

All researchers in the fields of geoheritage, geotourism, conservation, environment and sustainable development, policy makers, economists, geopark and local community administrators and leaders, NGOs, business operators, Medias and individuals with interest in geoheritage development are invited to participate and contribute to make this event a success.

ROUNDTABLE 2: WOMEN IN GEOSCEINCES

Conveners and Moderators:

Prof. Ezzroua Errami, Chouaïb Doukkali University, Morocco; African Association of Women in Geosciences (erramiezzoura@yahoo.fr)

Mrs. Aster Gebremariam, *UNECA, Addis Ababa, Ethiopia (agebremariam@uneca.org)*

Dr. Monica Omulo, *Maseno University, Kenya; African Association of Women in Geosciences (omuloma@gmail.com)*

Rapporteur:

Dr. Monica Omulo, *Maseno University, Kenya; African Association of Women in Geosciences (omuloma@gmail.com)*

Women geoscientists are participating in the promotion of Earth Sciences for Society in their respective countries. This roundtable, through exchange of experiences, will focus on challenges women are facing while pursuing this goal and will offer them an opportunity to connect and network in order to overcome all these barriers.

After an introduction of the African Association of Women in Geosciences: its challenges and perspectives, the roundtable will open discussion in order to outline the priority of women in each African country represented, taking into consideration their cultural, political, and socio-economic situations. After the priorities are outlined, small working groups by regions will be formed in order to come up with concrete proposals for activities to be conducted under the umbrella of the AAWG during the years 2013-2015.

At the end of the roundtable, each regional working group will be called upon to share their proposed activities with the other participants, and lead a larger conversation. This roundtable will provide the Association and its partners as well as decision makers with concrete proposals to be conducted in line with the main objectives of the Association. It will also be an opportunity for the AAWG to sustain its work on the continent by creating national chapters in each country.

The roundtable is open to both women and men geoscientists as well as to all those interested in Earth Sciences for Societal development in Africa. It will provide an interactive platform for sharing different opinions, views and experiences on how women and men could work hand in hand in order to better participate in the development of the continent.

LIST OF SYMPOSIUMS

SYMPOSIUM	TITLE	CONVENERS	DATES
SYMPOSIUM 1	The Second YES Africa Symposium: *YES Projects and Research Initiatives for Geoscience and Sustainable Development in Africa*	Elyvin Nkhonjera, Yayeh Desalegn, Cecilia Mukosi, Amel Barich, Enas Ahmed, Stephen Nyangonde, Ivy Ddamba	11-13 JAN. 2013

THE SECOND YES AFRICA SYMPOSIUM UNDER THE THEME

"YES PROJECTS AND RESEARCH INITIATIVES FOR GEOSCIENCE AND SUSTAINABLE DEVELOPMENT IN AFRICA"

Conveners:

Elyvin Nkhonjera (elyvinnkhonjera@gmail.com)
Yayeh Desalegn (desalegny@gmail.com)
Cecilia Mukosi (ncmukosi@gmail.com)
Amel Barich (amel.barich@gmail.com)
Stephen Nyangonde (Stnya19@yahoo.com)
Ivy Ddamba (ivy.n.ddamba.13@dartmouth.edu)
Enas Ahmed

Sub Themes

1. Earth Resources and Sustainable Development in Africa
2. Mining, Environment and sustainable development in Africa
3. Integration of Geosciences with other disciplines for African Development
4. Geoconservation and its contribution to sustainable development in Africa

January 12 (Day one)

1. Opening ceremony
2. Oral Presentations
3. Poster Presentations

N.B: Both oral and poster presentations will be based on the proposed sub-themes.

January 13 (Day two)

1. **Roundtable One:** Geoscience communication in Africa
   Organizers: Cecilia Mukosi, Amel Barich, Enas Ahmed
   Contacts: ncmukosi@gmail.com, amel.barich@gmail.com
2. **Roundtable Two:** YES Africa Project Presentations
   Organizers: Amel Barich, Ivy Ddamba
   Contacts: amel.barich@gmail.com, ivy.n.ddamba.13@dartmouth.edu

January 14 (Day three)

1. **GSAf Student Chapter roundtable**
   Organizers: Elyvin Nkhonjera, Yayeh Desalegn
   Contacts: elyvinnkhonjera@gmail.com, desalegny@gmail.com
2. **GSAf student launch**
   Organizers: Elyvin Nkhonjera, Yayeh Desalegn, Stephen Nyangonde

