

International Continental Scientific Drilling Program



Carottages Lacustres & Continentaux

Satillieu, April 3 - 6, 2012

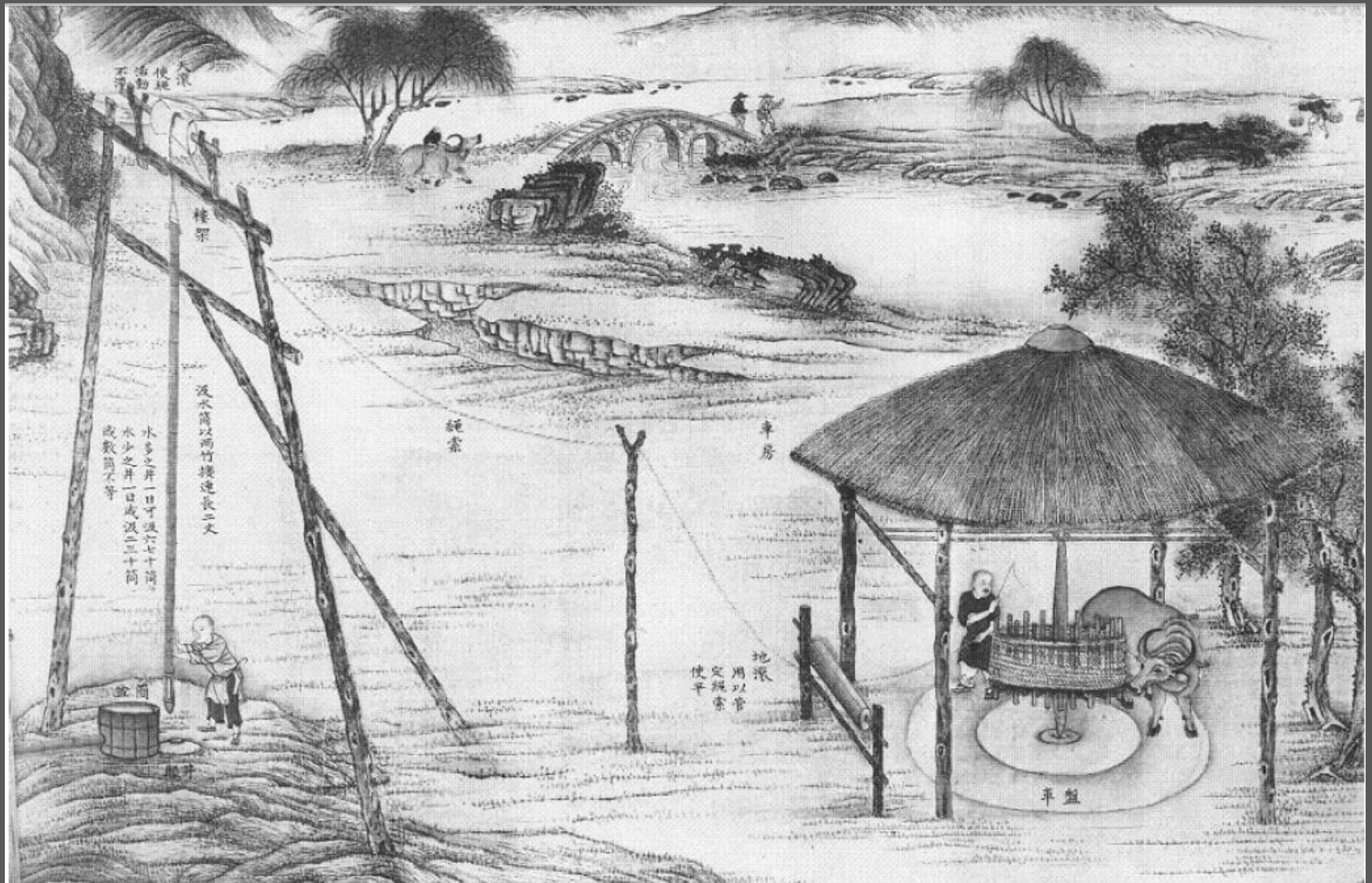
Uli Harms

ICDP Executive Secretary

German Research Centre for Geosciences - GFZ

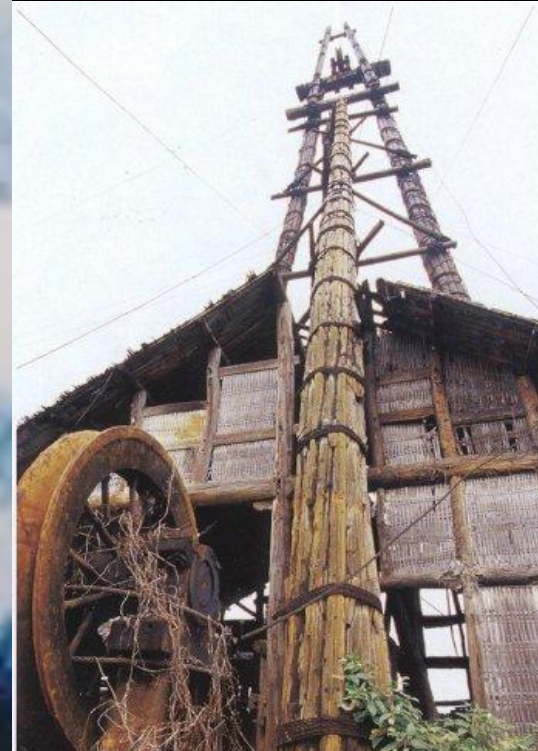
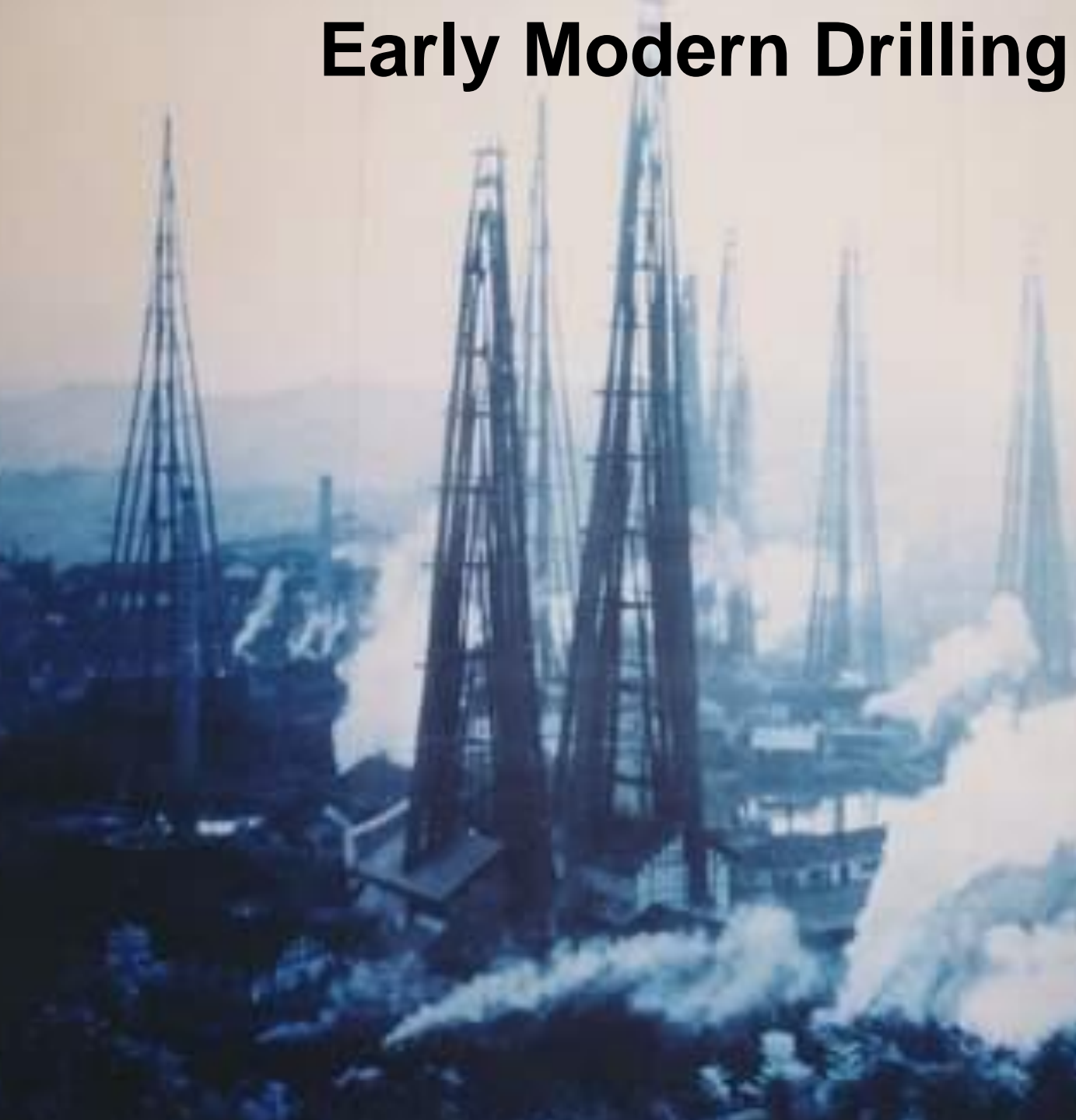


Ancient Drilling in Szichuan

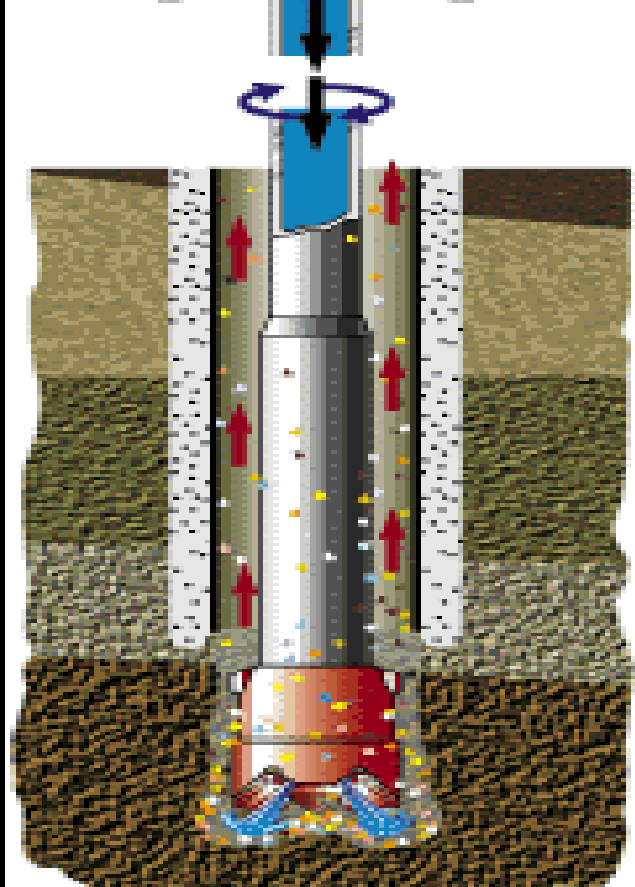
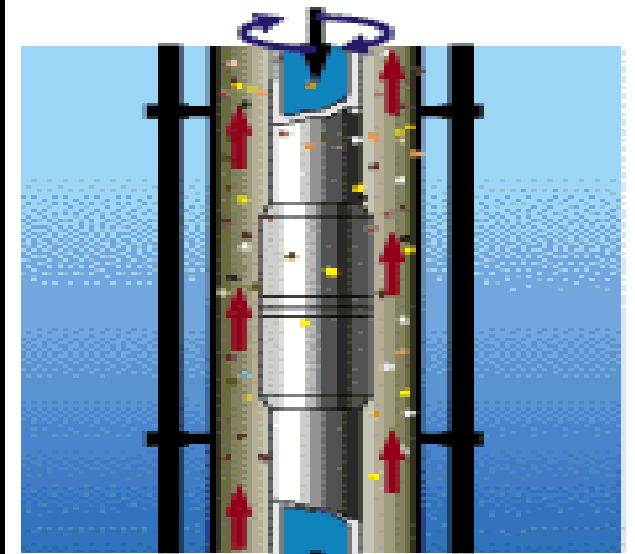
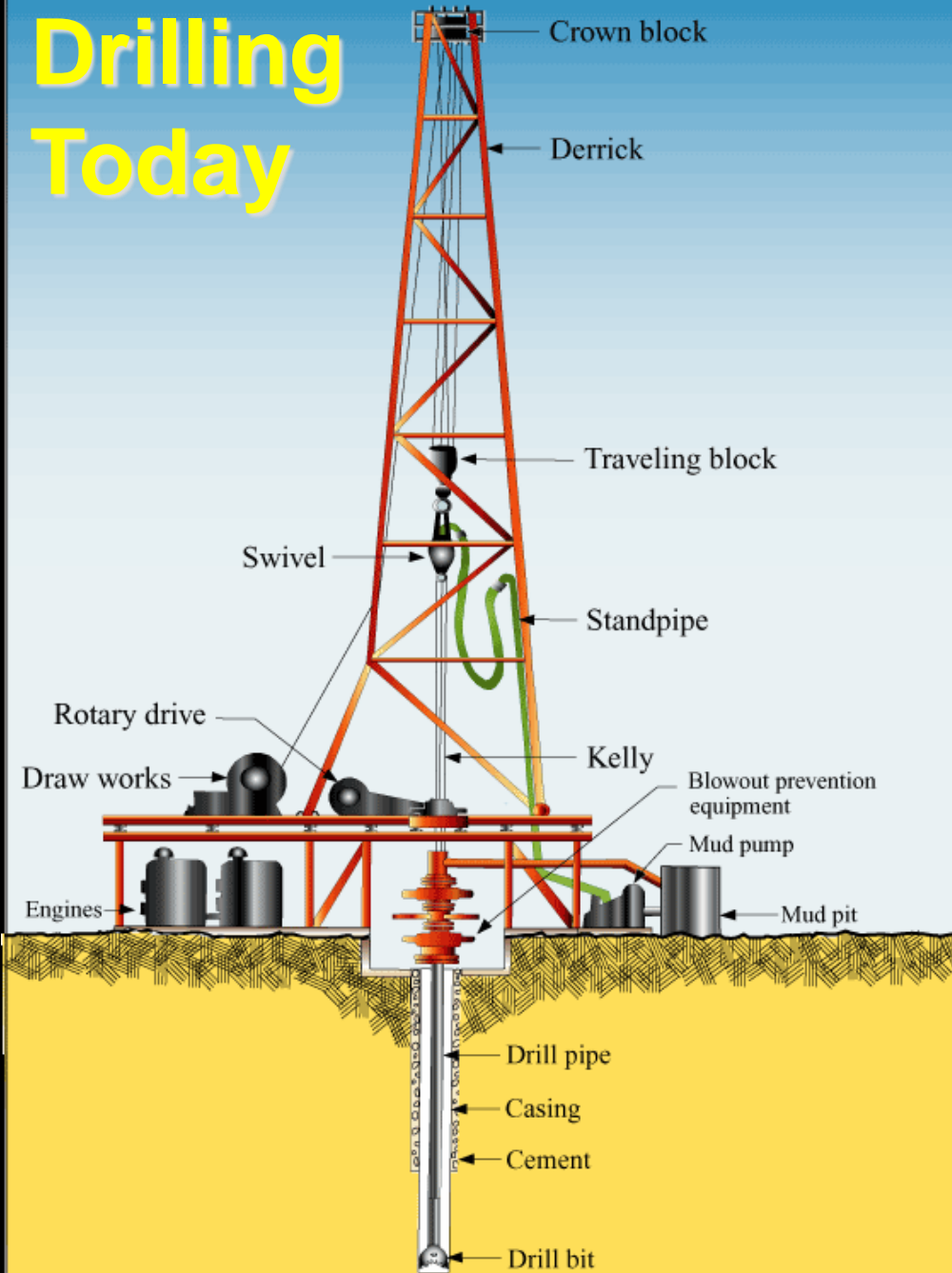


Deep drilling since 10. century A.D.; rolled painting from about 1750

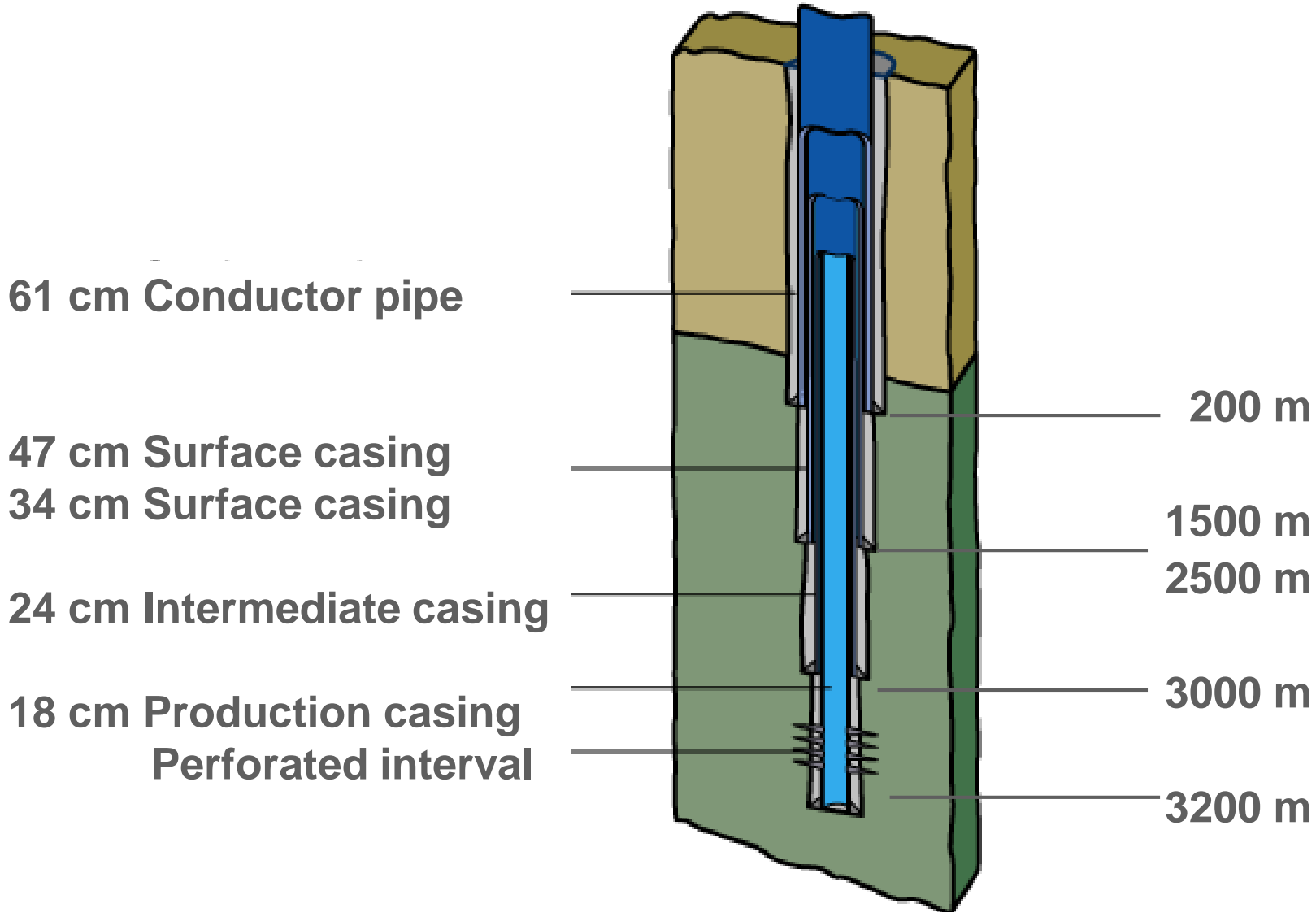
Early Modern Drilling



Drilling Today



Oilfield drill: typical depth and width



Drilling: Why and Where ?

99 % of all deep drillings are for Oil and Gas hosted in sedimentary basins which make up just 5% of Earth's crust

Worldwide Rotary Rig Count			
	January 2012	December 2011	January 2011
Latin America	420	438	403
Europe	108	112	117
Africa	78	79	86
Middle East	311	304	269
Far East	254	247	286
International	1,171	1,180	1,161
Canada	577	429	564
United States	2,003	2,003	1,711
World	3,751	3,612	3,436

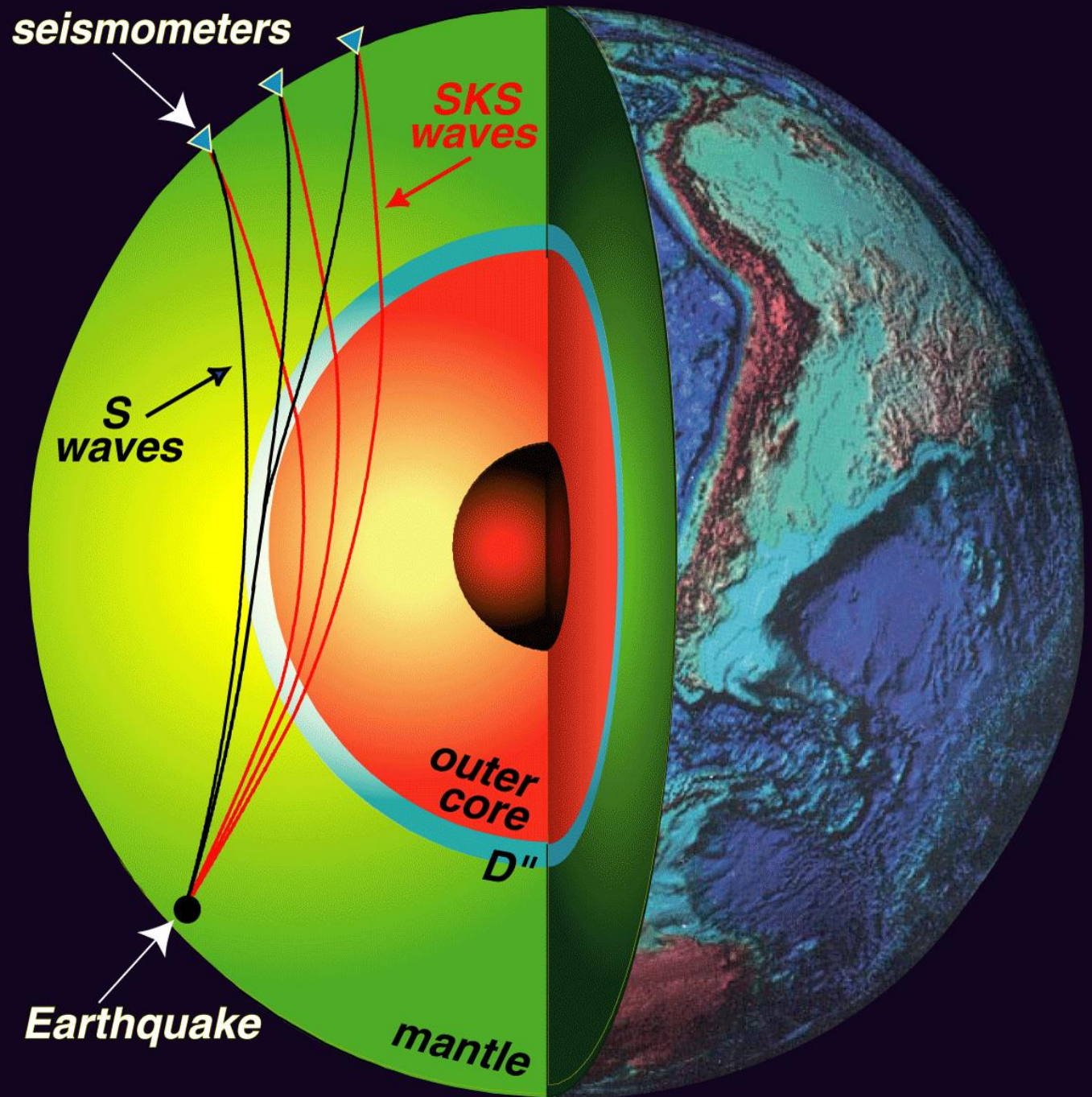
What do we know about Earth?

