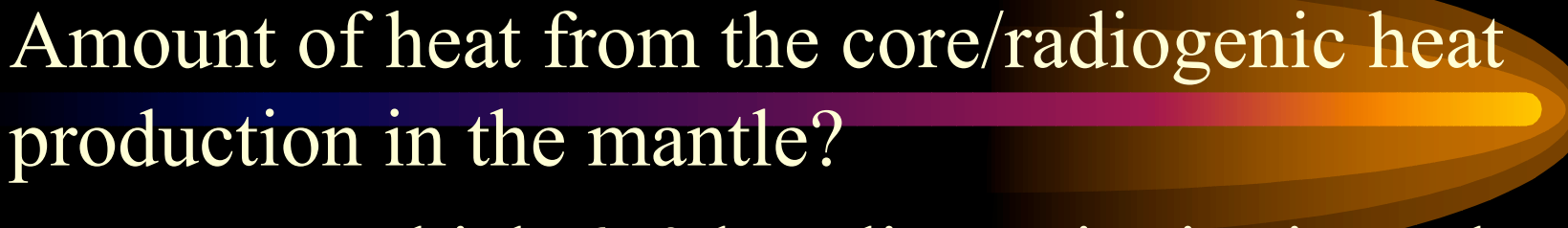


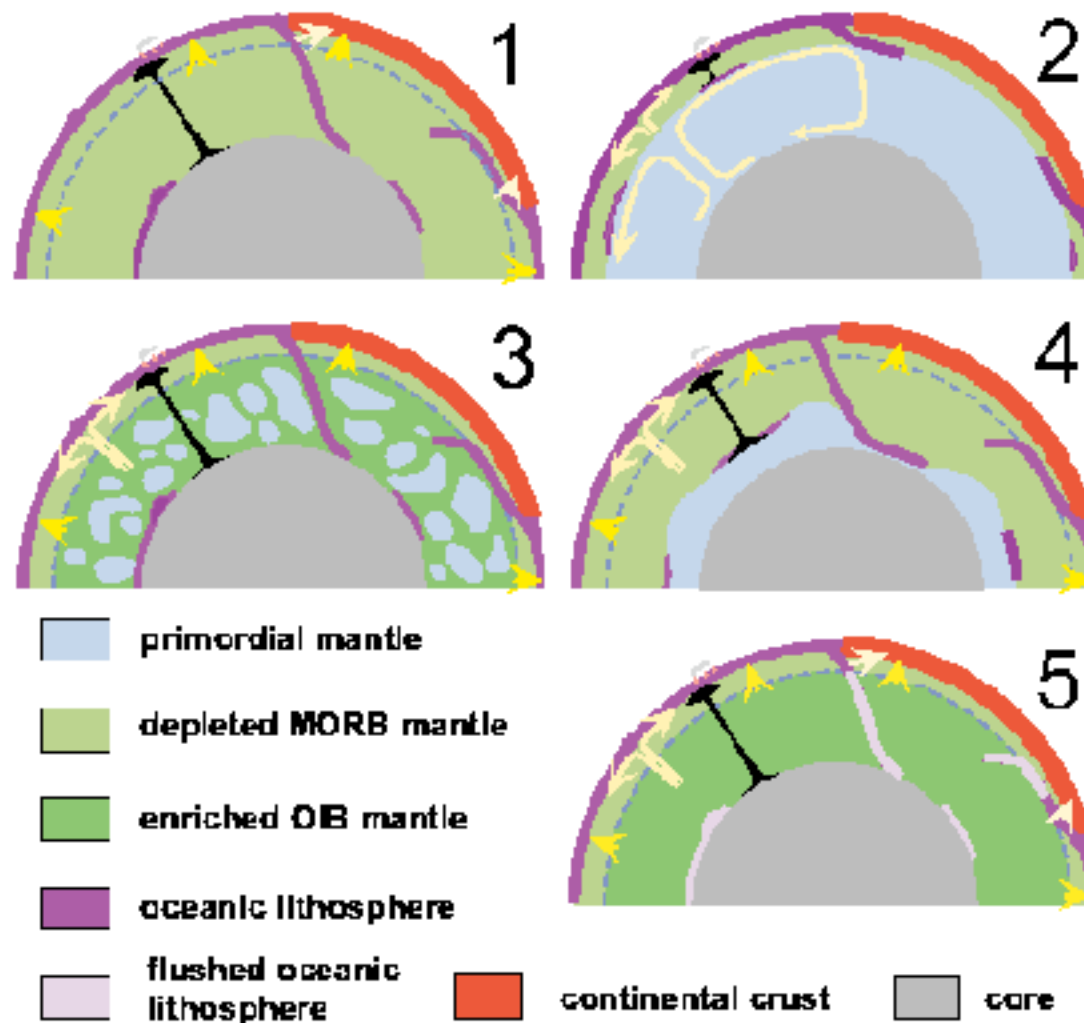
*CIDER:*

*Cooperative Institute for Deep  
Earth Research*




Barbara Romanowicz  
U.C. Berkeley

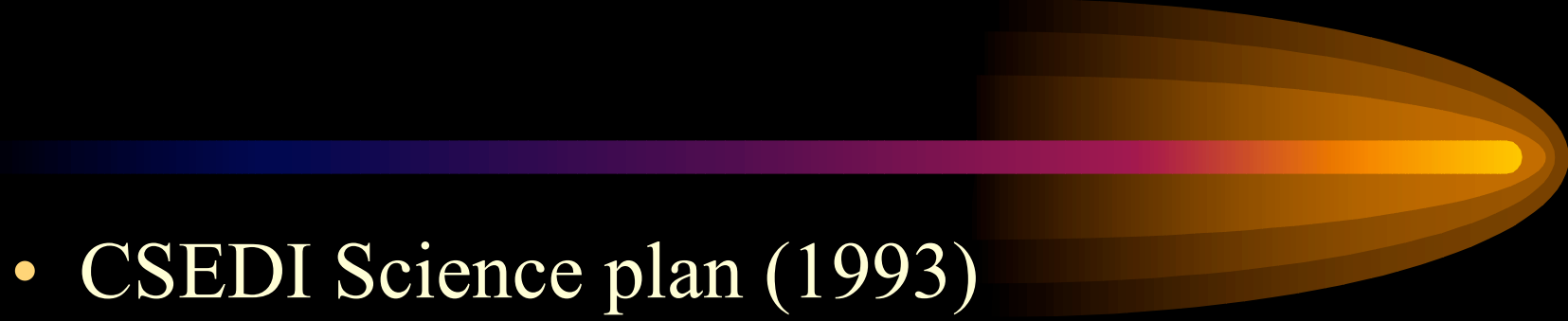
- 
- Amount of heat from the core/radiogenic heat production in the mantle?
  - Degree to which 670 km discontinuity impedes whole mantle circulation?
  - Origin of mantle plumes?
  - Nature of thermo-chemical heterogeneity in the deepest mantle?
  - Nature and importance of coupling between mantle and core?




*(Albarède and van der Hilst, 1999)*

- 
- Progress in the quantity and quality of data collected - new infrastructure initiatives:
    - IRIS and Earthscope (*seismology*)
    - Analytic facilities (*geochemistry*)
    - advances in computational technology (*geodynamics- CCIG*)
    - advanced accelerator facilities (*mineral physics-COMPRES*)

- Intellectual framework is needed for an integrated multi-disciplinary approach, combining knowledge and latest achievements in each of the relevant disciplines:
  - geodynamics
  - geochemistry
  - mineral physics
  - seismology
  - geomagnetism

- 
- CSEDI Science plan (1993)
  - CSEDI Program (NSF): many fruitful collaborations among individual PI's from different disciplines.
  - *Major leap* required in the level of research collaboration and education of scientists across fields.

- 
- SEDI, Gordon Conferences:
    - short-lived
    - focused on the latest, hottest results
  - Need for a more basic level of cross-education
    - to gain a common language


## *WHY CIDER?*

- Objective: understanding of deep earth dynamics and evolution
- Need for truly interdisciplinary work involving geochemistry, geodynamics, mineral physics and seismology.
- Provide long-range intellectual framework for more effective communication between the different disciplines involved

- Need to create the circumstances that will allow the different disciplines to educate each other in a fundamental way, to master understanding of the constraints and limitations that other fields bring to one's own field
- What's the best way to go about it?

## *CIDER:*

- *Working model:* ITP (Institute for Theoretical Physics, UC Santa Barbara)
  - Workshops and courses on particular topics
  - typically start with 1-2 weeks tutorials
  - last 4-6 months
  - at any given time ~20 participants
  - each participant commits to stay at least 3 weeks.