Contacts: elyvinnkhonjera@gmail.com, desalegny@gmail.com, Stnya19@yahoo.com

LIST OF FIELD EXCURSIONS

PRE-CONFERENCE EXCURSIONS

EXCURSION	DATES (DURATION)	LEADERS/ COORDINATORS	ITINERARY[1]	LOGISITCS	FEE (USD)	EXCURSION HIGHLIGHTS
Pre-Conference Excursion 1. THE MAIN ETHIOPIAN RIFT	Jan. 6-7/2013 (2 days)	Giday Woldegabriel, Bekele Abebe	Addis Ababa-Metehara-Addis Ababa	All meals covered; Overnight at Awash Fall Lodge on full board; entrance fee at Awash park covered; means of transport: Bus	210	The Main Ehiopian rift a volcano-tectonic rift where crustal breakage is being witnessed. The purpose of this trip is to observe rift structures and volcanics in the northern section of the Main Ethiopian Rift. **Key words:** Rift tectonics, rift faults and volcanic products, tectonic lake, neo- tectonics, calderas and craters, rift margin architecture, tectonic and volcanic landforms, volcanic landscape of the Southern Afar depression; (bird watching, wildlife, thermal waters, fauna and flora of Awash National Park)
Pre-Conference Excursion 2. QUATERNARY PALAEOENVIRONMENT AND GEOMORPHOLOGY IN THE MAIN ETHIOPIAN RIFT	Jan. 5-7/2013 (3 days)	Balemwal Atnafu, Agazi Negash	Addis Ababa-Ziway-Hawassa-Addis Ababa	All meals covered; 2 nights at hotels on full board; entrance fee at Melka Kunture and Tiya covered; means of transport: Bus	360	The Lakes of the East African Rift system have been shown to contain high-resolution volcano-tectonics and palaeo-climate proxy records that extend back into the Miocene. In the central segment of the Main Ethiopian Rift, the Ziway–Shala lake basin system includes four residual lakes which have been subjected to strong changes in lacustrine conditions, at least during the Late Pleistocene. The

						purpose of this field trip is to observe the lacustrine sediment archives and geomorphic features as well as associated archeological resources **Key words:** Lake sediments, paleo lake levels and strandlines, Quaternary history of climate and hydrology, modern hydrology of rift lakes, volcanic morphology, calderas, craters, residual lakes, etc.

Pre-Conference Excursion 3. PALAEOANTHROPOLOGICAL SITES (HUMAN ORIGINS AND PALEOENVIRONMENT)	Jan. 4-7/2013 (4 days)	Yohannes Haile-Selassie, Berhane Asfaw, Mulugeta Alene	Addis Ababa-Mille-Semera-Addis Ababa	All meals covered; 3 nights at hotels on full board; means of transport: 4 WD	700	Ethiopia is known to the world as the "Cradle of Humanity" and most of the ancient fossil remains of early human ancestors, dating back to 6 million years ago, are found in the Afar region of Ethiopia. The "Paleoanthropological Sites" field trip is to two very important human ancestor fossil sites located in the central Afar rift. The first site is Hadar, where Lucy ("Dinknesh"), the famous 3.2 million-years-old partial skeleton of *Australopithecus afarensis*, was found in 1974. The second site is Woranso-Mille, a relatively new, but extremely fossil-rich, paleoanthropological site which has recently yielded another partial skeleton of Australopithecus afarensis that is 400,000 years older than Lucy. This partial skeleton is nicknamed "*Kadanuumuu.*"

[1]*Please refer to the map for routes of excursions and detailed descriptions of the Itineraries of all field excursions following these tables.*

MID-CONFERENCE EXCURSIONS

EXCURSION	DATES (DURATION)	LEADERS	ITINERARY	LOGISITCS	FEE (USD)	EXCURSION HIGHLIGHTS
Mid-Conference Excursion 1. ADDIS ABABA CITY TOUR	Jan. 11/2013 (1 day)	Tadesse Berhanu, Merhawi Gebregziabher, Addis Hailu	Addis Ababa	Picnic lunch; Guided tour of Addis Ababa; means of transport: Bus	Included in Conf. Reg. Fee	Major landmarks of Addis Ababa; visit of the National Museum
Mid-Conference Excursion 2. GEOLOGY OF ADDIS ABABA AND VOLCANIC MORPHOLOGY	Jan. 11/2013 (1 day)	Gezahegn Yirgu, Tadewos Chernet, Dereje Ayalew	Addis Ababa-Debre Seit-Addis Ababa	Picnic lunch; guided tour; means of transport: Bus	Included in Conf. Reg. Fee	The purpose of this trip is to give visitors a brief introduction to rift structures, volcanic morphology, volcanic products and associated resources. This trip is an abridged version of the other visits in volcanic province of Ethiopia. **Key words:** Rift Margin, plateau volcanics, volcanic products, crater lakes, maars, central and fissural volcanics, associated resources.
Mid-Conference Excursion 3. WONCHI VOLCANO AND THERMAL SPRINGS	Jan. 11/2013 (1 day)	Seifu Kebede, Tsegaye Abebe	Addis Ababa-Ambo-Wonchi-Woliso-Addis Ababa	Picnic lunch; means of transport: Bus	Included in Conf. Reg. Fee	Wonchi is a central volcano sitting in an E-W oriented volcano-tectonic zone called the Yerer Tulu Welel Volcanic Lineament. It is a prominent volcano dotted by crater lakes, mud pools, thermal springs. It is known for its beautiful landscape. The volcano has visible influence on water rock interaction, fauna and flora. **Key words:** Water-rock interaction, CO_2 sequestration analogue, CO_2 dominated naturally sparkling groundwaters, Wonchi volano, mud pools.

