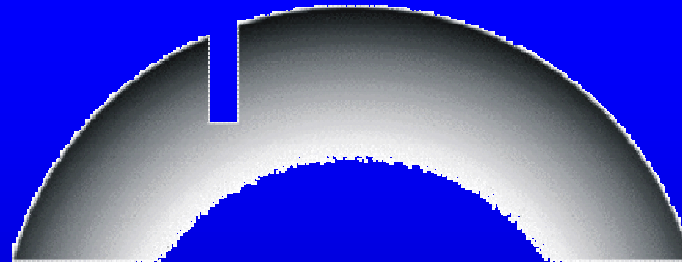


International Continental Scientific Drilling Program

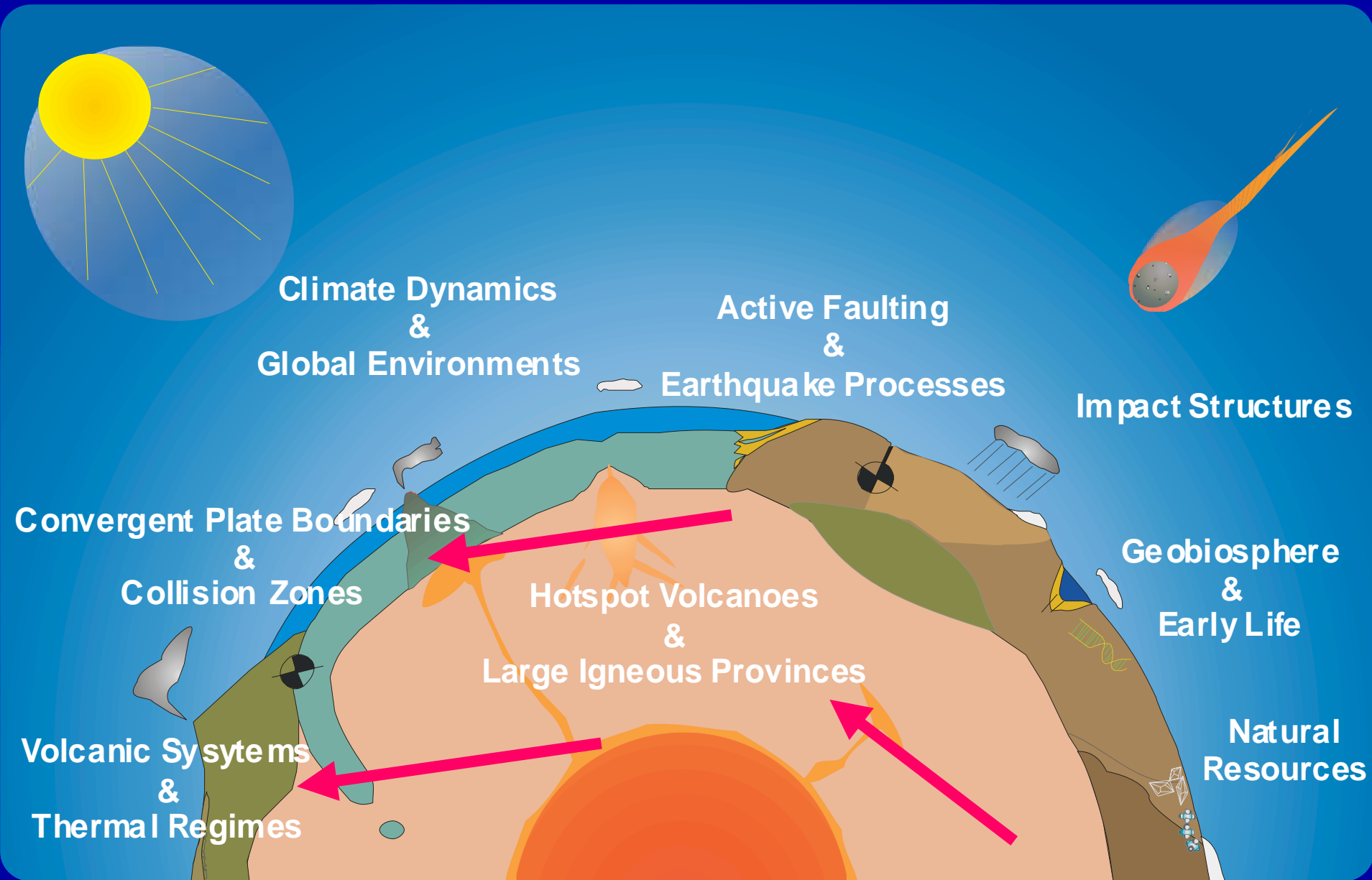
icdp |



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ICDP goals and project examples

Themes of the ICDP



Lake Peten Itza Drilling Project

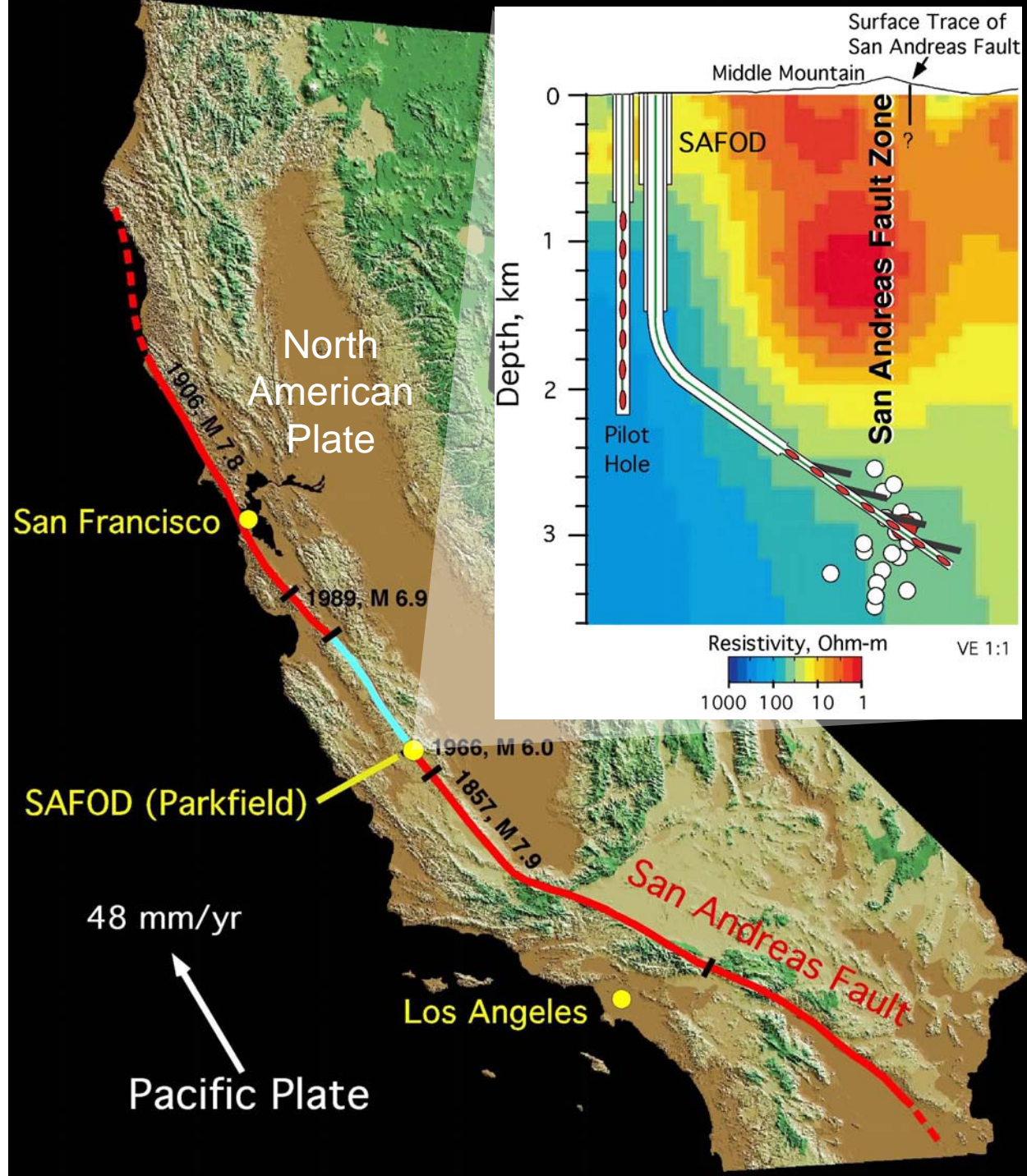
Workshop in August 2003
Full Proposal submitted 2004
Drilling started Feb 3, 2006
Drilling ended, Mar 8, 2006



