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## REPORT

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### **PARTICIPATION OF THE MEDICAL GEOLOGY GROUP AT THE EUROPEAN GEOSCIENCES UNION (EGU) INTERNATIONAL MEETING**

**VIENNA, APRIL 8<sup>TH</sup> – 13<sup>TH</sup>/2018**

**Prepared by**

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## **I) GENERAL INFORMATION**

### **1) Medical Geology in brief**

Medical Geology is a complex field of science that requires multi/inter/cross-disciplinary approaches, bringing together experts from various fields of science, including geology, biology, geography, biochemistry, toxicology, epidemiology, etc. Recent advances in science and technology continue to prove that the geology of an area can have direct impacts on the regional input of elements and minerals into the soil, air, and water. Depending on the composition and concentration, these inputs may result in beneficial or harmful health effects in humans, animals and plants. Therefore, by understanding the geological history and background of our environment, we will be able to contribute to better and deeper insight into our understanding of a range of natural hazards that can affect (directly or indirectly) our health and that of animals and may result in mitigation and even prevention of some widespread and serious health problems.

### **2) Status of Medical Geology at the University of Johannesburg**

Since 2013, Medical Geology at the University of Johannesburg, South Africa has seen a significant growth through training of Postgraduate students from all over Africa. It started with one part-time South African MSc student in 2013 sponsored by the Council of Geoscience, and evolved into 2 full-time Kenyan MSc students in 2015 sponsored by the University of Johannesburg through the prestigious Global Excellence and Stature (GES) Program awarded to top students, and then evolved to a more Pan-African initiative in 2018 with 12 Postgraduate students representing 5 African countries including Kenya, Ghana, Namibia, Nigeria and South Africa. The University of Johannesburg became the main destination hosting most of these postgraduate students jointly supervised by colleagues from various departments (Geology and Applied Chemistry) from the Faculty of Science at the University of Johannesburg and colleagues from a number of other African and non-African countries including Portugal, Sweden, Australia, UK, USA, Nigeria, Namibia and Ghana. The rest of the students of the Medical Geology group are based and jointly supervised at other Universities in South Africa including so far Witwatersrand and Venda Universities.

The main sponsors of these students are the National Research Foundation (NRF) (bursaries) through a collaboration funds granted to Hassina Mouri for 2 years (2017-2019) and the University of Johannesburg (running costs) with support from all other universities and organizations involved in the supervision including the Council for Geoscience (CGS) and PARC RGM Radon Gas monitoring (Pty) Ltd.



The Medical Geology Team at the 1<sup>st</sup> seminar held on the 1<sup>st</sup>/12/2017 at UJ

### 3) The European Geosciences Union General Assembly (EGU) Meeting in general and EGU 2018 in numbers

The European Geosciences Union (EGU) General Assembly 2018 is one of the largest international geosciences meetings, which bring together experts from all over the world covering all disciplines of the earth, planetary and space sciences. The conference aims to provide a forum where scientists, especially early career researchers and postgraduate students, can present their work and discuss their ideas with experts in all fields of geoscience. The postgraduate students shall be attending the conference as main authors and presenters of their on-going projects.

The conference was held from the 8<sup>th</sup> to the 13<sup>th</sup> of April 2018, at the Vienna International Centre, Austria. For the year 2018, over 15000 scientists from 112 countries participated, featuring 4,776 oral, 11,128 posters, and 1,419 PICO presentations ([www.egu2018.eu](http://www.egu2018.eu)). Furthermore, 68 short courses and 294 side events were hosted together with 666 unique scientific sessions and Medical Geology was one of them hosted and convened for the first time in this event by Hassina Mouri (SA) (convener), and co-conveners Brenda Buck (USA), Olle Selinus and Prosum Bhattacharya (Sweden), and Carla Candeia (Portugal).



The group on their 1<sup>st</sup> day at the EGU venue



#### 4) Purpose of attending EGU Meeting

Attending EGU meeting provides students with an opportunity to learn more about the latest technologies and developments in Earth sciences in general and Medical Geology, their field of interest more specifically. In addition, it helps them in their research productivity through the identification and application of cutting-edge solutions to current challenges. Their attendance at this international meeting gives the University of Johannesburg important exposure, access to exhibits and presentations from many other organizations within the geoscience community, allowing gaining valuable information about what other institutions are doing and where they are focusing their efforts, especially in terms of sustainable development and wellbeing using natural resources such as minerals and water in Africa. This is especially important given the mandate of the University of Johannesburg to becoming a Pan-African and leading international institution of learning with emphasis on cutting-edge research outputs as well as partnership with other organizations in the development of new applications.

#### 5) Sponsors

**Eight** postgraduate students (7 from UJ and 1 from Wits University) were sponsored to attend the EGU. The students registered at the University of Johannesburg were sponsored by the UJ division of the International Office and the student from Witwatersrand University was sponsored by the International Council for Science Union-Regional Office Africa (ICSU-ROA) and the Geological Society of South Africa (GSSA) and Prof Mouri, was sponsored by the National Research Foundation KIC program.



## II) PREPARATION TOWARDS THE EGU MEETING

### 1) Abstracts preparation, submission, and acceptance

All the students prepared their abstracts and submitted to EGU in December 2017. All abstracts were successfully accepted in January 2018. For posters presentations, in addition to an abstract by Hassina Mouri, which was accepted for an oral presentation.

#### List of students who attended the meeting, abstracts titles and co-authors

The table below shows the medical geology students, their abstracts information and co-authors as submitted to EGU. The PhD students are at their 1<sup>st</sup> year and the MSc are at the 2<sup>nd</sup> year of registration.

