

Geosciences for Understanding Habitability in the Solar System and Beyond

Scientific programme

Sunday, 24 September 2017	
14:00 - 20:00	Registration of participants at Terra Nostra Garden Hotel (front desk)
Monday, 25 September 2017	
08:00 - 09:00	Registration at Terra Nostra Garden Hotel ("Casino" conference area)
Session 1: Opening session	
<i>Chair: Wolf Geppert, Stockholm University, SE</i>	
09:00 - 09:15	Welcome address <i>Muriel Gargaud, University of Bordeaux, FR</i>
09:15 - 09:30	Conference logistics <i>Wolf Geppert, Stockholm University, SE</i>
09:30 - 10:10	Introduction lecture <i>Véronique Dehant, Royal Observatory of Belgium, BE</i>
10:10 - 10:15	Discussion
10:15 - 10:45	Coffee break
Session 2: Formation of habitable planets	
<i>Chair: Véronique Dehant, Royal Observatory of Belgium, BE</i>	
10:45 - 11:25	Terrestrial planets and Super-Earths: similar bodies? An origin perspective (Review talk) <i>Alessandro Morbidelli, University of Nice, FR</i>
11:25 - 11:30	Discussion
11:30 - 12:00	Formation of habitable planets (Keynote talk) <i>Anders Johansen, Lund University, SE</i>
12:00 - 12:05	Discussion
12:05 - 12:25	Habitable planets in multi-planet systems <i>Ewa Szuszkiewicz, University of Szczecin, PL</i>
12:25 - 12:30	Discussion
12:30 - 12:45	Open Discussion
12:45 - 16:00	Lunch break and facultative guided tour to the hot spring area at Furnas
Session 3: Core and mantle evolution, mantle overturn and their role in the formation of habitable planets and the evolution of their interiors and atmospheres	
<i>Chair: Akos Kereszturi, Konkoly Observatory, HU</i>	
16:00 - 16:40	Coupled evolution of the core, mantle and lithosphere over billions of years: Our current state of understanding (Review talk) <i>Paul Tackley, ETH Zürich, CH</i>
16:40 - 16:45	Discussion
16:45 - 17:15	The link between mantle convection, atmosphere evolution and surface habitability - from the Solar System to exoplanets (Keynote talk) <i>Lena Noack, FU Berlin, DE</i>
17:15 - 17:20	Discussion
17:20 - 17:40	Global Archean geodynamics and onset of plate tectonics evidenced by ¹⁴²Nd <i>Vinciaine Debaille, ULB, BE</i>
17:40 - 17:45	Discussion
17:45	Poster session with coffee, tea, wine & nibbles

Tuesday, 26 September 2017

09:00 - 09:20	On the habitability of a stagnant-lid Earth <i>Barbara Stracke, German Aerospace Centre, DE</i>
09:20 - 09:25	Discussion
09:25 - 09:45	What is the role of the planetary magnetic field in the evolution of the planetary atmosphere? <i>Igor Alexeev, Lomonossov University, RU</i>
09:45 - 09:50	Discussion
09:50 - 10:10	New evidence for recent geologic activity on the surface of the Moon <i>Adomas Valentinas, University of Copenhagen, DK</i>
10:10 - 10:15	Discussion
10:15 - 10:45	Coffee break
10:45 - 11:05	Evolution of Pluto's interior <i>Stephen Coulson, University of Oxford, UK</i>
11:05 - 11:10	Discussion
11:10 - 11:30	The obliquity of icy satellites with internal global oceans <i>Rose-Marie Baland, Royal Observatory of Belgium, BE</i>
11:30 - 11:35	Discussion
11:35 - 11:55	Tidal heating in the Trappist-1 planets <i>Vera Dobos, Konkoly Observatory, HU</i>
11:55 - 12:00	Discussion
12:00 - 12:20	Open discussion
12:20 - 14:00	Lunch
Session 4: Relation between interiors, plate tectonics and atmospheres, and their evolutions <i>Chair: Lena Noack, FU Berlin, DE</i>	
14:00 - 14:30	The magmatic processes making habitable worlds (Keynote talk) <i>Fabrice Gaillard, University of Orléans, FR</i>
14:30 - 14:35	Discussion
14:35 - 14:55	Origin and evolution of the terrestrial nitrogen atmosphere <i>Manuel Scherf, Austrian Academy of Sciences, AT</i>
14:55 - 15:00	Discussion
15:00 - 15:20	Possible methane outgassing scenarios from clathrates on Mars and atmospheric transport modelling <i>Özgür Karatekin, Royal Observatory of Belgium, BE</i>
15:20 - 15:25	Discussion
15:25 - 16:00	Coffee Break
16:00 - 16:40	The evolution of atmospheric composition on the early Earth (Review talk) <i>David Catling, University of Washington, US</i>
16:40 - 16:45	Discussion
18:00	Guided tour through Terra Nostra Garden (Facultative)

