



2nd IAGA Summer School

Prague, Czech Republic
June 15 – 21, 2015

Schedule Overview

Day	Time	Topic	Lecturer
Monday, June 15	Arrival		
Tuesday, June 16	9:00 to 13:00	Observational Geomagnetism	Richard Holme
	14:00 to 18:00	Data Assimilation	Alexandre Fournier
Wednesday June 17	9:00 to 13:00	Paleomagnetism	Julie Bowles
	14:00 to 18:00	Paleomagnetism	Julie Bowles
Thursday, June 18	9:00 to 13:00	Lithospheric magnetic field	Erwan Thebault
	13:30 to 18:00	Excursion to Pilsen and brewery tour	
Friday, June 19	9:00 to 13:00	Ionospheric physics	Petra Knizova
	14:00 to 18:00	Magnetic anisotropy	Martin Chadima
Saturday, June 20	9:00 to 13:00	Electromagnetism	Steve Constable
	14:00 to 18:00	Electromagnetism	Steve Constable
Sunday, June 21	Free day before IUGG		

Lectures and lecturers

Observational Geomagnetism

Prof. Richard Holme, University of Liverpool, UK

1. Magnetic theory, internal / external and core/crustal field separation
2. Ground and satellite measurements
3. Modelling and models from historical to paleomagnetic time scales
4. Secular variation
5. Core field, core dynamics and Earth rotation
6. Magnetic fields of other planets



Practical exercise will give an introduction to the International Geomagnetic Reference Field (IGRF) and core flow modelling by hand.

Numerical models of the geodynamo and data assimilation

Prof. Alexandre Fournier, Institut de Physique du Globe de Paris, France

1. Earth's core dynamics and the geodynamo
2. Standard numerical models
3. Comparison with the geomagnetic field
4. Geomagnetic data assimilation: why and how



Practical exercise regarding application of Ensemble Kalman filter to Lorenz (1963) deterministic (and possibly chaotic) model.

Paleomagnetism

Prof. Julie Bowles, University of Wisconsin-Milwaukee, USA

1. Earth's geomagnetic field
2. Physics of magnetism
3. Acquiring (and preserving) a magnetization
4. Sampling and laboratory techniques



Practical exercise on analyzing and interpreting paleomagnetic data.

Identification and interpretation of the Earth's magnetic lithospheric field

Dr. Erwan Thébault, Institut de Physique du Globe de Paris, France

1. Generality about the geomagnetic field.
2. The sources of the lithospheric field.
3. Imaging the Earth's lithospheric field.
4. Example of interpretations from local to global scales.

Practical exercise including equivalent dipole representation, synthetic lithospheric magnetic fields at different spatial scales and altitudes and simulation of *Swarm* satellite data processing.

Ionospheric physics

Dr. Petra Koucká Knižová, Czech Academy of Sciences, Czech Republic

1. Ionospheric plasma formation
2. Ionospheric variability
3. Principles of ionosphere sounding



Magnetic anisotropy

Dr. Martin Chadima, AGICO, Czech Republic

1. Theory of magnetic anisotropy
2. Magnetic anisotropy of minerals
3. Geological application of magnetic anisotropy for sedimentary and metamorphic rocks
4. Geological application of magnetic anisotropy for igneous rocks



Practical exercise including measurements of some sample sets using the Agico MFK1 Kappabridge and data visualization and processing.

Electromagnetic induction methods

Prof. Steven Constable, University of California San Diego, USA



1. Electrical conductivity of Earth materials
2. Earth's electromagnetic environment
3. Theory and instruments
4. Methods: Magnetotellurics (MT), geomagnetic depth sounding (GDS) and controlled-source
7. Forward and inverse modelling
8. Global conductivity structure

Practical exercise on forward modelling.

Acknowledgement:

IAGA gratefully acknowledges the Czech Academy of Sciences for financial support and AGICO for providing lecturer M. Chadima and the instrument to measure magnetic anisotropy free of charge.