

## Probing the Deep Earth Interior by using in synergy observations of the Earth's gravity and magnetic fields, and of the Earth's rotation

*Conveners: Anny Cazenave (ISSI), Mioara Mandea (CNES), Veronique Dehant (Royal Observatory Belgium), Lorena Moreira (ISSI)*

ISSI Workshop Program, 1-4 September 2020

Tuesday, 1 September 2020		
Time	Topic	Speaker
8:30 – 9:30	Registration in ISSI, Hallerstrasse 6, 1 <sup>st</sup> floor	
9:30 – 10:00	Welcome and introducing ISSI	Anny Cazenave (ISSI)
<b>Session 1: Introductory session</b>		<b>Chairperson:</b>
10:00 – 10:15	Objectives of the workshop	Anny Cazenave (ISSI)
10:15 – 11:00	Deep Earth interior: the Earth's core	Veronique Dehant (ROB) R
11:00– 11:30	Deep Earth interior: the core magnetic field	Mioara Mandea (CNES)
11:30 – 12:00	Structure, materials and dynamics of the lower mantle	Reidar Tronnes (Oslo Univ.) R
12:00 – 14:00	<i>Lunch</i>	
14:00 – 14:30	Observed correlation between gravity and magnetic fields	Mioara Mandea (CNES)
14:30 – 15:00	Earth's rotation and the deep Earth interior	Jérémy Requier (ROB) R
15:00 – 15:30	Gravity anomaly related to the core	Mathieu Dumberry (Alberta Univ.) R
15:30 – 16:00	<i>Coffee break</i>	
16:00 – 16:30	Processes at the core-mantle boundary	Bruce Buffett (Berkeley Univ.) R
16:30 – 17:00	Discussion	All participants

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<b>Wednesday, 2 September 2020</b>		
<b>Time</b>	<b>Topic</b>	<b>Speaker</b>
<b>Session 2: The Earth magnetic field and the geodynamo</b>		<b>Chairperson:</b>
9:00 – 9:30	From Magsat to Swarm	Magnus Hammer (DTU) R
9:30 – 10:00	Models of the Earth’s magnetic fields	Vincent Lesur (IPGP)
10:00 – 10:30	Specific features of the Earth’s magnetic field: South Atlantic anomaly, dipole changes and other curiosities	Angelo De Santis (INGV) R
10:30 – 11:00	<i>Coffee Break</i>	
11:00 – 11:30	Geomagnetic jerks – from data to numerical models	Nicolas Gillet (Grenoble Univ.)
11:30 – 12:00	‘Tangential stresses’ at the core-mantle boundary	Dominique Jault (Grenoble Univ.)
12:00 – 13:30	<i>Lunch Break</i>	
13:30 – 14:00	Geomagnetic Jerks: Observations from the Iridium Constellation of Satellites	Regupathi Angappan (J. Hopkins Univ.) R
14:00 – 14:30	More on the geodynamo	Sabine Stanley (J. Hopkins Univ.) R
<b>Session 3: The Earth’s gravity field</b>		<b>Chairperson:</b>
14:30 – 15:00	Time variable gravity field from GRACE & GRACE Follow-on	Christoph Dahle (GFZ)
15:00 – 15:30	Sources of mass anomalies seen by GRACE	Isabelle Panet (IGN) R
15:30 – 16:00	How accurately can we remove surface fluid envelopes’ signals from GRACE to extract the deep Earth signal?	William Llovel (LEGOS) R
16:00 – 16:30	Open questions in GRACE data processing	Jianli Chen (Texas Univ.) R
16:30 – 16:45	<i>Coffee Break</i>	
16:45 – 17:30	<i>General Lecture: A planetary scientists look at the Earth’s interior and evolution</i>	Tilman Spohn (ISSI Director)
18:30	<i>DINNER</i>	

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Thursday, 3 September 2020		
Time	Topic	Speaker
<b>Session 4: Models of the Deep Earth Interior and Earth’s Rotation</b>		<b>Chairperson:</b>
9:00 – 9:30	Modelling of inertial waves and interaction with rotational modes	Santiago Andres Triana (ROB) R
9:30 – 10:00	Model of the core of the Earth and planet (laboratory experiments/non-hydrostatic)	Wim van Westrenen (Vrije Univ.) R
10:00 – 10:30	Precession/tidal flow in the core and double-diffusive convection	Nathanael Schaeffer (Grenoble Univ.) R
10:30 – 11:00	<i>Coffee Break</i>	
11:00 – 11:30	Core-mantle boundary topography from experiments	Fabian Burmann (ETHZ)
11:30 – 12:00	Dynamics of rotating, stratified and shear flows	Michael Le Bars (Marseille Univ.)
12:00 – 12:30	Decadal length of day variations and core mantle coupling	Ben Chao (Academia Sinica in Taiwan) R
12:30 – 14:00	<i>Lunch Break</i>	
14:00 – 14:30	More on the Earth rotation (short time scale-Jerks)	Richard Holme (Liverpool Univ.) R
14:30 – 15:00	Nutational loading	Antony Trinh (Univ. Arizona) R
15:00 – 15:30	Zonal flows in a rotating spheroidal cavity	Philippe Cardin (Grenoble Univ.) R
15:30 – 16:00	<i>Coffee Break</i>	
16:00 – 16:30	Resonances in spherical couette	Ankit Barik (J. Hopkins Univ.) R
16:30 – 17:00	Liquid sodium models of the earth’s core	Dan Lathrop (Maryland Univ.) R
17:00 – 18:00	General discussion	All participants

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ISSI Workshop Programme, 1-4 September 2020

Friday, 4 September 2020		
Time	Topic	Speaker
<b>Session 6: Preparation of the special issue of Surveys in Geophysics and ISSI book</b>		<b>Chairperson:</b>
9:00 – 9:30	Preparation of the special issue	Anny Cazenave and all participants
<b>Session 5: Opening doors to planetary science</b>		<b>Chairperson:</b>
09:30 – 10:00	The interior of Mars, Mercury, and icy satellites	Tim Van Hoolst (ROB) R
10:00 – 10:30	The interior evolution of Mars, convection, and magnetic field	Doris Breuer (DLR)
10:30 – 11:00	The interior of the Moon	Nicolas Rambaux (IMCCE) R
<b>Session 6: Synthesis together with coffee</b>		<b>Chairperson:</b>
11:00 – 12:00	Synthesis	All participants
12:00 – 13:00	Prospective	All participants