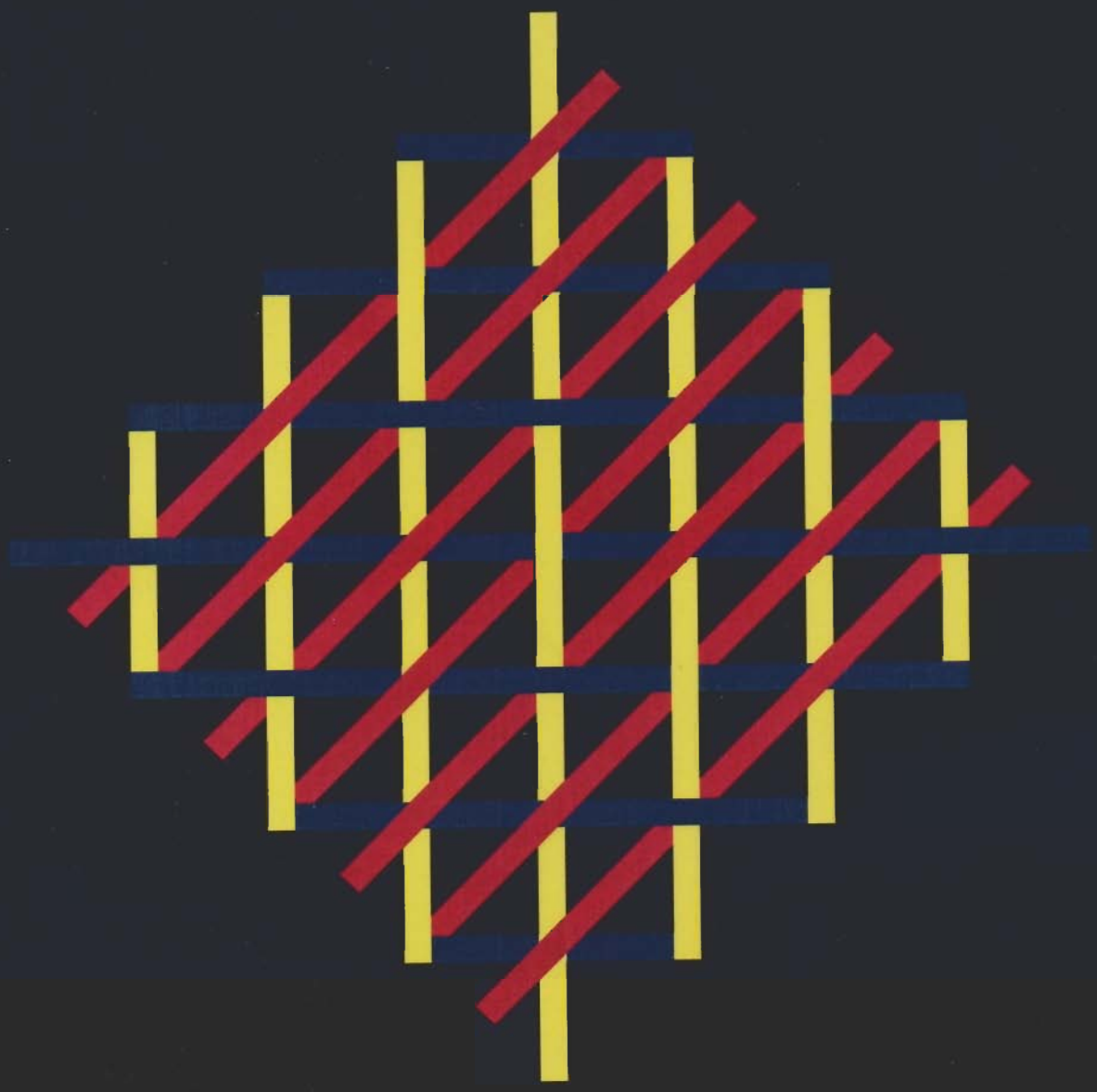


The Neutrino Matrix

DNP / DPF / DAP / DPB