Cosmic data:

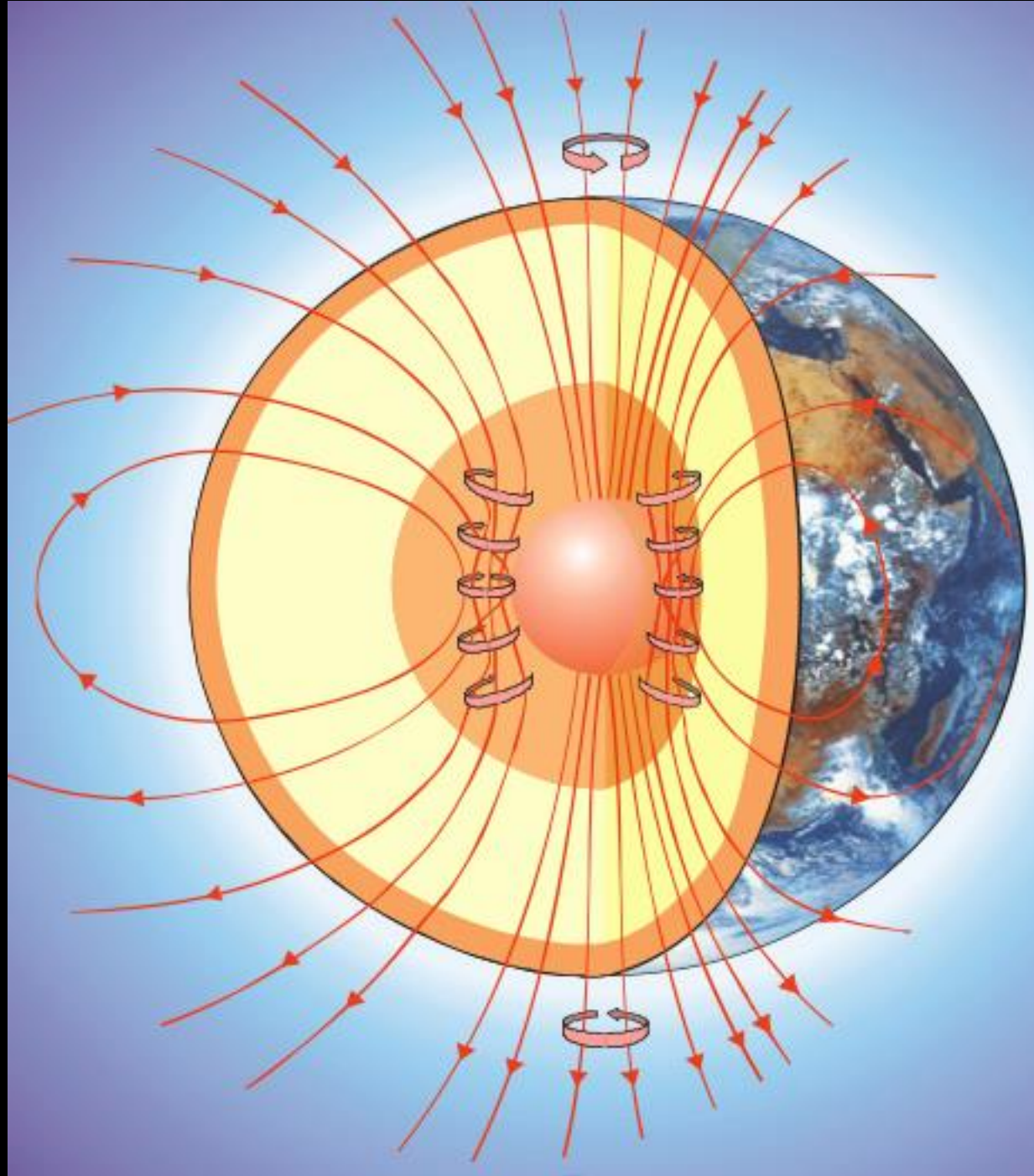
**Size, mass,
rotation,
velocity**



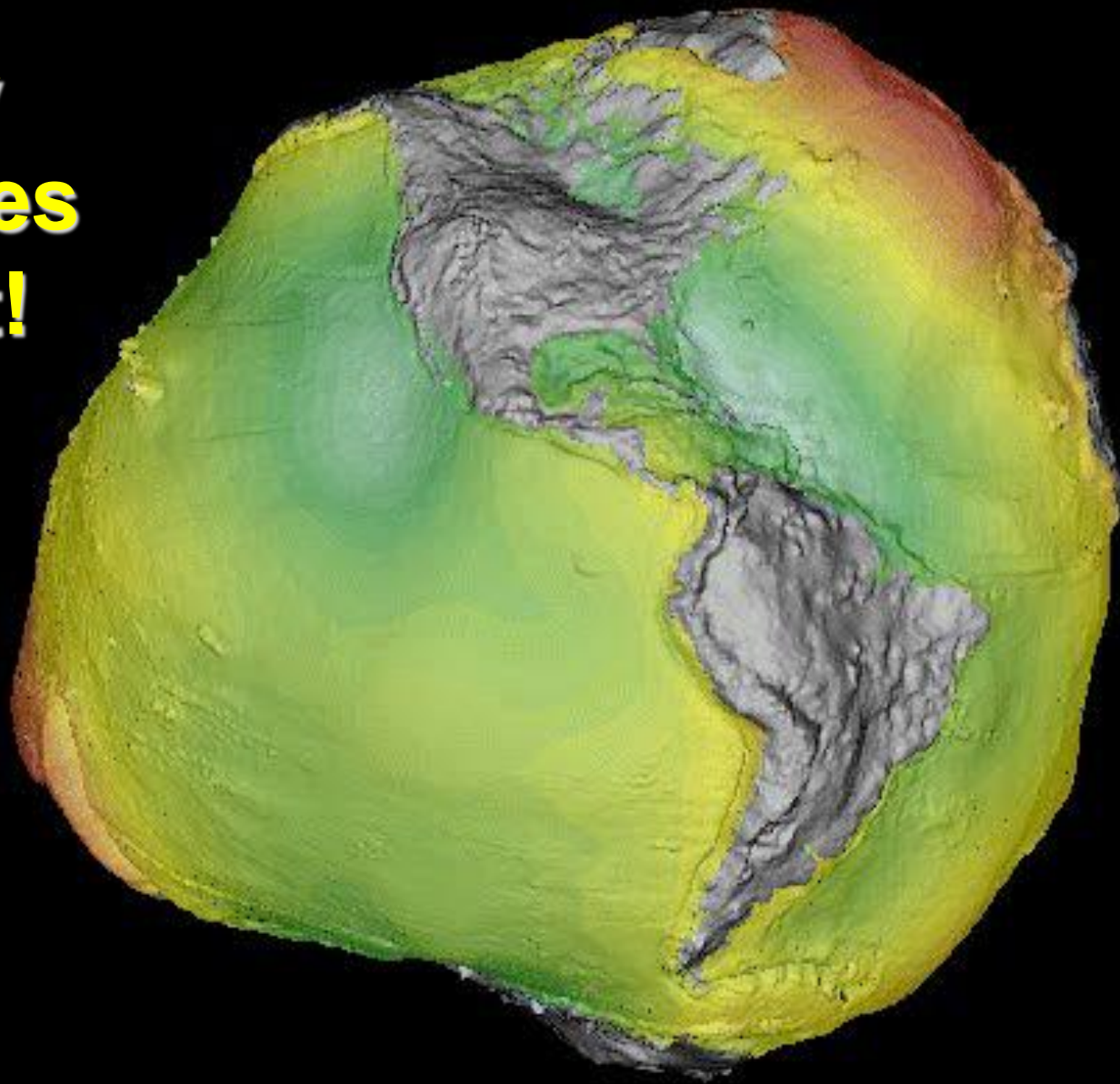
**seismic
waves
provide
„insight“**



**the
magnetic
field
provides
„insight“**



**gravity
provides
insight!**



Crust

– 50 km

Upper Mantle
Transition Zone
Lower Mantle

Mantle

– 2900 km

Outer Core

– 5080 km

Inner Core

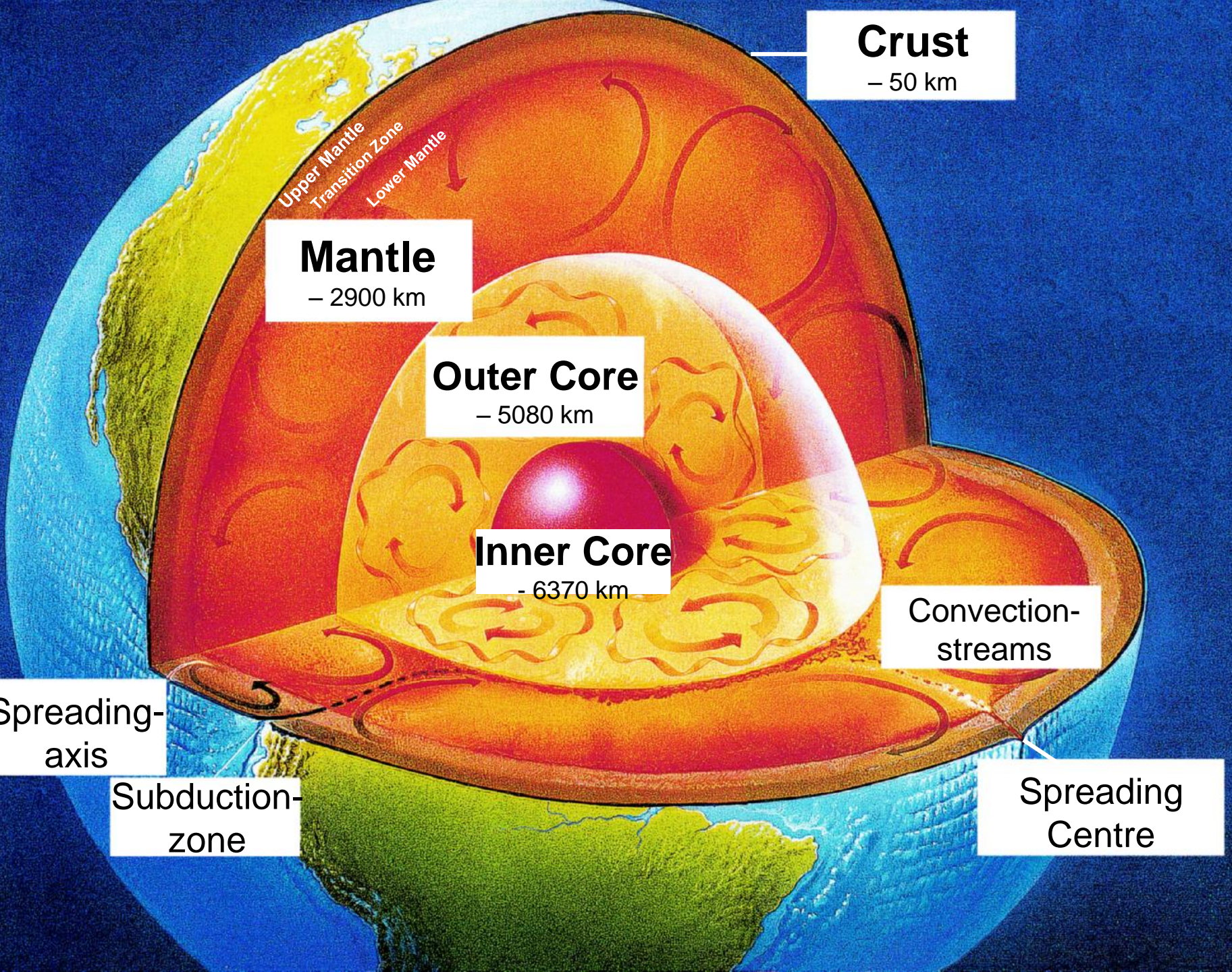
- 6370 km

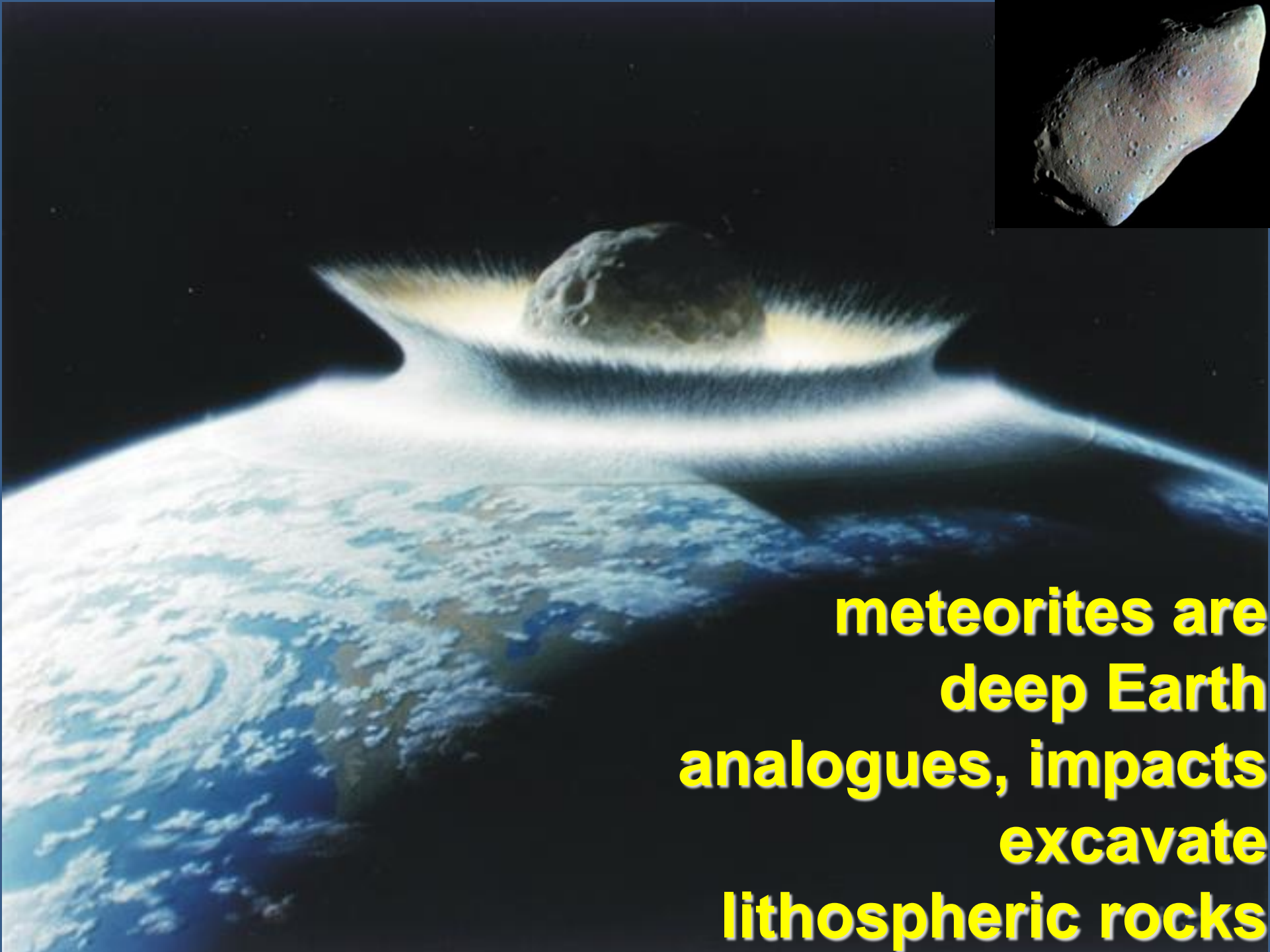
Convection-streams

Spreading-axis

Subduction-zone

Spreading Centre



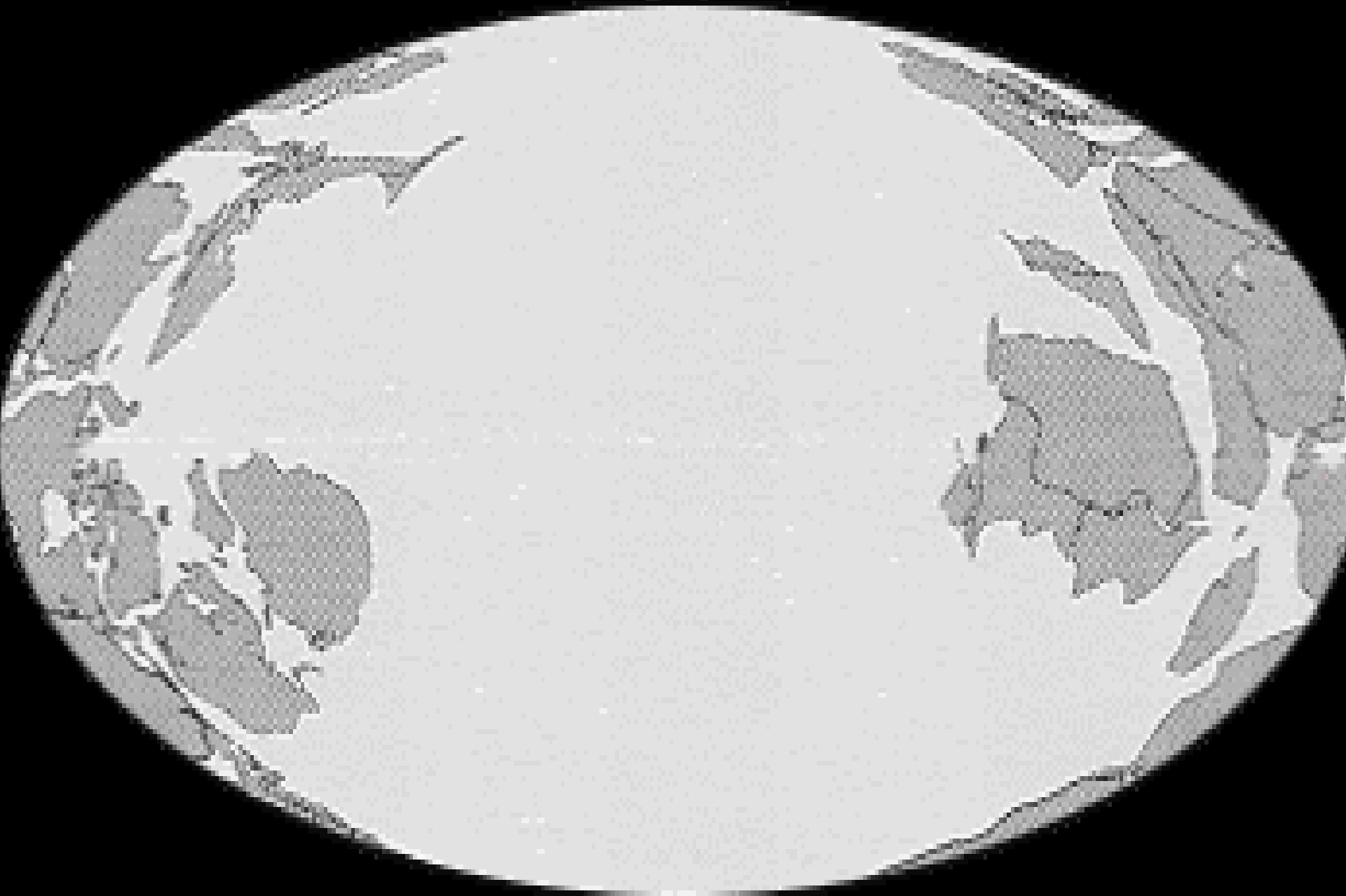


**meteorites are
deep Earth
analogues, impacts
excavate
lithospheric rocks**

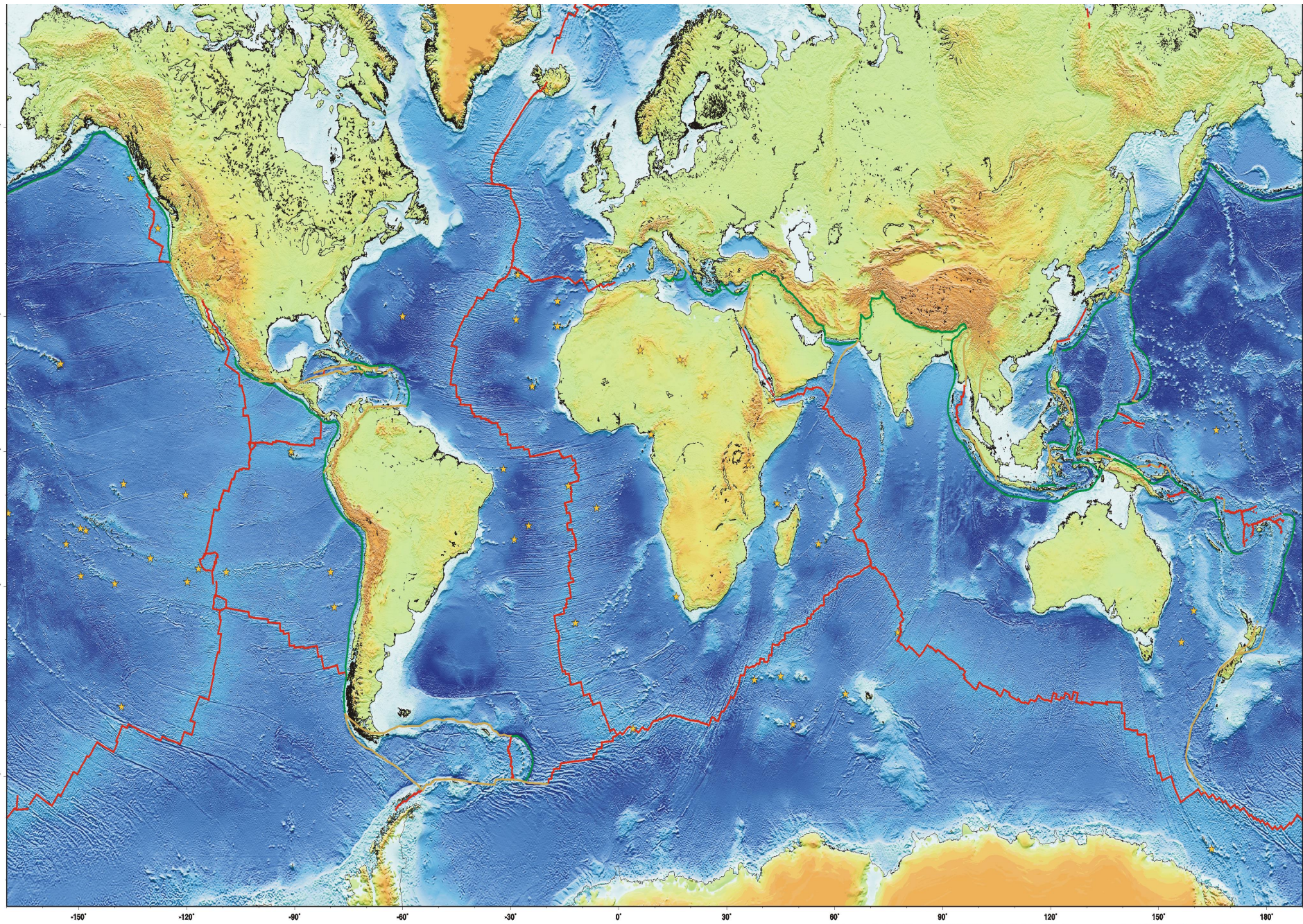


**Volcanoes
sample
rocks on
their way
up to
surface!**

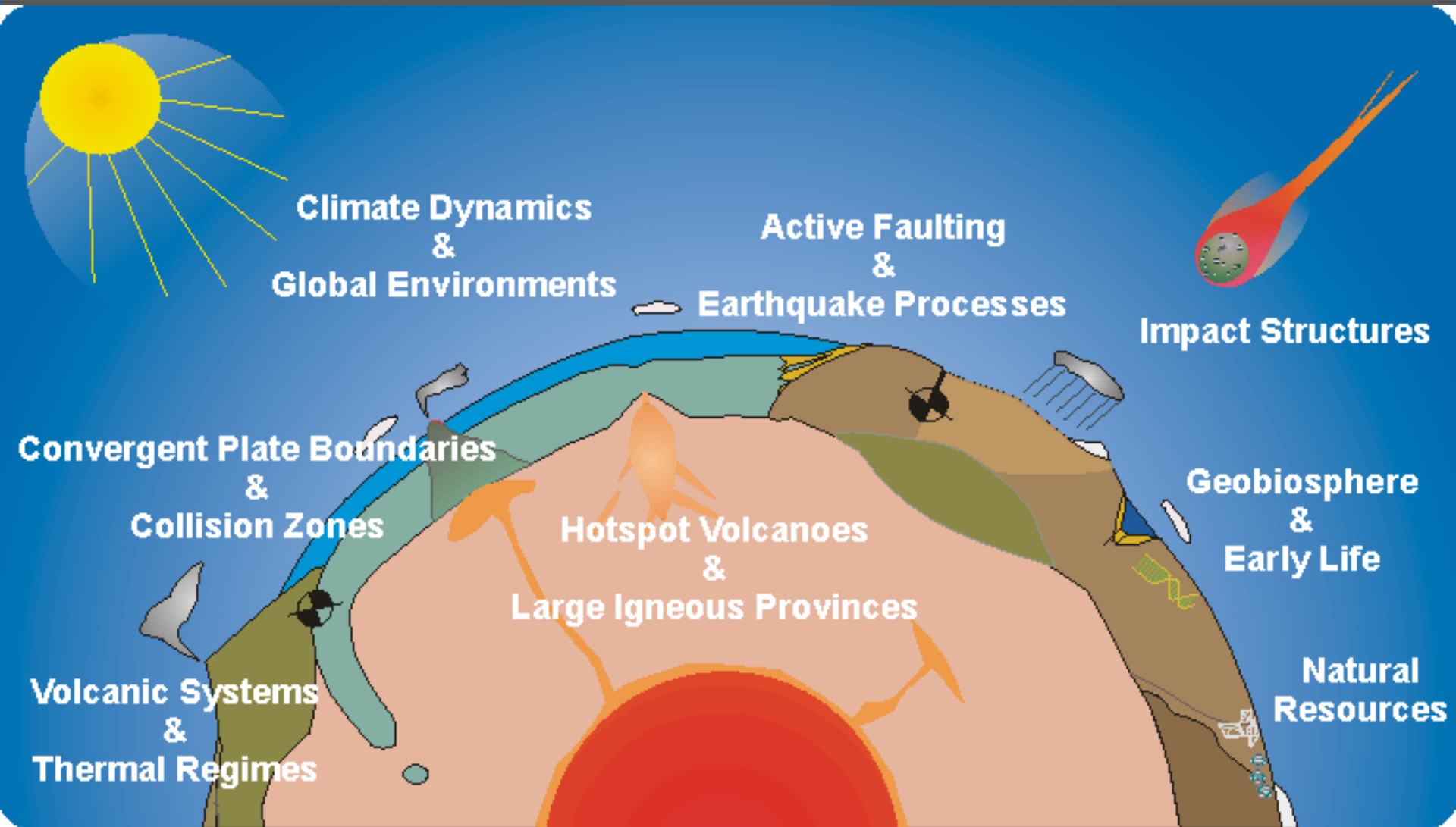
plate tectonics exhumes rocks from depth



Mountain Belts provide insight



ICDPs Research Themes



Costs for International Science Programs

- **Physics, Biology:**

Large Hadron Collider, 20 Nations, **4 Bio €**, Search for Atomic Substructure (CERN)

ITER Fusion Reactor, 33 Nations, **10 Bio €**, Fusion as Energy Source

Human Genome Project, 6 Nations, **2,7 Bio €**, Deciphering the Human Genes

IPCC, 130 Nations, **60 Mio €**, Coordination of Climate Research Results

- **Geoscience:**
 - IODP**, 200 Mio € (p.a)
 - ICDP**, 3 Mio € (p.a., plus 3rd party funds)



ICDPs Research Themes

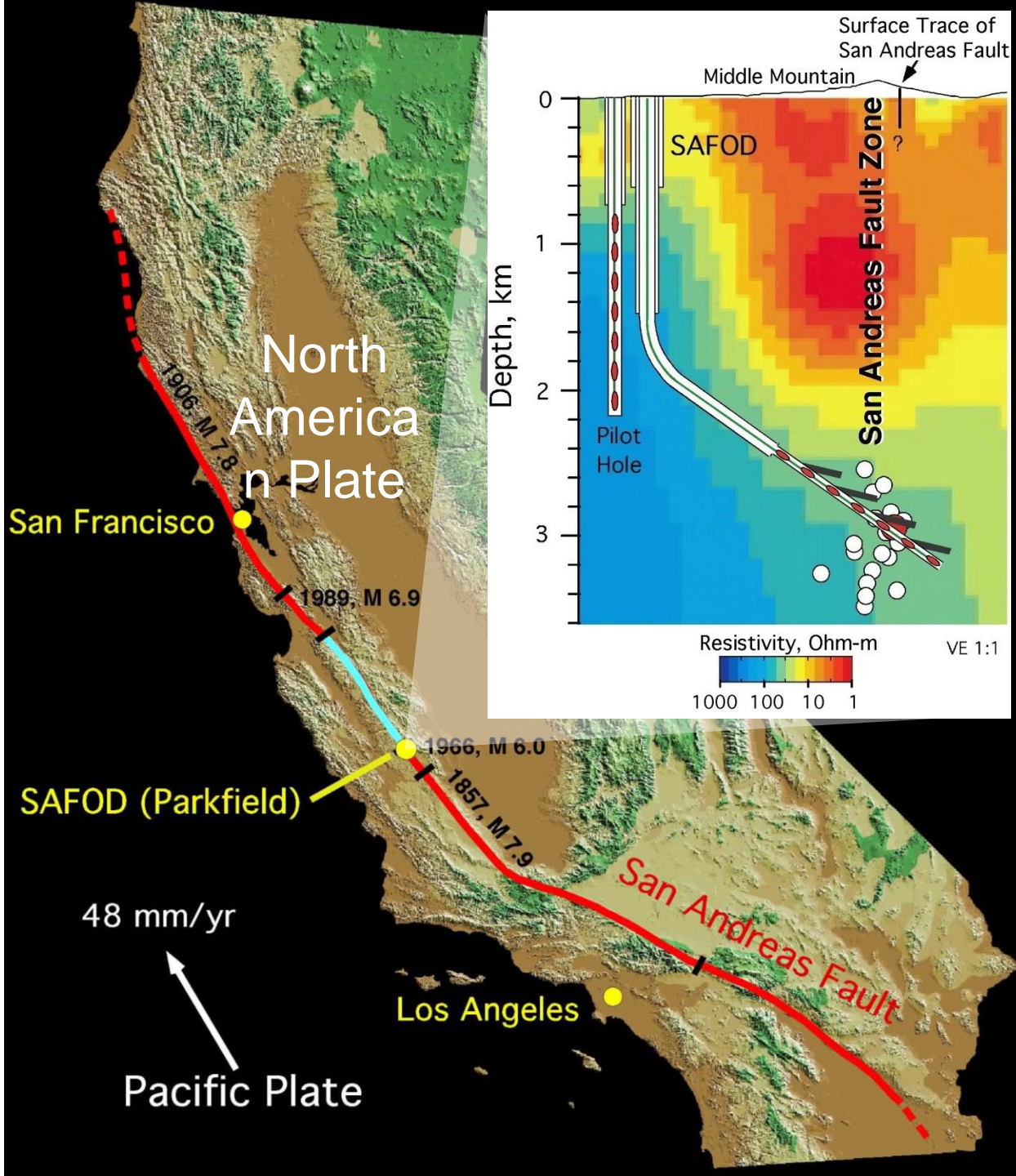




San Andreas Fault Observatory at Depth (SAFOD)

- Test fundamental theories of earthquake mechanics
- Establish a long-term observatory in the fault zone

Pilot Hole 2003
Main Hole 2004/05/07
2008+ Observatory





SAN ANDREAS
FAULT

NOW ENTERING
NORTH AMERICAN
PLATE

NO HUNTING
OR TRESPASSING

San Andreas Fault Observatory at Depth: Project Overview and Science Goals



Test fundamental theories of earthquake mechanics:

- Determine structure and composition of the fault zone.
- Measure stress, permeability and pore pressure conditions in situ.
- Determine frictional behavior, physical properties and chemical processes controlling faulting through laboratory analyses of fault rocks and fluids.