- Is this the right model for our community?

- 
- A decorative graphic consisting of a horizontal light streak that tapers to a point on the right. The streak has a color gradient from dark purple on the left to bright yellow on the right. It is surrounded by several concentric, semi-transparent, brownish-gold oval shapes that also taper to the right, creating a comet-like or lens flare effect.
- *Other possible models:*
    - Institute for Mathematics and its Applications (IMA, Minnesota)
    - Mathematical Sciences Research Institute (MSRI, Berkeley)
    - Geophysical Fluid Dynamics Summer School (WHOI)

# *CIDER*

- Will serve different purposes such as:
  - Education of community about the status of knowledge in a specific discipline
  - Filling gaps in the education of junior geoscientists (for example theory)
  - Attracting talented undergraduates to geosciences
  - Framework for integrating community models, e.g.:
    - REM
    - GERM
  - Complement to community infrastructure efforts (CCIG,COMPRES..)

## *CIDER Strawman*

- Minimal permanent staff
- Dedicated to providing stimulating environment for a critical mass of:
  - visiting senior scientists
  - resident post-doctoral fellows
  - Visiting graduate students
- Hold short courses and workshops around a selected multidisciplinary theme



## *CIDER*

- *Should CIDER be restricted to 4-6 weeks summer programs?*

## *CIDER timeline*

- May 24-29, 2003: Marconi Center
  - Define the scope and activities of future CIDER
  - Finalize Summer'04 Program at Institute of Theoretical Physics (Santa Barbara)
  - Provide Input for NSF Proposal for CIDER long term support
- Sept 8-10, 2003: UC Davis: write NSF proposal for CIDER'05

## *This workshop*

- Emphasis on dialog, discussion, cross-disciplinary education
- Goals:
  - Identify key cross-disciplinary themes that can serve as focus for CIDER programs
  - Construct draft programs for the first 3-4 years of CIDER activities
  - In particular, finalize the summer'04 program (July 5-30) at ITP

- Steering Committee :

- D. DePaolo UC Berkeley Geochem.
- A. Dziewonski (Chair) Harvard Seismology
- S. Hart WHOI/MIT Geochem.
- R. Jeanloz UC Berkeley Mineral Phys.
- L. Kellogg UCD Geodynamics
- M. Manga UC Berkeley Geodynamics
- G. Masters UCSD Seismology
- P. Olson Johns Hopkins Geodynamics
- B. Romanowicz UC Berkeley Seismology
- L. Stixrude U. Michigan Mineral Phys.
- E. Stolper Caltech Geochem.
- D. Weidner SUNY Mineral Phys.