<b>Student name (Country of origin)</b>	<b>Current degree/ affiliation</b>	<b>Supervisor/ affiliation</b>	<b>Co-authors of the abstract/ Affiliation</b>	<b>Abstract title</b>
P. Gevera (Kenya)	1 <sup>st</sup> Year PhD/UJ	H. Mouri/ UJ		High fluoride and dental fluorosis prevalence: A case study from Nakuru area, Kenyan Rift Valley
C. Pretorius (South Africa)	MSc/UJ	H. Mouri/ UJ	M. Cave Medical Geology/ British Geological Survey, UK and Dr. J. Piennaar/ State Veterinarian, Beaufort West, SA	The possible geological sources of chronic copper poisoning of sheep in some specific farms of the Karoo Basin, South Africa
E. Ahlijah (Ghana)	MSc/UJ	H. Mouri/ UJ	E. Arhin/ UDS, Ghana) and C. Candeias/ University of Porto and University of Aveiro, Portugal	Geophagy and related health implications: a case study from Anfoega in the Volta region and Mfensi-Adankwame in Ashanti region of Ghana
M. Sanyaolu (Nigeria)	MSc/UJ	H. Mouri/ UJ	M. Odukoya/ University of Lagos, Nigeria, and O. Selinus/ Linneaus University Sweden	Possible geogenic causes of goiter occurrence in the coastal and sedimentary environments of SW Nigeria: A case study of Badagry Lagos
S. Kambunga (Namibia)	MSc/UJ	H. Mouri/ UJ	Mr. Israel Hasheela /Geological Survey of Namibia and Prof. Carla Candeias/ University of Aveiro and University of Santiago, Portugal.	Geophagy during pregnancy and its possible health impacts: A case study from Onangama village Northern Namibia
M. Sihlahla (South Africa)	MSc/UJ	P. Nomngongo/ UJ	H. Mouri/ UJ	Assessment of extraction, bioavailability, distribution, contamination and health impact of some potential harmful elements in environmental matrices collected from selected areas in Eastern Cape Provinces
P. Moshupya (South Africa)	MSc/ Wits	T. Abiye/ Wits	H. Mouri/ UJ Dr Levin /Private Consultant	The uranium and radon gas concentration and impact on human health: A case from abandoned gold mine tailings in the West Rand area, Krugersdorp, South Africa.
G. Okereafor (South Africa)	PhD/ UJ	E.M Makhatha/ UJ	V. Mavumengwana and H. Mouri / UJ	Assessment of the impacts of mine tailings from a South African Gold mine: an example from Blesbokspruit conservation trust, Springs, Ekurhuleni

## 2) Funding applications

Hassina Mouri applied to the following offices/organisations to cover the costs of attendance to this meeting:

- Short-term study abroad program through the International Office at the University of Johannesburg to cover the costs of the 7 students registered at UJ,
- NRF-KIC program for Hassina Mouri expenses and
- GSSA and ICSU-ROA to cover the costs of the Miss Paballo Moshupya a jointly supervised student registered at Wits university and sponsored by NRF collaboration grant allocated to Hassina Mouri in 2016.

All applications were successful. The funding covered all costs incurred during the trip for all students and Hassina Mouri. The total income from all sponsors was **R144683** and the total expenses for the trip was **R141970**. The budget plan was successfully achieved.

## 3) Visas procurement

The application process for the Austrian (Schengen) visa involved compiling the following documents: conference registration (proof of payment), invitation letter, confirmation of accommodation in Vienna, travel itinerary and insurance. All the students and Hassina Mouri submitted their visa applications to the Austrian embassy in Pretoria on 1<sup>st</sup> of March 2018, and the visas were all successfully approved and collected before the day of departure.

## 4) Poster preparation

All the eight students attending the conference presented their work through posters. The preparation involved draft presentations of their works submitted for corrections, and finally printing. The posters sizes were 1420 x 900 mm and printed on gloss papers.



Final check of the posters after printing (Thursday 06/04/2018 for a departure planned on 09/04/2018- all is set and ready for the expedition)

### III) DEPARTURE FROM JOHANNESBURG AND ARRIVAL TO VIENNA

#### 1) Departure from UJ APK: 9<sup>th</sup> April 2018

The departure for Vienna took place on Monday 9<sup>th</sup> of April 2018 using Ethiopian Airlines, via Addis Ababa Ethiopia. The transport to the airport was assured by the Transport Department of the University of Johannesburg. Prior to the departure, all adjourned at the Geology Department at 10:30 am for final check-up meeting by Hassina Mouri.



The excitement moments, the “group hug” and pre-departure final check: At UJ-APK on the way to Airport



## 2) Arrival to Vienna: 10th April 2018 - Tuesday

The students arrived to Vienna around 5 a.m. on Tuesday 10<sup>th</sup>/04/2018. After which they all headed towards the meeting venue at Vienna International Centre around 7a.m. to register for the meeting. Between 11a.m. to 2p.m., they went out to the nearest shopping mall (SPAR) to their accommodation to shop for groceries and food items that they will need during their stay in Vienna. They had some rest and then went for a walk in order to familiarize with the neighbourhood.

## 3) Accommodation: Oberer Augartenblick apartments

All students were booked to stay in a fully furnished self-catering, very welcoming “*feel at home*” Oberer Augartenblick apartments located at Wasnergasse 11, 1200 Vienna, Austria. The idea of organising a common accommodation is also part of the training of the students. This purpose was to socialise and get to know each other as a group. In addition, students were advised to do their shopping for all they need for food and every evening a team is on duty for cooking while others are relaxing.



Outside and inside the apartment...



It looks like: Coffee and relaxing time for the boys and cooking for the girls ☺...!!