Establish a long-term observatory in the fault zone:

- Characterize 3-D volume of crust containing the fault.
- Monitor strain, pore pressure and temperature during the cycle of repeating microearthquakes.
- Observe earthquake nucleation and rupture processes in the near field.



San Andreas Fault

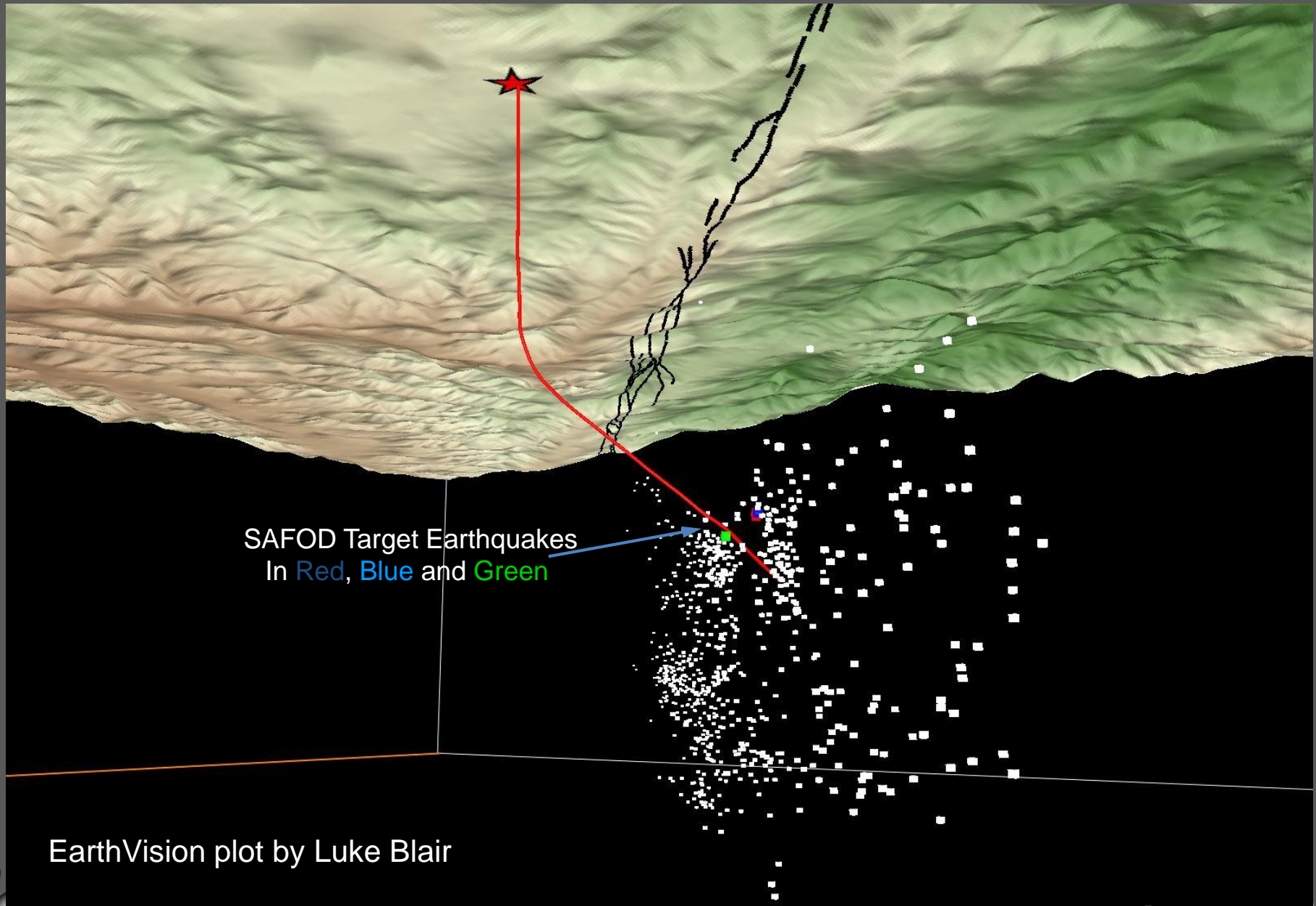
1.8 km



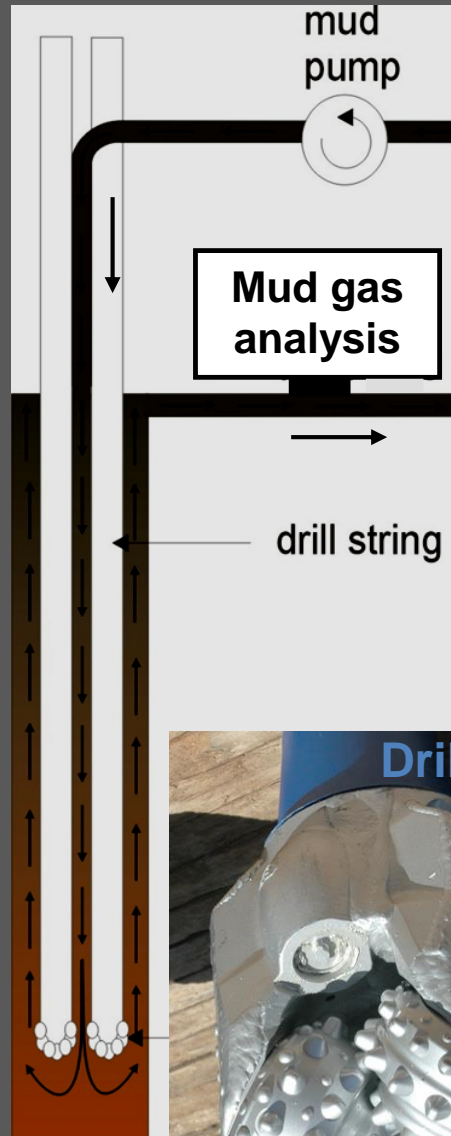
SAFOD Summer 2005

PASO Microearthquakes, 2002-2006

(Cliff Thurber, Steve Roecker and Haijiang Zhang)

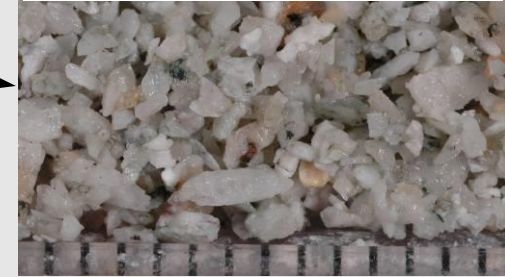


Rotary Drilling and Mud Gas/Cuttings Analysis



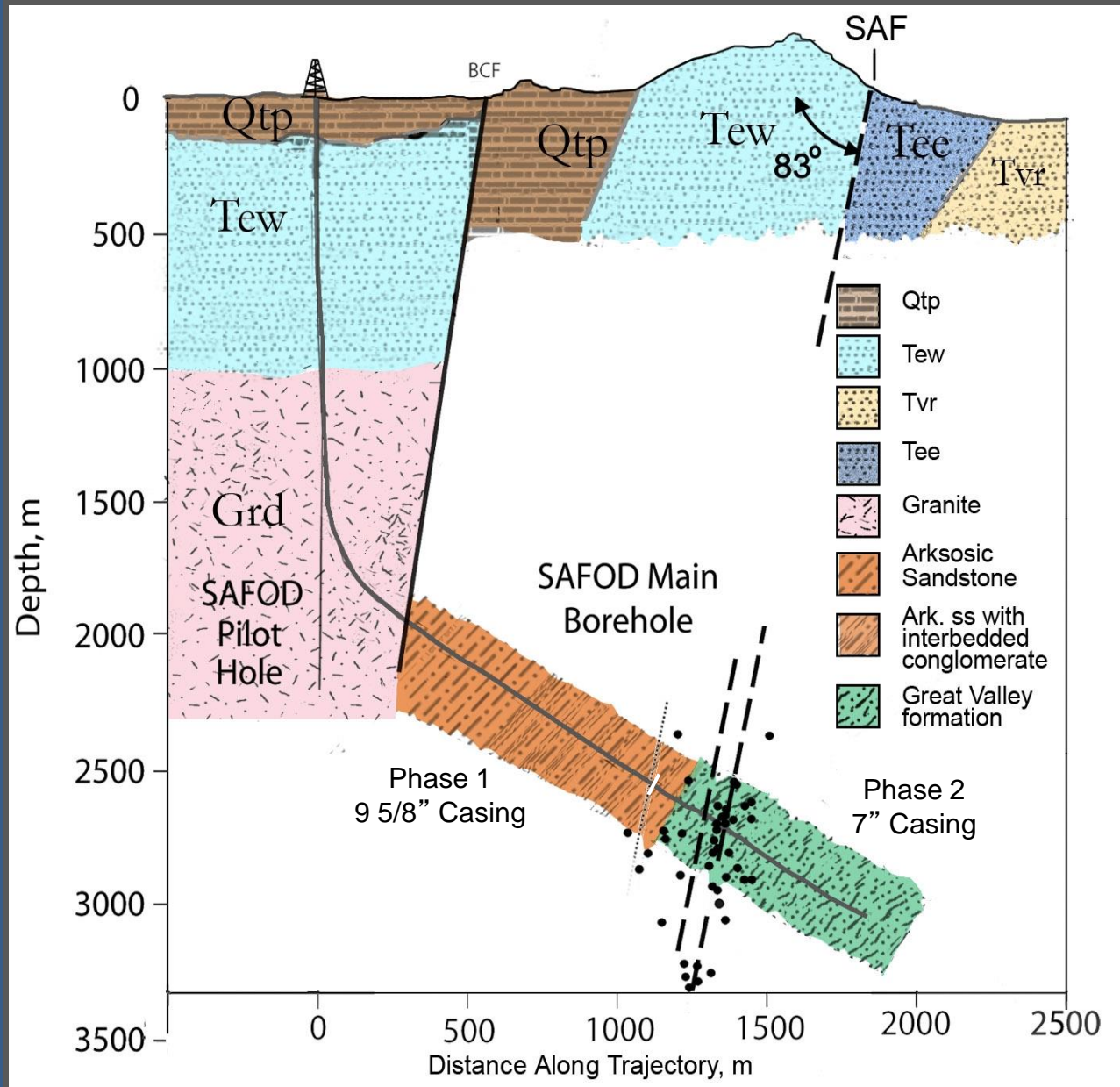
Separated from mud on screens

Carefully washed and dried; also preserved without washing



On-Site and Laboratory Analyses:
Optical, XRD, XRF, TEM, SEM, IR, friction tests, fission track annealing, isotopic studies, magnetic properties, fluid inclusion volatiles and thermal maturation.

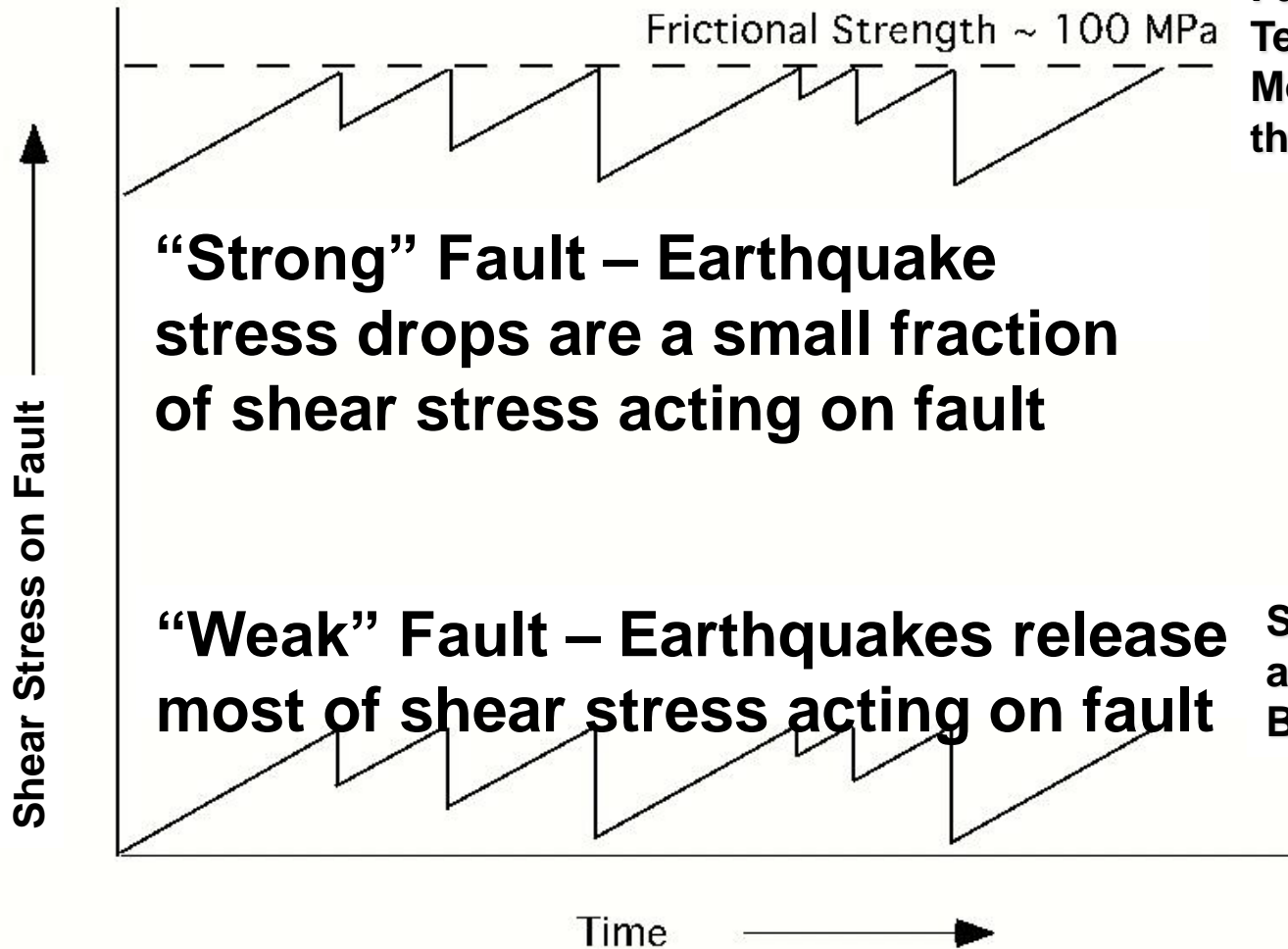




Geology Encountered During Drilling

Why SAFOD ?

Faults Inside
Tectonic Plates and
Most Rocks Tested in
the Lab



“Strong” Fault – Earthquake stress drops are a small fraction of shear stress acting on fault

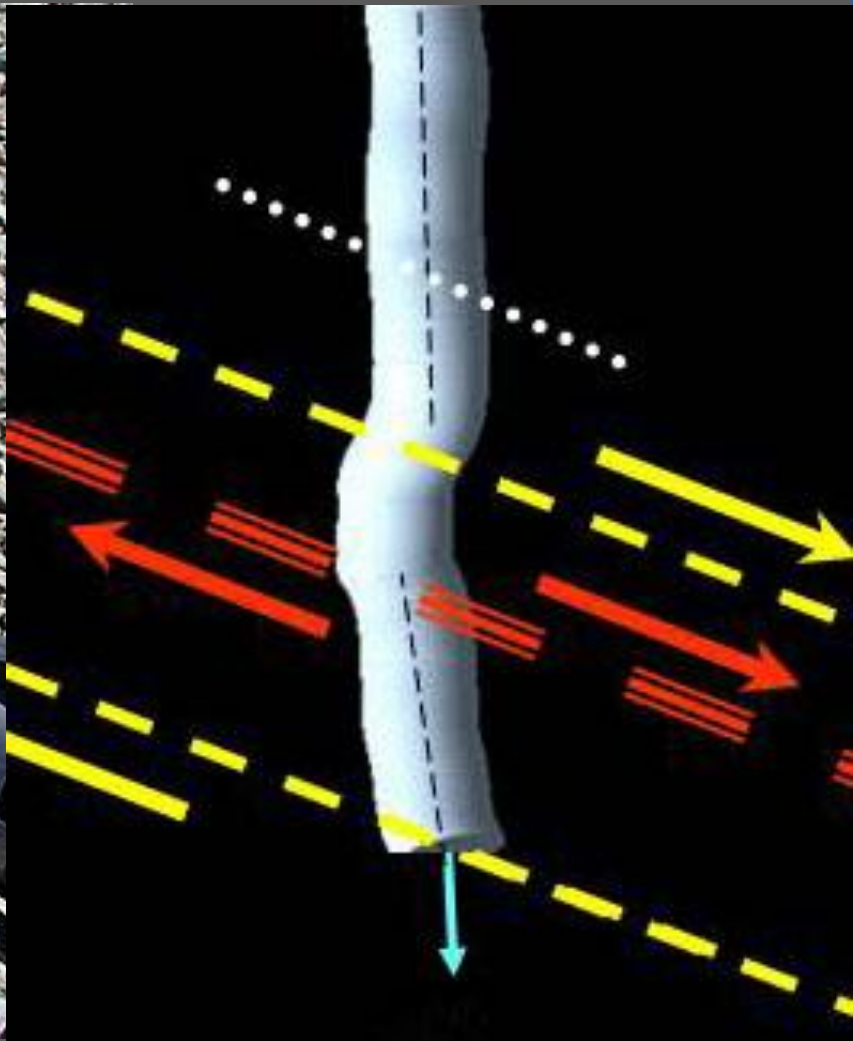
“Weak” Fault – Earthquakes release most of shear stress acting on fault

San Andreas Fault
and Many Other Plate
Boundary Faults

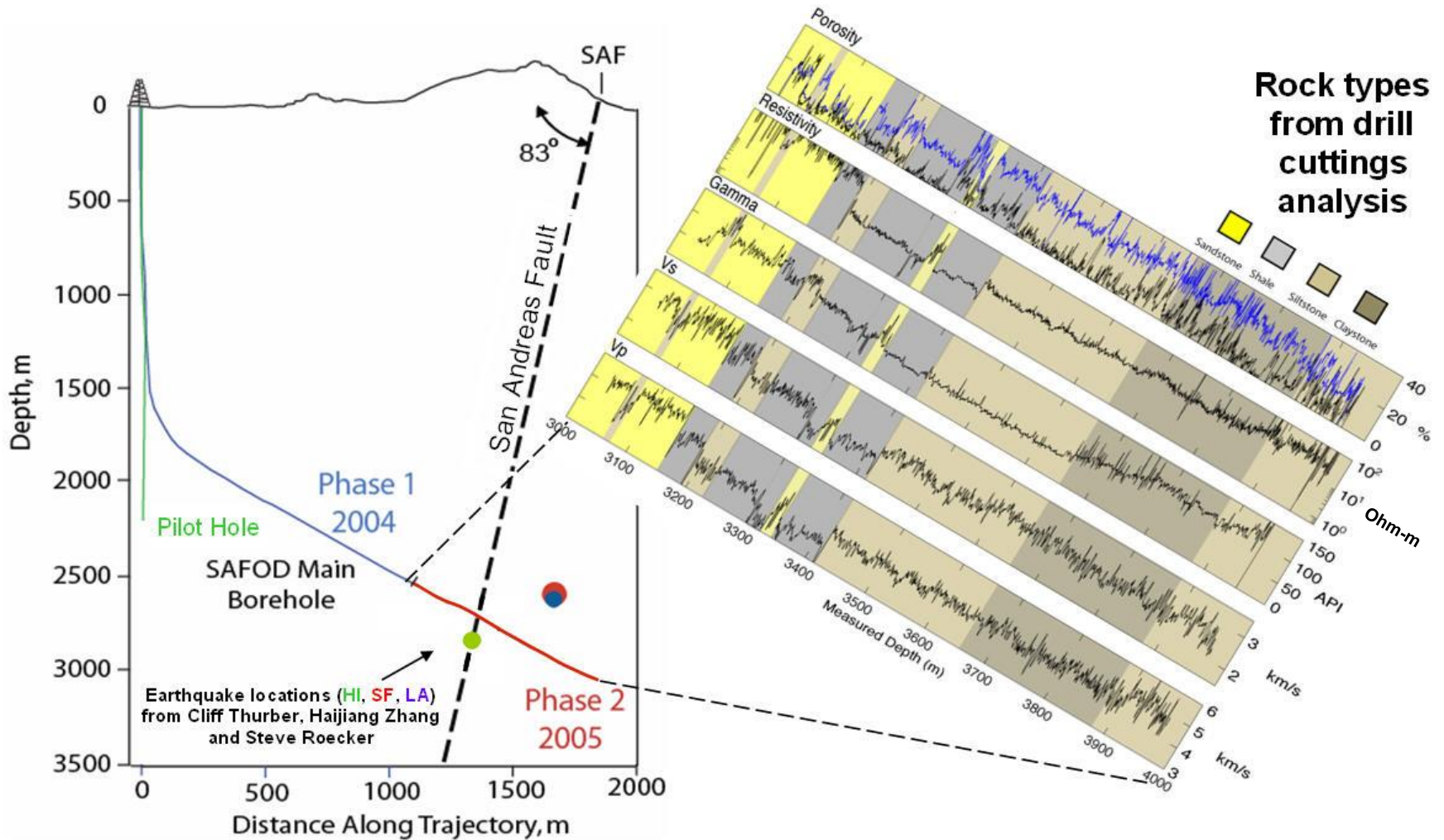
Crossing the Fault Zone During Phase 2: Wireline Logging and Logging While Drilling



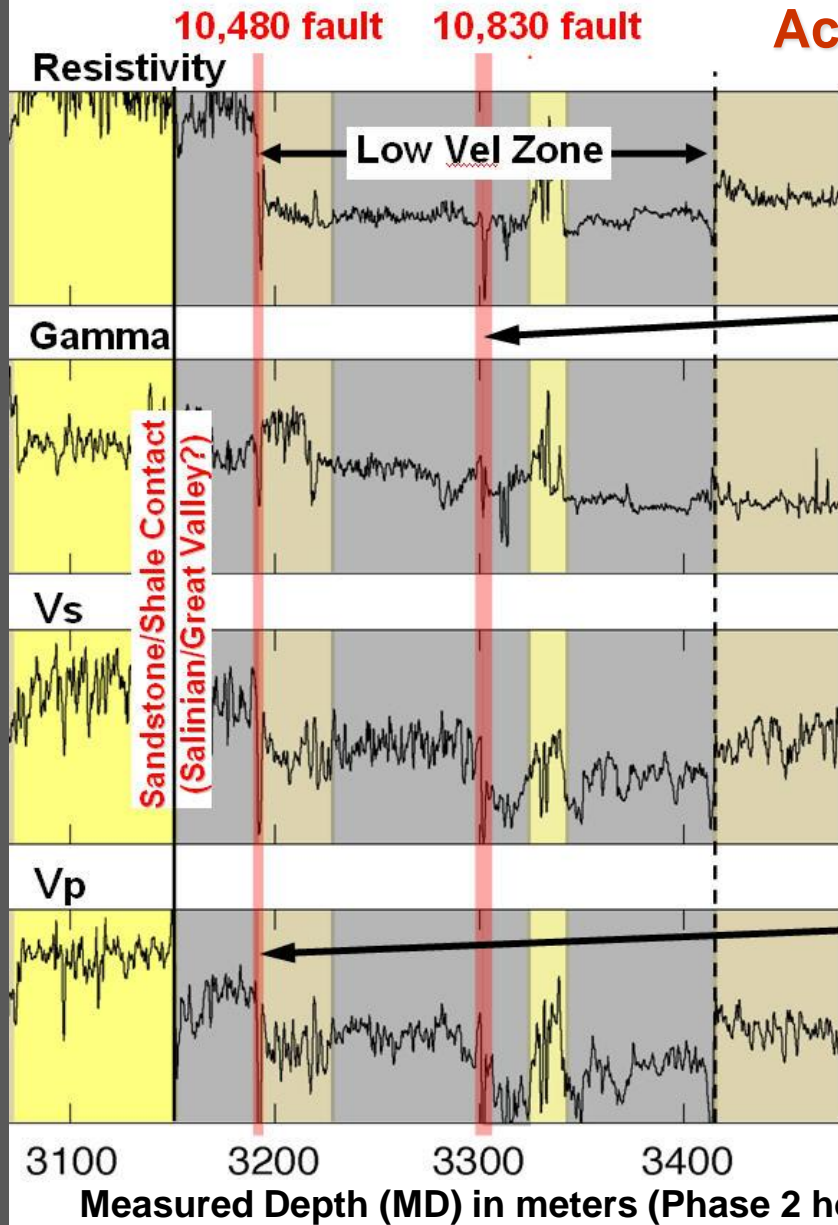
San Andreas Fault Observatory at Depth (SAFOD)



Phase 2 Geophysical Logs



Active Faults Identified in Phase 2 Hole



Casing deformation logs identify main deformation zone at 3301 m (10,830 ft fault)



