

# SPP1833

## Building a Habitable Earth

### PROGRAMME

General Meeting 2018

SPP 1833 "Building a Habitable Earth"

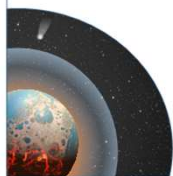
"Alte Mensa", Wilhelmsplatz 1, Göttingen

#### Wednesday, March 21st: Early Solar System / Early Earth Differentiation I

- 14.00-14.15 Carsten Münker, Köln: Introductory remarks
- 14.15-14.30 Dmitry Semenov, München: Origin of volatiles and organics on Earth, IDPs, meteorites, and comets
- 14.30-14.45 Hubert Klahr, Heidelberg: Tracing back Earth building material: Identifying the perfect Ice, Dust, Pebble and Planetesimal Cocktail from simulations of the solar nebula
- 14.45-15.00 Frank Wombacher, Köln: Cadmium stable isotope fractionation during evaporation and recondensation at atmospheric pressure
- 15.00-15.15 Ninja Braukmüller, Köln: A three component model for the refractory and volatile element inventory of carbonaceous chondrites
- 15.15-15.30 Wladimir Neumann, Münster: Modeling the evolution of the parent body of acapulcoites and lodranites: A case study for partially differentiated asteroids
- 15.30-15.45 Cornelis Dullemond, Heidelberg: Modelling the origin of Earth's water within constraints by noble gas isotope systematics
- 15.45-16.00 Mario Fischer-Gödde, Köln: Ruthenium isotope constraints on the timing of volatile element accretion
- 16.00-16.45 *Coffee Break*
- 16.45-17.00 Leonid Dubrovinsky, Bayreuth: Light elements oxygen and nitrogen in the core of the habitable Earth
- 17.00-17.15 René Heller, Göttingen: Tidal heating in the early Earth-Moon system under a faint, young sun
- 17.15-17.30 Christian Maas, Münster: On the effects of planetary rotation on early Earth differentiation
- 17.30-17.45 Esther Posner, Bayreuth: Fate of carbon during early differentiation of the Earth
- 17.45-18.00 Ulrich Hansen, Münster: Double diffusive convection and Layer Formation in Planetary Mantles
- 18.30 *optional: Joint Dinner in the restaurant „Bullerjahn“ (Markt 9, at one's own expense)*

#### Thursday, March 22nd: Early Earth Differentiation II / Onset of Plate Tectonics and Continental Crust Formation

- 9.00-9.15 Mario Trieloff, Heidelberg: Noble gas state of the Archean mantle
- 9.15-9.30 Raul Fonseca, Köln: The behaviour of the moderately volatile elements Sn and In during partial melting and crystallization
- 9.30-10.00 Elis Hoffmann, Berlin (**Keynote**): 'Earth's evolving differentiation history - from a primordial mantle to stable blocks of continental crust'
- 10.00-10.15 Jonas Tusch, Köln: Early silicate differentiation of the Isua mantle? Insight from Tungsten isotopes and HSE abundances
- 10.15-10.45 *Coffee Break*
- 10.45-11.00 Kathrin Schneider, Berlin: The origin of komatiites and basalts of the lower Onverwacht Group, Barberton Greenstone Belt (South Africa)
- 11.00-11.15 Nicholas Arndt, Grenoble: Numerical modelling demonstrates flaws in the sagduction model
- 11.15-11.30 Matthias Schmitz, Jena: Large-scale fold structures of the Barberton Greenstone Belt, South Africa & Swaziland
- 11.30-11.45 Sumit Chakraborty, Bochum: Insight into Archean thermal evolution using P-T-t history of mafic granulites from Coorg, India
- 11.45-12.00 Elis Hoffmann, Berlin: Elucidating Eoarchean geodynamic processes using multiple S isotopes
- 12.00-12.30 General Discussion
- 12.30-14.00 *Lunch Break*



# SPP1833

## Building a Habitable Earth

### PROGRAMME

General Meeting 2018

SPP 1833 “Building a Habitable Earth”

“Alte Mensa”, Wilhelmsplatz 1, Göttingen

#### Thursday, March 22nd: Ocean and atmosphere evolution I

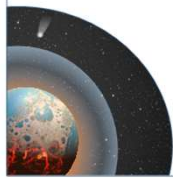
- 14.00-14.30 Sebastian Viehmann, Wien (**Keynote**): Reconstruction of the earliest marine habitats on Earth: Insights from BIFs and stromatolites
- 14.30-14.45 Horst Marschall, Frankfurt: Tracing secular changes in composition of Archean oceans and continental crust through boron isotopes
- 14.45-15.00 Nina Albrecht, Göttingen: High-precision measurement of  $\delta^{17}\text{O}$  and  $\delta^{18}\text{O}$  in carbonates by high-resolution gas source mass spectrometry – analytical setup and application
- 15.00-15.15 Sukanya Sengupta, Göttingen: Triple Oxygen Isotope Study of a Mesoarchean Banded Iron Formation, Pongola Supergroup, South Africa
- 15.15-15.30 Annika Brüske, Hannover: Uranium isotopes track oxidative weathering of U minerals in Archean sediments
- 15.30-16.00 *Coffee Break*
- 16.00-17.00 Poster Session
- 18.00 *Reception at the GeoMuseum, Goldschmidtstraße 1-5 (optional)*