## IV) The EGU Program

### Day 1: 10<sup>th</sup> April 2014

On the afternoon of Tuesday 10<sup>th</sup>/04, we attended the following talks:

- Daily and half-daily periodicities of radon in an enclosed 120cm pipe by Orr Rose Bezaly, Peter Kotlarsky, Tal Asperil, Oksana Piatibratova, Uri Malik, Peter Israelevich, Gideon Steinitz, and Shmuel Marco.
- Atmospheric Radon in a marine environment: a novel approach based on airborne gamma-ray spectroscopy by Marica Baldoncini, Matteo Albéri, Carlo Bottardi, Brian Minty, Kassandra Raptis, Virginia Strati, and Fabio Mantovani.
- Simultaneous monitoring of soil radon concentration and gamma radiation in air by Susana Barbosa, Xuemeng Chen, Diana Guimarães, and Catarina Monteiro.
- The Effect of Geology on Distribution of the Radionuclides in the Eastern Pontides, (Trabzon-Rize Region and its vicinity) by Mustafa Softa, Hasan Sözbilir, Tahir Emre, Joel Spencer, Sebastien Huot, and Mehmet Turan.

### Outcomes

This session highlighted various methods of measuring radon in different environmental settings, also the importance of understanding the parameters controlling radon concentrations. Students realized that there are many problems associated with radon and there are different techniques used in monitoring radon in the environment. From this session, students had an idea of what poster presentation entails and a foreknowledge of what is expected of them during our session scheduled for Friday (Poster presentation). This session was very relevant especially to Paballo who is working on radon.

At the end of the day, the group had an outing to the 57 level restaurant lounge, where we had a meeting with Dr Cave, a collaborator and co-supervisor from the British Geological Survey, UK with whom we shared and discussed our projects and the way forward.



Listening carefully to the discussions between Prof Mouri and Dr Cave on our projects



At 57 Level Restaurant Lounge—up the stairs to 57<sup>th</sup> floor ☺ and enjoying the view from the top..

## Day 2: 11th April 2018

The group attended talks at the following session:

1. 08:30-12:00, Data fusion, integration, correlation and advances of non-destructive testing methods and numerical developments for engineering and geosciences applications.
2. 08:30–10:00, Oral session on Assessing the Critical Zone functioning and reconstructing its evolution, based on soils and sediments, interpreting the geochemical composition of soils and sediments with respect to provenance, palaeoenvironments and pollution (co-organized).
3. 10:30–12:00, PICO presentations: Water, climate, food and health (co-organized)
  - a. (b) 10:30-12, Serious game of Natural Hazard.
4. Orals, 13:30–15:00, Assessing the Critical Zone functioning and reconstructing its evolution, based on soils and sediments, interpreting the geochemical composition of soils and sediments with respect to provenance, palaeoenvironments and pollution (co-organized).
5. 15:30 – 16:00 Volcanism and climate.

## Outcomes

1. (a) Learning how data could be integrated and correlated for geological and engineering interpretation. (b) Students derived vital information on how geochemical and isotope data can be applied in the critical zone as a tool for tracing water masses and detect mixing relationships.
2. Presentation on topics on the major environmental and health issues affecting global population. The focus was on water, climate, food and health related issues. Students found this section interesting and relevant to the projects in the medical geology field.
3. This is what students called the ‘Geogame,’ which creates an avenue for interaction among participants. This game requires critical reasoning on life threatening geohazards issues. Participants were divided into four main group representing, the

government both at regional and local level, the media, the science community and the population concern. Each group was given a task to develop a risk assessment and hazard mitigation plan for geohazards in a known geographic environment with active volcanic activities. Our role does not only stop at identifying geohazards and the health impacts on the population. We should also work with other bodies like government and media to have a better plan for mitigating some of the health issues posed on people by the natural environment. The group found this game very interesting and educating and we plan to incorporate the idea into our upcoming Medical Geology Symposium in November 2018.

4. This session provided a clear indication of how metal emission caused by anthropogenic activities becomes a major problem to water resources, as such understanding the distribution of these pollutants from point emission and diffusive sources is of importance in the water quality studies. Various approaches on how to investigate changes on water chemistry and evolution were also outlined. The stable isotopes of Cu, Pb, and Zn were found promising to be good indicators to track pollutants in addition to hydro-chemical modelling and reactive transport modelling. From this session, it was also indicated that geological attributes at a large-scale result in diffusive pollution. Therefore it is important to characterize the over abundant trace elements found to occur in the environment; bringing a new focus for future research as this are problems faced worldwide.
5. This session indicated how degassing of volcanoes impact on the climate, the air quality environment and health. The exposure to these gases results in hundreds of thousands of deaths.

### **Day 3: 12th April 2018**

The group attended talks from the following sessions:

1. 8:30 – 10:00, Groundwater - Surface Water interactions: biogeochemical and ecological processes
2. 10:30-12:00, Air Pollution
3. 12: 00 to 13: 30, EGU Early Career Scientists forum.
4. 13:30-15:00, Debate on natural vs anthropogenic threats to life on earth.
5. 15:30 – 17:00, Coastal zone geomorphologic interactions nature vs human induced driving factors.
6. 17:30-19:00 (Poster session)

### **Outcomes**

1. This session included talks on physical, ecological, and biogeochemical processes and interactions within streams and their bed forms. The outcomes reached in this session include determining groundwater surface water interactions using different approaches (stable isotopes, SISS model) in various environmental settings in order to identify mixing from different sources.
2. The session focused on the impact model on health from energies and predictions for air pollution in Africa and air quality modelling using data from different sources. The outcome showed that renewable energy could have negative health effects such as diabetes mellitus and lung cancer. In addition, the importance of contributors to air pollution; aerosols and reactive gases and how long-term exposure to these pollutants impact on the health of the population exposed were



discussed. This indicated how important it is to maintain and improve the air quality.