POST-CONFERENCE EXCURSIONS

EXCURSION	DATES (DURATION)	LEADERS	ITINERARY	LOGISITCS	FEE (USD)	EXCURSION HIGHLIGHTS
Post-Conference Excursion 1. THE BLUE NILE GORGE	Jan. 15-16/2013 (2 days)	Mohammed Abdelselam, Dawit Lebenie	Addis Ababa-Debre Markos-Addis Ababa	All meals covered; 1 night at hotel on full board; means of transport: Bus	220	The Blue Nile Basin, situated in the NW Ethiopian Plateau, contains 1400m thick Mesozoic sedimentary section underlain by Neoproterozoic basement rocks and overlain by Early–Late Oligocene and Quaternary volcanic rocks. The purpose of this field trip is to observe the stratigraphic and structural setup of the Blue Nile Basin. The Blue Nile Basin has evolved in three main phases: (i) pre-sedimentation phase, include pre-rift peneplanation of the Neoproterozoic basement rocks, possibly during Palaeozoic time; (ii) sedimentation phase from Triassic to Early Cretaceous; (iii) post-sedimentation phase, including Early–Late Oligocene eruption of 500–2000m thick flood basalts and shield volcanics. The plateau was subsequently deeply incised which has unloaded upto 850 meters of rocks. **Key words:** Mesozoic sedimentation, Uplifting history, flood basalts, deep incision and origin of drainage basins, Blue Nile canyon and its origin.

Post-Conference Excursion 2. TERTIARY CONTINENTAL FLOOD BASALT AND VOLCANIC RIFT MARGIN	Jan. 15-22/2013 (8 days)	Dereje Ayalew, Gezahegn Yirgu	Addis Ababa-Bahirdar-Debark-Lalibela-Woldiya-Semera-Addis Ababa	All meals covered; 7 nights at hotels on full board; all entrance fees; means of transport: 4WDs	1280	The Ethiopian volcanic province in general and the flood basalts in particular are the youngest example of a major continental volcanic plateau. Because of their relatively young age and their eruption in a region where plate movements are slow, we find a complete record from the initial, high-flux, flood volcanic phase through to its shutdown and the onset of continental rifting, and finally the initiation of sea-floor spreading. The region represents an ideal situation to study the nature of the mantle source of continental flood volcanism and the manner in which magmas derived from this source interacted with the continental lithosphere. The purpose of this field trip is to observe the complete record of the volcanic province of Ethiopia and associated tectonic features, and resources. **Key words:** Continental flood basalt evolution; Simen Mountain National Park and rift margin and rift floor tectonics and volcanism.
Post-Conference Excursion 3. THE PRECMBRIAN GEOLOGY AND ASSOCIATED MINERALIZATIONS OF WESTERN ETHIOPIA	Jan. 15-19/2013 (5 days)	Tadesse Alemu, Kebede Hailu	Addis Ababa-Nekemt-Gimbi-Nejo-Addis Ababa	All meals covered; 4 nights at hotels on full board; means of transport: 4WDs	680	The Precambrian of western Ethiopia that extends northwards from 6^0N for about 650 kilometer is the largest Precambrian block in the country. It forms the western and wider branch of the low-grade volcano-sedimentary terrain of the Arabian-Nubian shield (ANS) bounded both to

						the east and to the west by the gneissic terrain of the Mozambique Belt (MB). The main objective of this field excursion is to visit areas where polyphase deformation and metamorphism have affected Precambrian layered and intrusive sequences and to get insight about the geodynamic evolution of the Precambrian basement of western Ethiopia. The excursion consists of observations of lithology and structures, and mineralization of critical outcrops exposed along the trip route.
Post-Conference Excursion 4. AFAR RIFT GEODYNAMICS, ERTA'ALE ACTIVE VOLCANO AND DALLOL	Jan. 15-22/2013 (8 days)	Tesfaye Kidane	Addis Ababa-Afdera-Erta'Ale-Dallol-Mekelle-Addis Ababa	All meals covered; 3 nights at hotels on full board; 4 nights camping; means of transport: 4WDs	1800*	Rift tectonics and active volcanism: rift faults and volcanic products, neo-tectonics, calderas and craters, rift margin architecture, tectonic and volcanic landforms; Erta'Ale active volcano, salt plains of the Danakil depression; discussion on the birth of an ocean.

