WAXI - West African Exploration Initiative

IXOA - L'Initiative d'Exploration Ouest Africaine

Structural Geophysics
WAXI Training Proposal
October, 5th - 9th 2018 (inclusive)
Abidjan, Cote d'Ivoire

Organised by Monash University in collaboration with the University Felix Houphouet Boigny, Abidjan.

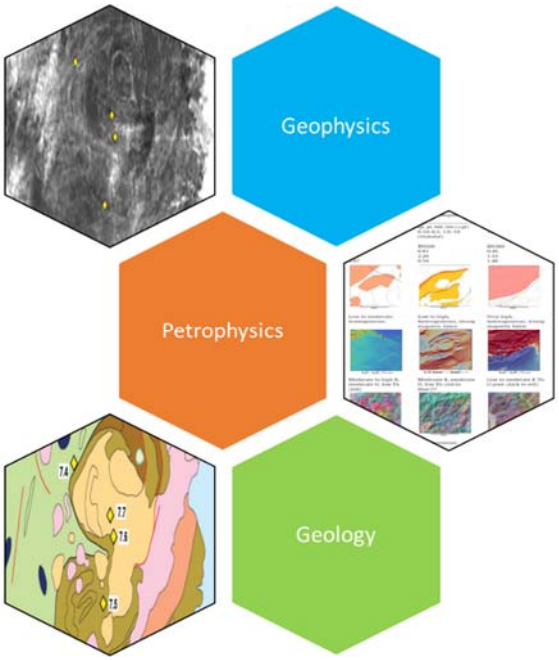
Registration Deadline 1st September 2018, send attached

registration form to luc.siebenaller@asdm.lu

This 5 day training course will provide an introduction to modern laboratory based techniques applied to the regional geophysical data of the West African Craton. This course will be offered to all AMIRA sponsors, including in-kind sponsors, and is aimed at geologists wishing to improve their skill base in modern integrated Structural Geophysics mapping techniques.

Many regions in the world now are covered at a high-resolution by airborne geophysical data sets, including magnetic, electromagnetic, digital terrain models and radiometric surveys. When combined with multi-spectral satellite data, and of course the available geological observations, these geophysical data provide key constraints on our geological interpretation, in particular in ancient terrains, such as the West African Craton.

This training course, organised by Laurent Aillères and Robin Armit who collectively have decades of experience of interpretation and modelling of aeromagnetic, radiometric and other regional geophysical data, is aimed at those people who would like to acquire the fundamental interpretation techniques needed to use very high resolution data sets and those who are faced with the problem of integrating their geological and geophysical data.



The Proposed Programme

Day	Date	Course Element	Lecturer
Day 1	Wednesday October 3rd Morning	1 Introduction: what can potential field data tell us about geology? 2 Geophysical principles; *Collaborative Case Study*	LA RA
	Wednesday October 3rd Afternoon	*Collaborative Case Study*	All
Day 2	Thursday October 4th Morning	3 Data processing and data degradation during processing 4 Data/Image filtering/processing – enhancing the geological signal *Collaborative Case Study*	LA RA
	Thursday October 4th Afternoon	*Collaborative Case Study: SW Burkina Faso*	All
Day 3	Friday 5th October Morning	5 Interpretation strategies 6 Structural Geophysics *Collaborative Case Study: Sefwi Belt*	LA RA
	Friday 5th October Afternoon	*Attendees' Data Sets*	All
Day 4	Saturday 6th October Morning	7 Petrophysics / lithologies 8 Structural Controls on Ore Deposits	LA RA
	Saturday 6th October Afternoon	*Attendees' Data Sets*	
Day 5	Sunday 7th October Morning	9 Regional Geophysics and the Regolith 10 Inversions: 2.5D forward and 3D inverse modeling	LA RA
	Sunday 7th October Afternoon	*Attendees' Data Sets*	