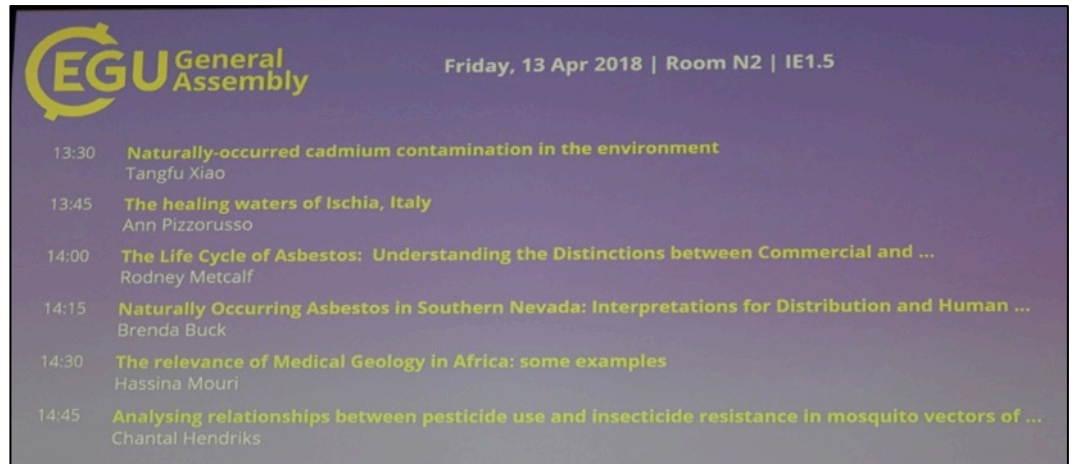
3. The outcome for this session helped create opportunities for mentoring programs, networking resources, scientific recognition, research proposal, and financial support
4. This session showed the different natural and human induced forces that have an impact on humans and other life forms.
5. This session's outcome showed how urbanisation is reclaiming land in the coastal regions and the effects that it has on it.
6. Posters in this session included the impact that trace elements such as arsenic have on soil, water, plants, and animals. Methods used to remove these trace elements from soil and water and monitoring an ecological system using remote sensing technology.



Outside (background shows some of the thousands of delegates who were attending the event) and inside the EGU venue with students checking the program and others are enjoying a break

#### Day 4: 13th April 2018

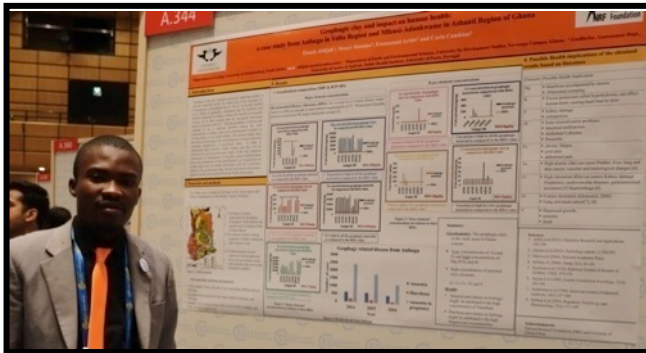
1. 08:00 10:00: Poster setup by MedGeo team at the medical geology poster session in Hall A
2. 10:30 -12:00 Soil pollution and reclamation as a geochemical problem.
3. 13:30–15:00: Medical Geology: an interdisciplinary field of science for the benefit of the society.
4. 15: 45 to 19:00: Presentations by MedGeo Students posters



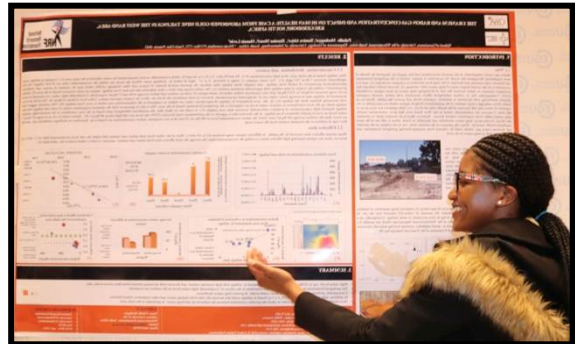
Hassina Mouri giving her talk on the relevance of Medical Geology in Africa and PG students (with their UJ-orange colour scarves and ties) ready for their posters presentations.



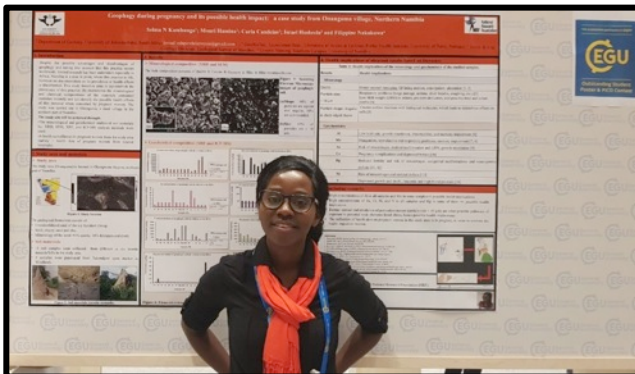
Students at their posters, ready and confident! Well done



1)