Oct 6, 2005

15 m

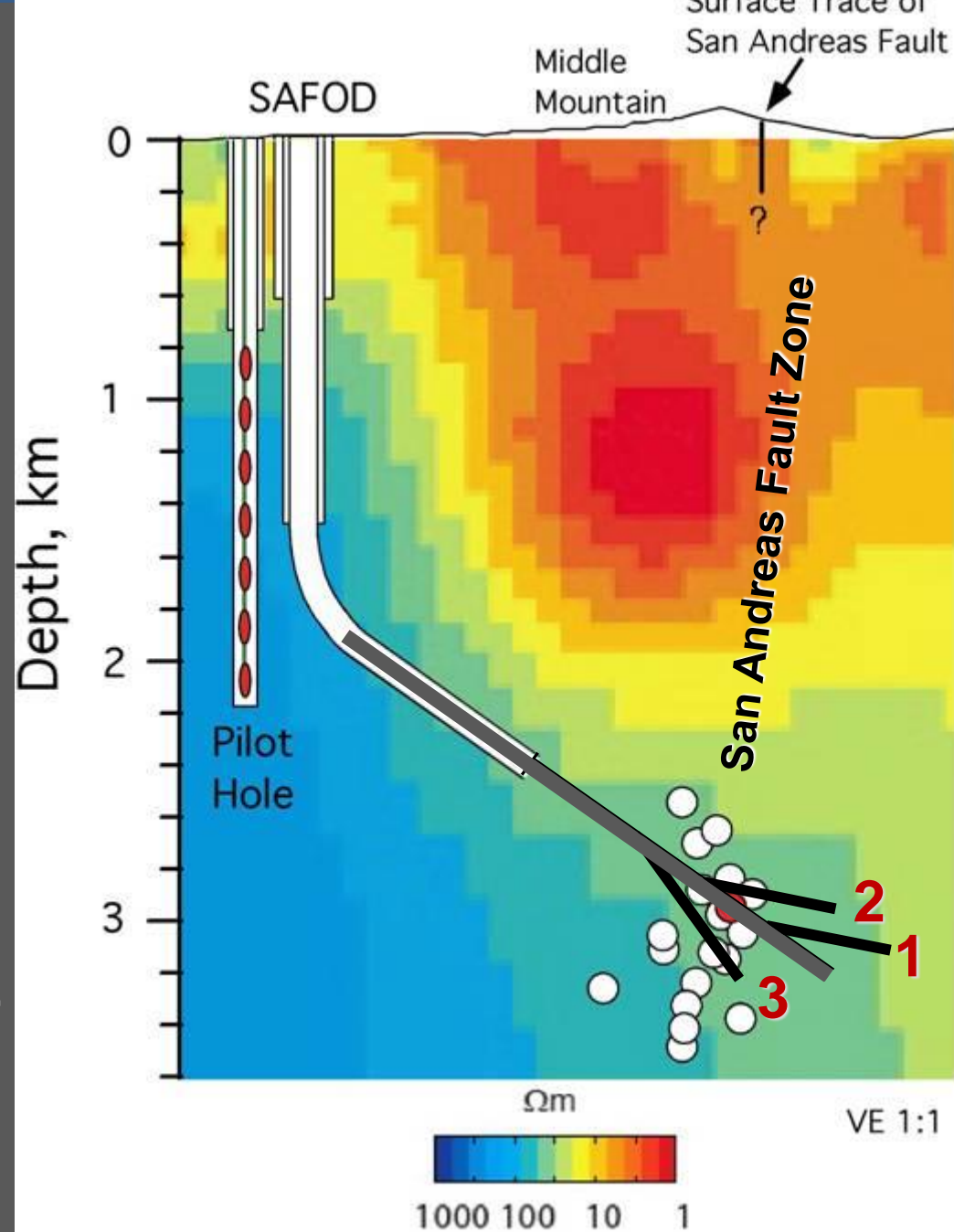
Log 5 (June 5, 2007) reveals new, secondary zone of casing deformation at 3194 m (10,480 ft fault)



SAFOD Phase 3 Drilling

Coring Multi-Laterals

- Mill through casing and continuously core 3 holes extending 250 m from main hole to intersect actively deforming traces of San Andreas Fault.
- Conduct fluid pressure, permeability and hydrofrac tests in core holes.
- Leave one core hole open for long-term monitoring incl. seismo- & accelerometers, strain- & tiltmeters, pore pressure, T



First penetration of active fault at seismogenic depth

First extraction of intact rock material (135 feet)

Fault Gouge Layer (1.5 m thick)

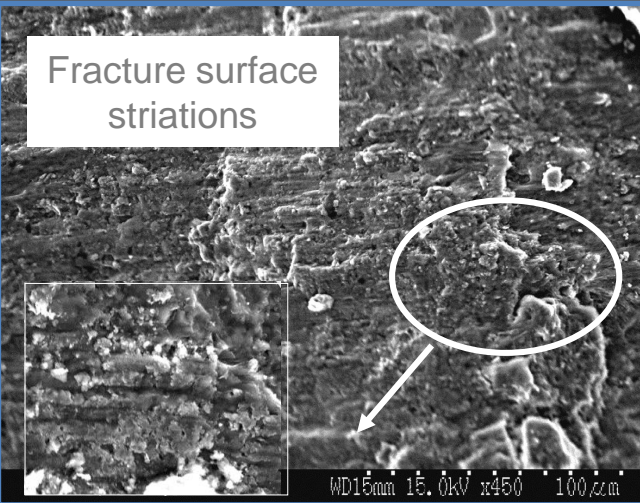
Highly sheared
serpentine layer
with fragmented
calcite veins

Foliated fault gouge
with serpentinite
and sandstone
porphyroclasts

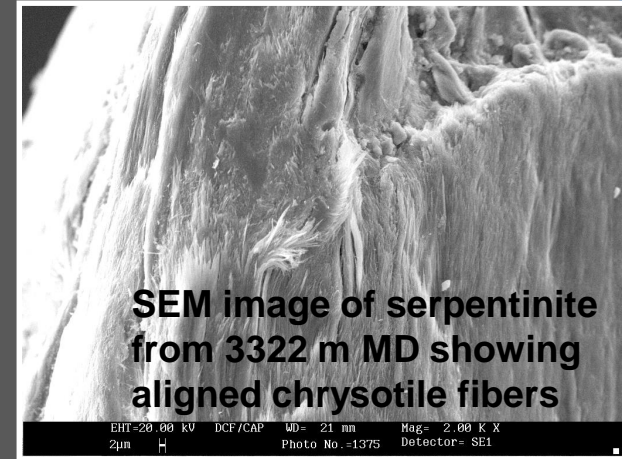
Serpentine cut by white
(calcite)
veins

Foliated gouge
with serpentinite
and sandstone
porphyroclasts

Fracture surface
striations



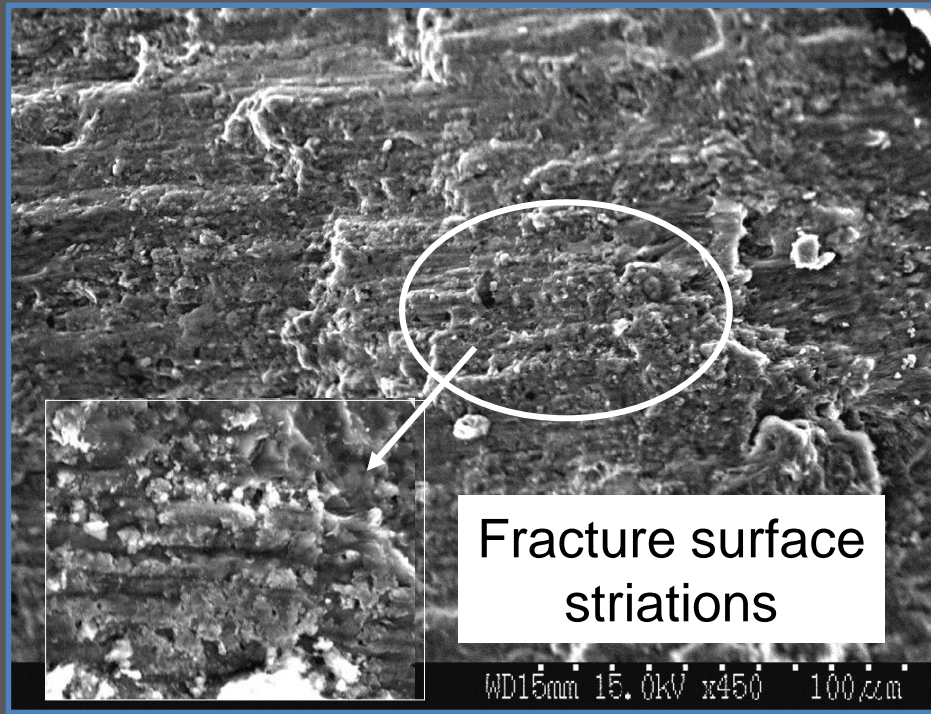
Ultra-thin (nm) film of secondary
smectite phase on polished and
striated. Smectites well oriented
and occasionally fibrous in form,
creating slickenfibers.



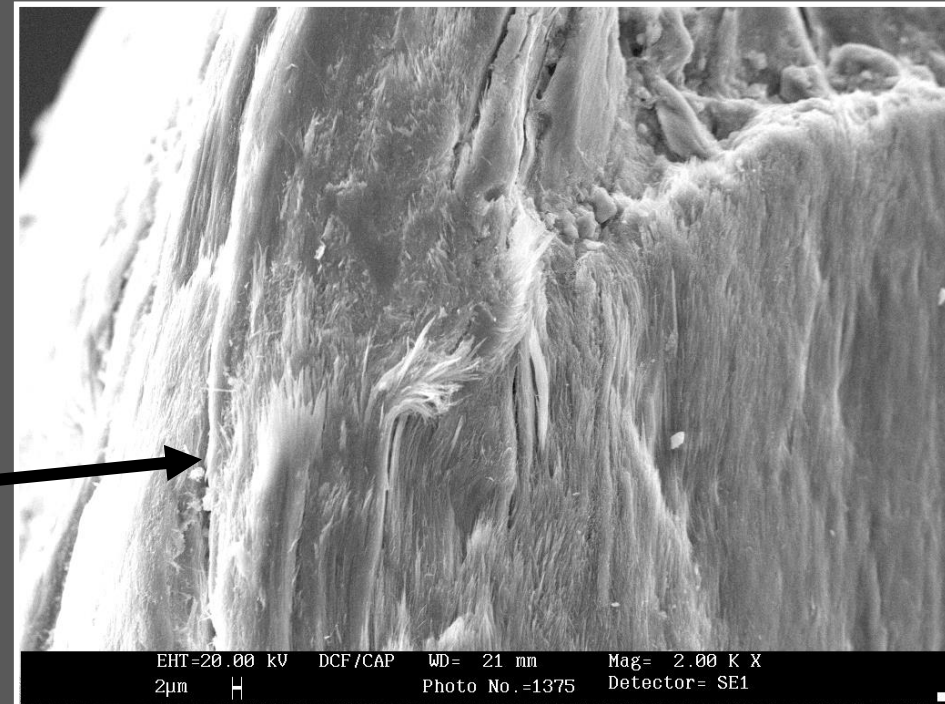
Evidence for Dissolution-Precipitation Creep in SAFOD Cuttings from SAF

Ultra-thin (nm) film of secondary smectite phase on polished and striated surfaces (*Schleicher et al, 2006*).

Smectites well oriented and occasionally fibrous in form, creating slickenfibers.



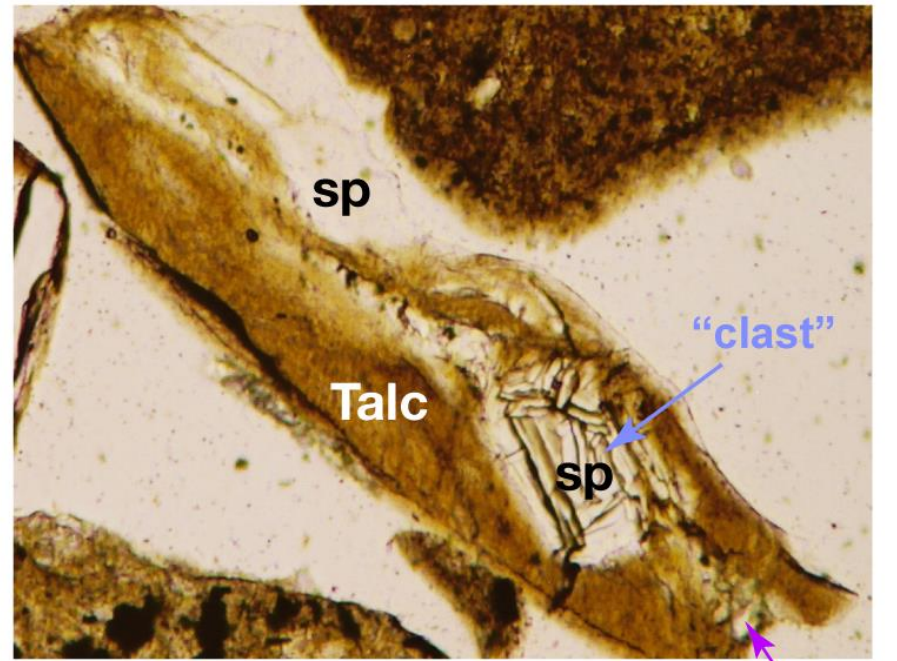
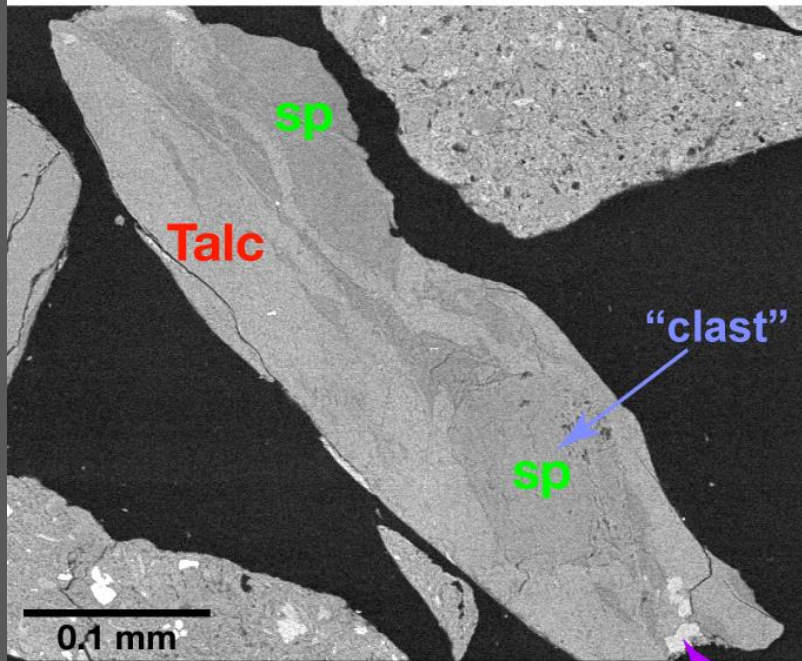
SEM image of serpentinite from 3322 m MD showing aligned chrysotile fibers (*Boullier and Andreani, 2007*)



Talc Found in Cuttings from Serpentine Zone near Deforming Casing (*Moore and Rymer, 2007*)

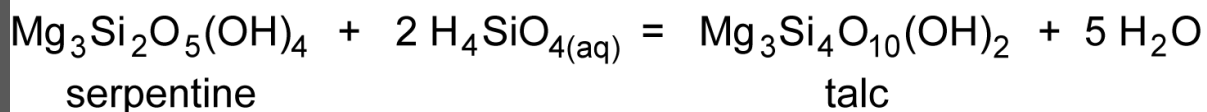
3325 m MD

Foliated (sheared?) serpentinite (sp) grain partly replaced by talc. The talc contains ≈ 5 wt% Fe-oxide, which gives it the brown color.



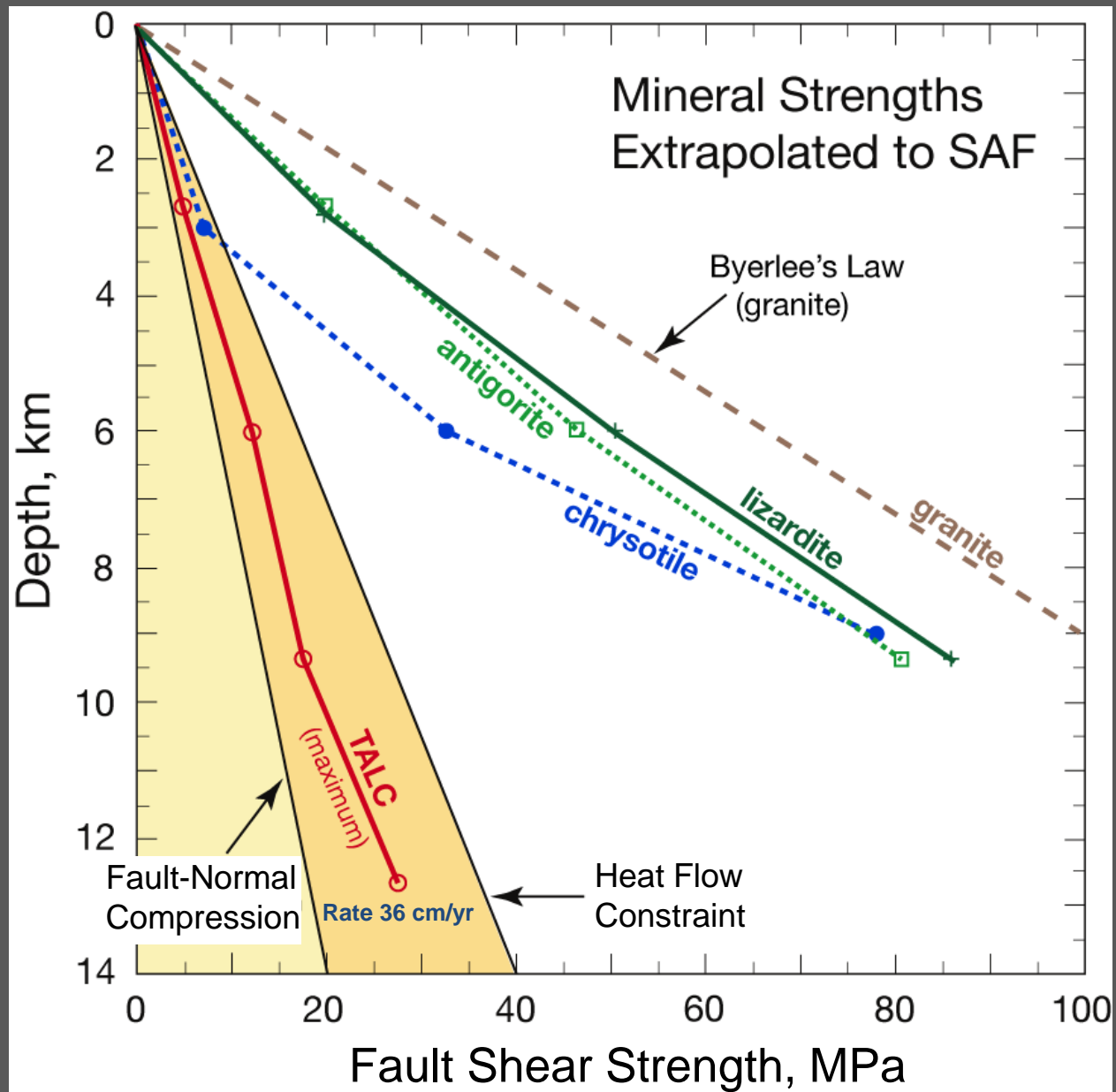
SEM: Backscattered Electrons

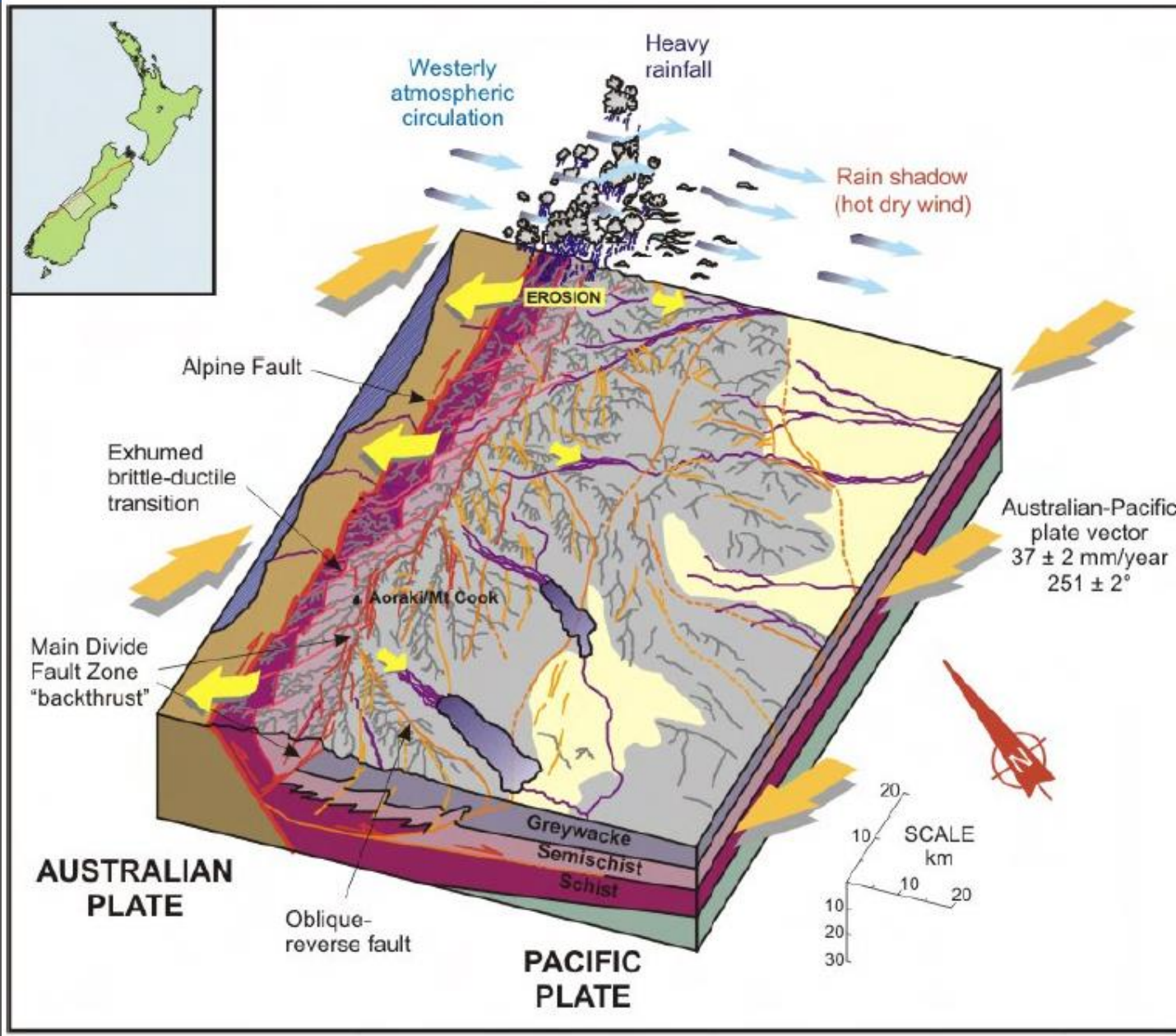
Plane-Polarized Light



Lab friction tests show that a compositionally similar talc is anomalously weak and velocity strengthening (creeping) at seismogenic conditions.