Wednesday, 27 September 2017

09:00 - 09:20	Comparative study of circulation regimes of terrestrial planets' atmospheres <i>Pedro Machado, Institute for Space Sciences, PT</i>
09:20 - 09:25	Discussion
09:25 - 09:45	Robust constraints on the climate and ocean pH of the early Earth using a geological carbon cycle model <i>Joshua Krissansen-Tatton, University of Washington, US</i>
09:45 - 09:50	Discussion
09:50 - 10:10	Open Discussion
10:10 - 10:45	Coffee Break
Session 5: Interaction of life with the atmosphere, geosphere and interior of planets <i>Chair: Emmanuelle Javaux, University of Liège, BE</i>	
10:45 - 11:15	Impact of life on feedbacks cycles in Earth's evolution (Keynote talk) <i>Dennis Höning, German Aerospace Centre, DE</i>
11:15 - 11:20	Discussion
11:20 - 11:40	Microbial isotopic biosignatures and biomineralization to unveil biosphere-hydrosphere-geosphere interactions <i>Nolwenn Callac, Stockholm University, SE</i>
11:40 - 11:45	Discussion
11:45 - 12:00	Open Discussion
12:00 - 13:30	Lunch break
13:30 - 22:30	Conference excursion and dinner

Thursday, September 28, 2017

Session 6: Role of cometary, meteorite and asteroid impacts on planetary evolution <i>Chair: Vinciane Debaille, ULB, BE</i>	
09:00 - 09:40	Seeding Life, Punctuating Evolution – How impact processes affected planetary evolution (Review talk) <i>Kai Wünnemann, Museum of Natural History, DE</i>
09:40 - 09:45	Discussion
09:45 - 10:15	Studying the extraterrestrial flux to Earth: what can we learn from the terrestrial impact cratering record? (Keynote talk) <i>Steven Goderis, Vrije Universiteit Brussel, BE</i>
10:15 - 10:20	Discussion
10:20 - 10:40	Early large impacts and the evolution of Venus <i>Cedric Gillmann, Royal Observatory of Belgium, BE</i>
10:40 - 10:45	Discussion
10:45 - 11:00	Open Discussion
11:00 - 11:30	Coffee break
Session 7: Identification of preserved life tracers in the context of the interaction of life with planetary evolution <i>Chair: Dirk Schulze-Makuch, TU Berlin, DE</i>	
11:30 - 12:00	Early Life Traces and Evolution, & Implications for Astrobiology (Keynote talk) <i>Emmanuelle Javaux, University of Liège, BE</i>
12:00 - 12:05	Discussion
12:05 - 12:25	Photodegradation of selected organics on Mars <i>Inge Loes ten Kate, Utrecht University, NL</i>
12:25 - 12:30	Discussion

12:30 - 12:50	Habitability of hyperarid Atacama Desert soils as an analog for the search of life on Mars <i>Alessandro Airo, TU Berlin, DE</i>
12:50 - 12:55	Discussion
12:55 - 13:10	Open Discussion
13:15 - 15:00	Lunch break
Session 8: Habitability and planet formation in a broader context <i>Chair: Tim Van Hoolst, Royal Observatory of Belgium, BE</i>	
15:00 - 15:40	The impact of the host star and of geophysical processes on the habitability of exoplanets (Review talk) <i>Heike Rauer, German Aerospace Centre, DE</i>
15:40 - 15:45	Discussion
15:45 - 16:15	Interpreting Spectra of Exoplanetary Atmospheres: A Review of Atmospheric Retrieval (Keynote talk) <i>Kevin Heng, University of Bern, CH</i>
16:15 - 16:20	Discussion
16:20 - 16:45	Coffee break
16:45 - 17:05	Habitability of Many Worlds and the Adaptability of Life on Earth <i>Dirk Schulze-Makuch, TU Berlin, DE</i>
17:05 - 17:10	Discussion
17:10 - 17:30	Apatite geochemistry coming to the rescue for evaluation of Martian abiotic environment composition <i>Ewa Slaby, Polish Academy of Sciences, PL</i>
17:30 - 17:35	Discussion
17:35 - 17:50	Open Discussion
18:00	Guided tour through Terra Nostra Garden
20:15	Conference Banquet
Friday, September 29, 2017	
Session 9: Planetary research: Ethical, philosophical and societal issues <i>Chair: Muriel Gargaud, University of Bordeaux, FR</i>	
09:00 - 09:20	The need for an ethics of planetary sustainability <i>Andreas Losch, University of Bern, CH</i>
09:20 - 09:25	Discussion
09:25 - 09:45	Astrobiology and Society in Europe Today <i>Klára Anna Čapová, University of Durham, UK</i>
09:45 - 09:50	Discussion
09:50 - 10:10	The role of communication in science and astrobiology <i>Arianna Ricchiuti, University of Bari, IT</i>
10:10 - 10:15	Discussion
10:15 - 10:30	Open Discussion
10:30 - 11:00	Coffee break
11:00 - 12:00	Discussion: Future Key Questions in Planet Formation and Habitability, related to geophysics <i>Véronique Dehant, Royal Observatory of Belgium, BE</i> <i>Wolf Geppert, Stockholm University, SE</i>
12:00	Lunch break
13:30 - 19:00	After-conference outing: Walk to Lagoa da Furnas crater lake, visit to Seismic Observation Centre

Saturday, September 30, 2017

09:00 - 10:30	Discussion on the White Paper “Astrobiology and Society in Europe Today” <i>David Dunér, Lund University, SE</i> <i>Klára Anna Čapová, University of Durham, UK</i> <i>Erik Persson, Lund University, SE</i>
10:30 - 11:00	Coffee break
11:00 - 12:30	Discussion on the White Paper “Astrobiology and Society in Europe Today”
12:30 - 14:00	Lunch
14:00 - 15:30	Core Group Meeting of the COST Action TD1308
15:30 – 16:00	Coffee break
16:00	Core Group meeting (cont.)