1. Paleoclimatic history of the northern lowland Neotropics
2. Paleoecology and biogeography of the Maya tropical lowland forest
3. Biogeochemical cycling in deep lake sediments

San Andreas Fault Observatory at Depth (SAFOD)

Test fundamental theories of earthquake mechanics
Establish a long-term observatory in the fault zone
Since 1993
PH 2003
MH 2004/05/07



Volcano and geothermal drilling

a major theme of the ICDP

- Caldera with resurgent dome uplift
LONG VALLEY (geothermics, hazard)
- Hot spot ocean island shield volcano
MAUNA KEA (plume history)
- Subduction-induced andesitic-dacitic volcano
UNZEN (conduit, degassing, history)
- Mid ocean ridge volcanism
ICELAND (supercritical fluids)

Unzen Volcano Drilling Project, Japan

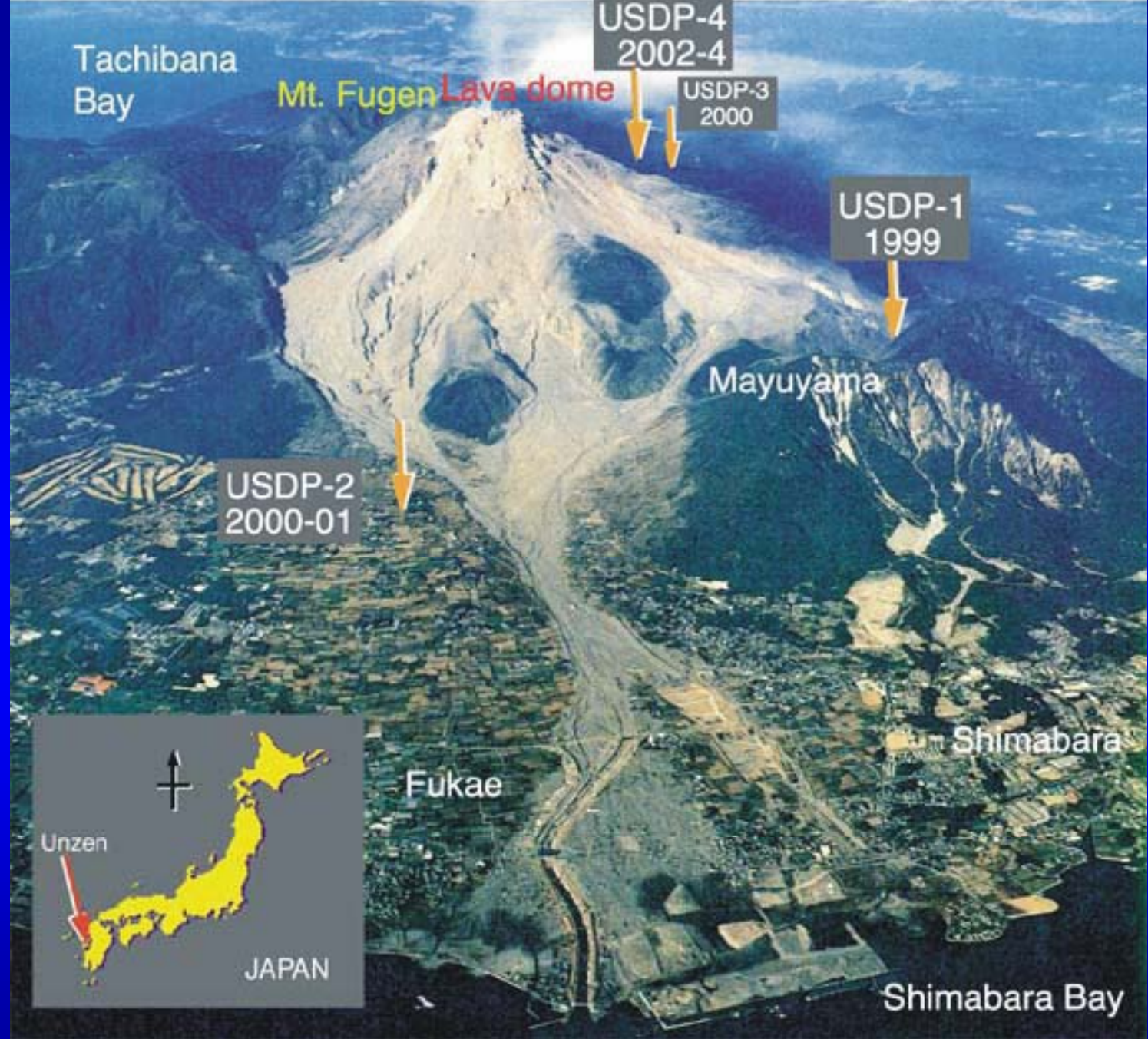


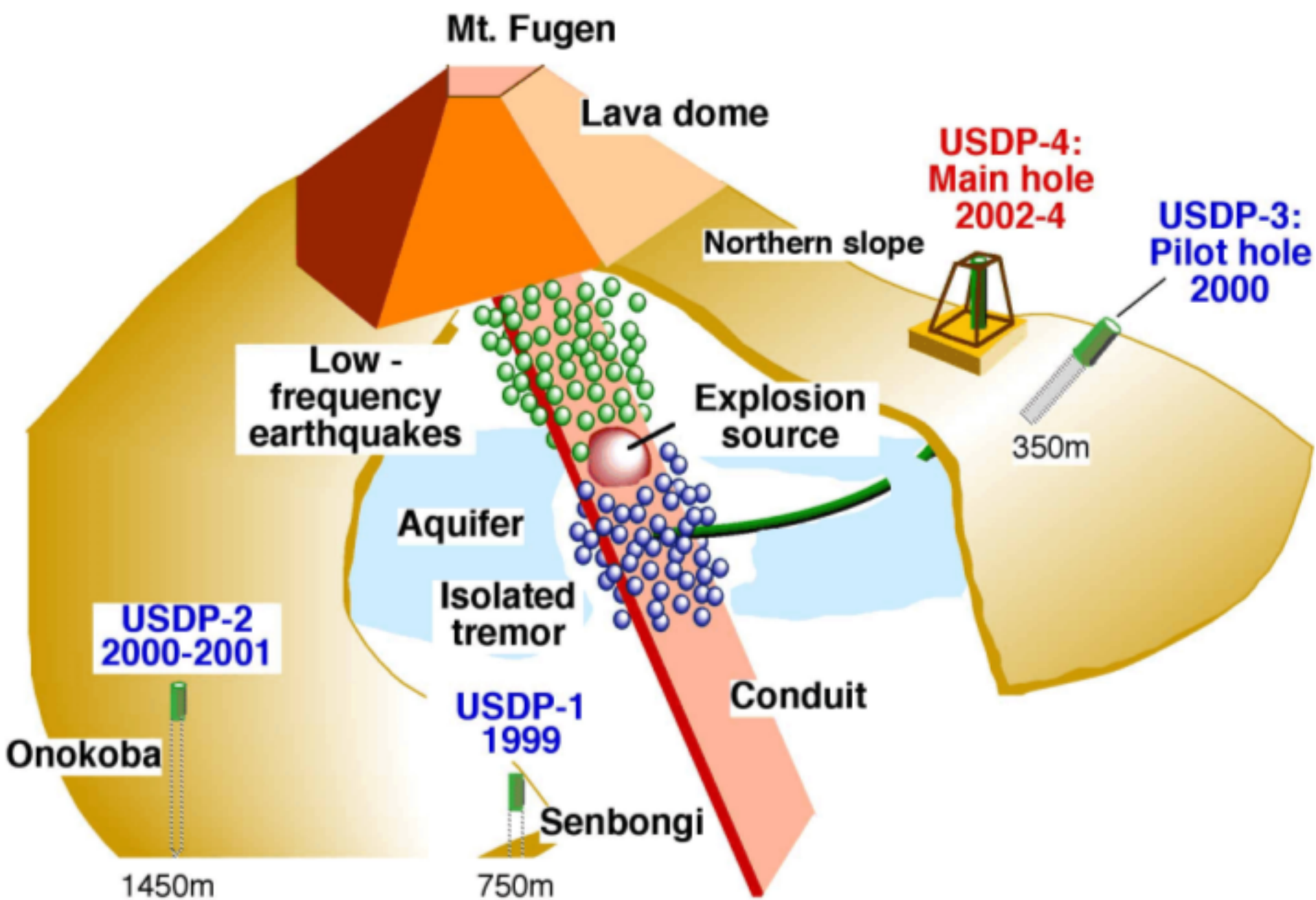
Unzen Volcano Drilling Project, Japan

Science
Workshop
1997

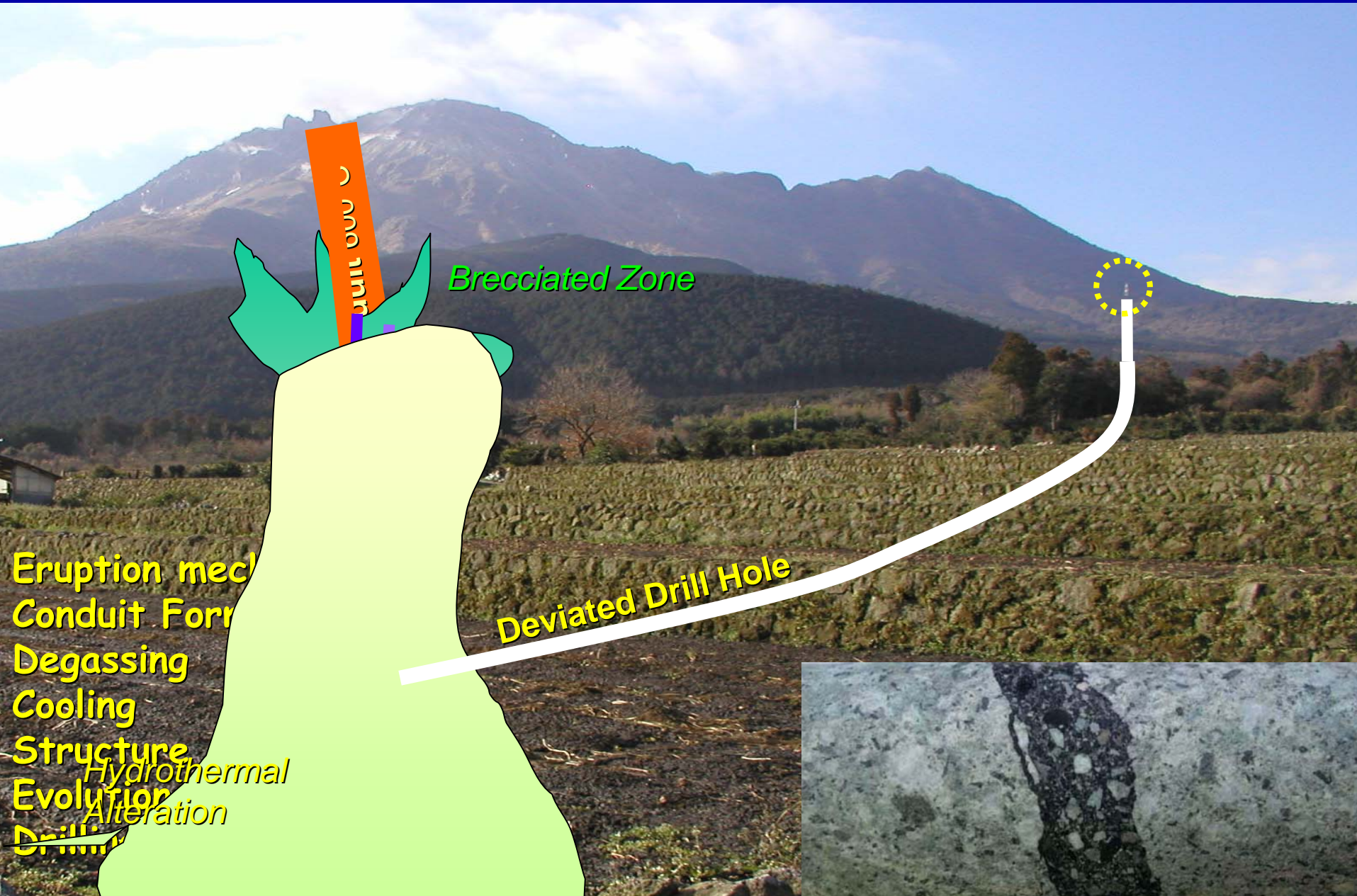
Technical
Workshop
2000

Drilling
2003/4



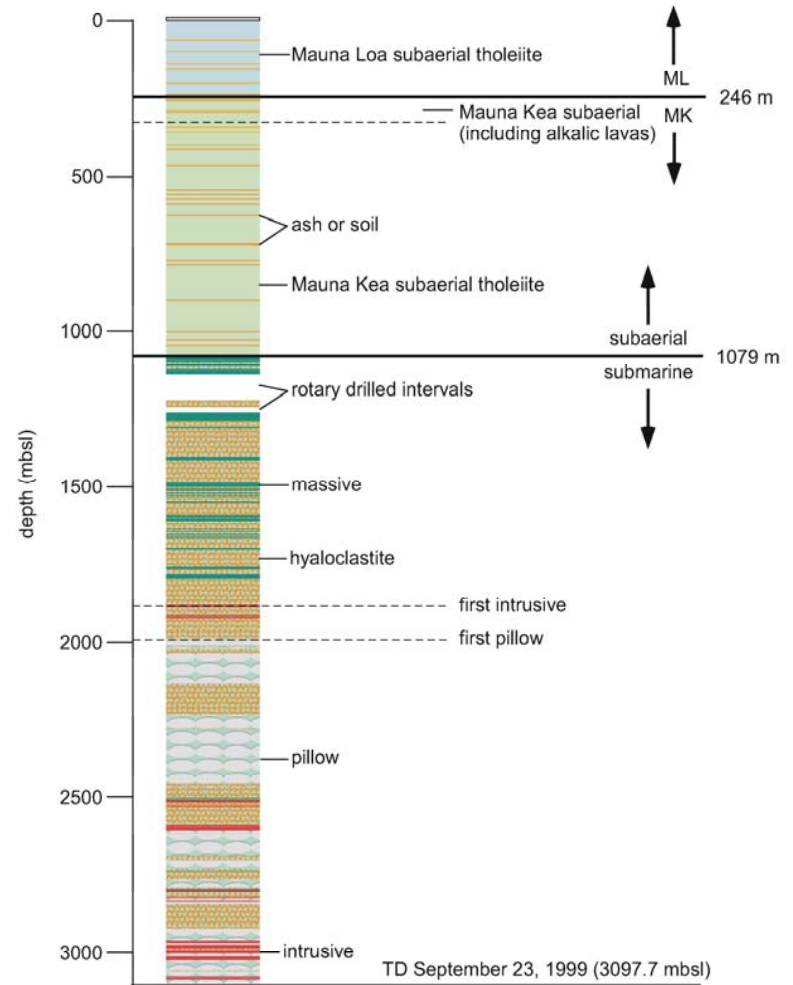
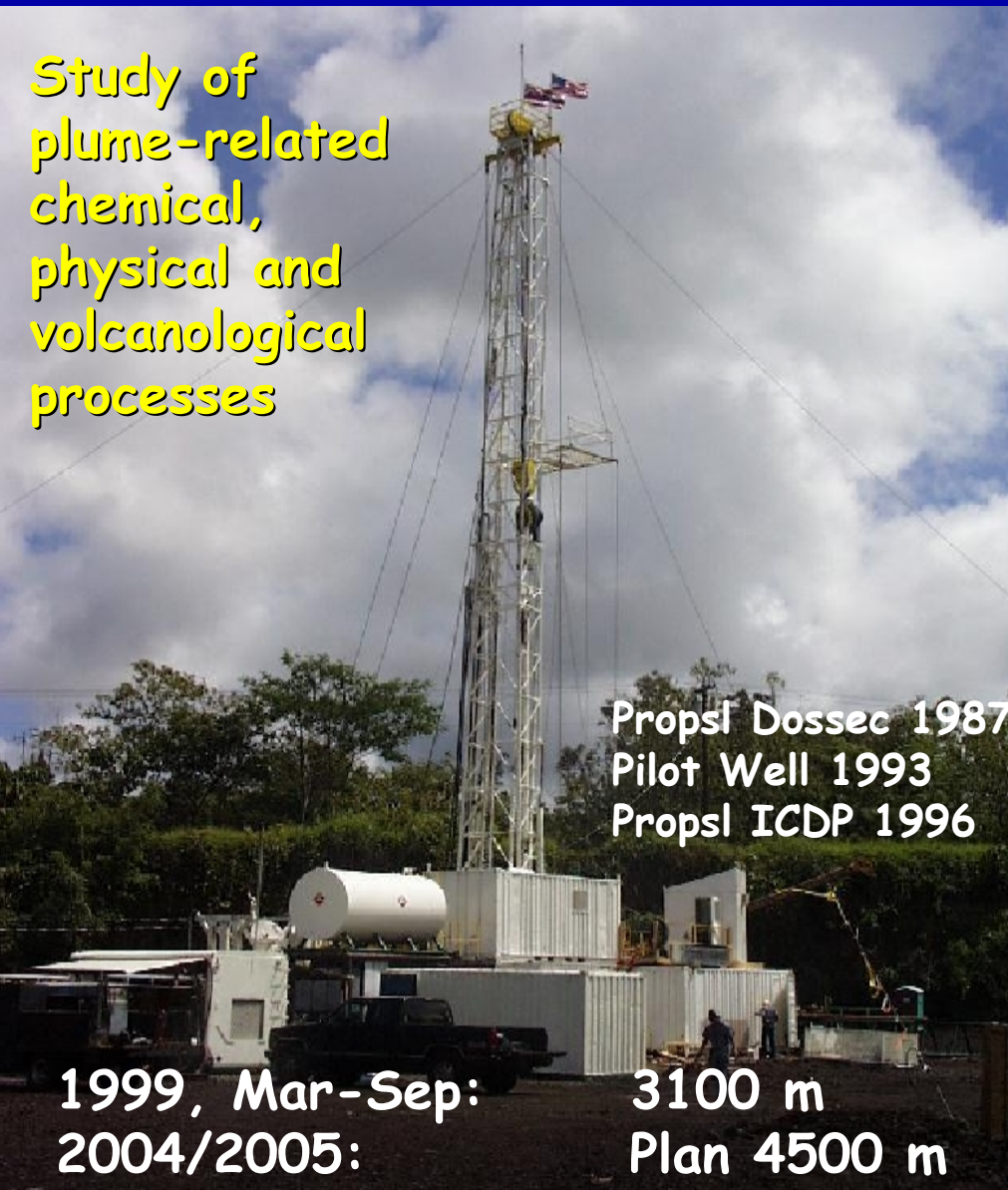


