

# Curriculum Vitae

## Personal information

Surname, First Name

**Colli, Lorenzo**

Address

2229 Mimosa Drive, Apt 9, Houston, Texas 77019, United States

E-mail

lor.colli@gmail.com

Nationality

Italian

Date of birth

18<sup>th</sup> December 1985

## Research Interests

Global mantle convection, full-waveform seismic tomography, dynamic topography, kinematic plate motion reconstructions, links with surface geological processes, geodynamic retrodictions

## Academic Appointments

**Research Assistant Professor**, since September 2017  
*University of Houston, Houston, TX, USA*

**Postdoctoral researcher**, February 2017 to September 2017  
*Ludwig-Maximilians-University, Munich, Germany*

## Education

**Dr.Rer.Nat.** in Geophysics, 2010-2017

*Ludwig-Maximilians-University, Munich, Germany*

Thesis title: "The past is the key: testing Earth models from seismic waveform to continental uplift through reconstructions of past mantle states"

Thesis advisors: Hans-Peter Bunge and Andreas Fichtner

**M.Sc.** in Physics, 2007-2009

*University of Milan, Milan, Italy*

Thesis title: "Modelization of co- and post-seismic deformations of the 2004 Sumatra earthquake by compressible viscoelastic self-gravitating Earth models"

Thesis advisors: Roberto Sabadini and Gabriele Cambiotti

**B.Sc.** in Physics, 2004-2007

*University of Milan, Milan, Italy*

## Training and workshops

**Linking Seismic Imaging to Geodynamic Modelling**, 10th PhD course of the University of Copenhagen, Copenhagen, Denmark 2015

Hum workshop - Munich, Germany, 2014

Computational Geosciences Workshop, Geilo, Norway, 2012

**Uncertainty Analysis in Geophysical Inverse Problems**, Leiden, Netherlands, 2011

**COST Training school on Glacial Isostatic Adjustment (GIA) modeling**, Gävle, Sweden, 2011

## Awards

Study of the Earth's Deep Interior Graduate Research Award, AGU 2017

Best SAGA Student Paper Award, 13<sup>th</sup> SAGA conference, 2013

## Professional Service

Chair of EGU and AGU sessions

**Reviewer** for Earth and Planetary Science Letters, Geophysical Research Letters, Journal of Geophysical Research - Solid Earth, Geophysical Journal International and Scientific Reports

## Publications

Fichtner, A., van Herwaarden, D.-P., Afanasiev, M., Simute, S., Krisher, L., Çubuk-Sabuncu, Y., Taymaz, T., **Colli, L.**, Saygin, E., Villasenor, A., Trampert, J., Cupillard, P., Bunge, H.-P., & Igel, H., 2018. *The Collaborative Seismic Earth Model: Generation 1*. **Geophysical Research Letters**, 45, pp.4007-4016.

**Colli, L.**, Ghelichkhan, S. & Bunge, H.-P., 2018. *Retrodictions of late Paleogene mantle flow and dynamic topography in the Atlantic region from compressible high resolution adjoint mantle convection models: sensitivity to deep mantle viscosity and tomographic input model*. **Gondwana Research**, 53, pp.252-272.

Ghelichkhan, S., Murböck, M., **Colli, L.**, Pail, R. & Bunge, H.-P., 2018. *On the observability of epeirogenic movements in current and future gravity missions*. **Gondwana Research**, 53, pp.273-284.

Friedrich, A. M., Bunge, H.-P., Rieger, S., **Colli, L.**, Ghelichkhan, S., & Nerlich, R., 2018. *Stratigraphic framework for the plume mode of mantle convection and the analysis of interregional unconformities on geological maps*. **Gondwana Research**, 53, pp.159-188.

O'Connor, J., Jokat, W., Wijbrans, J., & **Colli, L.**, 2018. *Hotspot tracks in the South Atlantic located above bands of fast flowing asthenosphere driven by waning pulsations from the African LLSVP*. **Gondwana Research**, 53, pp.197-208.

Nerlich, R., **Colli, L.**, Ghelichkhan, S., Schuberth, B.S.A. & Bunge, H.-P., 2016. *Mantle convection models constrain central Neo-Tethys Ocean reconstructions*. **Geophysical Research Letters**, 43(18), pp.9595-9603.

**Colli, L.**, Ghelichkhan, S. & Bunge, H.-P., 2016. *On the ratio of dynamic topography and gravity anomalies in a dynamic Earth*. **Geophysical Research Letters**, 43(6), pp.2510-2516.