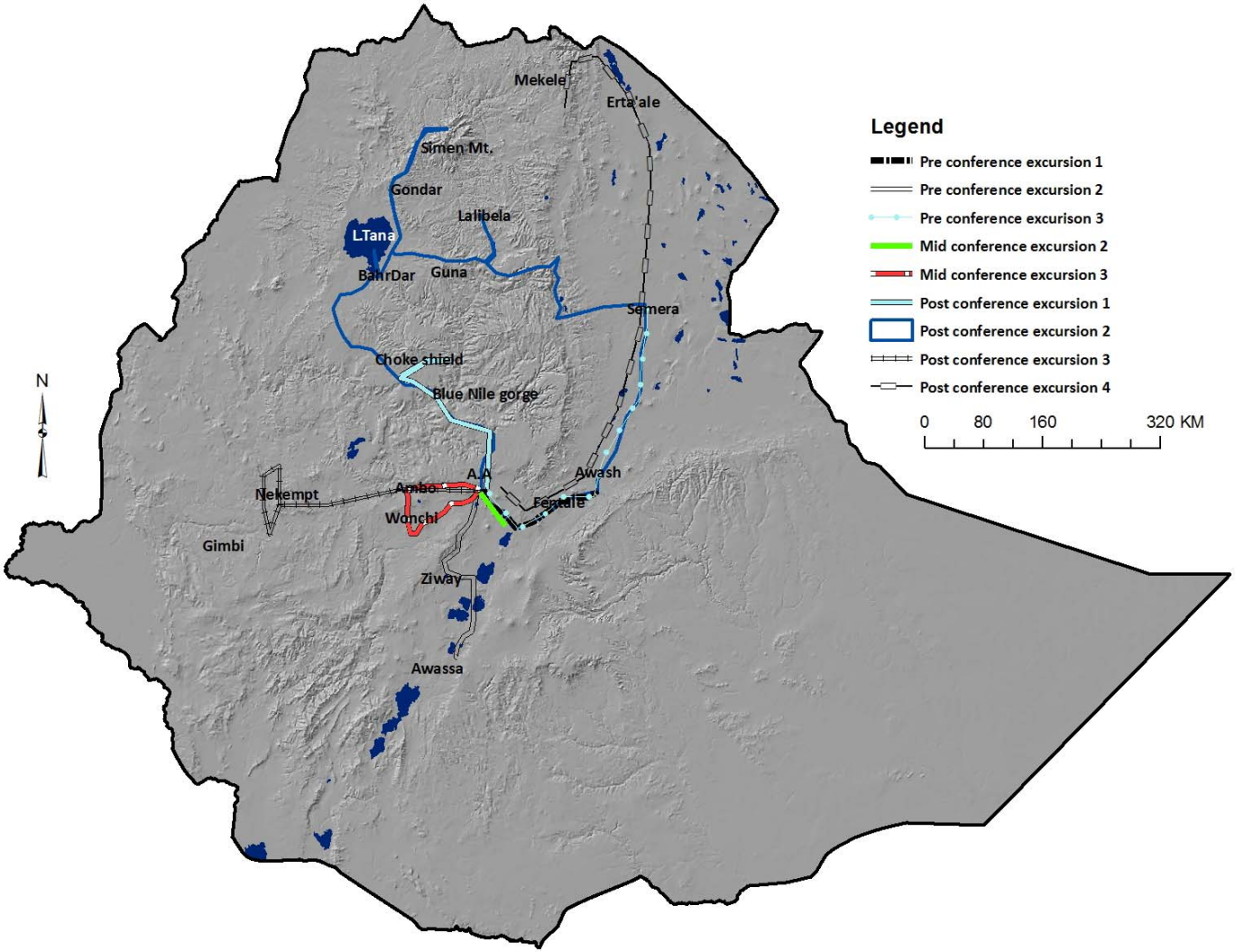
Notes:

In all excursions, the fees cover the following: hotel accommodation on full board (including all meals): double bed accommodation in best hotels in each destination; adequate bottled water supply during the trip; entrance fees where applicable. Tents and cooked foods will be provided where applicable. However, fees will not cover the following expenses: video charges where applicable, International flights, other expenses of personal nature like tips, telephone calls and laundry services.

Transportation: Excellent, conditioned Toyota 4WD Land Cruiser/Toyota Minibus (manufacturing year 2008 and later) with AC (Air Conditioner), seat belts, First aid kit, Fire extinguisher, Roof rack, Couple spare tires on off roads, Towropes and enough toolkits; Well-experienced English speaking drivers with prior experience of driving in the areas visited; comprehensive local insurance for the cars; local flight expenses covered where applicable.

*Minimum attendance must be greater than 7 participants, if not fee may increase to up to 2110 USD**.**

MAP OF FIELD EXCURSION ROUTES



DESCRIPTION OF FIELD EXCURSIONS

Main Ethiopian Rift:Fentale volcano (background) and historical basaltic lava flows

PRE-CONFERENCE EXCURSION 1. THE MAIN ETHIOPIAN RIFT

(January 6-7/2013)

Leaders:

Dr. Bekele Abebe, *School of Earth Sciences, Addis Ababa University, Ethiopia (bekelino_abe@yahoo.com)*

Dr. Giday Woldegabriel, *Los Alamos National Laboratory, USA (wgiday@lanl.gov)*

January 6/2013 (Day 1): Addis Ababa-Awash

Stop 1: Visit three Maar Lakes (subterranean explosion crater lakes) namely Bishoftu, Hora, Babogaya and an artificial Maar depression filling reservoir of Kuriftu by driving and walking around the Lake.

Stop 2: Between Mojo and Nazret: observe prominent normal fault features resulting in horst and grabens.

Stop 3: Just after Wolenchiti observe en echelon faults of the Wonji Fault Belt and while driving along the road observe the volcano segments of Boseti and Fentale.

Stop 4: Kone volcanic complex-observe nested caldera features, ash fall deposits, spatter cones and very recent lava flows.

Stop 5: Metahara: a) observe Fentale volcano (active volcano, last eruption in 1820) and the EW elongated caldera, b) observe active normal faults within the rift axis and their formation. Discuss the tectonic significance of the active normal faults (tension cracks); c) observe the blister caves (the Metehara blister cave field is the largest in the world).

Night in Awash Park.

January 7/2013 (Day 2): Awash-Addis Ababa

Stop 1: Observe the geology of Awash National Park (The Awash River falls, Fantale volcano; Tinishu Fentale, the Welded tuff plain, Blister caves; fissures, Sabober tuff ring, the recent and old lava flows; Lake Beseka and hotsprings) and its fauna.

Stop 2, 3 and 4: Sodere thermal springs and recreation (in a thermal water-fed swimming pool).