Unzen Volcano Drilling Project, Japan



Hawaii Scientific Drilling Project

Study of
plume-related
chemical,
physical and
volcanological
processes



Hawaii Scientific Drilling Project

Cores recovered: Highly fragmented pillow lavas, breccias, and rubble



II. Drilling Phase

October 25, 2004: Rig Up

December 15, 2004: Coring Start

Final depth: 10,958 ft = 3340 m

III. Drilling Phase

November, 2006: Rig Up

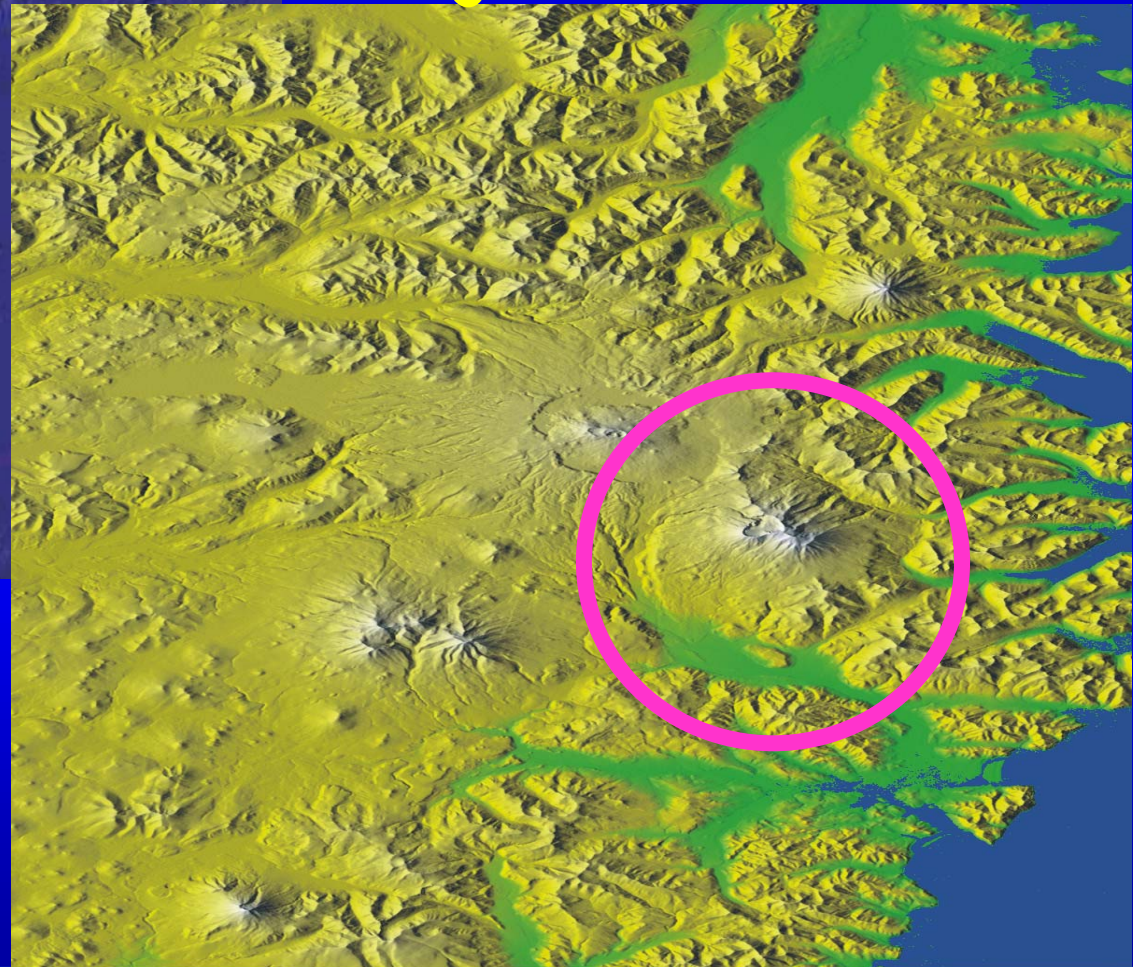
December 8, 2006: Coring Start

Possible IDDP Drill Site at Krafla

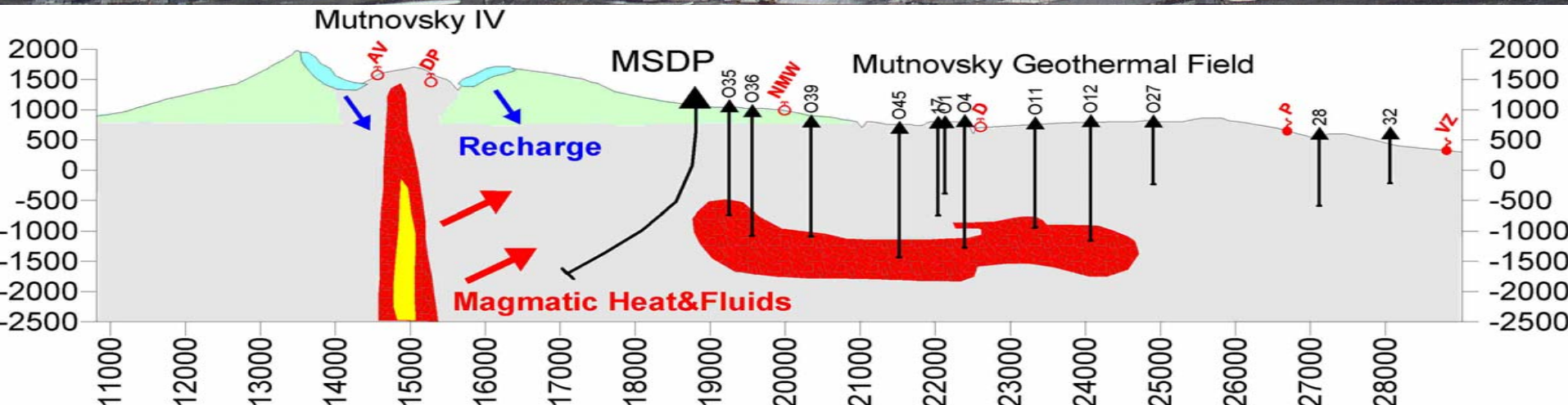
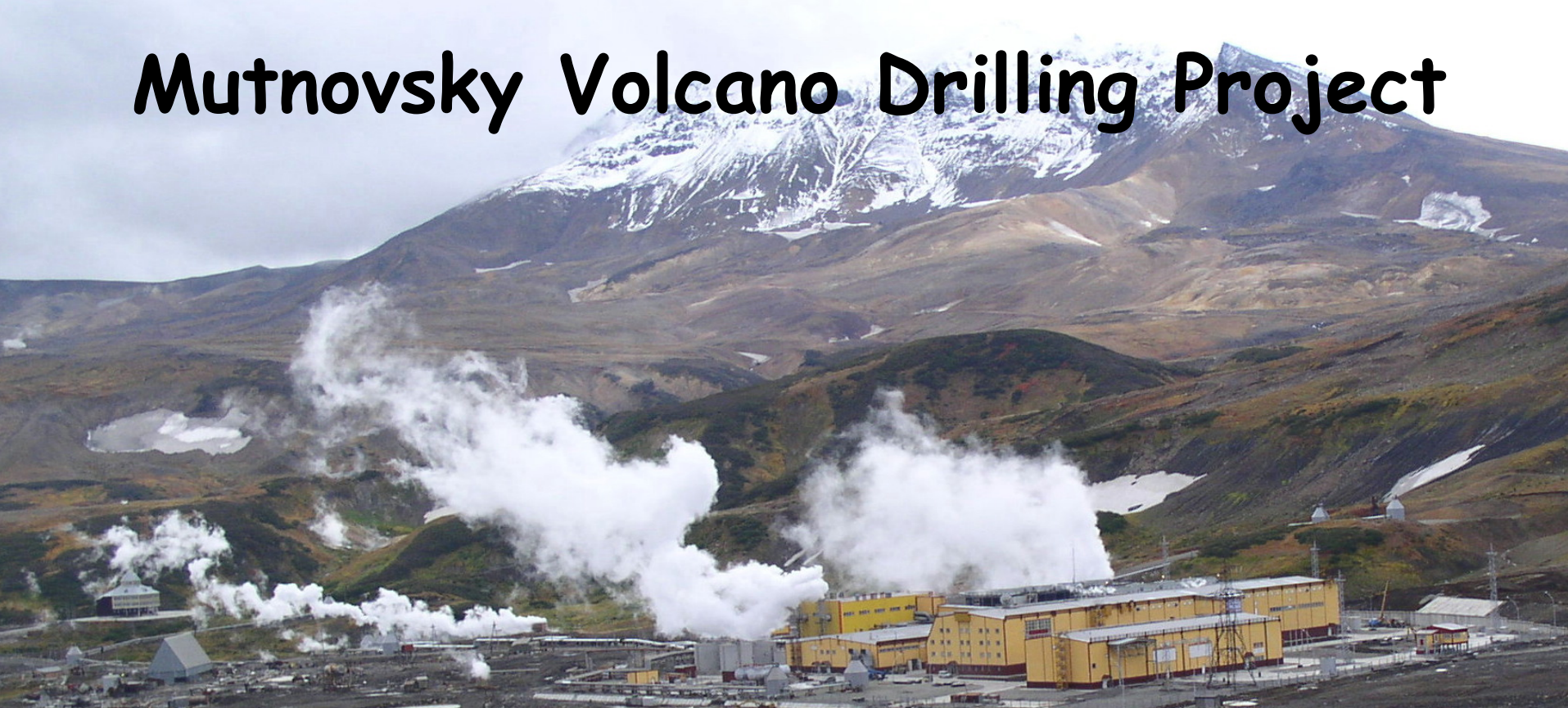