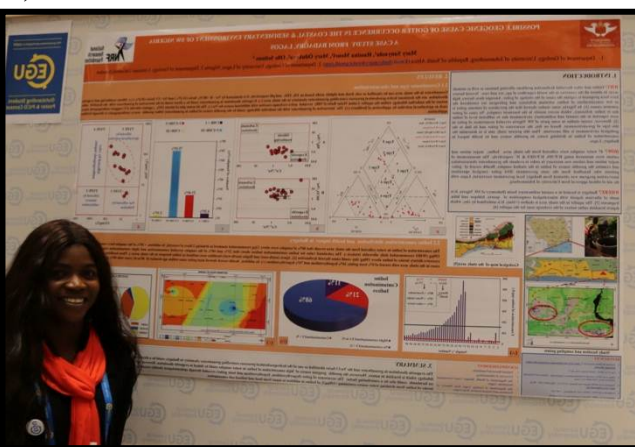
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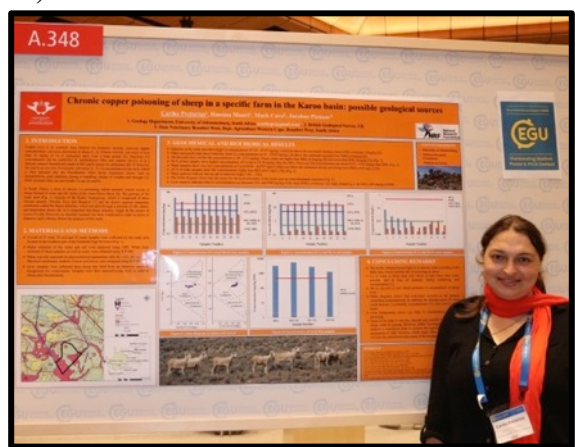
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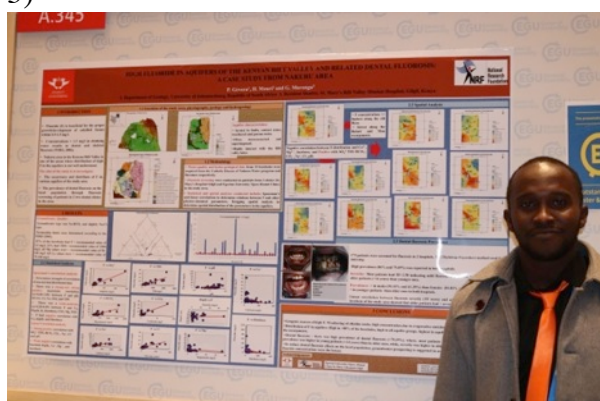
4)



5)



6)



### Posters presentations by students

1. Enoch Ahlijah
2. Paballo Moshupya
3. Selma Kambunga
4. Masixole Sihlahla
5. Olufunke Mary Sanyaolu
6. Carike Pretorius
7. Patrick Gevera

## Session Outcomes

1. Set up our posters.
2. Presentations in this session showed different mining activities and industries resulting in the release of pollutants and how these pollutants have an impact on the environment and the population residing at proximity to the mining facilities.  
The outcome from this session showed that the release of hazardous trace elements from mine residues is a worldwide problem. The findings showed that future research should be concentrated more on remediation and ways of using these residues as an important resource without compromising the health of the public. These issues require interdisciplinary intervention.
3. At session Hassina Mouri presented on the relevance of Medical Geology in Africa, which was very well received by the people attending the session. Other presentations included the potential beneficial effects that hot water springs on Ischia, Italy can have on human health. The difference between commercial and natural occurring asbestos and the affect it has on human health. The outcomes of this session showed that natural environment can positively and negatively affect human health and that even though elements and minerals have been studied for over a long period, however not all their effects on health are fully understood yet.
4. This session required us to present our posters to delegates at the EGU. This also allowed students to interact with other delegates who wished to learn more about our research work. During this time, students got valuable comments, suggestions, and call for collaboration. After the session was over, the group headed to the airport for a departure back to Johannesburg.



Interaction at the end of the session: With Prof Brenda Buck (USA) and Prof Ann Pizzorusso (Italy) dedicating her book titled “**Tweeting Da Vinci**” (left) and Prof Peter van der Beek (EGU- Organising Committee Member – France showing appreciation for the success of the session) and Prof Nicol (USA) discussing possible collaboration on Climate Change in Africa (right).



## V) BENEFITS OF ATTENDING THE EGU CONFERENCE TO THE MEDICAL GEOLOGY GROUP (*As expressed by the students*)

Attending an International conference is a professional rewarding experience as it provides the opportunity to socialize and to interact with experts and colleagues from the rest of the world. The European Geosciences Union (EGU) Meeting in general played an important role in our professional career by involving sessions from all aspects of geosciences. There were so many benefits derived from this meeting, which included exposure, networking for possible future collaboration, team spirit as well as knowledge and professional development skills. The conference did not only enhance our knowledge on medical geology studies but also provided extended knowledge in many fields which are related to geosciences including atmospheric sciences, bio-geosciences, climate, soil system, energy resources and environment, geomorphology, geochemistry and mineralogy. Throughout all the sessions, we had the opportunities to learn, grow and contribute to the science community.

### 1) Exposure

On a professional side: Sharing our ideas and presenting our work on some problems faced in Africa to delegates from different parts of the world, was our main interest. From the presented work, we received positive feedback whereby the relevance of our studies and their importance to the science community and to the public was highlighted.

On a cultural side: although the visit was short, however we still had the opportunity to visit interesting historic places such as the Votivkirche Neo Gothic church, Gartenpalais Liechtenstein palace, St. Stephen's Cathedral (12<sup>th</sup> Century church), St. Peters Catholic church, Vienna Pestsäule (Memorial column for plague victims), Hofburg palace and Michaelerplatz. We also enjoyed the public transport system, which conveyed us from our place of residence to the conference venue within the period that we spent in the city of Vienna.