Additional details in: F. Williams (2006) *Geology of the Awash National park*.

Main Ethiopian Rift: Ziquala Silicic centre

PRE-CONFERENCE EXCURSION 2. QUATERNARY PALAEOENVIRONMENT AND GEOMORPHOLOGY IN THE MAIN ETHIOPIAN RIFT

(January 5-7/2013)

Leaders:

Dr. Balemwal Atnafu, *Addis Ababa University, Ethiopia (balemwal@yahoo.com)*

Dr. Agazi Negash, *Palaeoanthropology and Palaeoenvironment Program, Addis Ababa Unviersity, (agazi.negash@googlemail.com)*

January 5/2013 (Day 1): Addis Ababa-Butajira –Ziway

Stop 1: Guided tour of Melka Kunture Archeological Site (famous Paleolitic site).
Stop 2: Visit Tiya Stelae site (a UNESCO World Heritage site).
Stop 3: Observe foothills of the Gurage Mountains and associated marginal grabens; at Butajira discuss geologic and tectonic features and evolution of the rift.
Stop 4: Observe the Siltie Debrezeyit tectonic features (horst and graben structures and faults) with stop at Koshe town.
Stop 5: Stop at Gademota vantage point and observe the rift floor and associated Lakes, Lake sediments and volcanic products and associated volcano-tectonic structures.
Night in Ziway

January 6/2013 (Day 2): Ziway-Hawassa

Stop 1: Observe Paleo Lake strandlines around western Ziway caldera or Meki.
Stop 2: Observe the Bulbula River section south of Adami Tulu and walk down to the river floor to see the Holocene and Pre-Holocene surfaces and the volcanic products at the Lake sediments.
Stop 3: Observe the Bulbula section at Bulbula Bridge. A section widely documented for its record of Holocene and Pre-Holocene Lake Level fluctuations.

Stop 4: At the Abiyata-Shalla National Park, observe two of the Lakes (Langano and Shalla) and thermal springs at closer distance; walk down to Lake Shalla and see the Lake, thermal springs and the Ajewa lake sediment section.

Stop 5: At Langano-Arsi Negele vantage point observe the four rift valley Lakes and discuss the history of Lake Level fluctuation and its paleo-climate significance.

Stop 6: Observe Lake Hawassa: Balchi volcano, fumeroles and thermal springs in the Lake Hawassa caldera.

Night in Hawassa

January 7/2013 (Day 3): Hawassa-Addis Ababa

Stop 1: Visit Wondogent thermal springs; Landslide features in rift margins, and from a vantage point observe the Lake Hawasa Caldera.

Stop 2: Observe ground fissures in soft sediments between Meki and Ziway; discuss their origin and significance.

Stop 3: Lake Koka area and associated agro-business development; observe the prominent Ziquala central volcano.

Stop 4: Observe Maar Lakes and Maar depressions of Bishoftu, discuss their hydrology and paleoclimate significance as well as their water resources significance.

Night in Addis Ababa.

Hominid fossil bearing sediments and tuffs from Woranso-Mille, Afar

PRE-CONFERENCE EXCURSION 3. PALAEOANTHROPOLOGICAL SITES (HUMAN ORIGINS AND PALEOENVIRONMENT)

(January 4-7/2013)

Leaders:

Dr. Yohannes Haile-Selassie, *Cleveland Museum of Natural History, USA (yhailese@cmnh.org)*

Dr. Berhane Asfaw, *Rift Valley Research Center, Addis Ababa, Ethiopia (ramideth@gmail.com)*

Dr. Mulugeta Alene, *School of Earth Sciences, Addis Ababa University, Ethiopia (mulugeta_alene@yahoo.com)*

January 4, 2013 (Day 1): Addis Ababa-Semera

The group will leave Addis Ababa early in the morning and spend a night in Semera, the capital of the Afar Regional State.

January 5, 2013 (Day 2): Semera –Weranso Mille-Semera

The group will leave Semera early in the morning and drive to the Woranso-Mille study area. The first stop will be at the locality where "*Kadanuumuu*" was discovered. This will be followed by a visit to the localities on the north side of the Mille River. The group will drive back to Semera at the end of the day.

January 6, 2013 (Day 3): Semera-Hadar-Semera

The group will leave Semera early in the morning and drive to Hadar via Eliwoha. The first stop will be at the new Hadar town followed by a trip to the locality where Lucy was found. At the end of the tour, the group will drive back to Semera.

January 7, 2013 (Day 4): Semera-Addis Ababa

The group will leave Semera for Addis Ababa and that will be the end of the trip.

A crater lake (Maar) in Debre Zeit; the Yerer silicic centre at the background

MID-CONFERENCE EXCURSION 2. GEOLOGY OF ADDIS ABABA AND VOLCANIC MORPHOLOGY

(January 11/2013)

Leader:

Prof. Gezahegn Yirgu, *School of Earth Sciences, Addis Ababa University, Ethiopia (gezahegnyirgu@yahoo.com)*

Dr. Tadewos Chernet, *Geological Survey of Ethiopia*

Dr. Dereje Ayalew, *School of Earth Sciences, Addis Ababa University, Ethiopia (dereayal@yahoo.com)*

January 11/2013: Addis Ababa-Debre Zeit-Addis Ababa

Stop 1: At Entoto (rift shoulder): observe the Addis Ababa rift embayment; the various volcanic landforms such as central volcanoes (Ziquala; Yerer, Wachaca, Furi), scoria cones alignments and observe the city of Addis Ababa and its landscapes and extents; Visit the famous 20th century seat of Ethiopian King Menelik at Entoto; Visit the Filwuha thermal springs and discuss their origin.