Planned ICDP projects

Mutnovsky Volcano Drilling Project



Mutnovsky Volcano Drilling Project

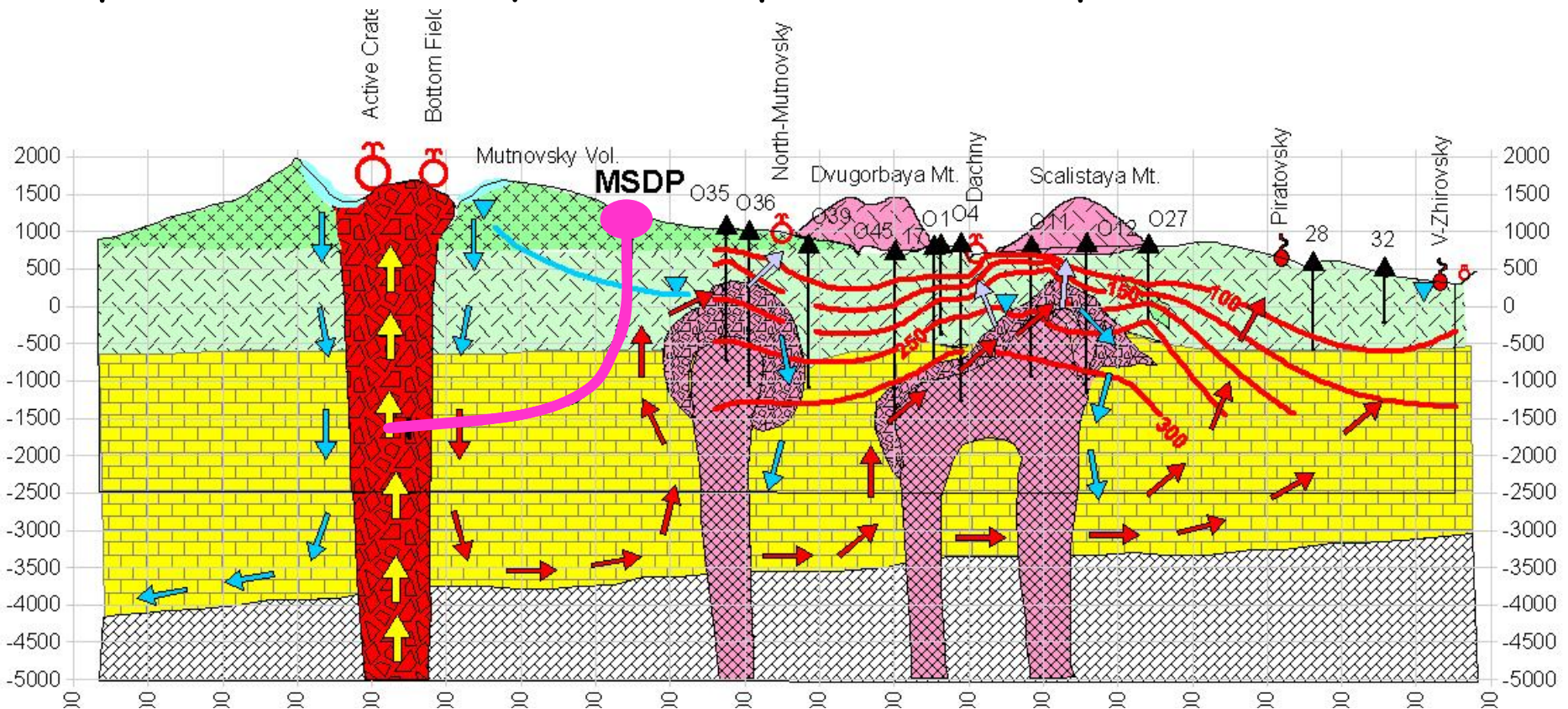


**V-Mutnovsky Site:
12 MWe PP put in
operation since 1999**



**Dachny Site: 50
MWe PP put in
operation since
2002**

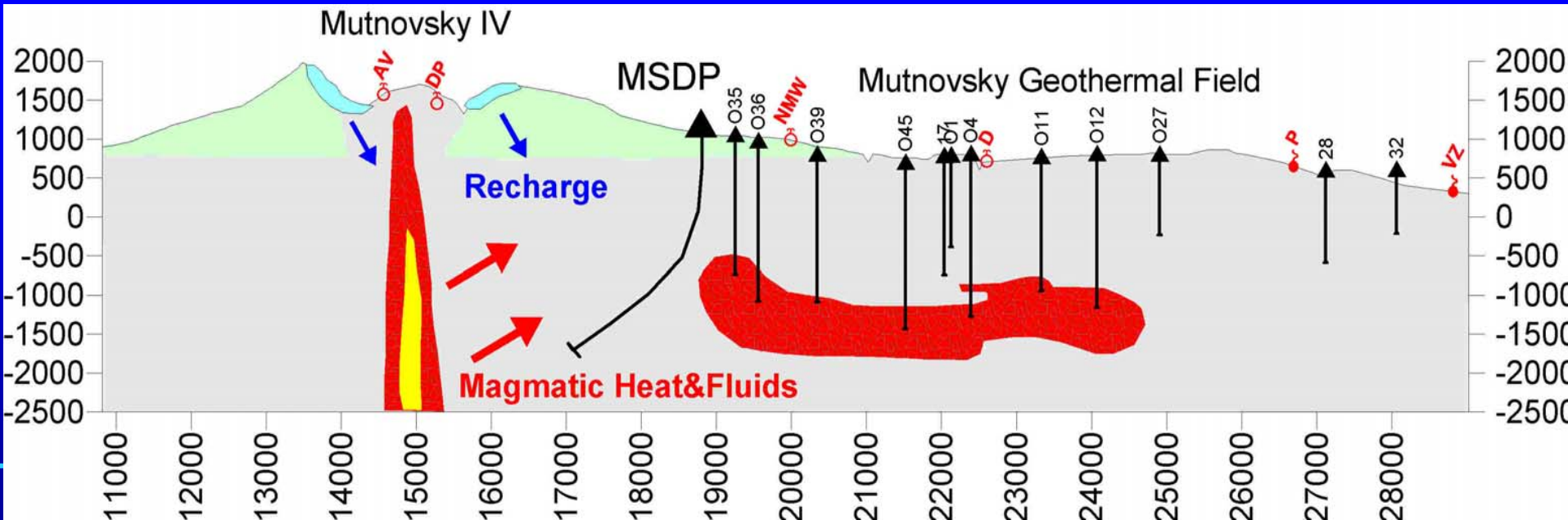
Probing the connection: A dynamic system perturbed by geothermal production, earthquakes, eruptions, and experiments in MSDP



The concept is to drill the fracture zone between the active magma system and the geothermal field, in order to test the relationship between the two systems.

Mutnovsky drilling has the potential to combine 3 lines of "thermal regimes" investigations

- The magma-hydrothermal connection (chemical and structural evidence) - IDDP
- A new P-T conduit environment (fumaroles demonstrate hT, shallow magma degassing - USDP)
- Volcano stratigraphy & magmatic history of arc-volcanic center - HSDP (OIV), USDP (BAV)



Experiments and goals

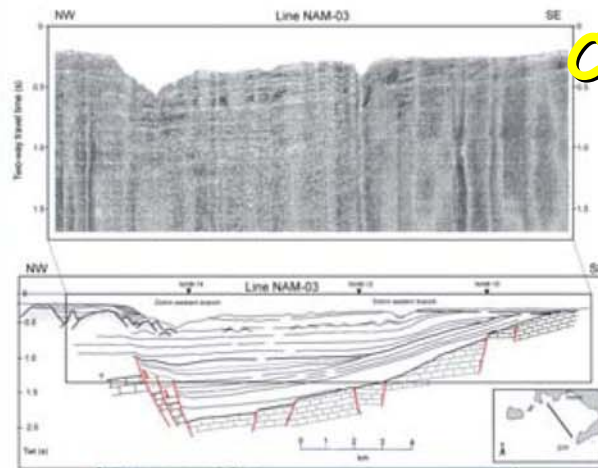
- Coring and fluid sampling.
- Monitoring of T & P of fluids and hydraulic properties as well as the related seismicity.
- Other issues: metal transport, mineral deposits, microbiology, geothermal utilization.
- Borehole - surface experiments with P and tracer tests while tracking changes in crater (fumaroles) and geothermal field; use of earthquakes & eruption to assess connectivity and mass and heat transport.
- Installation of instrument package in the borehole for improved monitoring of Mutnovsky.