**Colli, L.**, Bunge, H.-P. & Schuberth, B.S.A., 2015. *On retrodictions of global mantle flow with assimilated surface velocities*. **Geophysical Research Letters**, 42(20), pp.8341-8348.

**Colli, L.** et al., 2014. *Rapid South Atlantic spreading changes and coeval vertical motion in surrounding continents: Evidence for temporal changes of pressure-driven upper mantle flow*. **Tectonics**, 33(7), pp.1304-1321.

**Colli, L.**, Fichtner, A. & Bunge, H.-P., 2013. *Full waveform tomography of the upper mantle in the South Atlantic region: Imaging a westward fluxing shallow asthenosphere?* **Tectonophysics**, 604, pp.26-40.

Cambiotti, G., Bordoni, A., Sabadini, R. & **Colli, L.**, 2011. *GRACE gravity data help constraining seismic models of the 2004 Sumatran earthquake*. **Journal of Geophysical Research**, 116(B10), B10403.

## International conferences

EGU general assembly, Vienna, Austria, 2011-2018

AGU fall meeting, 2013, 2015-2017

JpGU meeting, Chiba, 2018

17th Annual HGS-PESGB Africa Conference, Houston, 2018  
Convection in Nature workshop, Princeton, 2018  
35<sup>th</sup> IGC, Cape Town, South Africa, 2016  
GSA meeting, Denver, Colorado, USA, 2016  
SAMPLE SPP Colloquium, Germany, 2011-2016  
75<sup>th</sup> EAGE conference, Amsterdam, 2014  
GeoFrankfurt 2014 - Earth System Dynamics, Frankfurt, 2014  
SAGA 13<sup>th</sup> Biennial Conference, Skukuza Rest Camp, South Africa, 2013  
SIAM Conference on Mathematical & Computational Issues in the Geosciences, Padua, Italy, 2013  
46<sup>th</sup> Brazilian Geological Congress, Santos, Brazil, 2012  
European Mineralogical Conference, Frankfurt, Germany, 2012  
3<sup>rd</sup> QUEST Workshop, Tatranska Lomnica, Slovakia, 2012  
GSA-GV-DGG International Conference Fragile Earth, Munich, Germany, 2011  
2<sup>nd</sup> QUEST Workshop, Hveragerdi, Iceland, 2011

## **Invited talks**

*"Mantle flow retrodictions: linking geodynamic models to the geologic record"*, Convection in Nature workshop, Princeton, 2018

*"Linking past topographic evolution and mantle structure: toward time-dependent dynamic Earth models"*, MOVE-ON (Models and Observations of VERTICAL motiON) workshop, Tutzing, 2017

*"Relating geological and geophysical datasets through retrodictions of past mantle states"*, Stony Brook University, 2017

*"Geodynamic retrodictions: reconstructing past mantle flow to test geophysical hypotheses against geologic data"*, University of Padua, 2016

*"Relating mantle convection, epeirogeny and gravity anomalies"*, GSA Meeting, 2016

*"Rapid plate motion variations and continental uplift: a window on the history of asthenospheric flow"*, EGU general assembly, 2015

*"Rapid South Atlantic spreading changes and coeval vertical motion in surrounding continents: evidence for temporal changes of pressure-driven upper mantle flow"*, Roma Tre University, 2014

*"Rapid Spreading Rate Variations in the South Atlantic: Causes and Consequences"*, University of Leicester, 2014

*"How can the South Atlantic spreading rate vary so quickly?"*, 75<sup>th</sup> EAGE meeting, 2014

*"Full waveform tomography of the South Atlantic upper mantle"*, 46<sup>th</sup> Brazilian Geological Congress, 2012

## **Funding and grants**

Major contributions to the Large Scale Project “Global High-Resolution Earth Models - Generation and Assessment” for the supercomputer SuperMUC at the LRZ, 35 million CPU-hours

Major contributions to the DFG Proposal for Priority Programme SAMPLE “Co-Investigation of upper mantle structure and flow history for the South Atlantic region and adjacent continents”

Test project “Full waveform tomography of the South Atlantic upper mantle” for the supercomputer SuperMUC at the LRZ, 50 thousand CPU-hours

## **Teaching**

Lab session for the class “Geocontinua”, 2010-2016

Supervision of two PhD, four MSc and nine BSc projects