Stop 2: At Dukem observe closely the Ziquala central volcano and Yerer volcano; observe the scoria cones and spatter cones dotting the area; discuss their significance.

Stop 3: Visit three Maar Lakes (subterranean explosion crater lakes) namely Bishoftu, Hora, Babogaya and an artificial Maar depression filling reservoir of Kuriftu by driving and walking around the Lake; some of the Maar lakes have been cored and some of them returned annually laminated lake sediments which contributed to high resolution palaeoclimate reconstruction; the Lakes are groundwater fed; discuss classic example of isotope hydrology based investigation of the hydrology of the Lakes.

The Wonchi Caldera

MID-CONFERENCE EXCURSION 3. WONCHI VOLCANO AND THERMAL SPRINGS

(January 11/2013)

Leader:

Dr. Seifu Kebede, *School of Earth Sciences, Addis Ababa University, Ethiopia (seifukebede@yahoo.com)*

Dr. Tsegaye Abebe (*tsegaye.abebe28@gmail.com)*

January 11/2013: Addis Ababa-Ambo-Wonchi-Woliso-Addis Ababa

Stop 1: At Ambo, 125 Km west of Addis Ababa, visit the unique naturally sparkling thermal springs; springs emerging at the foothill of the Wonchi Volcano are CO_2 rich, mildly acidic but with high HCO_3 content. Discuss carbonate disequilibria in the thermal waters; observe associated travertine deposits (active and relict). Origin of the thermal springs relate to heating from dykes that have produced the Wonchi volcano, CO_2 gas coming from metamorphic de-carbonation of underlying Mesozoic sediments. Significance of the springs in understanding the Impacts of carbon capture and storage has been noted.

Stop 2: At a vantage point at Altufa (10 Km along Ambo Woliso road) observe the E-W running Ambo fault (500 meter throw) and having similar orientation as the southern Margin of the Afar rift and Gulf of Aden Rift.

Stop 3: From the summit of Wonchi volcano (3500 m asl), observe the beautiful and spectacular landscape of the rim of the volcano.

Stop 4: At another point observe the lake, its monasteries and spectacular landscape; observe the Afro-Alpine trees near the apex of the Wonchi volcano; discuss about the bathymetry of the Lake, its hydrology, observe landslide scars and drowned trees.

Stop 5: At Darian, walk 2 Kms and observe active deposition of silica and iron oxide associated with thermal springs and discuss its significance in understanding carbon capture and storage impact.

Stop 6: At Woliso - Negash Lodge, observe basalt dykes and associated thermal waters; on the way to Addis, short stop at Awash Bridge to observe the Becho plain and headwaters of the Awash River (the only inland drainage in Ethiopia).

The Blue Nile Gorge

POST-CONFERENCE EXCURSION 1. THE BLUE NILE GORGE

(January 15-16/2013)

Leaders:

Prof. Mohamed G. Abdelsalam, *Department of Geological Science & Engineering, Missouri University of Science and Technology, USA (abdelsam@mst.edu)*

Dr. Dawit Lebenie, *Gondar University, Ethiopia (dawit_leb@yahoo.de)*

January 15/2013 (Day 1): Addis Ababa-Debre Markos

Stop 1: At Debrelibanos observe the Jema valley section; Portugese bridge of 17th Century, visit Debrelibanos monastery and its historical significance.

Stop 2: From vantage point at Goha Tsion, observe the spectacular Blue Nile Canyon (second largest next to the famous Colorado Canyon and first in Africa). Discuss the Mesozoic sedimentary section from at the vantage point.

Stop 3: With short stops at various localities, observe closely and rapidly the sedimentary sections, associated fossils, sedimentary structures.

Stop 4: On the way to Dejen, observe the mega Landslide body and its significance for road construction and its implication to desiccation of the Blue Nile Plateau.

January 16/2013 (Day 2): Debre Markos – Addis Ababa

Stop 1: Drive up the Choke Shield volcano, 40 Km east of Debre Markos, and observe the geologic history of the shield volcano, inter-Trappean sediments.

Stop 2: On Dejen plain, observe volcanic soils (black cotton soils) and discuss their significance in civilization of the Nile Valley.

The spectacular landscape of the Simien Mountains (Simien Shield)

POST-CONFERENCE EXCURSION 2. TERTIARY CONTINENTAL FLOOD BASALT AND VOLCANIC RIFT MARGIN

(January 15-22/2013)

Leaders:

Dr. Dereje Ayalew, *School of Earth Sciences, Addis Ababa University, Ethiopia (dereayal@yahoo.com)*

Prof. Gezahegn Yirgu, *School of Earth Sciences, Addis Ababa University, Ethiopia (gezahegnyirgu@yahoo.com)*

January 15/2013 (Day 1): Addis Ababa-Abay Gorge-Bahrdar

Stop 1: Blue Nile Gorge and the Mesozoic section.

January 16/2013 (Day 2): Lake Tana (Source of the Blue Nile River) and ancient monasteries and Geology

Stop 1: Visit Lake Tana Monasteries; discuss origin of Lake Tana and its desiccation history.
Stop 2: Drive to Gondar and night in Gondar.