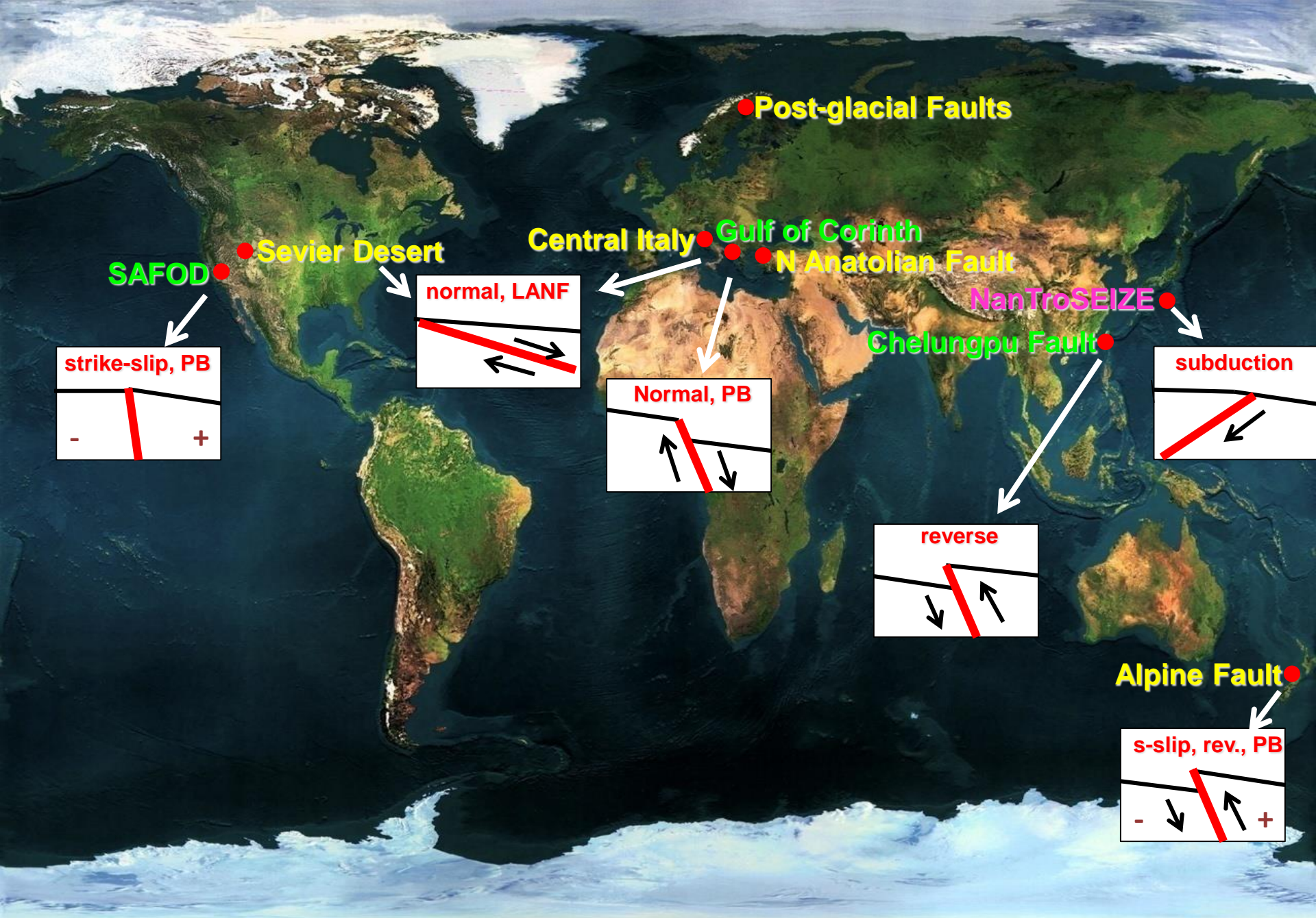
(Moore et al., 2006)





Active Deformation Processes in a Major Transpressional Fault (Alpine Fault)

Franz Josef Glacier, New Zealand, 22 – 28 March `09
 With 61 participants from 7 countries



● Post-glacial Faults

● Sevier Desert

Central Italy

Gulf of Corinth

● N Anatolian Fault

NanTroSEIZE ●

Chelungpu Fault ●

Alpine Fault ●

SAFOD ●

strike-slip, PB

normal, LANF

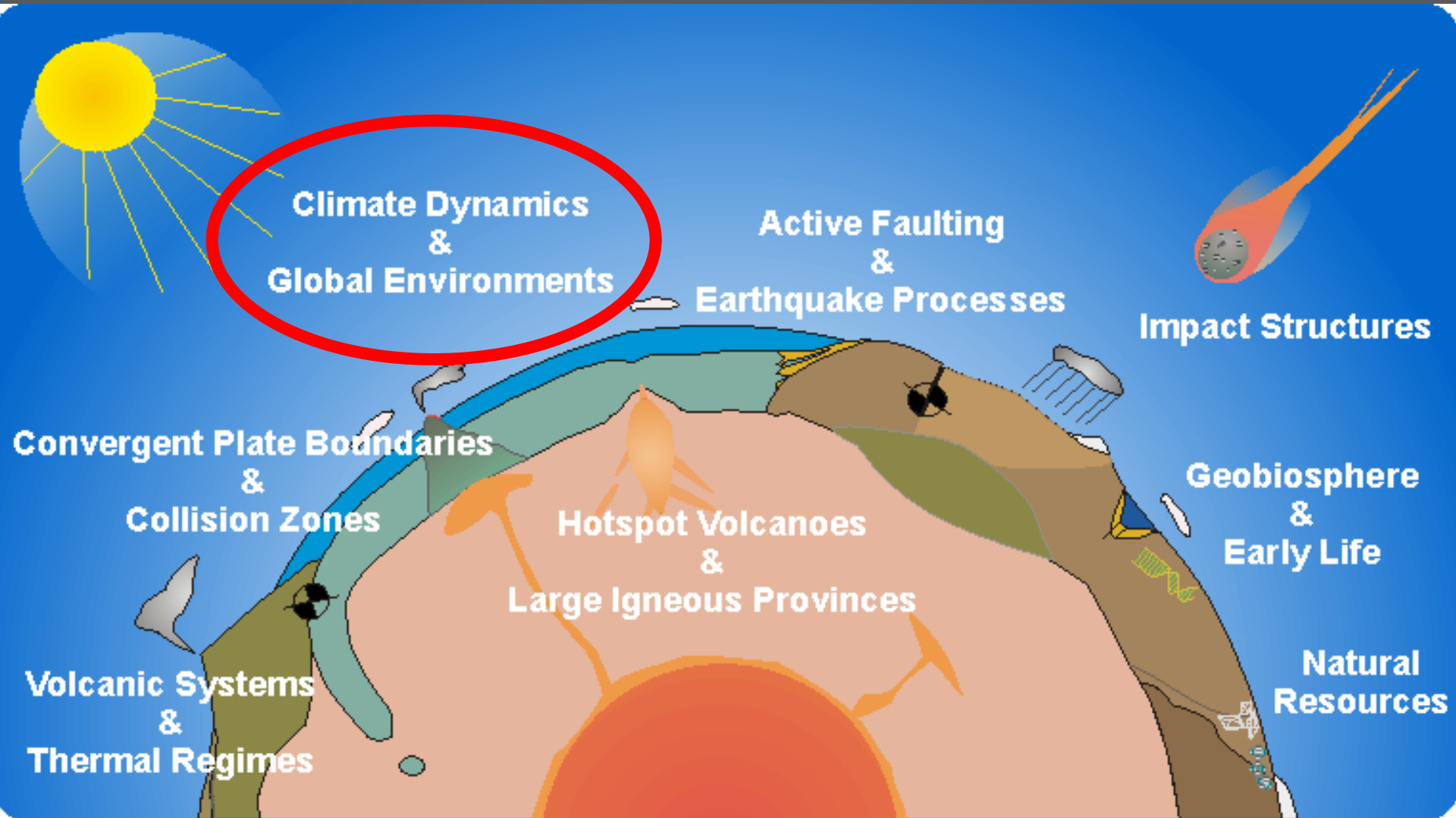
Normal, PB

reverse

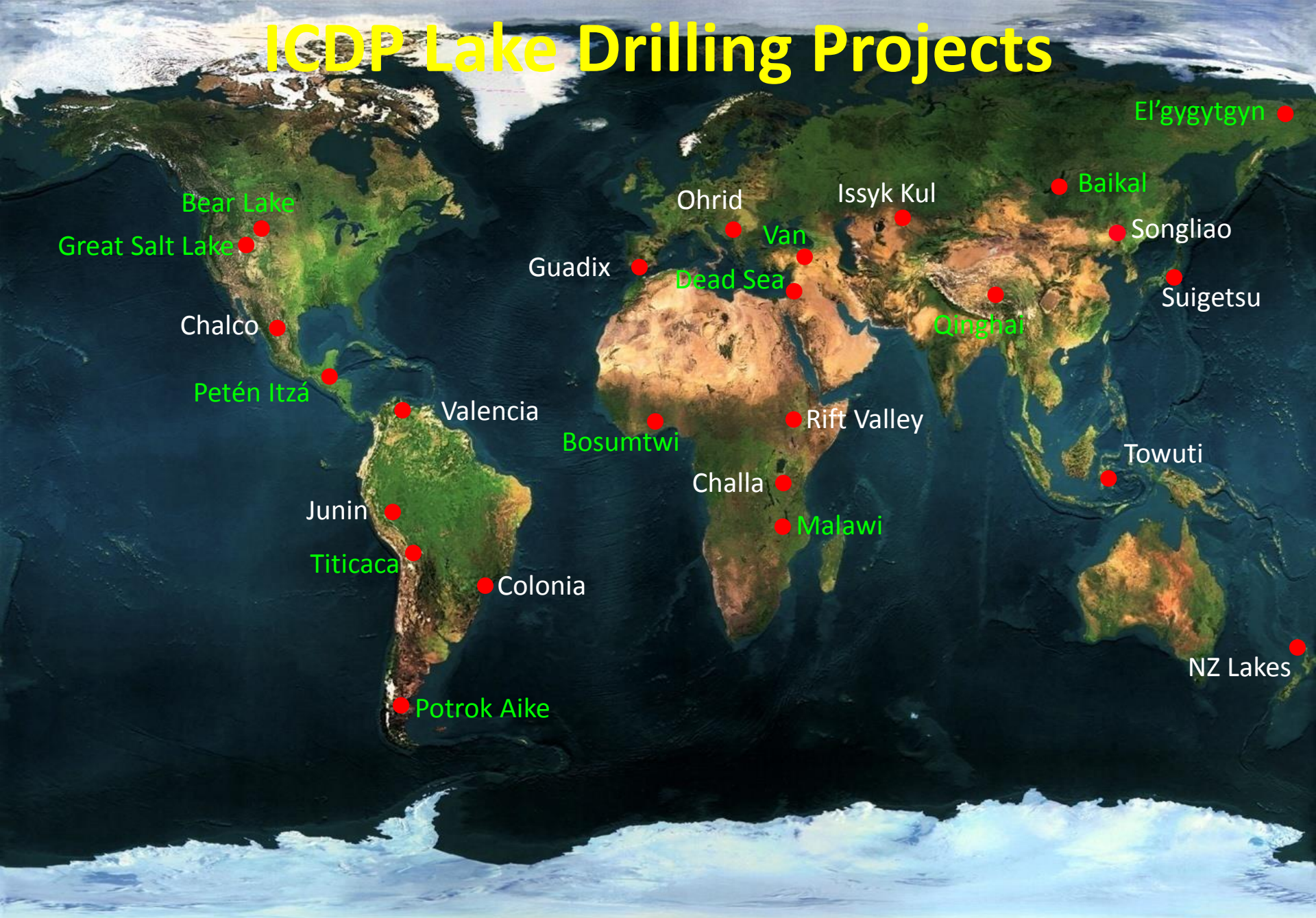
subduction

s-slip, rev., PB

ICDPs Research Themes



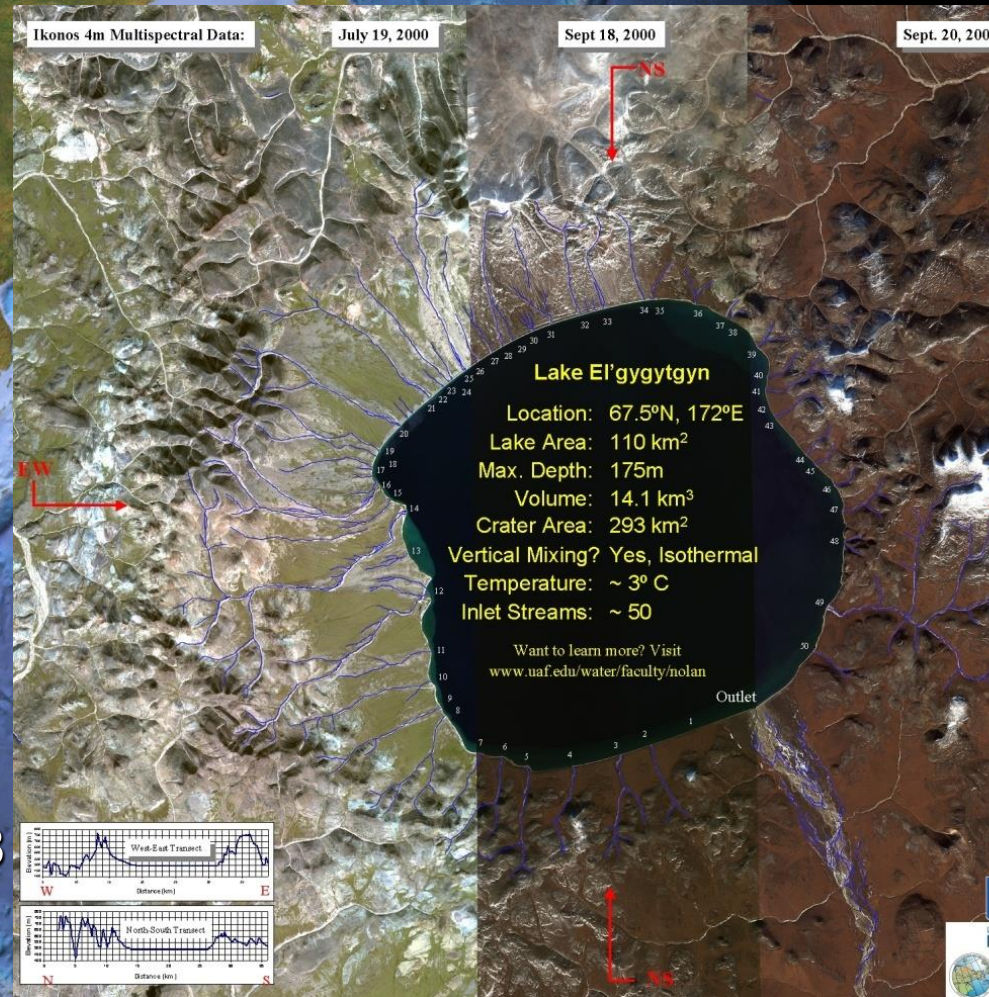
ICDP Lake Drilling Projects



Lake Elgygytyn Drilling Project

Status:

Rig test in Utah in March 2008
Readiness Review in May 2008
Shipping to Sibiria in Summer 2008
Permafrost drilling in Nov /Dez 2008
Lake drilling Mar - May 2009



The ICDP
El' gygytyn
Drilling Project:
successful drilling
operation in 2008/09

Martin Melles

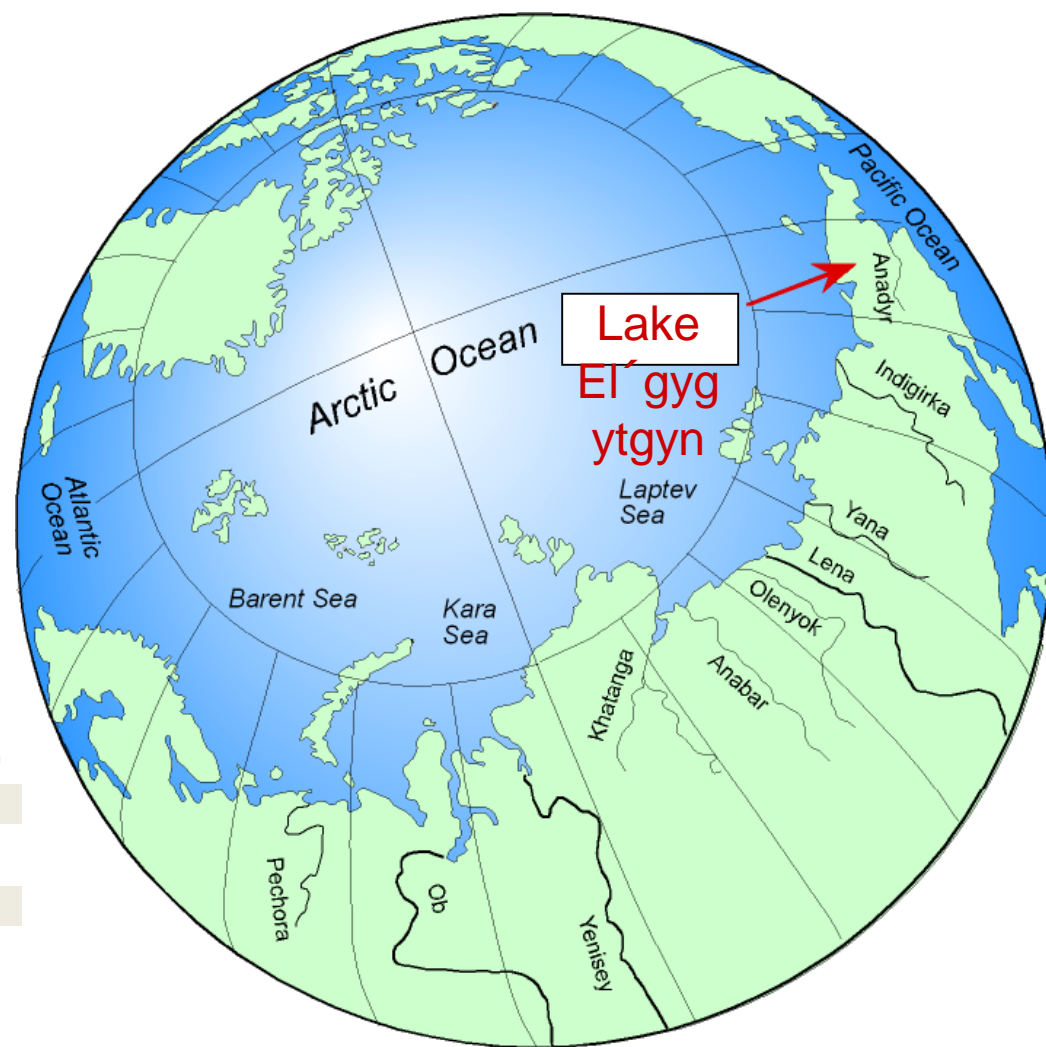
Julie Brigham-Grette

Pavel Minyuk

Christian Koeberl

and

Lake El' gygytyn Scientific Party



"Russian GLAD 800" on Lake El' gygytyn, March 2009



- Drilling Operation -

2008												2009												2010			
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A				

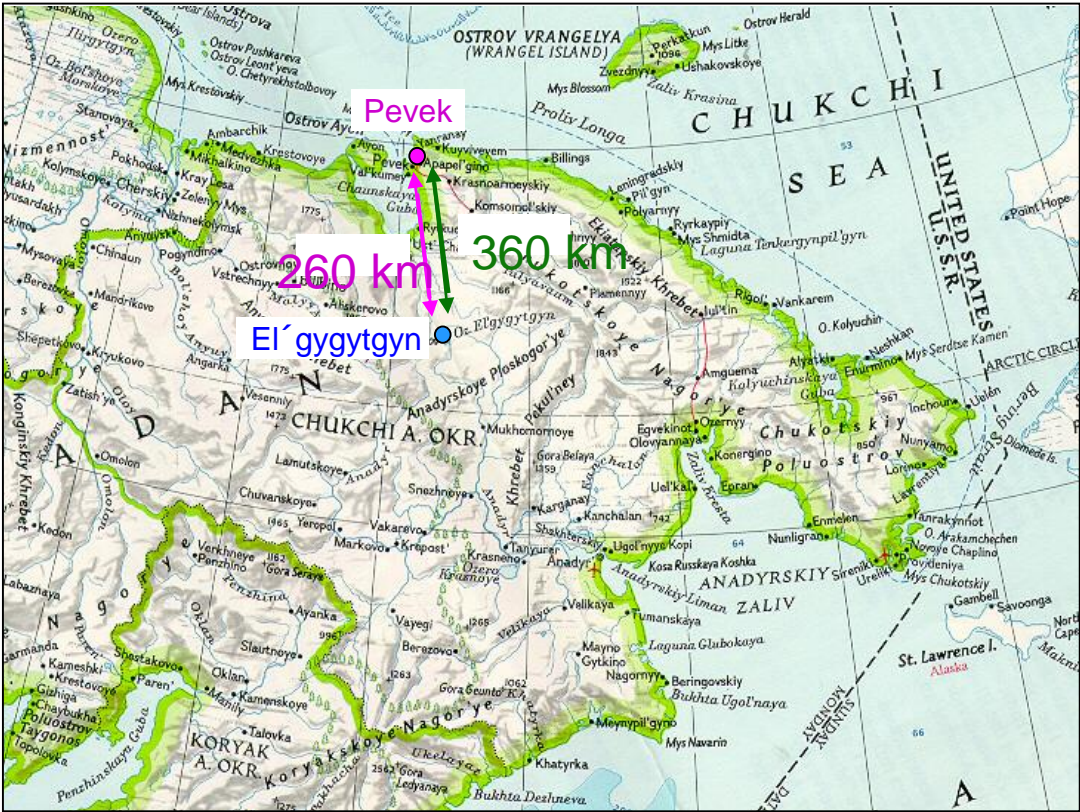
1st transport
to Lake E



MI-8



Truck convoy



- Drilling Operation -

2008								2009								2010							
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A

1st transport
to Lake E

Camp
set up



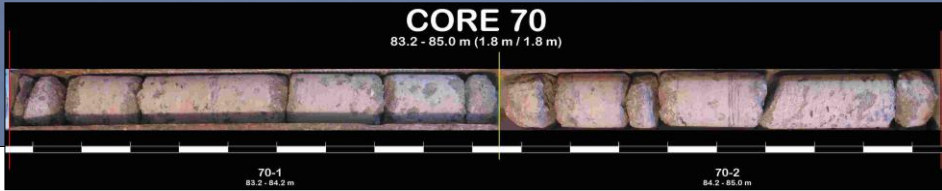
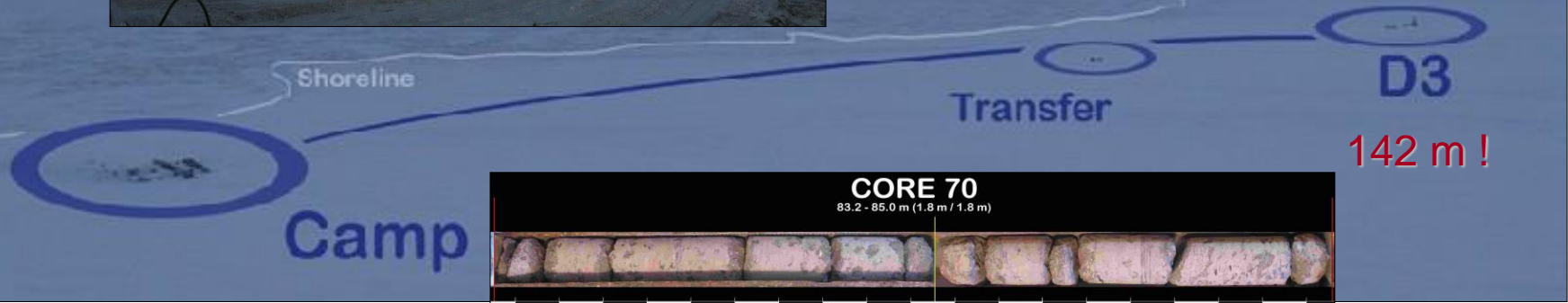
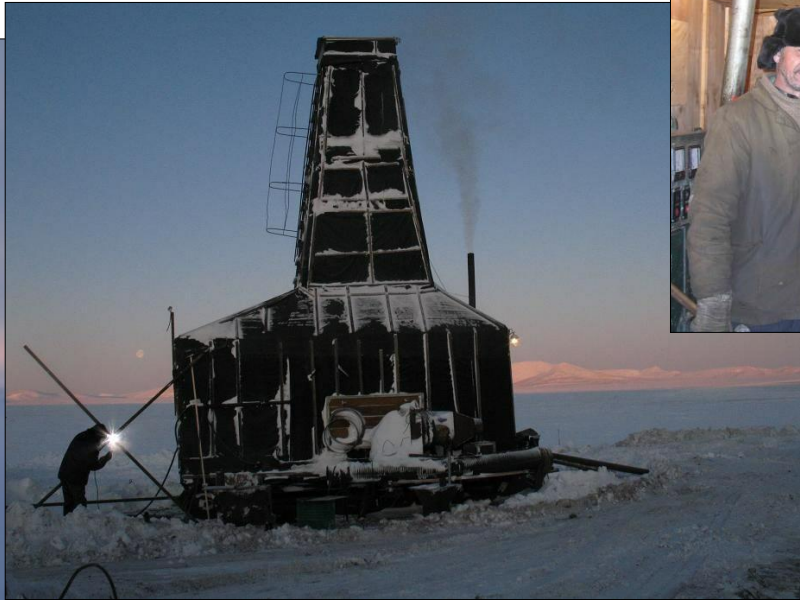
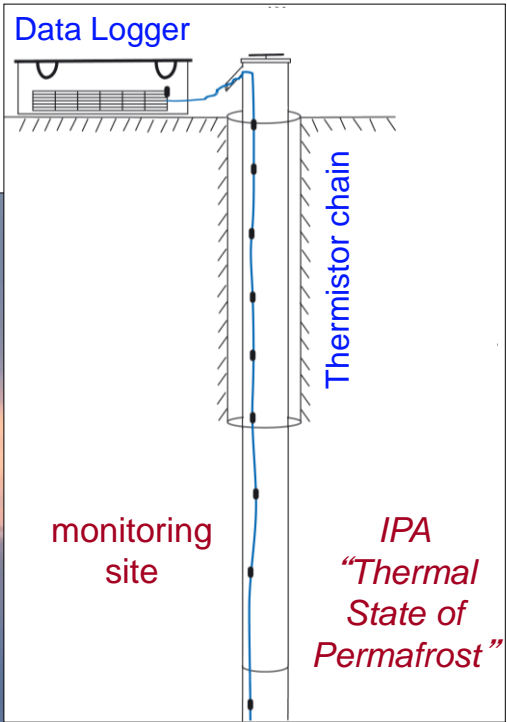
- Drilling Operation -

2008								2009								2010							
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A

1st transport to Lake E

Camp set up

Permafrost drilling (D3)

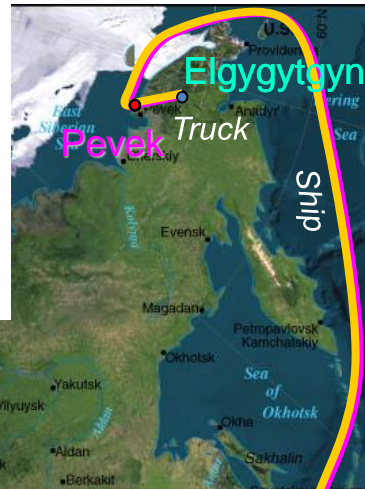
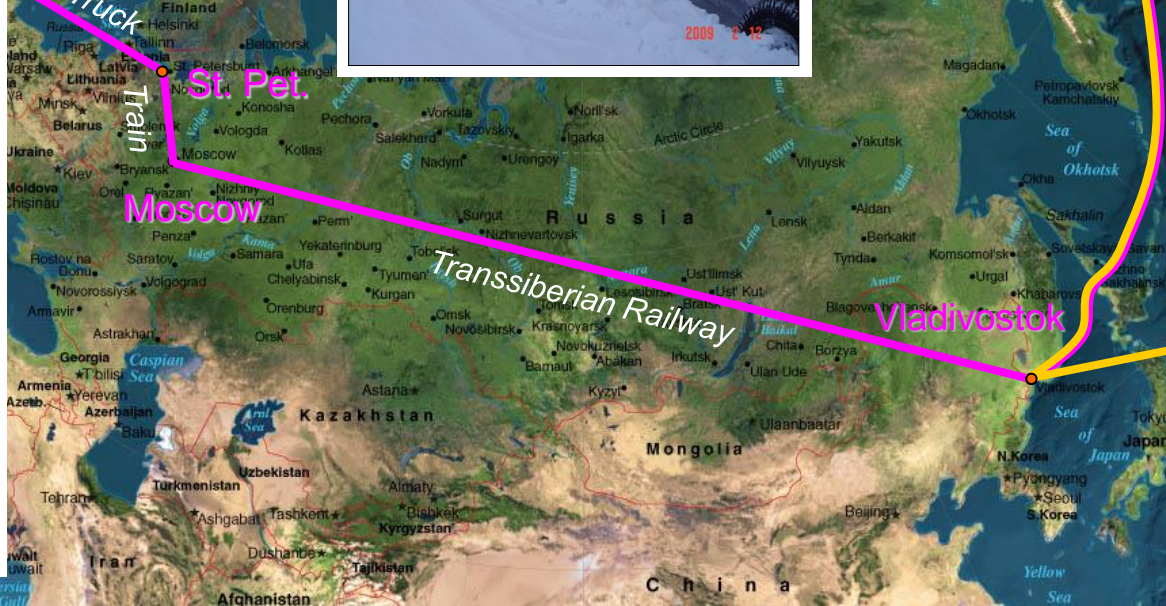
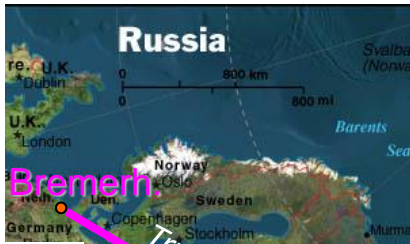


- Drilling Operation -

2008							2009							2010									
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A



2 Containers from Germany



15 Containers from the U.S.A.

- Drilling Operation -

2008								2009								2010							
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A

