Friday, March 24, 2017 **[F703]**

GEODYNAMICS AND TECTONICS ACROSS SCALES:
OUTSIDE, INSIDE OUT LIVIN' LA GEODYNAMICA LOCA
8:30 a.m. Waterway Ballroom 5

Chairs: **Nicola Tosi**
Richard Ghail

8:30 a.m. Tosi N. * Godolt M. Stracke B. Ruedas T. Grenfell J. L. et al.
On the Habitability of a Stagnant-Lid Earth **[#1885]**
Interior-atmosphere modelling of an Earth-like planet without plate tectonics shows that a stagnant-lid Earth could be habitable throughout its evolution.

8:45 a.m. Tikoo S. M. * Elkins-Tanton L. T.
The Fate of Water Within Earth-Like Planets and Implications for the Onset of Plate Tectonics **[#1261]**
Magma ocean processes may segregate sufficient water within the upper mantle to facilitate a rapid onset for plate tectonics on Earth-like planets.

9:00 a.m. Seales J. Jr. * Lenardic A.
Comparative Evolution of Earth and Mars with Volatile Cycling **[#1993]**
Numerical experiments show the potential of volatile cycling processes to delay the onset of cooling to near, at, or beyond present day for a Mars-like planet.

9:15 a.m. Hakim K. * Rivoldini A. Cottenier S. van Hoolst T. Chust T. C. et al.
A New Ab Initio Equation of State of hcp-Iron and Its Application to the Interior Structure of Rocky Super-Earths **[#2279]**
We develop a new ab initio equation of state (EOS) of hcp-iron and show effects of EOSs on the interior structure and mass-radius relation of rocky super-Earths.

9:30 a.m. Plesa A.-C. * Knapmeyer M. Golombek M. Breuer D. Grott M. et al.
Present-Day Mars' Seismicity Predicted from 3-D Thermal Evolution Models of Interior Dynamics **[#1906]**
Mars' annual seismic moment release due to convective and contraction stresses are similar in magnitude but spatially anti-correlated.

9:45 a.m. Raterron P. * Holyoke C. W. Tokle L. Hilairet N. Merkel S. et al.
Effect of Iron Content on Olivine Viscosity and Implications for the Martian Mantle **[#1553]**
From high-P experiments carried out on Fe-rich olivines, we show that Mars' upper-mantle viscosity contrast with depth may be 40 times larger than in the Earth.

10:00 a.m. Menard J. M. * Patton R. L. Watkinson A. J.
Geoid-Shape Cross-Spectral Method Constraints Planetary Structure, Composition, and Evolution **[#2745]**
Gravity-topography cross-spectra for the Earth, Moon, and Mercury exhibit dual low values. We explore some of the geochemical and evolutionary implications.

10:15 a.m. Qin C. Zhong S. J. * Phillips R. J.
Formation of the Lunar Fossil Bulge and Its Implication for the Dynamics of the Early Earth and Moon **[#1333]**
A first model with Moon's de-spinning and cooling histories explains the lunar fossil bulge and suggests a slow recession of the early Moon from the Earth.

10:30 a.m. Keane J. T. * Matsuyama I.
Reorientation Histories of the Moon, Mercury, Venus, and Mars **[#3016]**
We present the first comprehensive, multi-episode reorientation chronologies for the Moon, Mercury, Venus, and Mars.

10:45 a.m. Thomas P. * Grott M. Morschhauser A. Vervelidou F.
Paleopole Reconstruction of Martian Magnetic Field Anomalies **[#2019]**
Investigations of martian magnetic field anomalies determine regions of admissible paleopole locations and support polar reversal and true polar wander events.

11:00 a.m. Plattner A. * Golabek G. J. Simons F. J.
A Spectral View of the Terra Sirenum/Cimmeria Crustal Magnetic Field **[#1627]**
Spatial distribution of regional power spectra provides a new perspective of the strong crustal magnetic field of the Terra Sirenum/Cimmeria region on Mars.

11:15 a.m. Mège D. * Gurgurewicz J.
Surprising Implications of Dike Swarm Geometry for the Stress History in the Valles Marineris Region on Mars **[#1087]**
In the Tharsis LIP, some dyke swarms identified in Valles Marineris indicate crustal dilation that does not match usual rift-parallel magmatic dilation models.