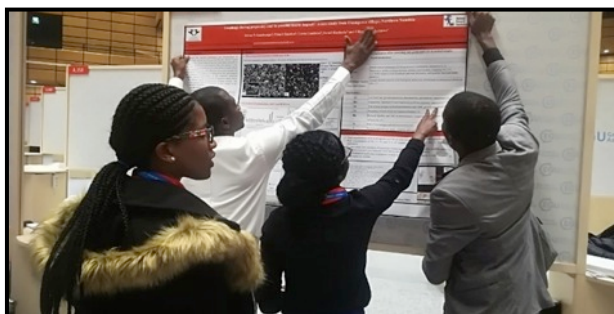
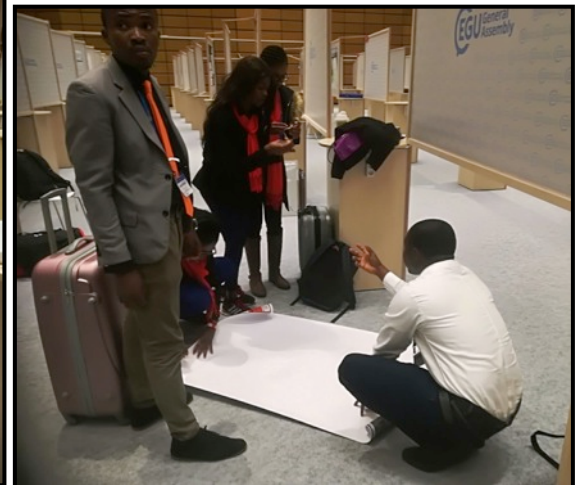
Votivkirche Neo Gothic church



St. Stephen's Cathedral church

## 2) Teamwork

Being eight students attending this meeting, gave us the opportunity to come together to work as a group and to give our individual contribution towards a common goal. This was the constant advice we received all the time from Prof Mouri. We learnt how to work within deadlines such as abstract submission, visa application, and poster preparation. During our stay in Vienna, we also shared house chores amongst ourselves such as cooking and cleaning. We also helped in setting up each other's poster on the poster board on the day of our presentation. Throughout the program, we walked and worked together. We created tracking system where we can easily locate one another using Geology application.



Team work spirit: Helping each other in setting up posters and enjoying the metro life....

## 3) Knowledge gain and professional skills acquired

We were able to maximize the opportunity that we have as first timer in this kind of international conferences and exposure. From the training we received under the supervision of Prof Mouri, we gained confidence in our work and ability to introduce ourselves without fear and walk up to delegates from different professions, ethics, and cultural backgrounds. We learnt how to market ourselves through our engagement with these delegates and get them interested in our field of study (Medical Geology research in Africa). As part of the knowledge gained, we also got potential research topic for future studies example include research on Health impact of dust after Prof. Alexander Baklanov from the World



Meteorological Organization (WMO) presented on “Seamless prediction of Air pollution for Africa”.

#### 4) Potential support/collaboration/ Networking

We were fortunate as a group to interact with experts and high level personalities in the geoscience profession, amongst:

-The President (Prof. Qiuming Cheng) and Treasurer (Prof. Hiroshi Kitazato) of IUGS (International Union Geological Sciences).



To the left: students (Selma, Mary, Paballo and Enoch) with the treasurer and the President of IUGS and to the right Patrick and Carike with IUGS President and Prof Mouri.

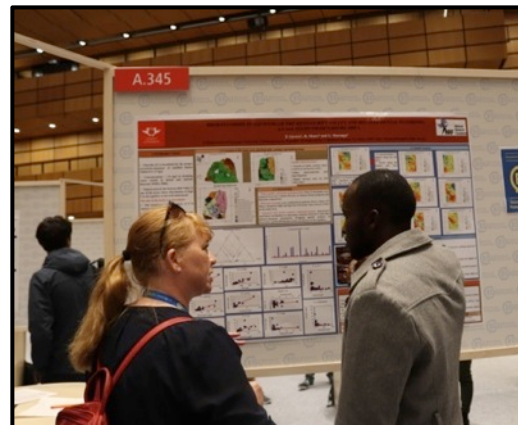
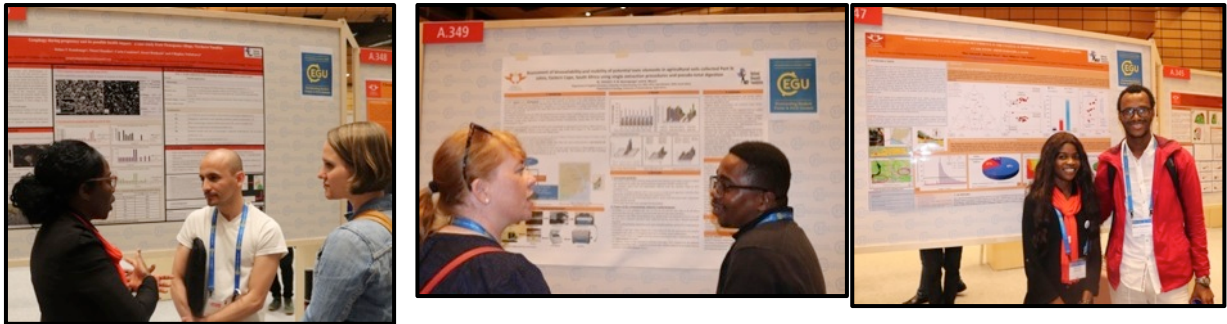
-Co-conveners of Water, climate, food and health session: Alin Andrei from Carsteanu, instituto Politécnico Nacional (IPN), Mexico and Andreas Langousis from the University of Patras, University of Patras, Department of Civil Engineering, Rio, Greece.

-Co-Convener of the Medical Geology Session; Professor Brenda Buck from the University of Nevada Las Vegas, Geosciences (photos below together with Prof Mouri).



-Representatives from various organisations such as the International Association of Hydrogeologists, World Food Programme, School of Integrated climate system science, GeoHealth and many others.