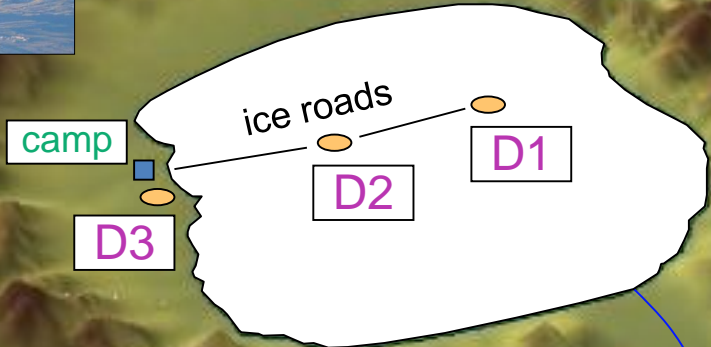
1st transport to Lake E

Camp set up

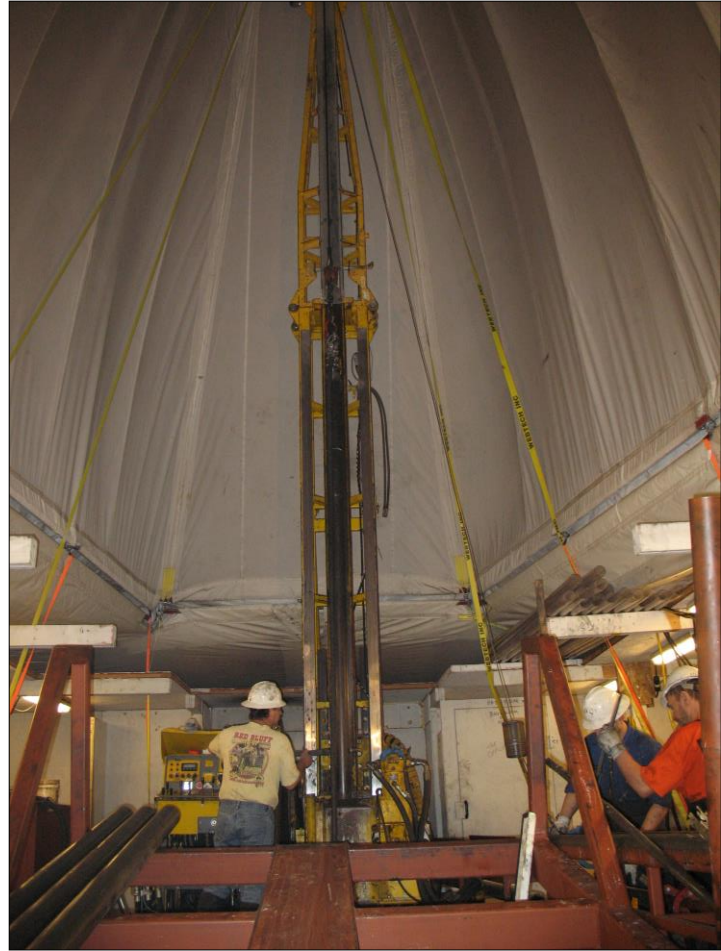
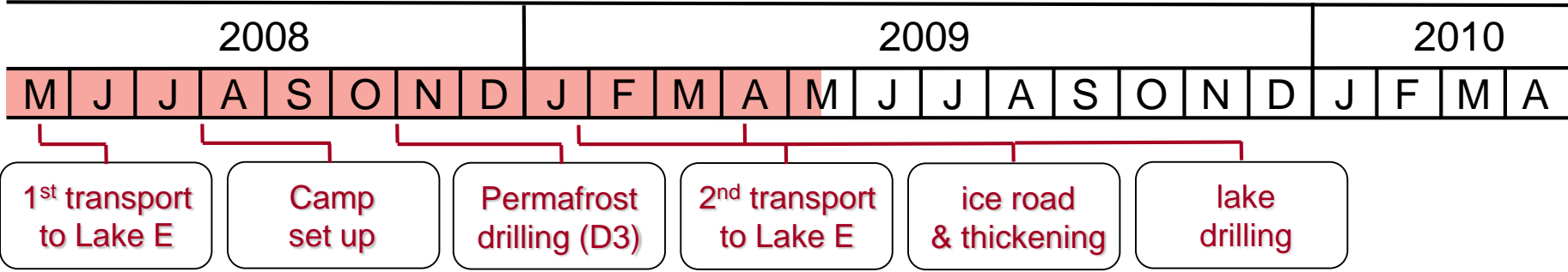
Permafrost drilling (D3)

2nd transport to Lake E

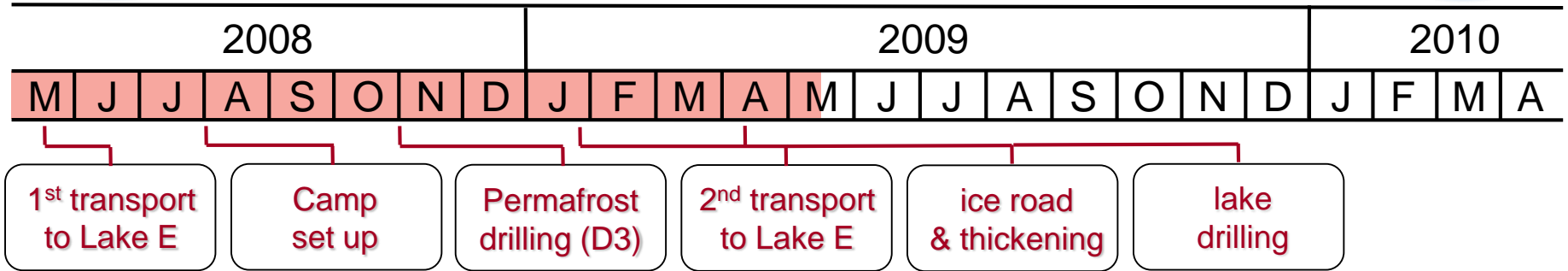
ice road & thickening



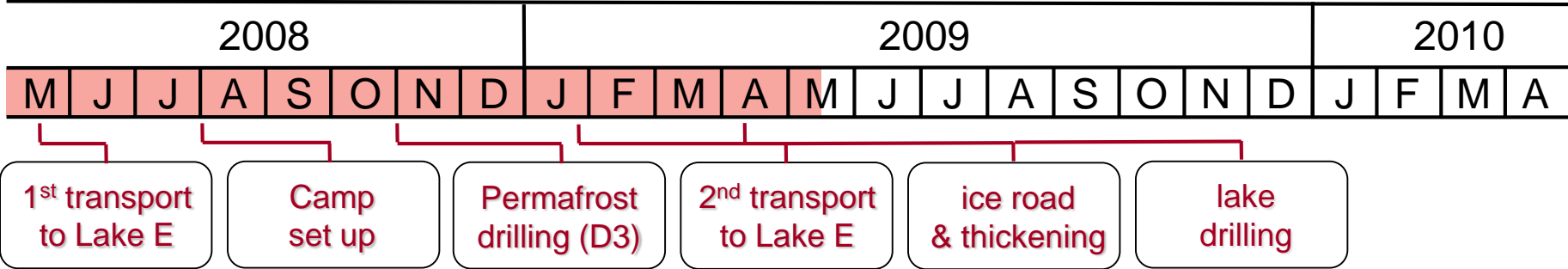
- Drilling Operation -



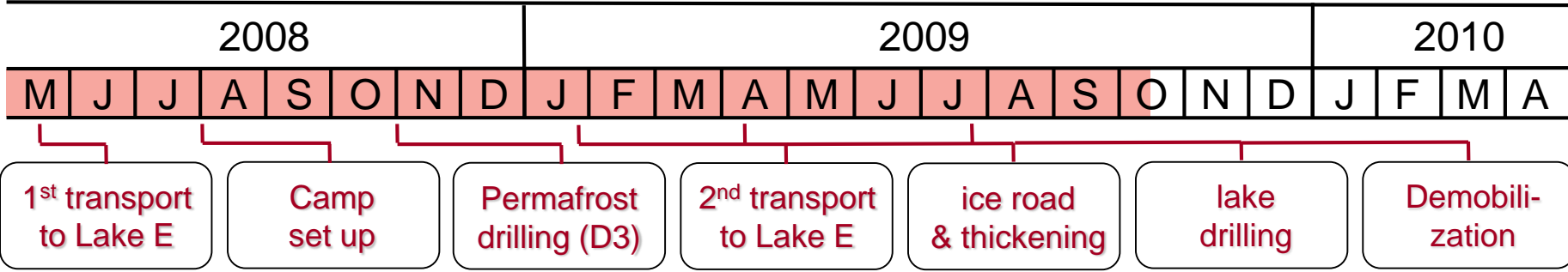
- Drilling Operation -



- Drilling Operation -



- Drilling Operation -



Lake E, Reefer (4/09)



Pevek, MI-8 (4/09)



Pevek, AN-12 (6/09)



Cologne, Reefer (8/09)



Deconstruction (5/09)

- Drilling Operation -

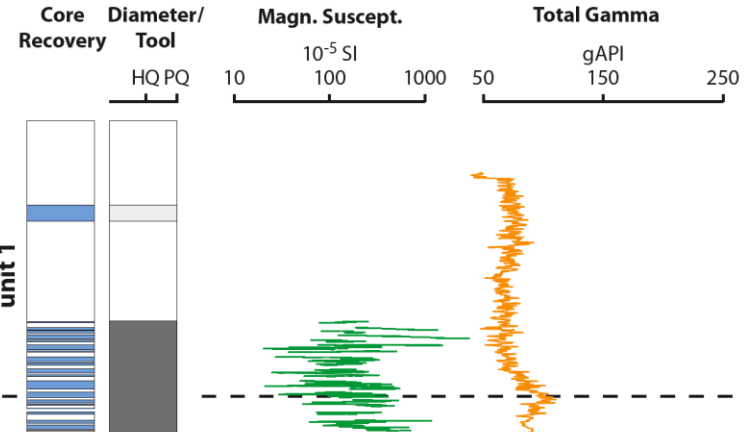
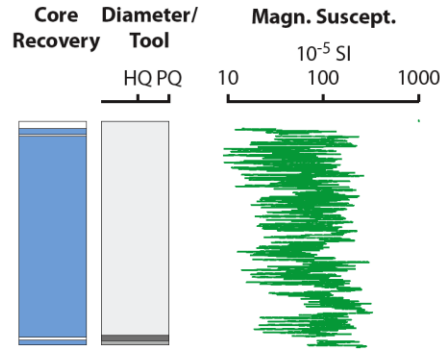
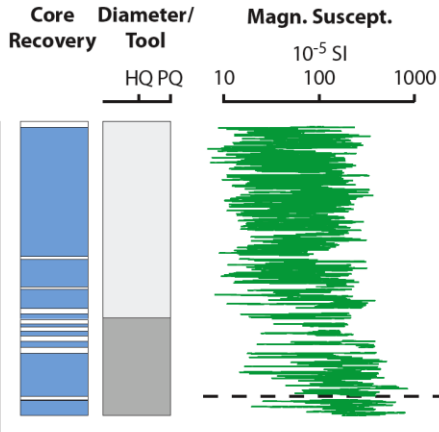
Hole 1A

Hole 1B

Recovery

Hole 1C

Downhole Logging



Meters below lake floor

Core recovery:

- Core retrieved (lacustrine sediments/impact rock)
- Material loss/gap

Tool:

- Center Bit (PQ)
- Hydraulic Piston Corer (PQ)
- Extended Nose (PQ)
- Alien Bit (PQ)
- Hardrock Bit (HQ)



lacustrine sediments

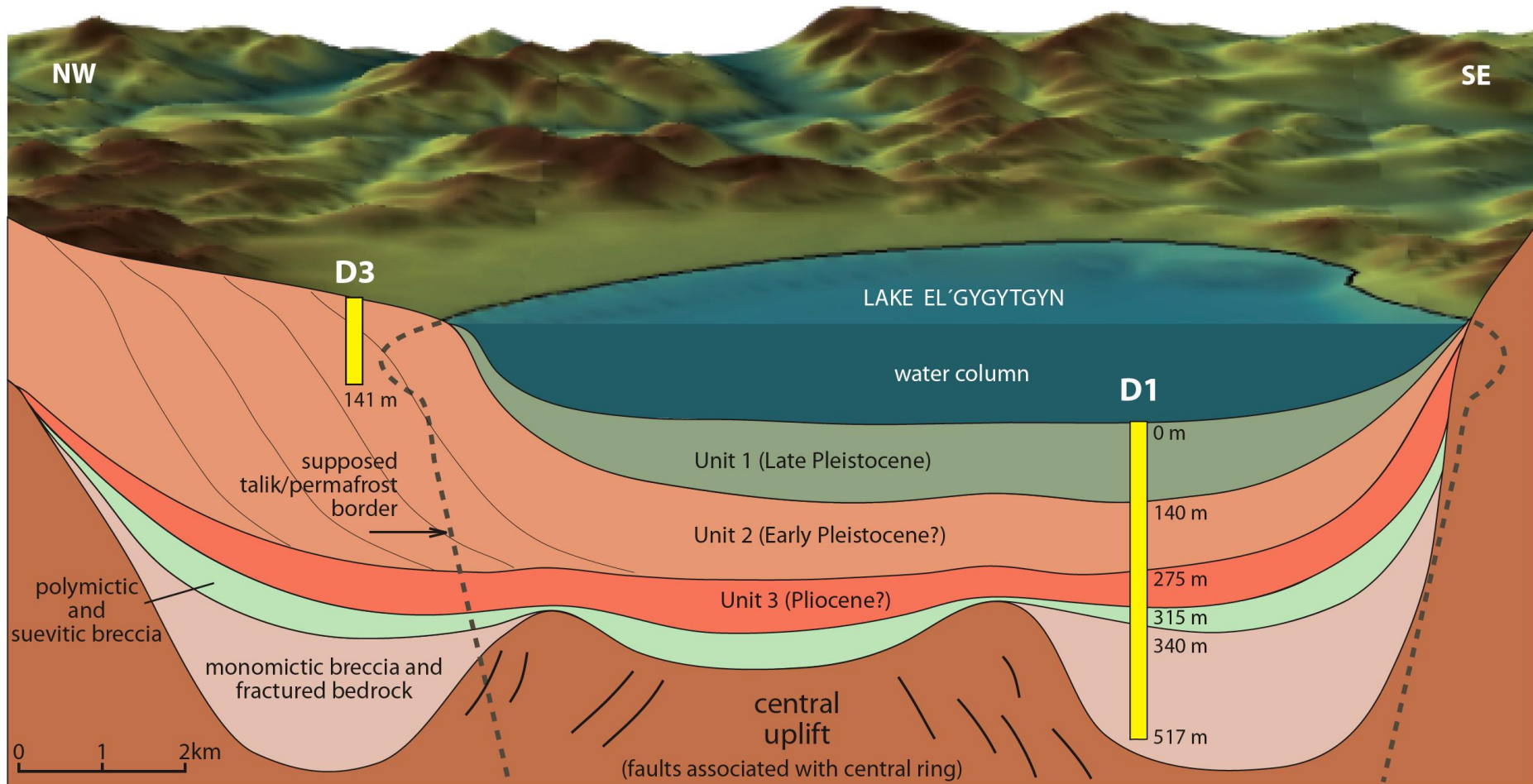
unit 1

unit 2

unit 3

impact rock

Conclusion



D3 Permafrost

- Permafrost history
- Lake-level history
- Permafrost monitoring

D1 Impact

- Bolide composition
- Energy release
- Target rock response

D1 Lake Sediments

- Climatic & environm. history
- Quaternary & Pliocene
- Early Pleistocene glaciation?

www.icdp-online.de
www.elgygytgyn.uni-koeln.de
www.dfg-science-tv.de



Funded by:
ICDP (international),
NSF (USA), BMBF (Germany),
RAS (Russia), BMWF (Austria),
etc.



Sediment Coring

- Jul 8 – Aug 30, 2004
- 6 sites
- Up to 300 m
- Total core recovery 1800 m

Impact Rock Coring

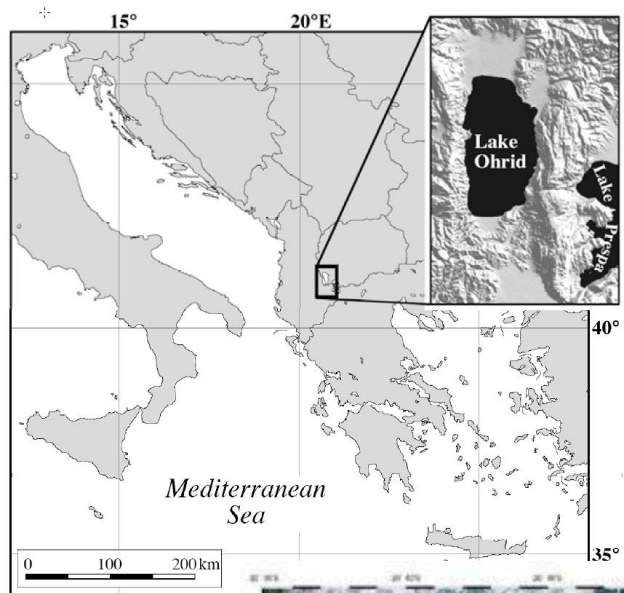
- Sep 7 – Oct 10, 2004
- 2 sites
- 451 and 545 m
- Total core recovery 300 m



The platform in heavy wind conditions stranded near the eastern shore.



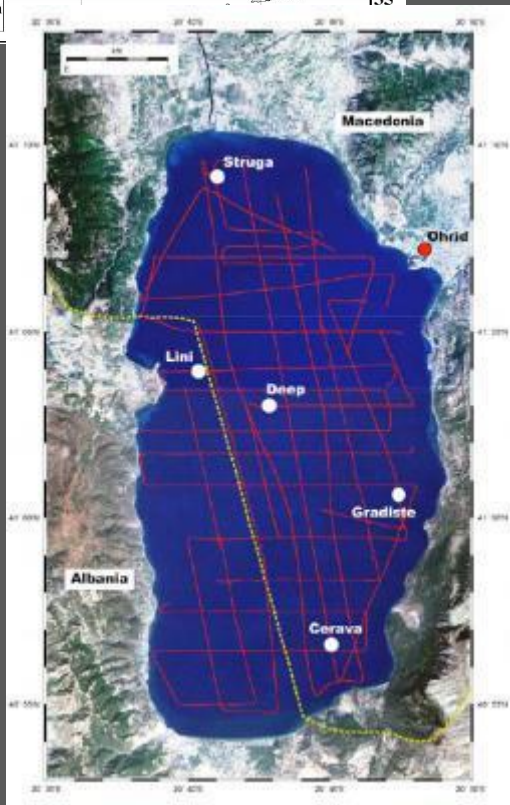
7 holes, up to 100 m depth, 530 m of core, 94 % core recovery



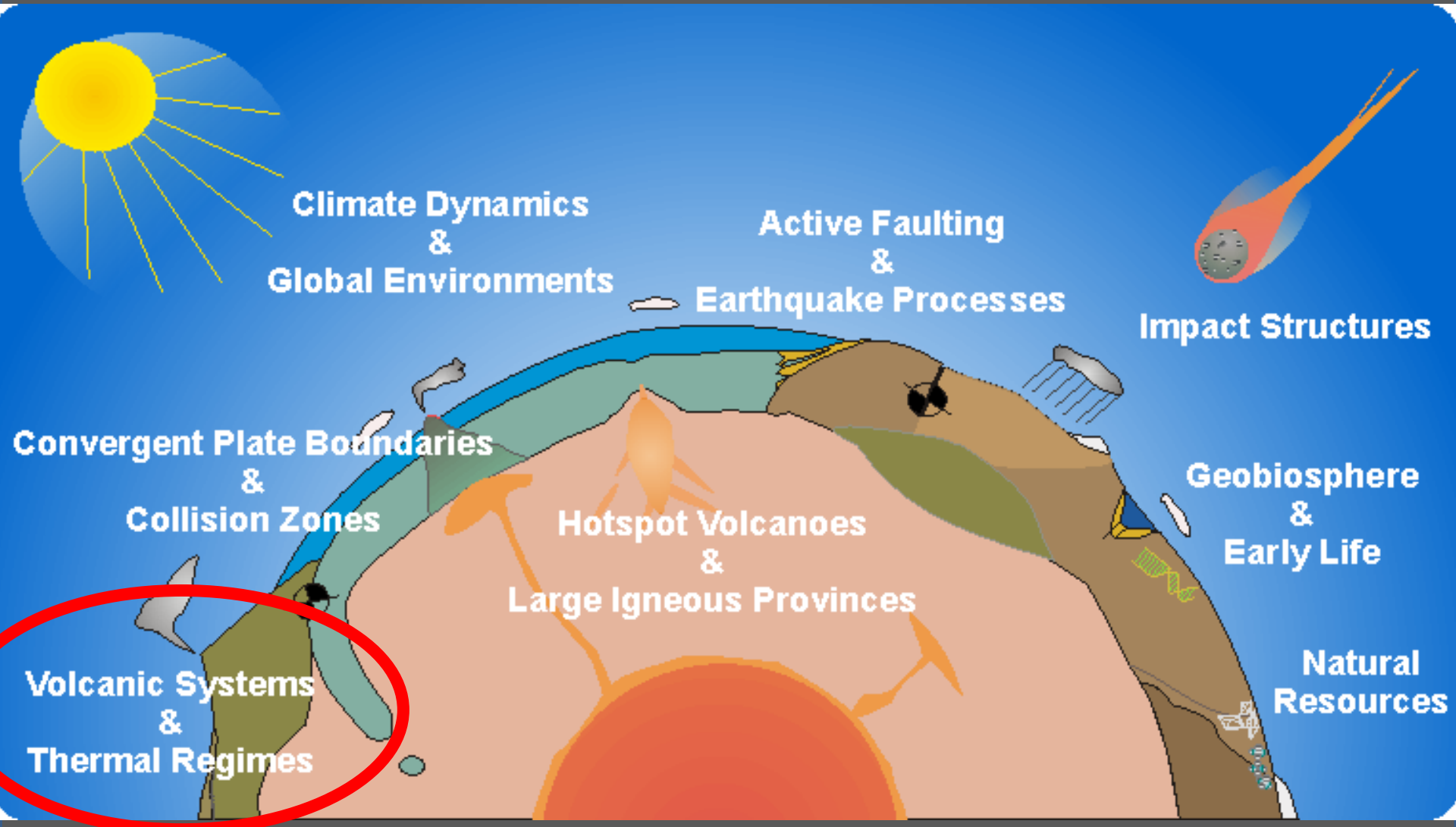
Scientific Collaboration On Past Speciation Conditions in Lake Ohrid (SCOPSCO)

Objectives:

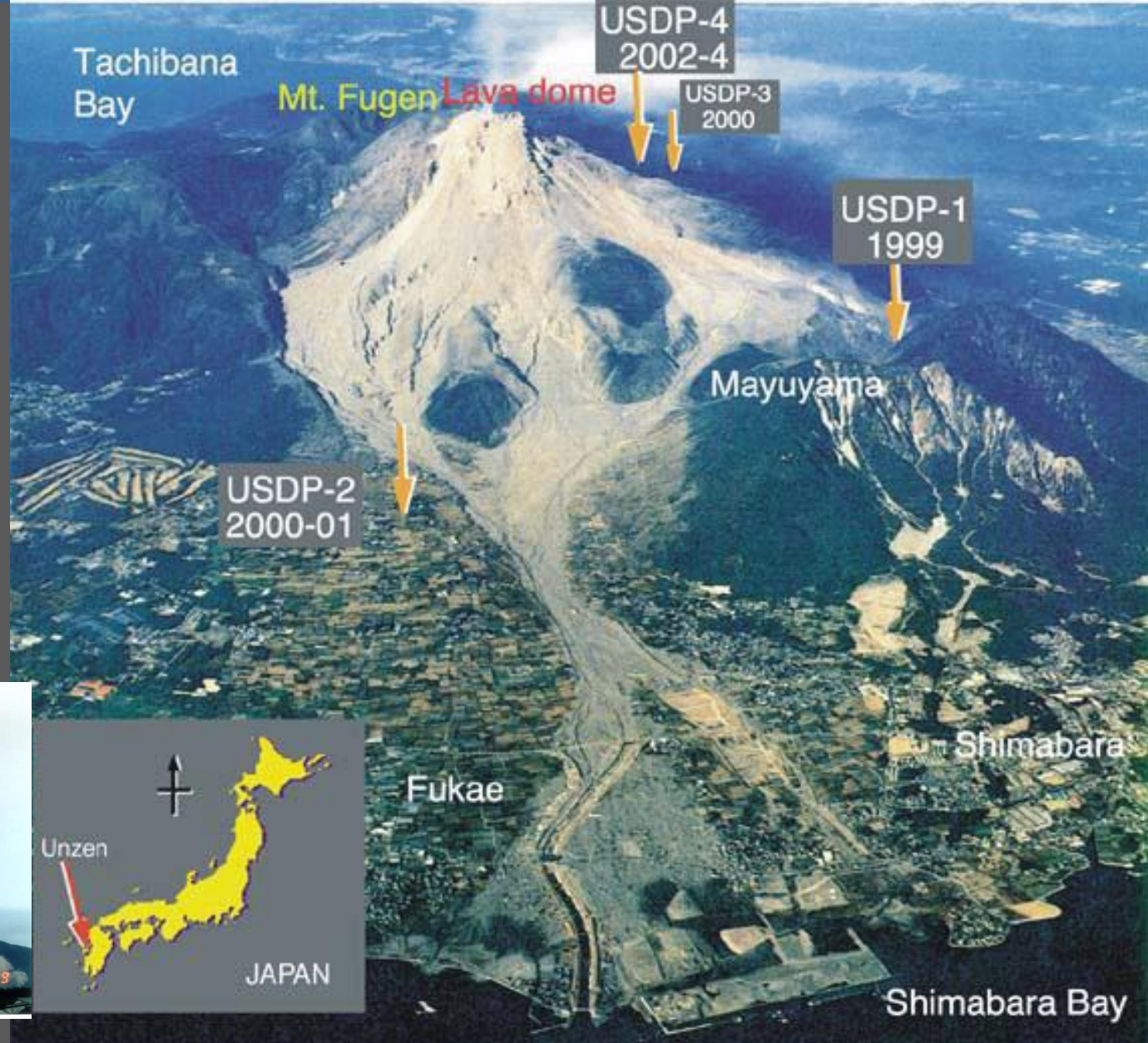
- Propose coring Lake Ohrid, a deep (286 m) and ancient lake (probably Miocene in age) lying on the Albanian/Macedonian border.
- Lake is famous for extraordinary biodiversity of invertebrates, which probably evolved in-situ.
- Development of a lake chronology to understand evolution of this biodiversity.
- Other objectives:
 - volcanic history from tephtras,
 - seismotectonic history from turbidites.
 - continuous terrestrial climate history.