January 17/2013 (Day 3): Gondar-Simen Mountains-Gondar

Stop 1: drive down the famous Limalimo Section; observe the famous Limalimo section with its thick pre-rift flood basalts sequence; this will be the occasion to discuss the mantle

plume related volcanic eruption history that led to the plateau formation by erupting flood basalts and uplifting basement; observe spectacular erosional landscape.

Stop 2: Visit Simien Mountains National Park, a world Heritage site with spectacular erosional landscape; watch endemic fauna of Ethiopia (Ethiopian Wolf, Gelada Baboons and Walia Ibex).

January 18/2013 (Day 4): Gondar-Lalibela

Stop 1, 2, and 3: On the way to Lalibela observe and discuss desiccation history of the Nile and Tekeze rivers; observe volcanic landscapes and stratigraphy of the Ethiopian Plateau.

January 19/2013 (Day 5): Lalibela-Woldia

Stop 1: Visit Lalibela rock hewn churches, excavated into scoriaceous basalts. The churches are UNESCO World Heritage Sites; holiest places which attract pilgrims thoughout the year particularly in December during the Ethiopian Christmas.

Stop 2: Marginal Graben: observe marginal graben of Kobo and discuss its tectonic evolution.

January 20/2013 (Day 6): Woldia-Haik-Semera

Stop 1, 2, 3: Selected stops on a traverse down into the Afar depression with time to discuss the morphotectonic evolution of the marginal graben, the structure, preservation and dissection of the flexure margin, the syn-rift volcanic and Afar depression basins.

January 21/2013 (Day 7): Semera-Awash

Stop 1: Observe the Afar Rift active magmatic segment and discuss the structure and petrology of the stratoid volcanic formation.

Stop 2: Visit the famous Awash River Valley and associated hominid fossil bearing formations and the famous site where *Australopiticus Afarenis* (3.2 million years) has been discovered in 1974.

Night in Awash Park

January 22/2013 (Day 8): Awash-Addis Ababa

Stop 1: Observe Awash National Park and its fauna.

Stop 2, 3 and 4: Observe structures and volcanism associates with normal faults of the Fentale, Kone and Bosetic magmitc segments.

Yubdo dunite-brbirite complex

POST-CONFERENCE EXCURSION 3. THE PRECAMBRIAN GEOLOGY AND ASSOCIATED MINERALIZATIONS OF WESTERN ETHIOPIA

(January 15-19/2013)

Leaders:

Mr. Tadesse Alemu, *Geological Survey of Ethiopia, Ministry of Mines, Ethiopia (tadessealemu@yahoo.com)*

Dr. Kebede Hailu, *NYOTA Minerals, Ethiopia (etgis@ethionet.et)*

January 15/2013 (Day 1): Addis Ababa-Nekemte

Leave Addis Ababa after breakfast for Nekemte. Some stops in between for refreshment. Overnight stay at Nekemte

January 16/2013 (Day 2): Nekemte-Gimbi-Inango-Daleti

Stops at exposures of different migmatites and appreciate the migimatization process from early up to complete stage where rocks melted with formation of granites. Observe and discuss about the NW-trending Didesa Shear Zone and make observations on how strain partitioned from brittle deformation to ductile deformation.

Departure from Nekemte early morning; Stop 1: Didesa Bridge; Stop 2: Abasina village; Stop 3: Ihud Gebeya; Lunch in Gimbi; Stop 4: Inango; Stop 5: Daleti; Overnight stay at Gimbi.

January 17/2013 (Day 3): Gimbi-Homa-Ganjii-Tulu Kapii-Yubdo-Guliso

Stops at exposures of the 780-760 Ma old Homa peralkaline granitic gneiss (older anorogenic granitoid magmatism in the Precambrian basement of western Ethiopia); the Ganjii monzogranite (the younger within-plate granitoid emplaced at ca. 620-625 Ma); Tulu Kapii syenite; the Yubdo mafic-ultramafic rocks and associated PGE mineralization; the Guliso metasediments.

Departure from Gimbi early morning; Stop 1: Homa area to visit the exposures of granitic gneiss; Stop 2: Ganjii village to visit exposures of Ganjii granitoids; Stop 3: Tulu Kapii area to see the gold mineralization associated with the syenite intrusives and pay a visit to the on-going gold mining activities in the area conducted by NYOTA Minerals Ltd.; Lunch in Tulu Kapii; Stop 4: Yubdo mafic-ultramafic complexes and a visit to Platinum mining site; Stop 5: Guliso metasediments; Overnight stay in Guliso.

January 18/2013 (Day 4): Guliso-Bila-Tulu Dimtu-Kemeshi-Agelo Meti

Stops to visit critical exposures of Abshala mélanges and the Tulu Dimtu thrust-fold belt. The Tulu Dimtu thrust-fold belt is a prominent deformational belt which is comprised of a NNE-trending fold and thrust/shear belt overprinted by a NW-SE strike-slip faults/shear zones. It is characterized by a variety of lithological units, including metamorphosed volcanic, volcaniclastic and sedimentary successions with associated mafic-ultramafic rocks of probable ophiolitic origin, and granitoid intrusives.