During our poster session (on Friday), we were privileged to interact with several delegates amongst: Dr. Clement E. Akumu, Assistant Research Professor expert in GIS, Tennessee State University, USA was offered to collaborate with the research group on GIS related matters. Other delegates met by individuals in the group include: Virginia Strati a Post Doctorate candidate from the Department of Physics and Earth Sciences - University of Ferrara, Italy who is working with radon related issues and was willing to share ideas, Chantal Hendriks, a PhD student from Nuffield Department of Clinical Medicine, University of Oxford, United Kingdom, and Ann Pizzorusso from Italy who gifted us with her book titled 'Tweeting Da Vinci'.



Students interacting with delegates

*"That man is best educated who knows the greatest number of things that are so, and who can do the greatest number of things to help and heal the world."*

*Henry Ford*



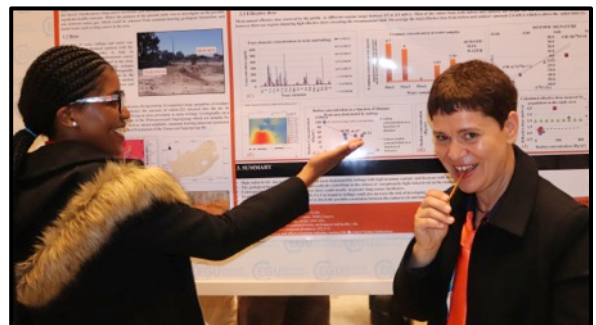
## 5) Finally: some snapshots of fun and memories



Preparing for the talk: Mary helping Prof Mouri putting her orange tie.



Dr Patrick supplying Mary with Medical Geology Drips



Oops!!! someone is not listening...!



After lunch, all energy is gone with the food except for Enoch (right), still keen to check the program...



Prayer time for a best performance...!!

## **6) TESTIMONIALS (*as expressed by the students*)**

The EGU conference was a great experience. Personally, this conference gave me the opportunity to visit Europe for the first time and also my second outside my country (Ghana). It really gave me a great exposure in that I had the chance to meet some great personalities I have only heard of and read their publications. Some of such personalities include Prof. Qiuming Cheng (IUGS President), Prof. Hiroshi Kitazato (IUGS Treasurer), Prof. Brenda Buck (University of Nevada, USA) and Dr. Mark Cave (British Geological Survey, UK). I also got the chance to see the beautiful city of Vienna, which I believe is one of the beautiful in the world. With this testimony, I would like to extend my profound and heartfelt gratitude to the International office of the University of Johannesburg for sponsoring me and my supervisor Prof. Hassina Mouri for giving me the opportunity to attend the conference. - **Enoch Ahlijah**

For me, attending the EGU conference was an eye opener and a great experience I can never forget. I enjoyed the opportunity to travel outside my African domain for the first time. The conference helped met with intelligent personnel who are expert in their various disciplines, few to mention are Prof. Brenda Buck (University of Nevada, USA) and Dr. Clement E. Akumu (Tennessee State University, USA). I benefited from the following activities; talk on the early career scientists, game on natural hazard and health mitigation and assessment plan and poster presentation by me. I am inspired from lesson derived from this session. The conference was well organized and successful. I really enjoyed the 4 days with so many interesting session and discussion on global issues and innovation in the field of geosciences. My heart-felt thanks to people who have made this EGU conference possible. – **Olufunke Mary Sanyaolu**

From my part, I would like to thank the EGU committee for hosting such a wonderful and prestige conference. This was my first international conference, and it provided me with such great platform for my professional and personal growth. I learned a lot during the conference from all the oral and poster sessions with different speakers working on different disciplines within the Geoscience field. The conference provides young researchers like me with a once in a life time opportunity to engage with some of the world's renowned researchers who expertize in their different fields with the Geoscience community, and also provided me with the chance to engage with other students from all over the globe in sharing ideas and acquiring knowledge. I am truly inspired and humbled by the incredible people that I met during the conference that are persevering through numerous obstacles to transform the Geoscience field. It makes me very hopeful that we (as Medical geology in Africa) will evolve and not became extinct like dinosaurs. Lastly, I would like to thank the U.J international office, EGU staff, my supervisor and co-supervisor for providing me with the opportunity to attend this conference and for their endless support. It is unforgettable that I have attended EGU 2018 conference, where I had the opportunity to extend my knowledge and also expand human network in my study area. – **Masixole Sihlahla**

Excellent conference! Is it because it was my first time attending an international conference or it was just a great conference? The EGU conference- very well organized, very professional with people from various backgrounds and countries, excellent venue, great quality speakers, and opportunities for discussion and networking. It's worth a recommendation to more scientists and researchers in the field of science. The presentations covered a wide range of very interesting scientific research topics, which were informative and valuable. It was a great opportunity travelling out of Africa for the first time, to communicate and share scientific excellences from the experts, and to get exposed to a strategic thinking tank, which enhanced a constructive dialogue and collaboration on themes relevant to Medical Geology. Consequently, I have known a number of academics and professionals from different countries who have similar or related research interests. "To me the conference was a true success, I enjoyed every moment!" Finally, I would like to express my sincere gratitude to the international office at the University of Johannesburg and Prof Mouri for a "dream came true" opportunity. -**Selma Kambunga**

This was the best geosciences conference I have ever been to, very enlightening. The EGU conference hosted sessions equipped with valuable information with great importance to early career scientists. I was able to acquire new skills and fundamental practices which I can implement in my future research. The conference presented best networking platforms to connect and interact with experts from different scientific background on a personal level. It also granted me a great opportunity to gain more knowledge on the relevance of medical geology to the science community. The conference also created a space for me to share ideas with other researchers focusing on similar problems. It was really an amazing lifetime exposure, which led to the encouragement and personal growth in the field of science. I would like to send my truthful thanks to the ICSU-ROA and GSSA for their financial support to attend this meeting and to my co-supervisor Prof Mouri for all her efforts and support to make my dream a reality and to my supervisor Prof Abiye and co-supervisor Dr Levin for their guidance and support. **Paballo Moshupya**