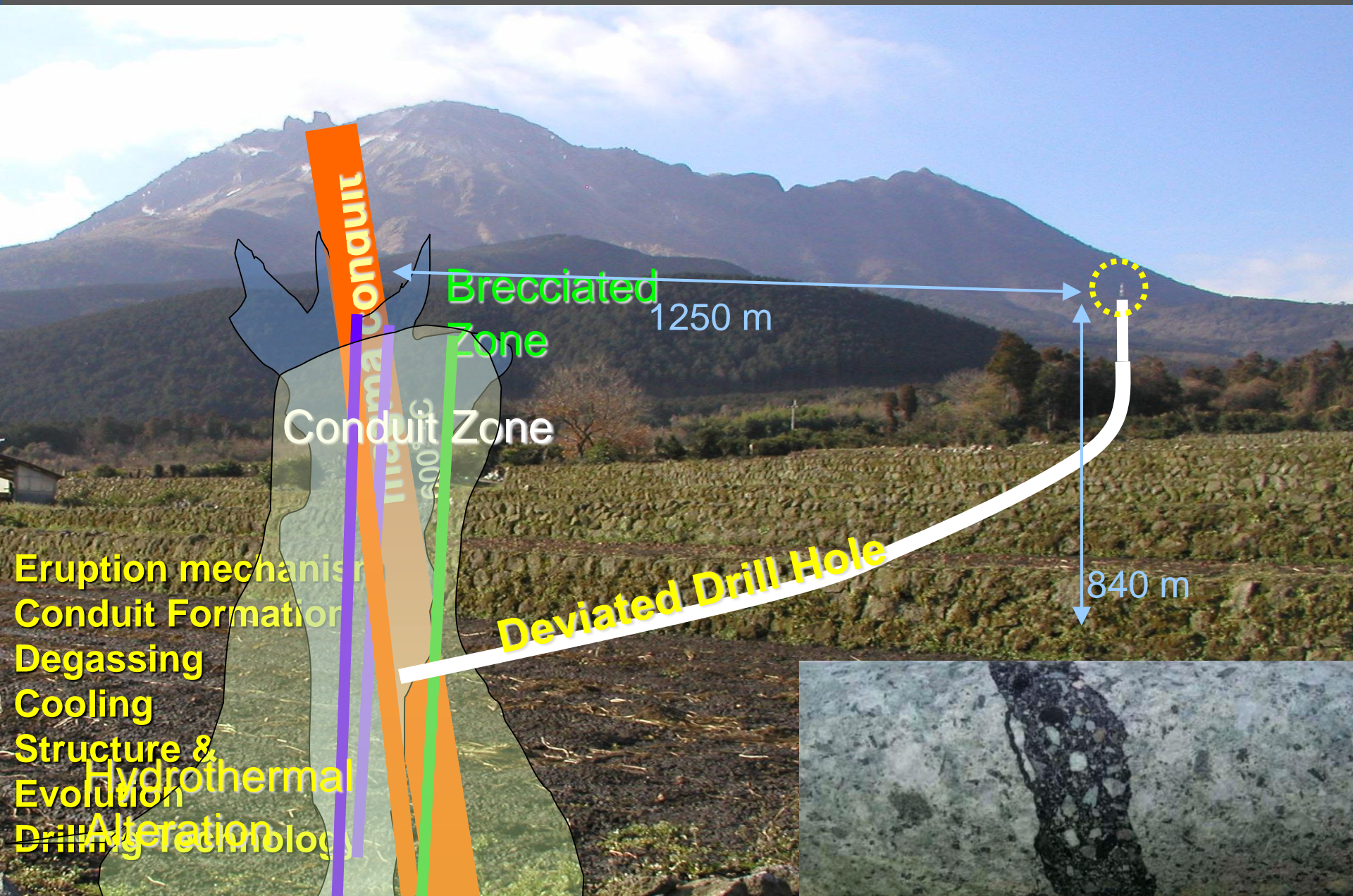
ICDPs Research Themes



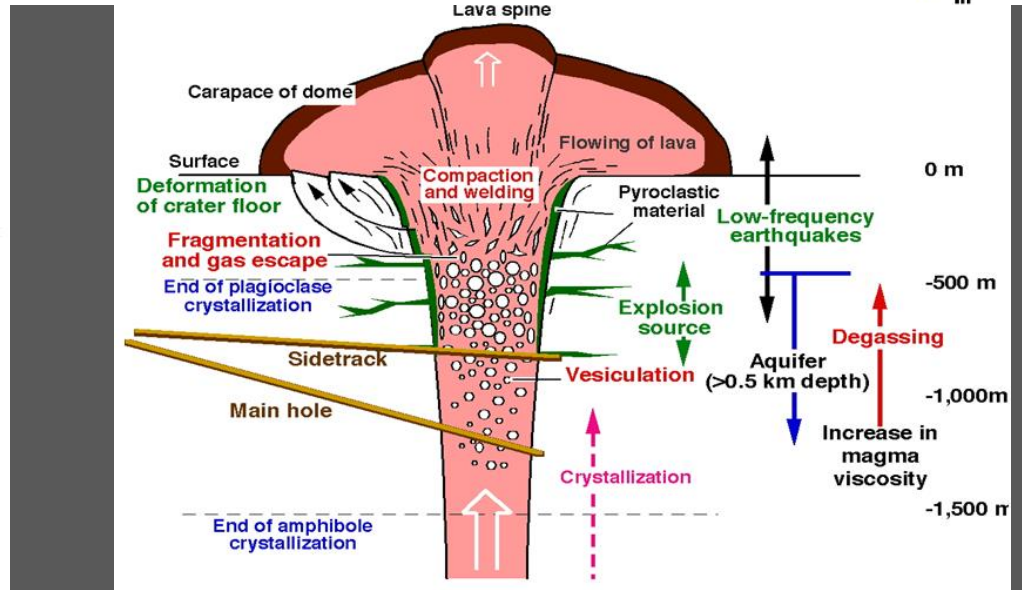
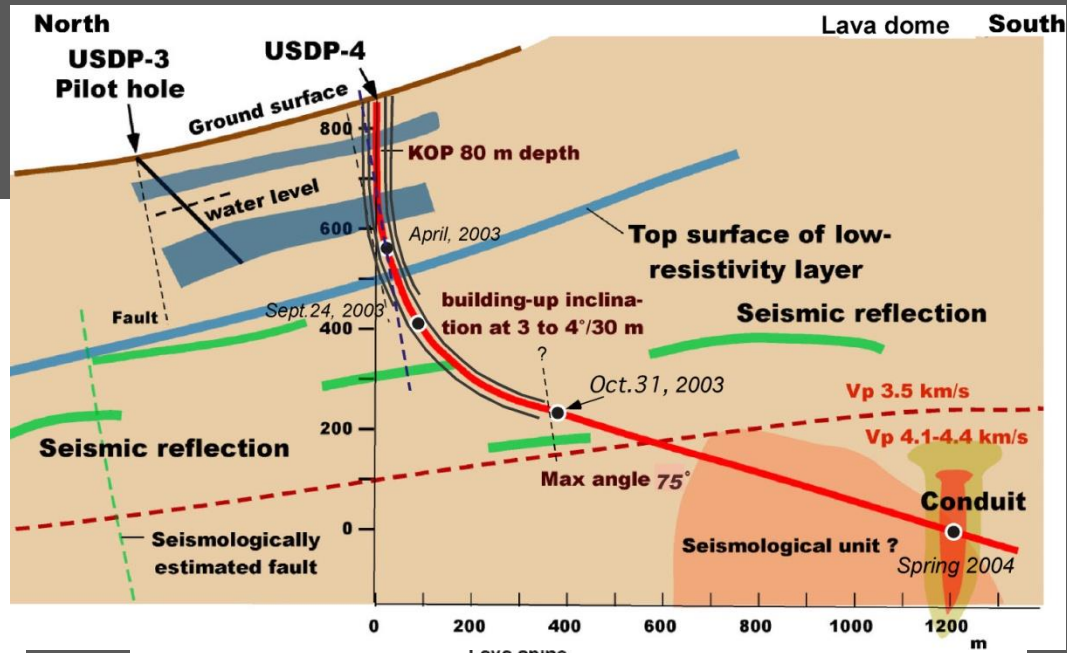
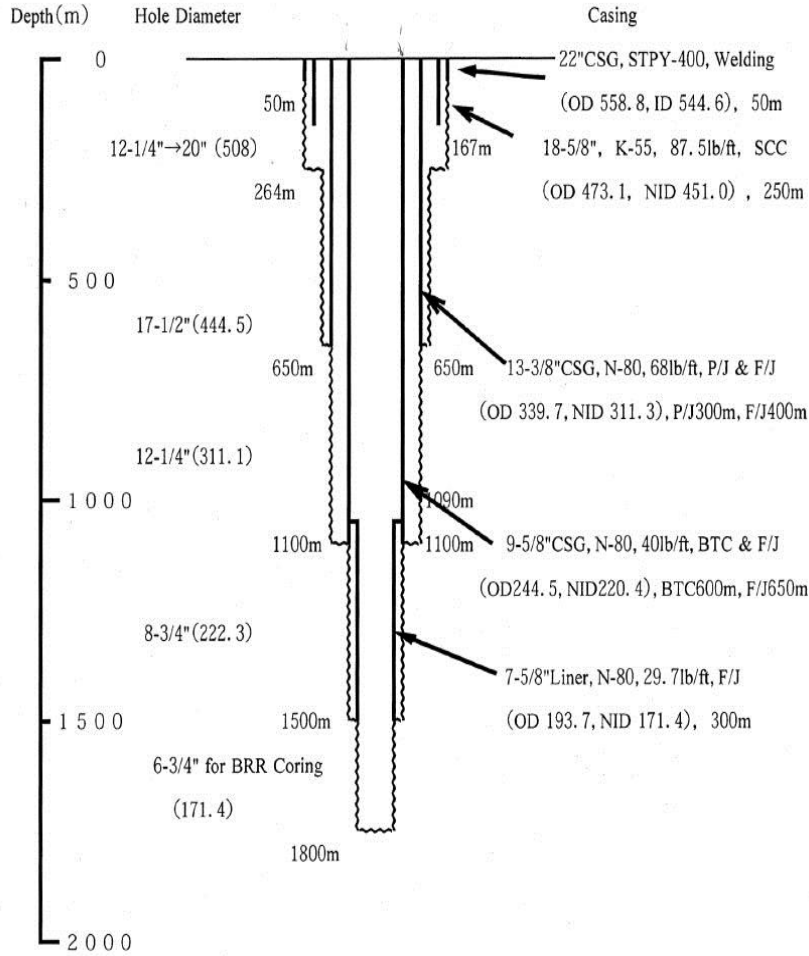
Unzen Volcano Drilling Project, Japan



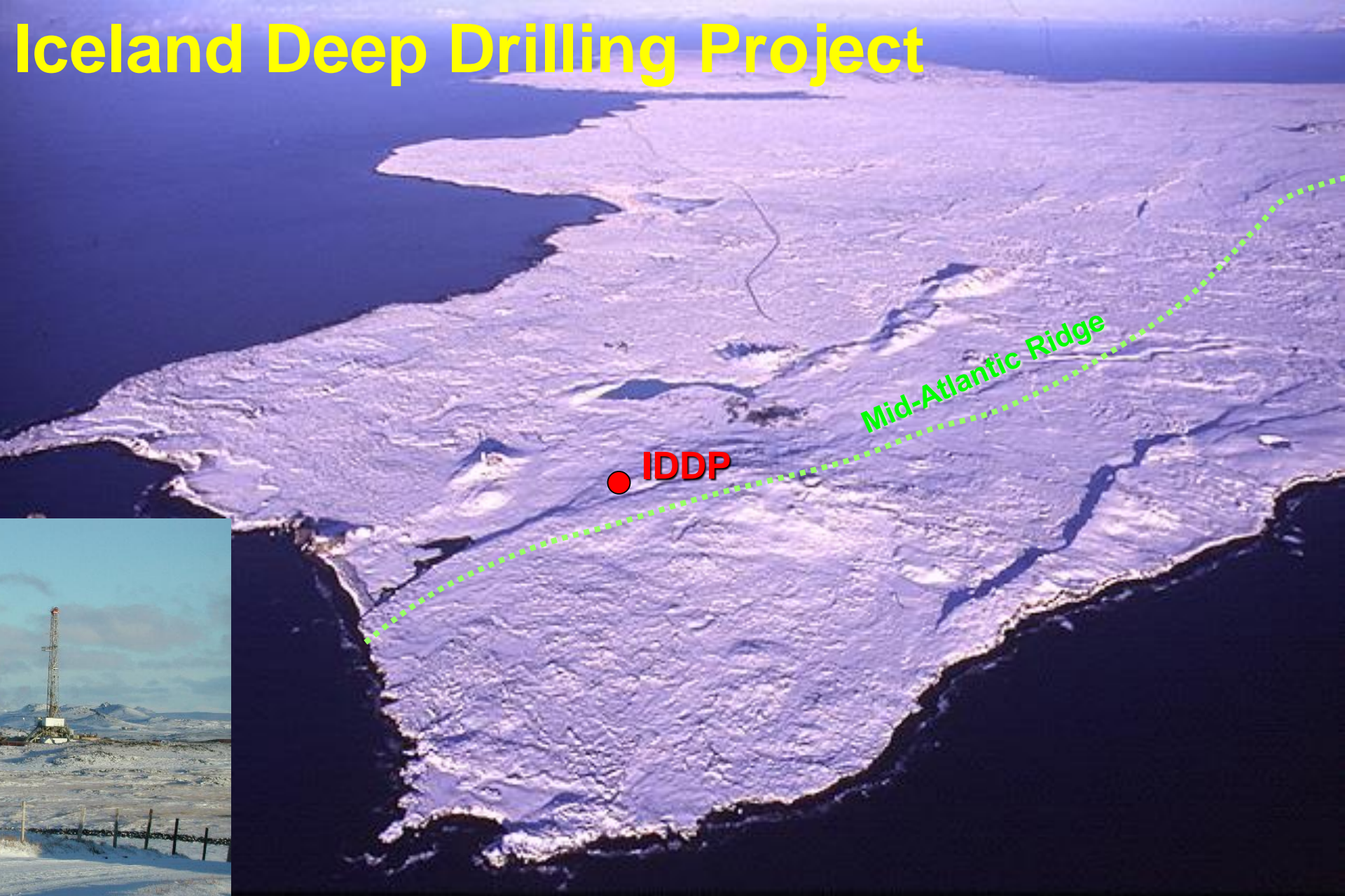
Unzen Volcano Drilling Project, Japan

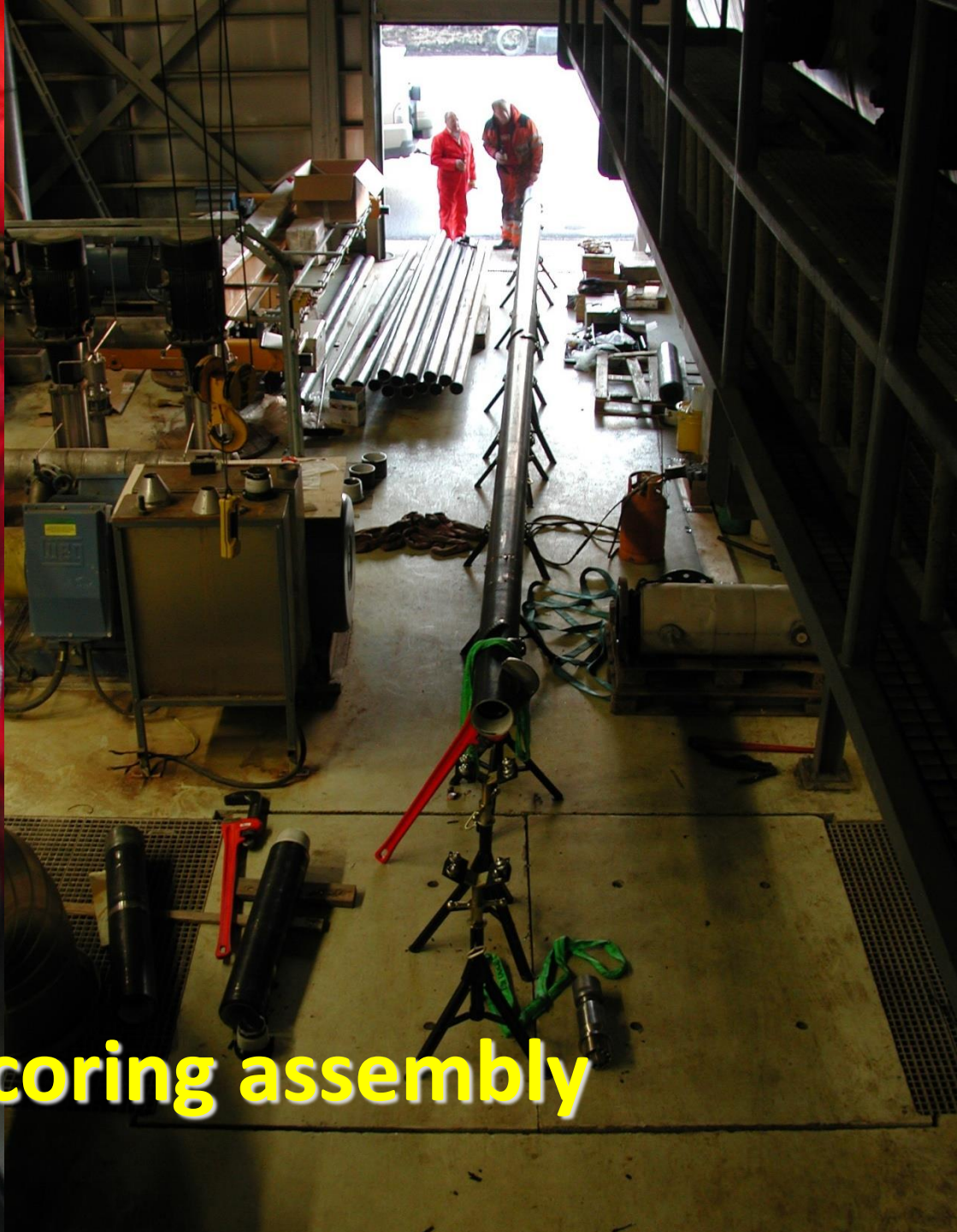


Unzen Volcano Drilling Project



Iceland Deep Drilling Project





ICDP spot coring assembly

Spot coring test successful

full recovery of 9 m
core at 2800 m depth





In situ probing
of 400 – 600 C
super-critical
fluids at 4-5
km

Icelandic
Consortium of
Private-Public-
Partnership

Scheduled for
2009 to 2011



IDDP drilled
into Magma

Colorless rhyolitic glass shard (~1 mm across) with spherical vesicles (photo from ISOR daily reports)

ICDP Activities (Feb 2012)

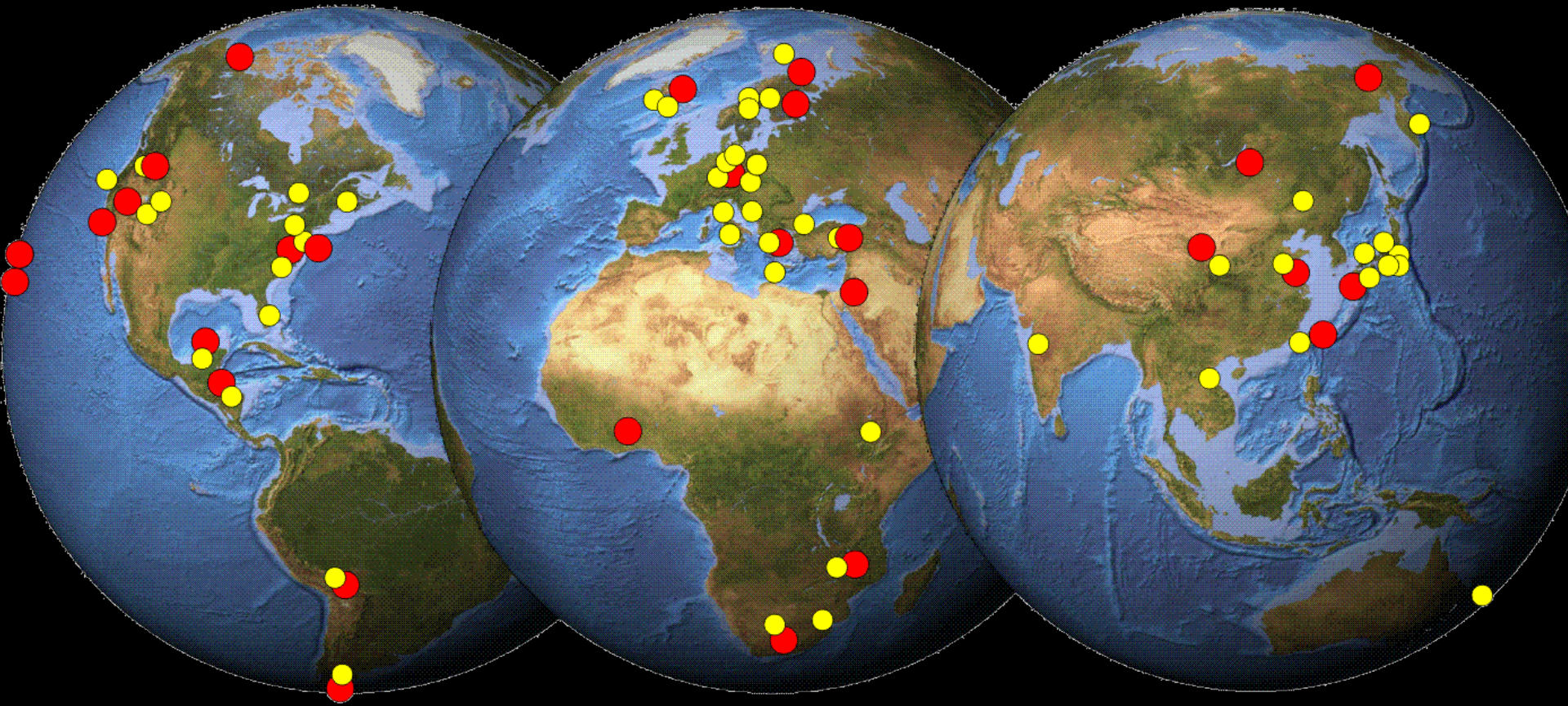
Proposals submitted	261 (12 in 2012)
ICDP Workshops	55
ICDP Drilling Projects	28

Ongoing & Upcoming Activities

Workshops	3
Drilling Projects	8



ICDP Workshops and Projects



ICDP is an international program to support scientific continental drilling through financial and logistical support to international science teams with a need for drilling

- is an internationally managed and operated Earth science research program
- addresses fundamental problems of global significance
- serves the entire Earth Science Community
- is undertaken by international teams of scientists at carefully selected sites around the world
- is proposal-driven and peer-reviewed
- is providing funding and operational support
- is coordinating research projects with IODP and other national and international programs



ICDP Membership

Member Countries

- Germany
- USA
- Japan
- China
- Canada
- Austria
- Norway
- Mexico
- Poland
- Czech Republic
- Iceland
- Finland
- South Africa

Member Countries

- Italy
- Spain
- Sweden
- Switzerland
- New Zealand
- France
- Israel

Member Organizations

- UNESCO
- Schlumberger

2011 Newcomers

- India
- Netherlands

2012 Newcomers

- Great Britain
- South Korea*

Interests

- Belgium
- Brasil
- Colombia
- Russia
- Turkey
- Denmark



From Proposal to Project



Constitute an essential component in the preparation of a full proposal, as they allow PI's

- to invite experts in the respective field from all over the world
- to strengthen and broaden the project
- to establish an international science team
- to prepare a detailed science, operations, and budget plan for a full proposal

Criteria for Selection of ICDP Projects

- **Global Criterion** Problem of Global Significance
"World-Class" Geological Site
- **International Criterion** Broad International Collaboration
Best Possible Science Team
Pooling of Resources and
Technology
- **Societal-Needs Criterion** Relevance of Problem to Society
Collaboration with Industry
- **Need-for-Drilling Criterion** Proof of Necessity for Drilling
- **Depth-to-Cost Criterion** Balancing of Costs and Drilling
Design

Funding Strategy

ICDP funds are granted for project development and drilling-related expenses, but **not for science** support

- Foster International Co-operation and Project development through Workshops (seed money to lift projects)
- Form partnerships with other scientific, private, governmental or industry groups for project funding
- Direct money to drilling operations, scientific-technical on-site support, facilities and data management



Project Funding through ICDP

Two Ways of Funding:

1. Leg = Financial Support

2. Leg = Operational Support

Operational Support Group – OSG
of ICDP at GFZ Potsdam

Both can be requested by ICDP projects



ICDP Funding Strategy

Commingle Funding = International Cost Sharing:

ICDP + national agencies + industry

5 – 70 % average 23 %
No Funding for Science

Workshops advance international project development

Drilling operations

scientific-technical on-site support

downhole logging

field-lab facilities

data management



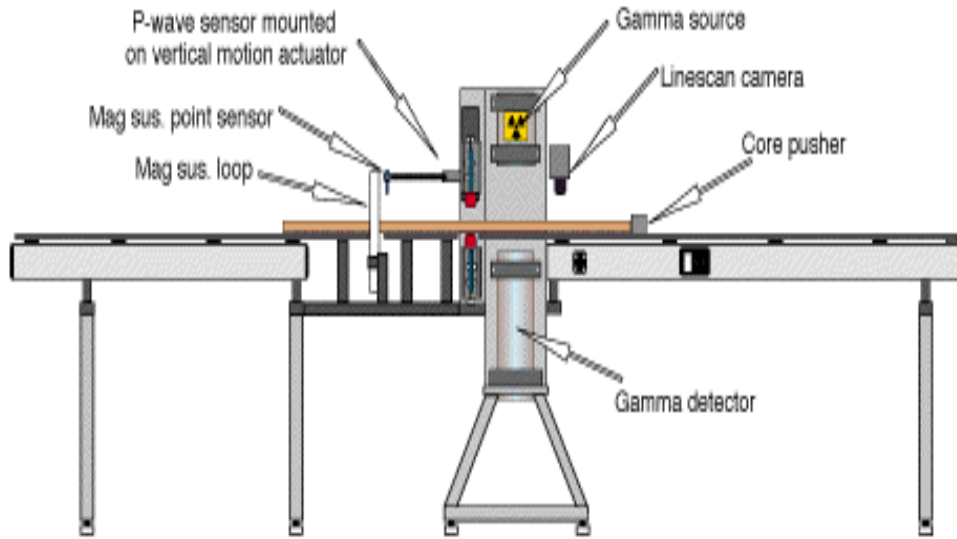
Operational Support Group (OSG)

based at GFZ Potsdam

- supports PIs in planning and design of Drilling Projects
- helps organizing ICDP Workshops
- assists PIs in developing Full Proposals
- assists PIs in scientific and engineering drill site operations and management
- provides drilling and field laboratory equipment
- provides downhole measurements
- provides an approved data management system
- conducts ICDP Training Courses