Campi Flegrei Caldera Deep Drilling Project

ICDP Workshop: Naples, November 13-15, 2006

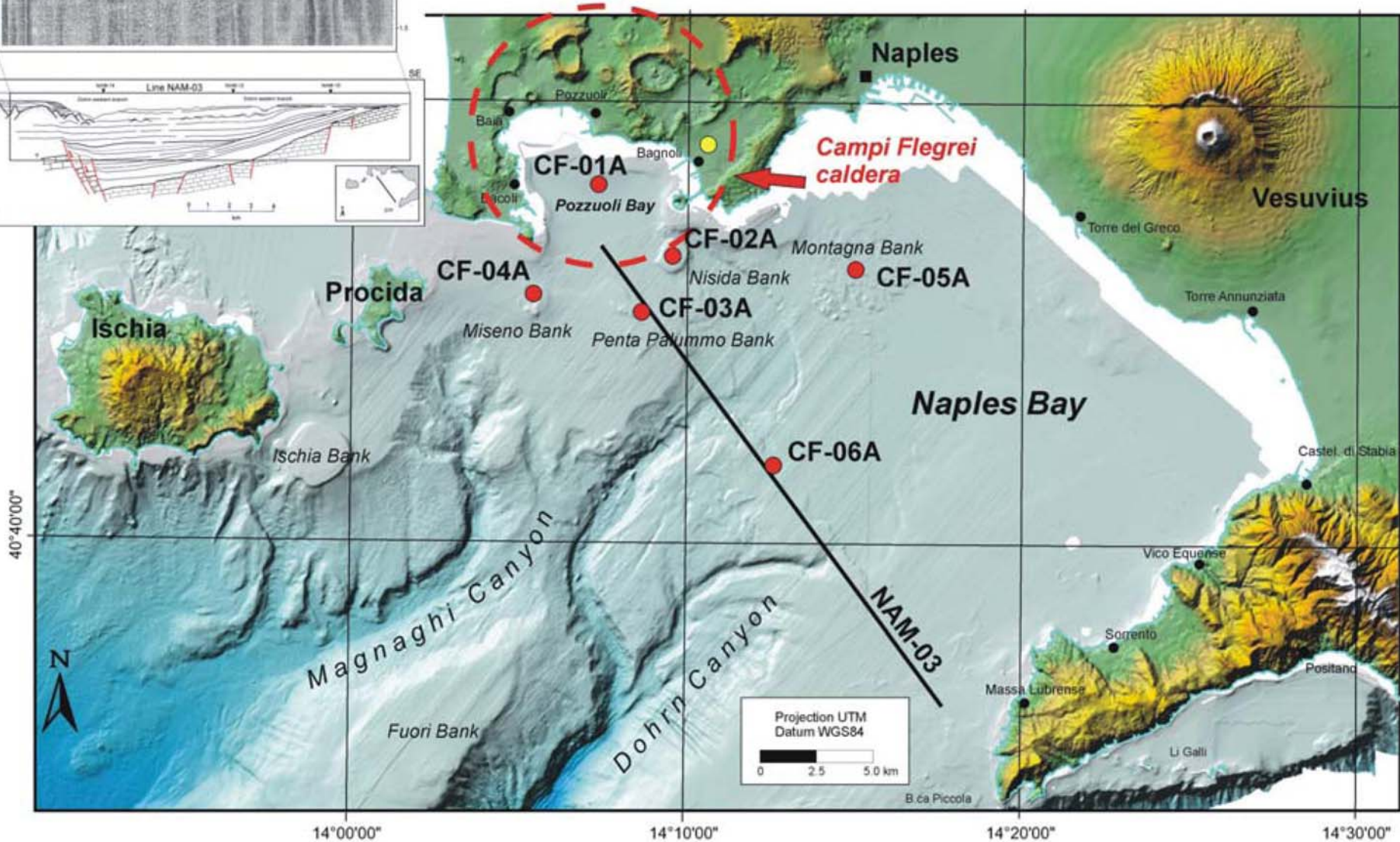


Campi Flegrei Caldera Deep Drilling Project



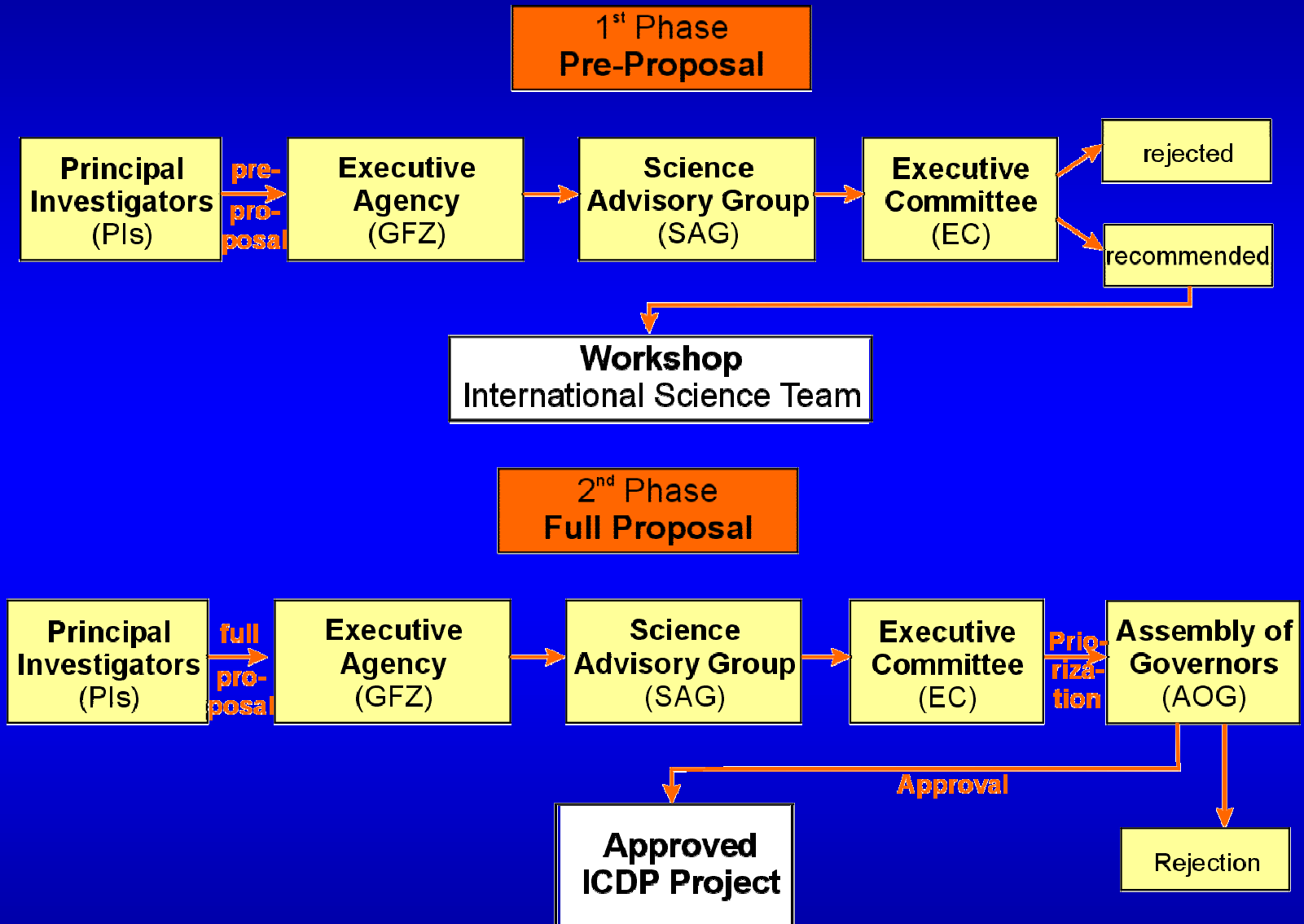
● Proposed IODP sites

● Proposed ICDP site



Funding through ICDP

Project Development Procedure



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

Project Funding through ICDP

Two Ways of Funding:

1. Leg = Financial Support
2. Leg = Operational Support through the ICDP Operational Support Group at GFZ Potsdam

Operational Project Funding

Through ICDP Operational Support Group

Main Functions:

- Provide technical & managerial assistance to PI's
- Support for engineering drill site operations
- Support for scientific field facilities such as downhole geophysicis and mobile field lab
- Provide a readily accessible ICDP data management system

Operational Project Funding

Operational Support Group Infrastructure:

- Drilling equipment and engineering.
- Downhole logging tools, instruments, cables, winches.
- Drill site science and tools, mobile field lab, core logging, core scanning, on-line fluid analysis.
- Information and data management system, Drilling Information System, WWW
- Training and Courses

ICDP Equipment Pool

organized by
Operational
Support
Group
at GFZ



Lake Drilling Tool
GLAD800



Data Management
System



Slimhole Sondes
& Downhole Logging



5.5 km Wireline Drillstring



Core Scanning
& Logging



ICDP Training Course at Unzen Volcano

Shimabara, Japan; November 10 – 14, 2003

Education and Outreach in ICDP

ICDP Membership

Member Countries

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

New Member

- Spain

Organizations

- UNESCO

Companies

- Schlumberger

Negotiations

- Italy
- Netherlands
- Argentina
- Sweden

In Discussion

- Russia
- Israel
- Chile

Interests

- France
- Great Britain
- Greece
- New Zealand
- Ireland