Departure from Guliso early morning; Stop 1: Kemeshi junction to Tulu Dimtu road section; to see the relationships between the Guliso formation and the Tulu Dimtu mafic-ultramafic rocks. To demonstrate the lithological association of the Abshala mélanges; Stop 2: Abshala River to see the tectonics of the Abshala mélanges, and climb the Tulu Dimtu hill to see the serpentinized dunite and associated chromium and nickel mineralization; Box lunch somewhere on the Tulu Dimtu hill; Stop 3: Sayi river; visit exposures of basic metavolcanics, which are variably sheared and deformed; Stop 4: Agelo Meti area; to visit outcrops showing fold and thrust structures; Overnight stay in Nejo.

January 18/2013 (Day 5): Nejo-Addis Ababa

Arrival at Addis Ababa and transfer to Hotel.

Erta'ale volcanic lake

POST-CONFERENCE EXCURSION 4. AFAR RIFT GEODYNAMICS, ERTA'ALE ACTIVE VOLCANO AND DALLOL

(January 15-22/2013)

Leaders:

Dr. Tesfaye Kidane, *School of Earth Sciences, Addis Ababa University, Ethiopia (tesfayek@yahoo.com)*

January 15/2013 (Day 1): Addis Ababa-Awash

Departure early morning from Hotel and drive to Awash; a break in Debre Zeit (Bishoftu) to visit some maar craters and stop over for lunch in Nazareth (Adama); stop 1 at Kone Caldera; stop 2 at Beseka Lake, at the foot of Fantale volcano, close to Metehara, and short walk to see some of the open normal faults; overnight in Awash National Park (at the Awash Fall Lodge ideally situated close to the Awash fall).

January 16/2013 (Day 2): Awash-Semera

Early morning: visit in the Awash National Park; drive to Semera after breakfast; stop 1: MER margin fault; Lunch in Gewane; stop 2: Afar Stratoid exposure; stop 3: SW Tendaho Graben (close to the Tendaho Dam); overnight in Semera.

January 17/2013 (Day 3): Semera-Afdera

Drive towards Afdera (after breakfast and some official arrangements in Semera); a short stop at Serdo village (which has been destroyed by the 1969 Earthquake of magnitude 5.9); stop 1: NE border of Tendaho Graben; top 2: Manda Hararo Rift; Stop over for lunch at Silsa; visit the Afdera Salt Mining site; overnight in Afdera (camp at the lake shore).

January 18/2013 (Day 4): Afdera-Erta'ale

After breakfast and official arrangements leave for Erta'ale; stop over at Kusowad among the basalts for lunch and arrange for camels and guides; drive to the base of Erta'ale; climb to the Erta'ale summit on foot starting late afternoon; set camp on Erta'ale summit and dinner.

January 19/2013 (Day 5): Erta'ale

Erta'ale visit (the main crater, the southern crater, walking around the summit, etc.); overnight in Erta'ale camp.

January 20/2013 (Day 6): Erta'ale-Hamedella

After breakfast descent from Erta'ale camp to base camp rejoining the vehicles and drive to Hamedella (Dallol); overnight in Hamedella (camp).

January 21/2013 (Day 7): Dallol-Mekelle

Visit of the Dallol area in the morning (Dallol volcano, salt caravans, etc.); have a lunch box in Dallol; drive towards Mekele in the afternoon; overnight in Mekelle.

January 22/2013 (Day 8): Mekelle-Addis Ababa

Transfer to Mekele Airport; flight back to Addis Ababa; on Arrival at Addis Ababa transfer to Hotel.

GSAf ANNOUNCEMENT

ANNOUNCEMENT FOR CAG25 BID BY A EUROPEAN COUNTRY

The Colloquium of African Geology takes place every two years. The last one (CAG23) was in Jan. 2011 at the University of Johannesburg, South Africa. At that time Ethiopia won the bid and the CAG24 is being organized by the Ethiopian Geoscience and Mineral Engineering Association (EGMEA) under the auspices of the GSAf, and will take place at the UNECA Conference Center in Addis Ababa, Ethiopia in January 2013. Traditionally it was necessary to have the Colloquium within the 2 years period. However, because of the world soccer games in July 2010 which was held in South Africa, it was postponed from July 2010 to January 2011 and as a result the coming Colloquium is also set for January 2013. The present GSAf Council is elected to serve until the end of the Colloquium (CAG24) and it will present itself for re-election or new council members (partly) will replace it during an election that will be conducted during the 14th Conference of the Geological Society of Africa, which should also take place during the Colloquium. According to our constitution and the decision of the General Assembly of the GSAf at a meeting held during the 13th Conference of the GSAf in Johannesburg, the next Colloquium (CAG25) will take place in Europe in 2015 (if we keep the two year term) or a bit earlier during the summer (in 2014). Therefore, we would like to inform all our European members and institutions about the possibility of submitting a bid to organize the next Colloquium. It is important that **those who are interested should inform the GSAf president (mogessie@uni-graz.at) before, 31 July, 2012.** Once we know which countries have shown interest, we will ask them to **start preparing a detailed bid which will be presented to the GSAf Council members the latest by November 15, 2012.** Based on the bids, three countries will be selected to present their bids at the 14th Conference of the Geological Society of Africa during the CAG24 in Addis Ababa, Ethiopia and the members of the GSAf based on the bid presentation will make the final decision.