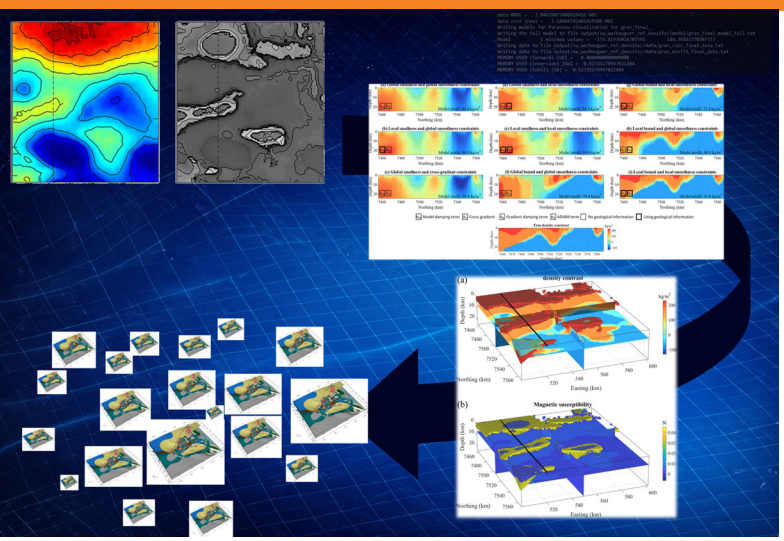
Understanding Geophysical Inversion:

From Deterministic to Advanced Stochastic Approaches

AGATE PROJECT

Knowledge, Skills, Networks in Earth and Planetary Science

2-DAY PROFESSIONAL TRAINING COURSE
20 & 21 July 2026, Accra, Ghana



This 2-day training course introduces modern 3D gravity and magnetic inversion techniques tailored for regional to district scale data using the open-source Tomofast-x platform.

Tomofast-x is a computationally efficient code used by both academia and industry that integrates geophysical, geological, and petrophysical constraints and runs in parallel on platforms ranging from laptops to super computers.

The curriculum progresses from basic inversion fundamentals and input file preparation through petrophysically-constrained inversions (incorporating density and magnetization properties) to more advanced methods including structurally guided inversion and probabilistic methods. It combines theoretical lectures with hands-on laboratory exercises and demos applying these techniques to real-world datasets. The training also introduces and tests recently developed methods for null-space exploration and 3D trans-dimensional inversion.

Why Attend

- To learn how gravity and mag data can be converted into 3D understanding.
- To gain practical, industry-ready skills in modern geophysical inversion workflows.
- To improve your ability to integrate geophysical, geological, and petrophysical data for stronger exploration decision-making.

What you will learn

- Fundamentals of gravity and magnetic inversion.
- Input file preparation and running inversions in Tomofast-x. Processing and enhancement of magnetic and geophysical grids.
- Advanced inversion workflows including structurally guided inversion.
- Post-inversion model assessment and interpretation.
- Applying methods to real datasets, including your own company data.

All inversion codes used during the course are open source.

No prior knowledge of Tomofast-x is required, but attendees should install the required software prior to the course.

Certificate of Attendance:

Upon completion, participants will receive a certificate of attendance.

Information

Course leaders

Jérémie Giraud: Jérémie is a geophysicist with expertise in inversion and integrated modelling, specialising in the integration of geophysical, geological, and petrophysical data. He is currently based at the Centre for Exploration Targeting (the University of Western Australia), where he develops advanced techniques for exploring the space of geophysically acceptable models under geological and petrophysical constraints.

Mark Jessell: Professor at the Centre for Exploration Targeting at The University of Western Australia, Mark Jessell has a vast experience in interpretation and modelling of aeromagnetic, radiometric and other regional geophysical data in 2 and 3D.

Date	Duration	Time	Venue
20 & 21 July 2026	2 days	9 am to 5 pm	Alisa Hotel, Accra, Ghana

Language
French and English

Program

Day	Course Elements
Day 1 20 July 2026	**Tomofast-x and QGIS Plugin** Input preparation and inversion with Tomofast-x using petrophysics and/or structural constraints - QGIS Plugin Ergodic Sampling for optimum data subsampling - QGIS Plugin
Day 2 21 July 2026	**Geometrical inversion and uncertainty** Threshold outputs from Day 1 to get discrete models - Notebook Geometrical trans-dimensional inversion - Notebook Evaluation of alternative scenarios using the null space - Notebook (Optional: posterior uncertainty analysis of results)

Registation Fees
USD 1,350.00 per attendee. The fee includes morning and afternoon tea, lunch, and training materials. Payment must be completed before the start of the training. Any applicable country withholding taxes will be added to ensure the net amount received is USD 1,350.00.

Registration Deadline
15 April 2026 - Register using the form on the next page.

Enquiries / Participation
Geological survey professionals, academics, and students interested in this training are invited to contact: corinne.debat@agate-project.org

Registration

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Please complete this form and email it to: Corinne.Debat@agate-project.org

Company Information

Company .....

Address .....

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Entity to invoice .....

.....

Administrative Email contact .....

Participants

Total number of Participants .....

Attendee Name + email.(first name and surname)

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Attendee Name + email.(first name and surname)

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Attendee Name + email(first name and surname)

.....

Attendee Name + email(first name and surname)

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Fees and Currency

	US$	AU$
Select your prefered invoicing currency		
Base registration Fee	1,350.00	2,015.00

Whithholding Tax if applicable	%

The organisers reserve the right to cancel the training if the minimum requirement of 10 participants is not met. Payment must be completed before the start of the training.