PHYSICAL AND NUMERICAL MODELLING
o f
MANTLE CONVECTION AND LITHOSPHERIC DYNAMICS

SECOND WORKSHOP :
20-26 JUNE , Oléron, FRANCE

Final informations

Dear friends,

This is the last circular before the meeting. The workshop will be held at the CNRS facility center in Oléron Island at "La Vieille Perrotine". Oléron Island is a nice place in the south west coast of France with nice beaches and see activities close to La Rochelle (take your clothbath).

Travel informations:

The easiest mean of travel is to reach "La Rochelle" by the TGV from Paris (High Velocity Train). Here enclosed you will find a SNCF coupon to get 20% off on the price of the domestic train ticket. A bus will start around 8 P.M. from "La Rochelle" to "La vieille Perrotine". This allow you to take the train starting at 3h25 P.M. from Paris arriving in "Poitiers" at 5h04 and a connecting train to "La Rochelle" starting at 5h15 and arriving at 7h31 P.M..

Registration fees of 300 french francs cover the expens of conference room renting and coffee breaks. Payment can be made by credit card or by french check. The fees do not cover the lodging expenses. The price will be 190 francs a day full board lodging and food. A few individual rooms are available with an extra charge of 50 francs a day. Attendants to the meeting will have to pay the living expenses directly to the center.

We are sending you a program which, we hope, will respond to your main interests. You may contribute in all the sessions you want by oral presentations and/or by posters. The final "program" will be filled interactively the evening before the sessions. We strongly encourage you to prepare posters eventhough you plane to do some oral presentations. Posters are important to promote thorough and more "private" discussions; and, therefore, for the scientific life of the meeting. The length of the presentations will be modulated to allow a maximum of people to presents results and interactive discussions. The posters, related to a session, will be hanged in the conference room during that session and will benefit of a very short presentation (1-2 minutes - one overhead).

Posters will be hanged during all the workshop in the coffee-room.

We enjoy to see you soon

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Monday 21 st June 1993

9H00-10H30 : Phase transitions and rheological problems : I

Scott king : Slabs and phase changes
Solheim Larry : Mantle Phase transitions
Volker Steinbach : Mantle convection and phase transitions
Schmelling Harro : Mantle convection and partial melting

11H00-12H30 : Phase transitions and rheological problems : II

Siegfried Frank : superplasticity and phase transition
Bittner Detlef : Thermal and dynamics interactions of basaltic intrusions

14H00-16H00 : Numerical methods : parallel computing, adaptive remeshing, domain decomposition

Sotin Christophe : 3-D Multigrid convection on CM5
Jean Brun : EBE method
Bruno Lafaurie : Numerical methods for interfaces
Bertrand Daudré, Jean Pierre Vilotte : Adaptative remeshing
Hassani Riad : Optimal remeshing

16H30-18H30 : Ice breaker and poster party

Tuesday 22 th June

8H30-10H30 : Mantle dynamics part I

William R. Peltier : Dynamics topographic constraint on models of the large scale geoid
Catherine Thoraval : Dynamical model of geoid importance of mantle discontinuities
Luce Fleitout : Large scale geoid and topography and mantle dynamics
Marie Pierre Douin : Geoid anomalies and structure of the cratonic lithosphere
Giovanni Pari : Internal loading model with calculation of geoid
Andrew Nyblade : Southern african superswell
Yannick Ricard : A geodynamic model of mantle density heterogeneity

11H00-13H00 : Mantle dynamics part II

Yannick Ricard : Mantle convection and rotation
Mariane Lefftz : Influence of lower mantle viscosity on CMB viscoelastic deformation
Valérie Corrieux: Predicting surface observation from internal loading modes
Misha Karpichev : Rigid plates in geoid mantle
Bernd Blankenbach : Comparaison of tomographic phenomenon with results of convection
Henri Claude Nataf : Sismological detection of plumes
Gary T. Jarvis : Effects of curvature on aspect ratio of mantle convection

16H30-18H30 Chemical convection and magmatic process

Ulli Hansen : Thermo-mechanical boundaries in the Earth mantle
Laure Dupeyrat et Christophe Sotin : Chemical convection in the Earth' upper mantle
Fradkov and Nauheimer : Thermal Sedimentary convection
Anne Davaille : Thermal convection in temperature dependent viscosity fluid
David Scott : Effects of melting on mantle flows

