

# Geodynamics Workshop 2012

Wandlitz

10<sup>th</sup> - 12<sup>th</sup> September 2012

## Sunday, 9<sup>th</sup> September

19:00 Social Event

## Monday, 10<sup>th</sup> September

**12:00 Lunch**

13:45 Opening D. Breuer

14:00 – 14:30 M. Tirone, *Why thermodynamics (and petrology) matter to geodynamic modelling*

14:30 – 15:00 H. Schmeling and G. Marquart, *The effect of hydrothermal cooling of the “square root  $t$ ”- law for a cooling oceanic lithosphere using parameterized porous convection*

15:00 – 15:30 J. Dannberg and S.V. Sobolev, *Dynamics of low-buoyancy mantle plumes*

**15:30 – 16:00 Coffee break**

16:00 – 16:30 R. Agrusta, D. Arcay and A. Tommasi, *Lithosphere erosion and small-scale convection atop mantle plume*

16:30 – 17:00 J. Tympel, S. Schröder and S. Sobolev, *Effects of rheology, composition and surface erosion during collision of India and Eurasia*

17:00 – 17:30 J. Quinteros and S.V. Sobolev, *Why does the convergence rate between Nazca and South America decrease since the Neogene?*

**17:30 – 18:00 Coffee break**

18:00 – 19:00 R. Wagner, *Crater distributions and surface ages of icy satellites: comparison with the Moon, current status of impact chronologies, and problems of age dating*

**19:00 Dinner**

## Tuesday, 11<sup>th</sup> September

09:00 – 09:30 W. Neumann, D. Breuer and T. Spohn, *Thermo-chemical evolution of asteroid 21 Lutetia*

09:30 – 10:00 T. Rückriemen, D. Breuer and T. Spohn, *Magnetic field generation in Ganymede's core in the context of the Fe-snow regime*

10:00 – 10:30 M. Laneuville, M. Wiczorek and D. Breuer, *Asymmetric thermal evolution of the Moon*

**10:30 – 11:00 Coffee break**

11:00 – 11:30 R. Ziethe and T. Spohn, *Constraints for a solid lunar inner core*

11:30 – 12:00 B. Steinberger and S.C. Werner, *On the possible deep origin of large-scale gravity anomalies on Moon and Mercury*

12:00 – 12:30 N. Tosi, D. Breuer, A.-C. Plesa and M. Laneuville, *Mercury's thermo-chemical evolution*

*from numerical models constrained by MESSENGER observations*

**12:30 – 14:00 Lunch**

14:00 – 14:30 A.-C. Plesa and D. Breuer, *The formation of stable geochemical reservoirs in the interior of Mars*

14:30 – 15:00 A. Stuke, N. Tosi, A.-C. Plesa and D. Breuer, *The influence of a compositional stratification on the thermo-chemical convection in the interior of Mars*

15:00 – 15:30 R. Gassmüller and B. Steinberger, *Modelling the interaction between subducted slabs and thermo-chemical piles*

15:30 – 16:00 M.J. Beuchert and H. Schmeling, *A thermodynamically consistent model for melting of the convecting lowermost mantle: consequences for the thickness of Ultra Low Velocity Zones (ULVZs)*

**16:00 – 16:30 Coffee break**

16:30 – 17:15 Poster Presentations (3 - 5 minutes short presentations of each poster)

17:15 – 19:00 Poster session

**19:00 Dinner**

**Wednesday, 12<sup>th</sup> September**

09:00 – 09:30 T. Spohn, *Planetary dynamics and habitability*

09:30 – 10:00 D. Höning, H. Hansen-Goos and T. Spohn, *A model of continental growth and mantle degassing comparing biotic and abiotic worlds*

10:00 – 10:30 S.V. Sobolev, *Origin and environmental impact of the Earth's largest intraplate magmatic events- Siberian Traps and Ontong Java Plateau*

**10:30 – 11:00 Coffee Break**

11:00 – 11:30 A. Davaille, S. Androvandi and A. Limare, *Thermal boundary layer instabilities in viscous fluids and planets*

11:30 – 12:00 L. Noack and D. Breuer, *Plate tectonics simulations using reduced viscosity contrasts – The simple approach?*

12:00 – 12:30 C. Hüttig, B. Moore and N. Tosi, *A novel formulation for the incompressible Navier-Stokes equations with variable viscosity, eliminating cross-derivatives*

**12:30 Lunch**

Departure

## Poster Session

Tuesday, 10<sup>th</sup> September

- C. Köstler, M. Müller, U. Walzer and J. Baumgardner, *An improved 3-D Spherical FEM formulation of Variable Viscosity*
- C. Hüttig, B. Moore and N. Tosi, *A novel formulation for the incompressible Navier-Stokes equations with variable viscosity, eliminating cross-derivatives*
- B. Futterer, A. Krebs, A.-C. Plesa, D. Breuer and C. Egbers, *Sheet-like and plume-like thermal flow in a spherical convection experiment performed under microgravity*
- L. Noack and D. Breuer, *Scaling laws revised: employment of a rheology-dependent exponent*
- H. Hansen-Goos, *A classical density functional theory for liquid Fe-FeS mixtures at high pressures*
- A. Möller and U. Hansen, *Numerical Parameter Study of the 'Metal Rain Scenario'*
- H. Wallner and H. Schmeling, *Effect of density changes on convection flow pattern caused by enrichment in consequence of melting and emplacement*
- P. Osinski and U. Hansen, *Double diffusive Convection in the Finger-Regime – Applications to Magmatic Systems*
- N. Tosi, D. Yuen, N. de Koker and R. Wentzcovich, *Mantle dynamics from analytical parametrization of thermal expansivity and conductivity*
- M. Mertens and U. Hansen, *Dynamically established structures at the Core-Mantle-Boundary*
- E. Mulyukova, M. Dabrowski and B. Steinberger, *Numerical Modelling of Deep Mantle Convection*
- T. Baumann, B. Kaus and A. Popov, *Data-driven geodynamic modeling: Constraining Stokes-rheology from surface observations*
- C. Stein, J. Lowman and U. Hansen, *Mantle Convection Models Featuring Plates*
- N. Müller, *Venus Express infrared surface imaging: New evidence for the mantle dynamics of Venus?*