#### Friday, March 23rd: Ocean and atmosphere evolution II / Early Life

- 9.00-9.15 Jens Hopp, Heidelberg: Fluid inclusion assemblages in Archean cherts: p-T history and consequences for the preservation of palaeoatmospheric noble gases
- 9.15-9.30 Katharina Schier, Bremen: Non-detrital Gallium and Aluminum in Early Precambrian Marine Chemical Sediments and the Potential Use of the Ga/Al Ratio as a Geochemical Proxy for Metal Sources and Relative Fluxes to the Early Ocean
- 9.30-9.45 Ronny Schönberg, Tübingen: Isotopic investigations of the pre-Great Oxidation Event (GOE) geo-biological evolution (project 1) and the mode of atmospheric oxygen build-up at the GOE as a sharp or an oscillating process (project 2)
- 9.45-10.00 Wafa Abouchami, Mainz: Stable Cd isotope fractionation, diagnostic of early ocean biogeochemistry?
- 10.00-10.30 *Coffee Break*
- 10.30-11.00 Jan-Peter Duda, Göttingen (**Keynote**): Gaia obscura — understanding life at the break of dawn
- 11.00-11.15 Stefanie Gebauer, Berlin: The influence of biogeochemical cycles upon atmospheric habitability on the Early Earth
- 11.15-11.30 Michelle Gehringer, Kaiserslautern: Reconciling biological and geochemical perspectives on the production of oxygen on early Earth
- 11.30-11.45 Alexander Ruf, Unterschleissheim: Habitability Assessment of Primordial “Soups” using Modified Miller-Urey Experiments and State-of-the-Art Analytical Tools
- 11.45-12.00 *Conclusion*

Note that only the first author/speaker of each talk is given, all co-authors are cited in the abstracts





# SPP1833

## Building a Habitable Earth

### POSTERS

General Meeting 2018

SPP 1833 "Building a Habitable Earth"

"Alte Mensa", Wilhelmsplatz 1, Göttingen

Katherine **Armstrong**, Bayreuth: Hydrogen partitioning between silicate melts and liquid sulfide: an early oxidation mechanism for the mantle

Ingrid **Blanchard**, Bayreuth: Behaviour of sulfur during Earth differentiation

Ludmila **Carone**, Heidelberg: The Archean Earth - Coupling between geodynamics and 3D climate modelling

Annika **Dziggel**, Aachen: Processes of Neoproterozoic terrane accretion in the Nuuk region, SW Greenland

Dennis **Harries**, Jena: Understanding the origin of terrestrial hydrogen and carbon: metamorphism and fluids within planetesimals of the inner Solar System – Earth's nearest building blocks

Eric **Hasenstab**, Köln: Hafnium and Nd isotope systematics of Pilbara basalts and komatiites: changes of Archean mantle composition through time.

Achim **Herrmann**, Kaiserslautern: Could cyanobacteria have made the salinity transition during the late Archean?

Christoph **Heubeck**, Jena: Leveraging the record of the Swazi Barberton Greenstone Belt for an improved understanding of Archean tectonostratigraphic processes

Christoph **Heubeck**, Jena: The role of early Archean Terrestrial Environments in Weathering, Sediment Transport, and the Colonization of Land

Christoph **Heubeck**, Jena: Comparison of Early Archean "sag basins" to subrecent salt basins through field work and numerical modelling

Christoph **Heubeck**, Jena: The ICDP BASE (Barberton Archean Surface Environments) Project: Probing the Moodies Group, Barberton Greenstone Belt, South Africa

Simon **Hohl**, Nanjing: Cd isotopes record changes in biologic productivity of Mesoproterozoic stromatolites

Peter **Hoppe**, Mainz: Iron-60 as a heat source for melting and differentiation of Earth-forming planetesimals & planetary embryos

Janos **Kodolanyi**, Mainz: In situ measurement of the Si isotope composition of metal and enstatite in reduced meteorites as a tracer for condensation processes and planetary differentiation during the early history of the Solar System

Inga **Köhler**, Jena: 3.2 Ga old microfossils in Moodies Group crinoids from the Barberton Greenstone Belt, South Africa

Florian **Kurzweil**, Köln: Stable tungsten isotope compositions of Earth's oldest rocks

Arne **Leider**, Jena: Tracing the development of early Earth's biosphere by systematic characterization of kerogens preserved in the Archean rock record

Jan **Leitner**, Mainz: Isotopic, chemical and mineralogical characterization of organic and inorganic nitrogen-carriers in chondritic meteorites

Christian S. **Marion**, Köln: 3.35 Ga carbonate interstitials from the Pilbara terrane, Australia, indicate unradiogenic  $^{87}\text{Sr}/^{86}\text{Sr}$  isotope composition for the Archean seawater

Raul **Martinez**, Bremen: The rise and fall of Archean atmospheric oxygen: did temporary carbon burial as Fe(Ox) -DOM complexes play a modulating role?

Wladimir **Neumann**, Berlin: Modelling of accretion and differentiation of Earth's building blocks: Ice-rich precursors and their retention of water

Lena **Noack**, Berlin: Global volatile cycles on early Earth

Stefan **Peters**, Göttingen: Constraining the composition of Earth's late stage building blocks from the earliest ultramafic rocks

Andrea **Piccolo**, Mainz: Plume-Lithosphere interaction during Archean

Joachim **Reitner**, Göttingen: Early Archean Carbon Archives

Falko **Schulz**, Berlin: Effects of compressibility and non-linear rheology on the early dynamics of the solid mantle

Sebastian **Viehmann**, Wien: Biogeochemical reconstruction of microbial habitats during stromatolite formation using REE and Cd isotopes

Christian **Vollmer**, Münster: The role of ammonia for biomolecule synthesis on meteorite parent bodies

Matthias **Willbold**, Göttingen: Early Earth mantle heterogeneities – an isotope perspective

Jie **Yao**, Bayreuth: Towards melting relations in the  $\text{MgSiO}_3\text{-FeO+SiO}_2$  system at lower mantle conditions from multi-anvil experiments