20H30: meetings for benchmark syntheses (Chemical convection, Lithospheric extension, Post-glacial rebound

Wednesday 23 rd June

8H30-10H30 : Patterns in non-linear dynamical systems : turbulence, large scale flows

Cserepes Lazlo : 3-D convective pattern in a plane layer of a compressible fluid
Harder Helmut : Large scale flows in spherical convection
Schmalzl J. : Mixing in 3-D steady state convection
Sornette Didier : Self organized criticality by dynamical feedback
Rothman Dan : Scaling in turbidite depositions
Sornette Didier : Non-linear theory of deformations : from earthquake b-value to large scale strain organisation

11H00-13H00 : Convection models in the Earth's core

Olson Peter : Convection in the outer core : an overview
Philippe Cardin : From convection to magneto-convection models in the Earth core
Jault Dominique : Geostrophic motions and model Z
Ciliberto Sergio : Comparison between turbulent thermal convection at low and high Prandtl number
Rieutord Michel : Inertial waves in the Earth core

Thursday 24 nd June

8H45-10H30 : **Transition Turbulence**

Paul Manneville : From Temporal to spatiotemporal chaos (and turbulence ?)
Sergio Cilliberto : Spatio-Temporal intermittance in thermal convection
Andrei Malevsky : Turbulence in the infinite and finite Prandtl convection
Ulli Hansen : Heat transport in chaotic convection
Ulli Chritiensen : Results of 3-D convection benchmark

11H00-13H00 : **Strain localization and fault**

Jean Braun : Faulting geometry and oblique convergence
A. Poliakov : Fault spacing in extension and compression
Yuri Podlachikov : Relative sea-level changes and faulting in the lithosphere
E. Burov : Feedback .....
Shimon Wdowinski : Strain localization in compressional stress regime
David Scott : Discrete element modeling of strain localization in granular material
Rob Govers : Extension of continental lithosphere and initiation of lithosphere scale faults

16H00-18H00 : **Earthquake faulting - rupture**

Raoul Madariaga : Terremotos
Stephane Nielsen : Dynamics, radiation and recurrence on a fault
Didier Sornette : Fractal fault formation by earthquakes as optimal structures
Jean-Pierre Vilotte : Burridge-Knopoff model : Adiscrete model for rupture or friction ?
D. Pisarenko : Velocity weakening in a dynamical model of friction
Sergio Ciliberto : Self-organized criticality in the stick-slip of two rough elastic surfaces
Stephane Roux : Scaling laws for rupture
J. Melosh : A theory for weak faults and fault creep

Friday 25 th June

8H45- 9H50 : Fluid circulation in porous media and interfaces

D. Rothman : Macroscopic laws for multiphase flow through porous media
Jean Schmittbuhl : Fracture surfaces : geometry and fluid transport
Sarah Watson : Geochemical effects of magmatic solitary wave

9h50 - 10H45 : Lithospheric extension

Ulli Christensen : Preliminary report of extension benchmark results
Harro Schmeling : Thermo-chemical benchmark
Jean Braun : Simple kinematic models for 2D and 3D listric normal faults

11h00 - 12H30: Lithosphere - Asthenosphere coupling

Nieil Ribe : 3D modelling of plume-lithosphere interactions
Scott King : Subduction, geoid and topography in a strongly temperature dependent viscosity
W. Wullner: Spherical convection underneath a crust inhomogeneously enriched in heat sources
John Paul: Ridge/plume interaction, inferences from gravity data over Afanasy-Nikita seamount
Julian Lowman : Mantle flow reversals due to continental collisions
Anne Davaille : The hypothesis of small-scale convection
G. Ceulener : Melt migration processes in the asthenosphere constraint by observations

13h45-15H00: Dynamics of mantle and crustal diapirs

A. Poliakov : Diapirism with sedimentation and erosion
Detlef Bitner : influence of phase diagram on dynamics of granitic diapirs
B. Daudre : Diapir modeling by FEM and mesh adaptativity
Peter Van Keken : Effective viscosity of rock salt

14H45-15H10 General discussion