I would firstly like to commend Prof Mouri for proposing the ‘seemingly impossible’ idea of having the medical geology session to the EGU committee. Not only did they agree but it was a big success for an inaugural session, that it was highlighted in the EGU 2018 highlights April edition. Attending the EGU conference in Vienna was a revelation moment to me in both career and social aspects. I got a chance to present my Masters work to a global audience with different geosciences backgrounds. I learned how to prepare and present both my work and myself amidst various professionals. Through interacting with other delegates, I leaned new skills and tricks on how to prepare and present scientific work, and most importantly, how to make my presentation appealing and interesting to my audience. I also got a chance to meet several big names in my field of Medical Geology such as Prof. Brenda Buck from University of Nevada, USA and Dr Mark Cave from the British Geological Survey. I got a chance to share ideas with Dr Mark on my PhD proposal, which I am currently working on. The trip was also a social eye-opener to me as it was my first time out of Africa. I enjoyed several aspects of Vienna City such as food, beautiful architecture, the efficient public transport, and comfortable housing. I strongly believe attending this conference has added significantly to both my academic and social life. I would therefore, like to express my sincere gratitude to our supervisor Prof Hassina Mouri for organizing the trip and making it happen, and the University of Johannesburg study abroad program, and all our sponsors for your financial support. Without the good work you are doing, the young generation would not get these wonderful opportunities to travel the world where they learn and improve our continent. Thank you! - **Patrick Gevera**



The “Group Hug” photo taken at the end of a successful meeting and trip.

***“Coming together is the beginning. Keeping together is progress. Working together is success.”***

**Edward Everett Hale**



**Medical Geology, as highlighted at EGU through art:** A poem by Sam Illingworth, Science Communication, Manchester Metropolitan University.

*To benefit from minerals underground  
And better understand the roles they play,  
A balance in our intake must be found.  
Spewed outwards from a deep volcanic mound  
We measure how these clouds disperse away,  
To benefit from minerals underground  
Effects on human health can be profound,  
A balance in our intake must be found.  
When traces sink below the safe background  
We search for missing parts in soil and clay,  
To benefit from minerals underground.  
The danger of asbestos is renowned,  
We toil to better map out its decay;  
A balance in our intake must be found.  
The synergies continue to abound,  
The Earth and human system is two-way;  
To benefit from minerals underground,  
A balance in our intake must be found.*

This is a [Villanelle](#) , inspired by the EGU 2018 session on [Medical Geology](#), and its role as an interdisciplinary science for the benefit of the society. Medical Geology is defined as the science dealing with the relationship between geological factors and health (for both humans and animals). This emerging field adopts an interdisciplinary approach, and the session featured presentations from environmental and public health experts, animal he professionals, and geoscientists on topics that ranged from the risk of exposure to humans from naturally ring asbestos in Southern Nevada, to the healing thermal waters of Ischia—a tiny volcanic island in the Gulf Naples.

### **Bringing Art and Geoscience together at EGU 2018**

(<https://blogs.egu.eu/geolog/2018/04/09/the-assembly-documented-through-art>)





## VI) ACKNOWLEDGMENTS

We, Med.Geos @UJ, would like to express our sincere gratitude to the International Office - University of Johannesburg and NRF as well as Geological Society of South Africa and the International Council of Science- Regional Office Africa for their financial support and to all the colleagues from various offices at these organisations especially Mrs Lisle Du Plessis (UJ International Office), for their (direct or indirect) support, which helped to make our trip a successful one. The EGU is thanked for the opportunity to host a Medical Geology session for the 1<sup>st</sup> time, the co-conveners (Brenda Buck, Olle Selinus and Carla Candeias) of the session for their support and kind cooperation and all our collaborators listed below for their input during the preparation of the abstracts/posters and support to the initiative in general.

- |                      |  |
|----------------------|--|
| 1. Dr. M. Cave       | Medical Geology/British Geological Survey/UK               |
| 2. Prof O. Selinus   | Medical Geology/Linneaus University, Kalmar/ Sweden        |
| 3. Prof K. Dowling   | Medical Geology/Federation University, Australia           |
| 4. Prof C. Candeias  | Medical Geology/Aveiro University/Portugal                 |
| 5. Ms Nakakuwa       | General Nursing, University of Namibia                     |
| 6. Prof. T. Abiye    | Hydro-Geology/Wits/SA                                      |
| 7. Dr. K. Pillay     | Applied Chemistry/UJ/SA                                    |
| 8. Dr. P. Nomngongo  | Applied Chemistry/UJ/SA                                    |
| 9. Dr. J. Pienaar    | Animal Health/Beaufort West/SA                             |
| 10. Dr M. Levin      | Water and Wastewater Engineering, Aurecon/SA               |
| 11. Dr M. Strauss    | PARC RGM - Radon Gas Monitoring/SA                         |
| 12. Dr R. Strydom    | PARC RGM - Radon Gas Monitoring/SA                         |
| 13. Prof. S. Odukoya | Geology/Univ. Lagos/Nigeria                                |
| 14. Mr I. Hasheela   | Geol. Surv. Namibia/Namibia                                |
| 15. Dr E. Arhin      | Univ for Dev. Studies, Dept of E & E Science/Ghana         |
| 16. Prof J. Gumbo    | University of Venda  |
| 17. Dr D. Rose       | University of Johannesburg                                 |
| 18. Prof Finkelman   | Geological Society of America- Geology and Health Division |



**Great Experience. Thank You All**  
Goodbye EGU 2018 and looking forward to EGU 2019

*"..That is what we are put in the world for, to get experience and to help others get it. It is the one thing no one can take away from us." Henry Ford*

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