



SHORT COURSE

Understanding mantle dynamics using data and models based on seismic tomography, geodynamics, and mineral physics

Prof. Alessandro Forte
Univ. Florida (USA)



AGENDA

Day #1

Introduction and overview

Why the deep mantle is important
Tomography-based mantle flow modelling

Spectral models of the viscous flow in the mantle

Resolution of fluid mechanical equations using spherical harmonics
Green Functions – response of the mantle to a spatial impulse
Boundary conditions: tectonic plates
Geodynamic kernels (functions) for convection-related data

Day #2

Joint seismic and geodynamic inversions

Global seismic data
Global geodynamic data
Joint inversions for perturbations of ρ , seismic shear and compressional speeds

Constraints on global energy balance in the mantle

Quantifying thermal anomalies through the mantle
Convective heat transport
Implications for heat flow across the core-mantle discontinuity

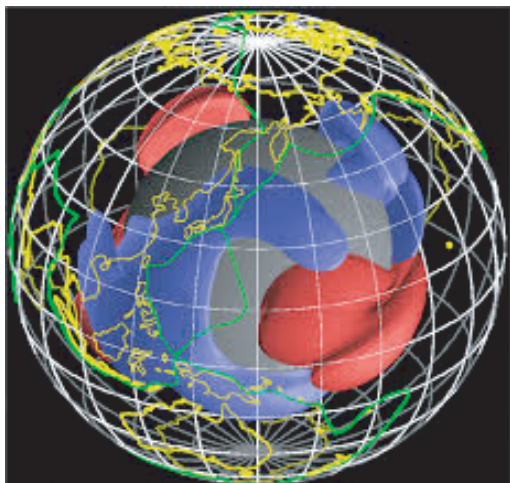
Day #3

Present-day convective flow patterns under continental plates

North American and African plates

Dynamic topography

What is it?
Finding DT in present-day continental elevations and oceanic bathymetry
Present-day DT induced by mantle convective flow
Modelling time-dependent topography in the geological past



WHERE

Università Roma TRE
Dipartimento di Scienze
Sezione di Geologia
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WHEN

May 24-26, 2017
10-12:00 and 14.00-16.00
Aula D (blocco aule)



REGISTRATION

Send an email to Francesca Funciello (francesca.funciello@uniroma3.it) before May 18th
(max number of participants: 50)