*** All practical training will be provided on PC's provided by attendees. All relevant software will be provided.**

Course Content: Lectures

1 Introduction: what can potential field data tell us about geology?

2 Geophysical principles

- Basic Theory:
- Basic potential field principles
- Petrophysics- the geophysical response of rocks (susceptibility, remanence, anisotropy, density, reflectance)
- Resolution of structures in potential fields
- Principles of radiometric surveying
- Principles of gravity surveying
- Principles of multi-spectral surveying
- Digital Terrain Models

3 Data processing and data degradation during processing

4 Data/Image filtering/processing – enhancing the geological signal

- Acquisition and processing principles - gravity, magnetics, multi-spectral and radiometric data
- Filtering, griding, levelling, upward continuation
- Image Processing and data presentation principles
- Wavelet transforms
- Magnetic interpretation at low field inclinations - Reduction to Pole and analytical signals

5 Interpretation strategies

- Principles and styles of aeromagnetic interpretation
- Profile analysis
- Mutli-scale analysis
- Mult-data approach

6Structural Geophysics

- Structural analysis in aeromagnetic interpretation
- Mapping with radiometrics
- Magnetic expression of some commonly found structures
- Magnetic expression of some commonly found ore deposit types

7 Petrophysics / lithologies

- Magnetic properties of typical minerals and rocks
- Primary and secondary controls on magnetic properties of rocks
- Radiometric properties of typical rocks
- Primary and secondary controls on radiometric properties of rocks

8 Structural Controls on Ore Deposits

- Fluid flow in source rocks
- Fracture networks, fault zones and fluid flow
- Structural and other types of traps
- Vein Arrays

9 Regional Geophysics and the Regolith

- Landscape evolution in West Africa
- Erosional, transported and in situ regoliths
- Using geophysical data to characterise regolith styles
- Seeing through the regolith

10 Inversions: 2.5D forward and 3D inversions modelling

- Modelling the Earth in 2D and 3D
- Modelling Potential Fields
- Inversion of potential field datasets

Course Content: Hands On Exercises

Attendees' Data Sets

All attendees will have the opportunity to participate in collaborative interpretations of their own data sets. Attendees wishing to provide datasets for discussion should prepare a 5 slide introduction to their area of interest so that the audience can understand the regional or local context of the data. If digital data are available then both processing and interpretation procedures can be performed.

Collaborative Case Study 1: SW Burkina
The SW Burkina area is the first RKL to be studied as part of the WAXI-2 program… Classic Birimian area

Collaborative Case Study 2: Australia

Collaborative Case Study 3: Australia

Collaborative Case Study 4: NW Ghana
Example of advanced geodynamic analysis of geophysical data

Training staff

The following personnel will be involved in the delivery of the courses.

Name	Institution
Robin Armit	Monash University
Laurent Ailleres	Monash University

The courses will be provided in either English or French, according to the native language of the presenter, however the training personnel are bilingual.

Registration Fees

We have set a cost of **1,600 €** per attendee for WAXI Sponsors and **2,000 €** per attendee for NON-WAXI sponsors for the full 5 days of training, including training materials.

This includes the following costs:

Items
Lunchtime Meals
Training Materials

This does not include:

Items
Evening Meals
Accommodation (but we will help in organising group accommodation for participants if needed)
Flights to and from Accra

It is likely that we will organise accommodation for attendees, so for those attendees who would like us to help with accommodation in Abidjan, please contact Corinne Debat (corinne.debat@uwa.edu.au) so that we can discuss your needs.

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WAXI Structural Geophysics Course

Registration Form

Company .....

Address .....

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Phone .....

Administrative Email contact .....

Attendee's Name 1.....

Attendee's Name 2.....

Attendee's Name 3.....

Attendee's Name 4.....

Total Registration Fees (1,600 € per person for WAXI sponsors & 2,000 € for NON-WAXI sponsors).....

Email: luc.siebenaller@asdm.lu

On confirmation of your places, we will ask you to transfer the registration fee to a bank account to be announced.