Core Logger



Operational Support

field laboratory
equipment

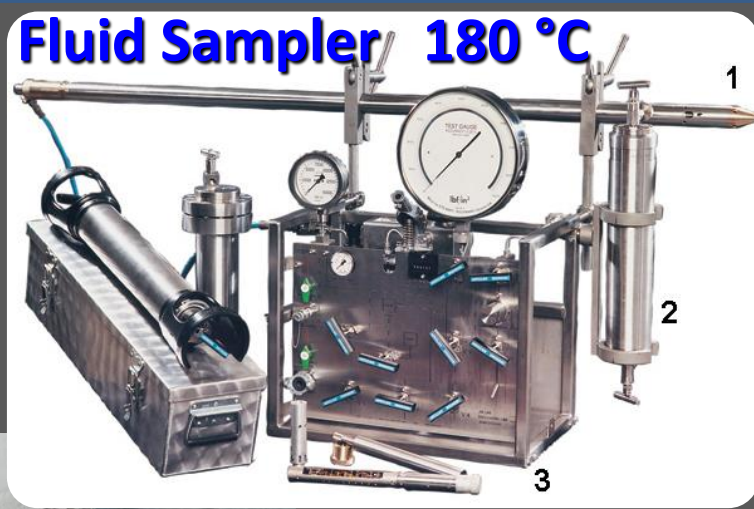
Core Scanner



**Wireline Sondes
150 °C**



Fluid Sampler 180 °C

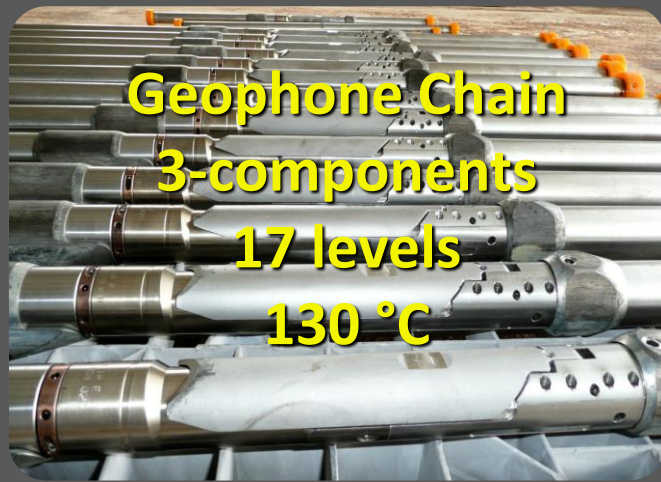


Winch 600 m

**Slimhole
Equipment**



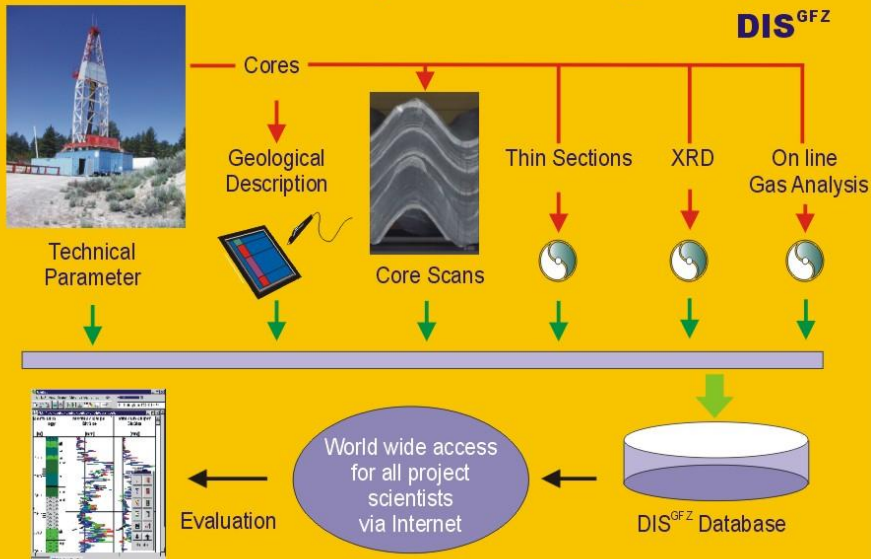
Winch 2000 m



**Geophone Chain
3-components
17 levels
130 °C**

Data Management - DIS

Drilling Information System for Long Valley



Stratigraphic Correlation



Data Management - DIS

The screenshot displays the Drilling Information System (DIS) software interface. The main window is titled "DIS: Data Input Form of HSDP_2_Units_INP". The interface includes a menu bar with options like "File", "Picture", "Annotation", and "Options". Below the menu bar, there are several tabs: "LITHO UNIT", "UNIT IN BOX", "POINTCOUNTS", "INTERNAL BOUNDARY", and "CLASTS".

The "Data-Input-Form" contains the following fields:

- box unit #:** B0198b
- unit #:** U0097
- core box #:** B0198
- logged by:** AR
- core run:** R0238
- calculated top depth:** 1868.9
- rock name:** moderately olivine-phyric basalt
- top contact:** rubbly flow contact
- bottom contact:** continuous with next box
- contact comments:** upper contact consists of a baked olivine in the rubble is black
- groundmass:** microcrystalline
- groundmass / matrix comments:**

At the bottom of the form, there is a "Data Record" section with buttons for navigation and a "New" button. The "Nr." field is set to 1, and the "Co." field is set to 2.

Overlaid on the right side of the form is a photograph of a core sample box, titled "BW_B0198_1.jpg". The photograph shows a core sample with several units labeled: "Unit 96" and "Unit 97". A ruler is visible at the bottom of the box, and the box is labeled "BOX 198". The photograph also shows a "pc" label and a "START 238 1875.0" label.

The Windows taskbar at the bottom shows the Start button, the Drilling Information System icon, and the file "BW_B0198_1.jpg". The system tray shows the time as 9:43 AM and the user as DE.



HOME SITEMAP CONTACT IMPRINT RSS SIGNIN

ABOUTICDP NEWS PROJECTS SERVICES NATIONALPROGRAMS

ADVANCED SEARCH FIND

Home || Projects || North and Central America



www.icdp-online.org

~5000 users
more than 2600 registered users
in 54 user groups or projects

past Tuesday we completed drilling of the...

→Deadsea: Yesterday the barge was

ICDP Web Pages for ICDP Projects

The screenshot shows a web browser window with the URL www.icdp-online.org/front_content.php?ic. The page title is "ICDP: Public Data-Data News1". The main header features the ICDP logo and the text "INTERNATIONAL CONTINENTAL SCIENTIFIC DRILLING PROGRAM". Below the header is a navigation menu with links for "ABOUTICDP", "NEWS", "PROJECTS", "SERVICES", and "NATIONALPROGRAMS". A search bar is also present.

The main content area displays a list of news items under the heading "Message of the Day". Each item includes a date, an image, and a short text description with a "more..." link.

Date	Image of the Day	Message of the Day
03/11/2006		The Peten Itza Scientific Drilling Project has finished the last hole and site of the project. Without enough time to move to an additional site, the team finished drilling today with 1327 meters of core in the reefer. Demobilization will begin shortly. We would like to thank everyone involved in the project for their support. Each of you has helped make this project successful. more...
03/10/2006		The first and second holes at site Pi-6 were finished today with an average depth of 68 meters below lake floor and 97% recovery. The team will drill one last hole at the site for the conclusion of the PISDP. more...
03/09/2006		New core liner arrived on the platform for the day shift. The shift returned with over 50 meters of sediment. more...
03/08/2006		Operations are still on hold while we wait for core liners to arrive. more...

On the right side of the page, there is a sidebar with a "PRINT" button and a logo for "Lago Peten Itza Scientific Drilling Project (PISDP)". Below the logo is a vertical menu with links: "News", "Objectives", "Scientists", "Location", "References", "Internal Data PISDP", "Public Data PISDP", "Links", and "Press & Media". At the bottom of the sidebar is a "News Highlights" section with several short news items, including "Lake Chaila Workshop 2012", "Job Offers for Scientific Drilling Experts", "Brian Horsfield - New ICDP Chairman", and "Plans for SAFOD Component of the EarthScope Program".

At the bottom of the page, there is a footer with contact information: "© ICDP | Central Office: GFZ German Research Centre for Geosciences, Telegrafenberg, D-14473 Potsdam, Germany phone: +49/331-288-1085 fax: +49/331-288-1088 E-Mail".

Public Data

ICDP Web Pages for ICDP Projects

ICDP: Internal Data Dead Sea

www.icdp-online.org/front_content.php?idc

INTERNATIONAL CONTINENTAL SCIENTIFIC DRILLING PROGRAM

HOME SITEMAP CONTACT IMPRINT RSS SIGNOUT

ABOUTICDP NEWS PROJECTS SERVICES NATIONALPROGRAMS

ADVANCED SEARCH FIND

Home || Projects || Asia || Dead Sea || Internal Data Dead Sea

Internal Data - Dead Sea Deep Drilling Project (DSDDP)

PRINT

Sites of the Dead Sea Deep Drilling Project 2010
(@Google Earth 2010)

The Science Team Members (STM) working on the project

Sites and Holes
List of all visited sites and boreholes.

Core Runs and Sections Report
Reports of all drilled core runs and the resulting core sections. (2012-01-06)

Lithological Section Units Report
Reports of the initial lithological core description in the lab. (2011-11-12)

List of Samples
Report of samples taken from the core sections. (2012-01-06)

MSCL Raw Data, Processed Data
Tables of all Multi Sensor Core Logging data measured at the shorebase. (2012-01-06)

Downhole Logging Report
Reports of all downhole logging runs.
[Composite Log 1A](#) (pdf, 120kB)
[Composite Log 1C](#) (pdf, 32kB)
[Composite Log 3C](#) (pdf, 176kB)

MAGSUS Data
Tables of Magnetic Susceptibility scanner measured in the lab. (2011-12-09)

Daily News from Sites

- Job Offers for Scientific Drilling Experts --more...
- Brian Horsfield - New ICDP Chairman --more...
- Plans for SAFOD Component of the EarthScope Program --more...
- Barberton:** Drilling stopped on 14th December for the Xmas break. It will start again in mid January We are...
- Snakeriver:** Mission Accomplished!!! Mountain Home well complete!! This past Tuesday we completed drilling of the...

Internal Data

Password protected access

ICDP Web

www.icdp-online.org/front_content.php?id...
ICDP: Projects-Asia x ICDP: Dead Sea - Se

INTERNATIONAL CONTINENTAL DRILLING PROJECT

ABOUTICDP NEWS PROJECTS SERVICES NATIONALPROGRAMS

Home || Projects || Asia || Dead Sea || Internal Data Dead Sea || d

Scanned Section Images

Dead Sea Deep Drilling Project

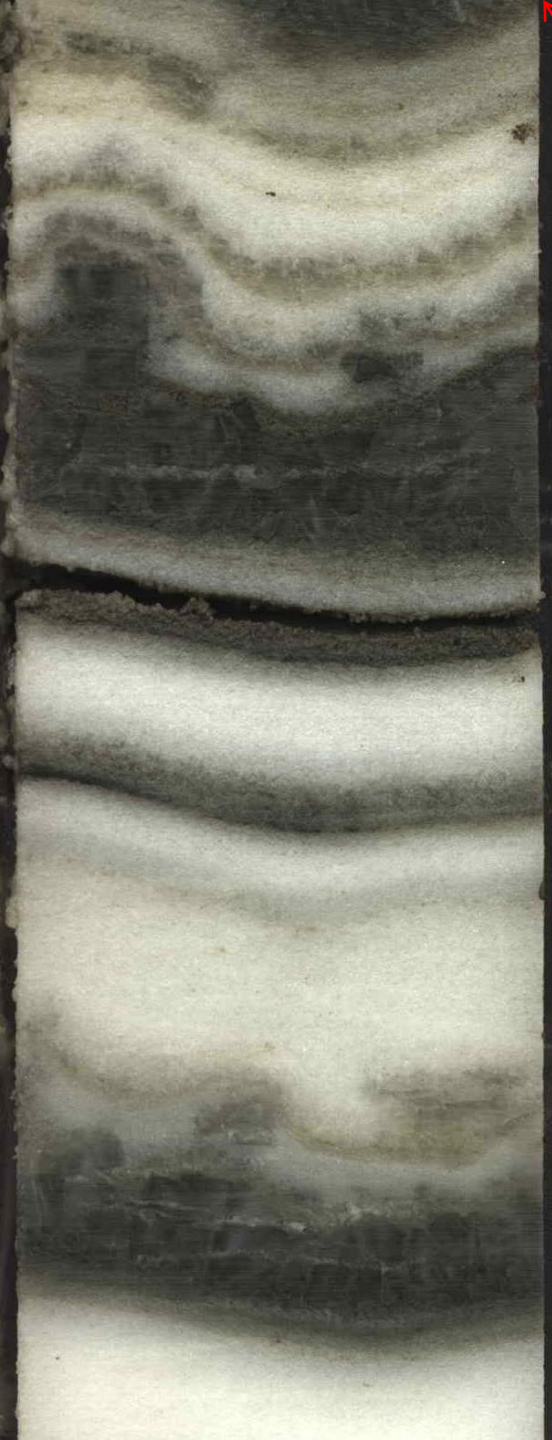
Here you will find zipped packages of scanned core images of low an...
with the xml-files you can import the images into Corelyzer for visualiz...

[Collapse All](#) | [Expand All](#) | [Toggle All](#)

Please click on a link to expand the directory name. Click on a file na...

5017_1_A_dis.xml	655
5017_1_A_MSCL.xml	10
5017_1_B_dis.xml	21
5017_1_B_MSCL.xml	94
5017_1_C_dis.xml	78
5017_1_C_MSCL.xml	344
5017_1_D_dis.xml	3
5017_1_D_MSCL.xml	34
5017_1_E_dis.xml	36
5017_1_E_MSCL.xml	432
5017_1_H_dis.xml	110
5017_1_H_MSCL.xml	673
5017_2_A_dis.xml	29
5017_2_A_MSCL.xml	262

http://www.icdp-online.org/sites/dead...CoreScans_Orig_Jpeg/5017_1_A



ICDP Projects

icdp |

MISS SIGN OUT

FIND

Page 1

%

Section Remarks

some mud below CC

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loss on deck -see core notes

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↑ TOP

Potsdam, Germany
0131-288-1188 Fax: +0131-288-1188 E-Mail

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ICDP Training Course

annually,
30 participants
free of cost



**ICDP
DIS Training
1-3 per project**



ICDP Project Organization

- All planning for operations, budget, time, and financial controlling must be planned for by PI's and the projects Scientific Team
- Accepted proposals receive financial support or get operations paid through ICDP after a funding contract (Joint Research Venture) has been signed, all matching funds approved, all service contracts are in place.
- All responsibility for operations and science remains with PI's
- ICDP has almost no own drilling equipment and minor science equipment

Prerequisites for Success

- A bright scientific idea to study processes or/and test important hypothesis that are only accessible through drilling
- Drilling at Sites of Global Scientific Importance and Societal Relevance as Example for Comparable Settings
- Excellent geophysical and geological Site Surveys to justify drilling target, drilling depth, and to reduce drilling risks
- Technical Feasibility and Budget Realities
- Environmental and Societal Compliance. Acceptance and Support through National Authorities early in the Project Planning Phase required.
- High Degree of International Cooperation (ICDP) in best possible Science Teams with Educational Potential



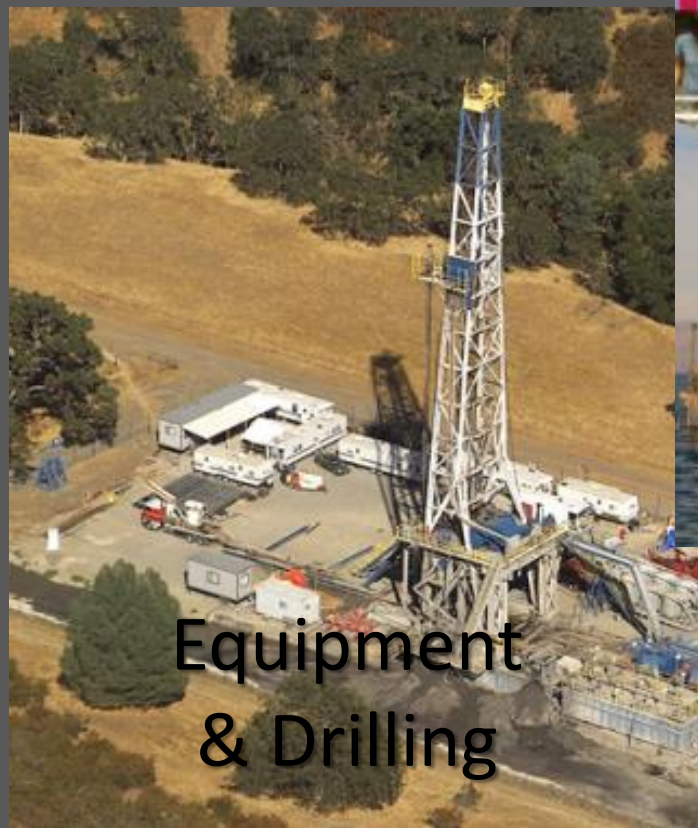
Organizational Prerequisites

- Successful application to ICDP plus other agencies to collect Commingled Funding / Cooperation with Industry
- Scientific Leadership and Team Building through Lead PIs
- Support from home institutes and National Acknowledgement
- Formation of a real Scientific Team with spirit and engagement
- Communication, Motivation and Planning Skills in PI Group and in the Scientific Team - Constant information, reminders, (re)commendations
- Experience with Drilling Projects or Large / International Projects
- Engineering Support „company man“ and good relation to drilling contractors,
- Management Support – a full time project / budget manager
- Sufficient Contingency Funding / Risk Management
- **PERSISTENCE!**



TAKE HOME MESSAGE

Activities of ICDP



Scientific Drilling

Reports on Deep Earth Sampling and Monitoring

Climate and Ocean Change
in the Bering Sea 4

San Andreas Fault Zone
Drilling 14

Climate History from
Lake El'gygytgyn, Siberia 29

World's Deepest Ice Core 41

Climate and Tectonic Unrest:
Dead Sea Drilling 46

Workshop Reports:

Sampling Earth's Mantle 51

Drilling into
3.5-Billion-Year-Old Rocks 66

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Science Reports

4 IODP Expedition 323—Pliocene and Pleistocene Paleoceanographic Changes in the Bering Sea

by Kozo Takahashi, A. Christine Ravelo, Carlos Alvarez Zarikian
and the IODP Expedition 323 Scientists



14 Scientific Drilling Into the San Andreas Fault Zone —An Overview of SAFOD's First Five Years

by Mark Zoback, Stephen Hickman, and William Ellsworth
and the SAFOD Science Team



29 The Lake El'gygytgyn Scientific Drilling Project – Conquering Arctic Challenges through Continental Drilling

by Martin Melies, Julie Brigham-Grette, Pavel Minyuk, Christian Koeberl,
Andrei Andreev, Timothy Cook, Grigory Fedorov, Catalina Gebhardt,
Eeva Haltia-Hovi, Maaret Kulkkonen, Norbert Nowaczyk,
Georg Schwamborn, Volker Wennrich,
and the El'gygytgyn Scientific Party



Progress Report

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Technical Developments

- 48 SAFOD Phase III Core Sampling and Data
Management at the Gulf Coast Repository

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- 51 Executive Summary: "Mantle Frontier"
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Workshop Reports

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Drilling at Mid-Crustal Level in a Palaeozoic
Major Collisional Orogen
64 U.S. Continental Scientific Drilling Community
Looks to the Future
66 Ultra-Deep Drilling through 3.5-Billion-Year-Old
Crust in South Africa

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- 74 News and Views

Schedules

back cover
IODP and ICDP Expedition Schedules

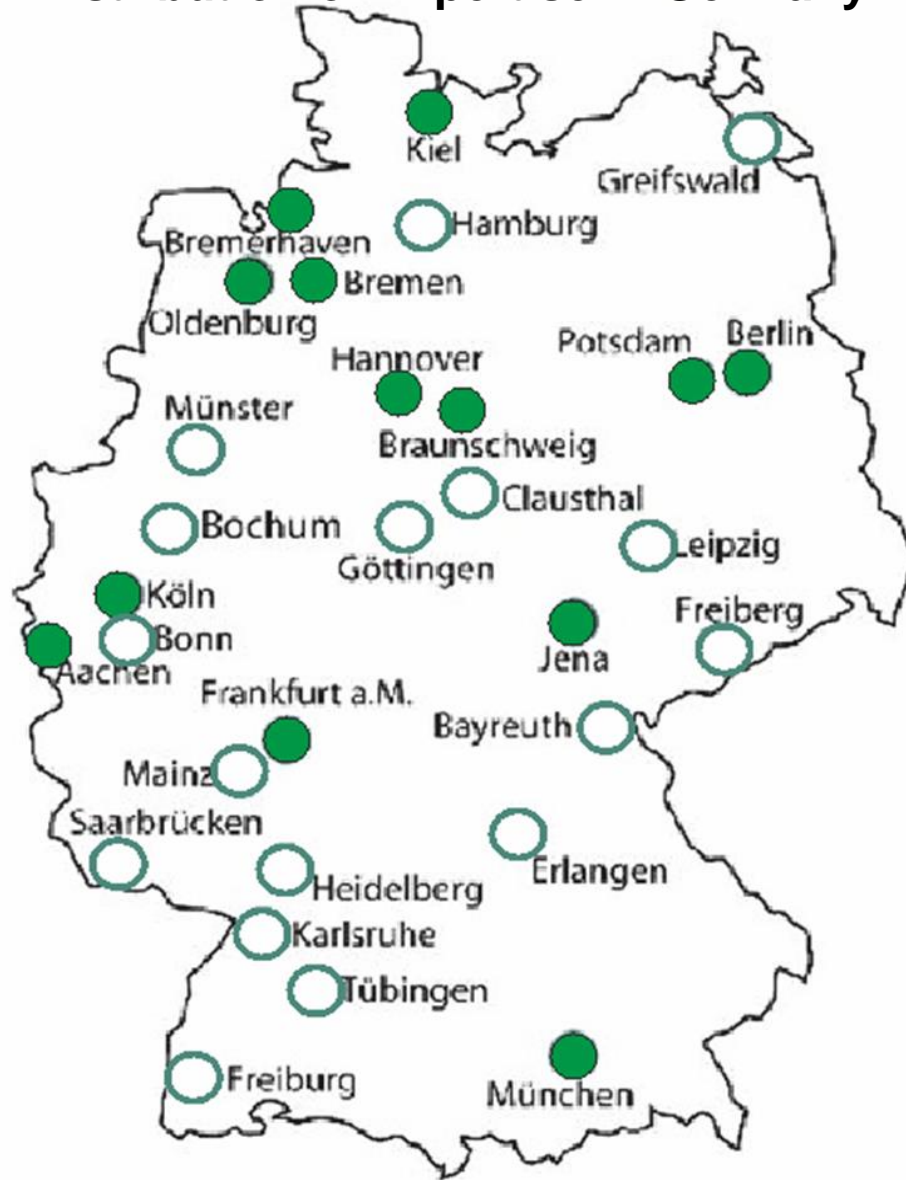
Deutsches Forschungsbohrkonsortium

**German Scientific
Earth Probing
Consortium
GESEP e.V.**

Major Goals of GESEP

- pool expertise, foster exchange among scientists
- information platform
 - Know-how
 - funding possibilities
 - technical and logistical advice
- assistance in planning and conducting projects and site surveys
- assistance in the preparation of proposals
- support development of new instrumentation and technologies
- develop industrial cooperation, evaluate commercial bids
- outreach, education, training

Distribution of Expertise in Germany



GESEP Members

1. AWI, Bremerhaven
2. BGR, Hannover
3. FU Berlin
4. GFZ, Potsdam
5. IfM-GEOMAR
6. LIAG, Hannover
7. MARUM, Bremen
8. RWTH Aachen
9. TU Braunschweig
10. U Frankfurt
11. U Köln
12. U München
13. U Oldenburg
14. U Potsdam
15. U Jena

GESEP Project

1. Central Core Repository for Continental Cores

2. Related Data and Information System

to strengthen a unified data and sample availability



- deep freeze at $-80\text{ }^{\circ}\text{C}$
- working space for preparation
- labs for analysis (MSCL, XRF, CT-Scanner)
- office space, seminar rooms

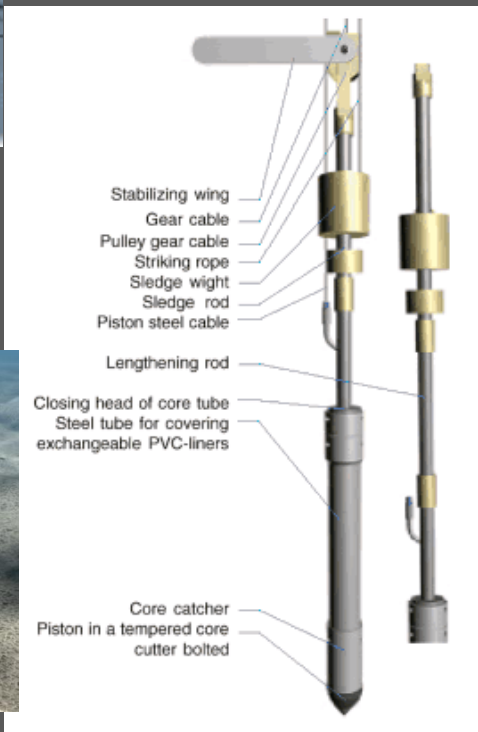
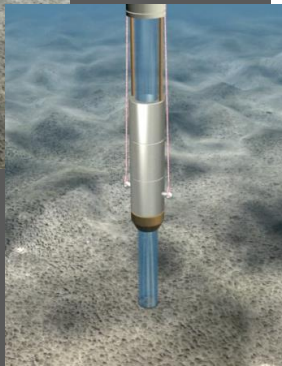
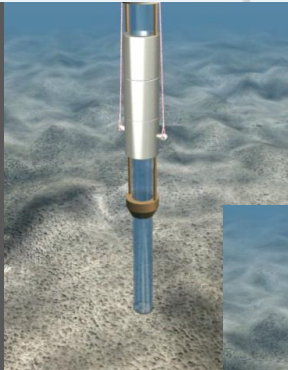
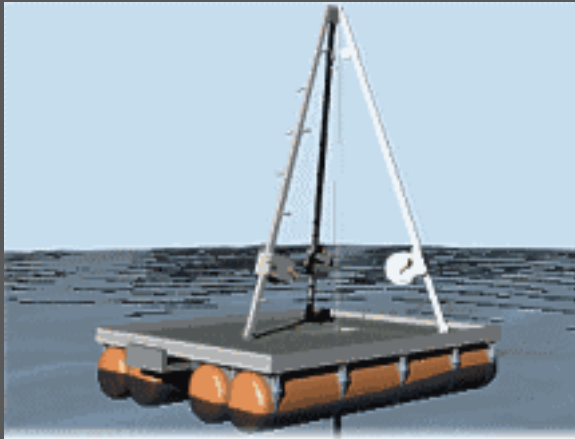
GESEP School

2.nd Half March 2013, Freiberg

Key Topic: Drilling Engineering



Workshop on Development of a Soft-Sediment Coring Tool



Thank You