JOINT STUDY ON THE FUTURE OF NEUTRINO PHYSICS

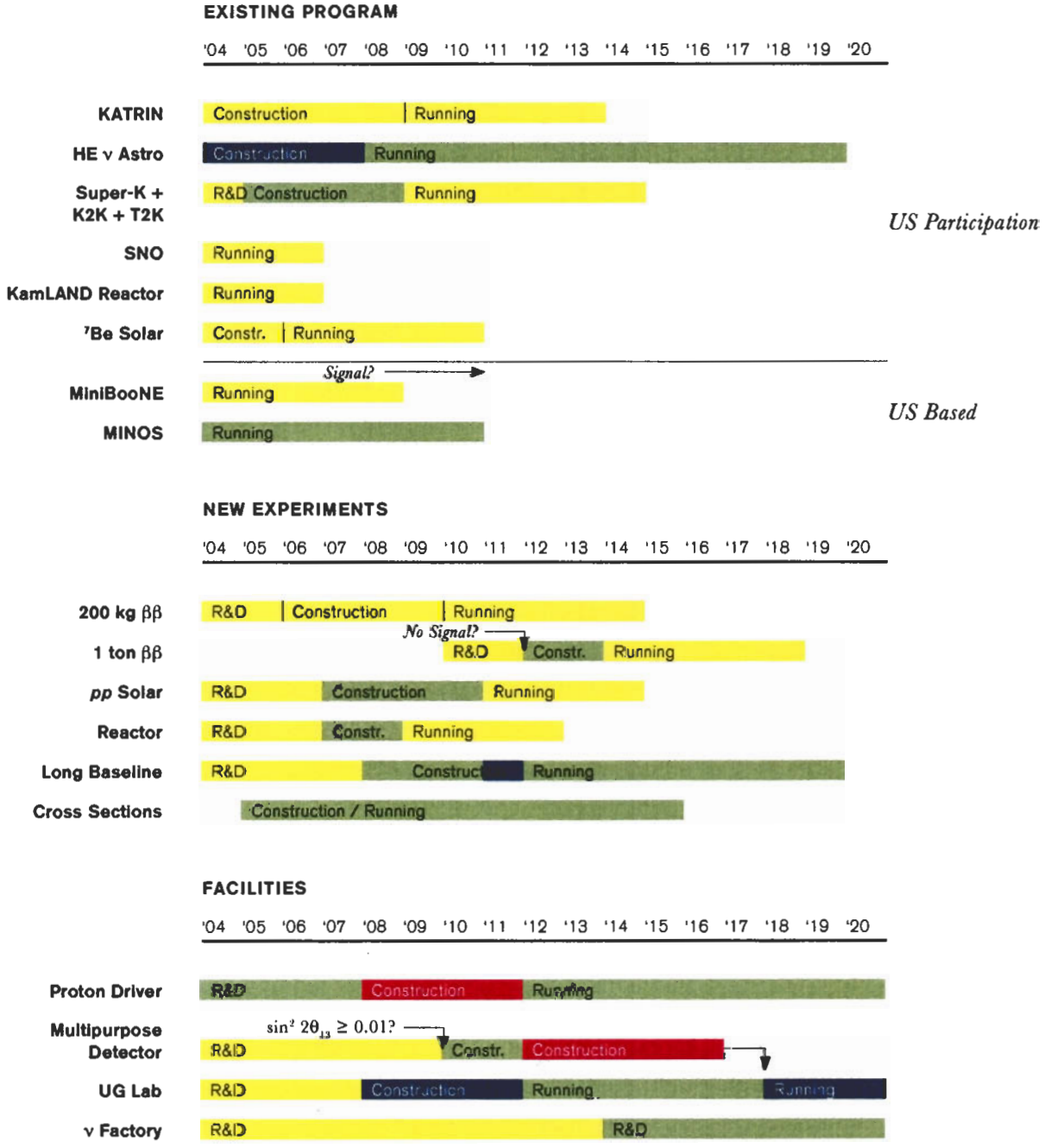
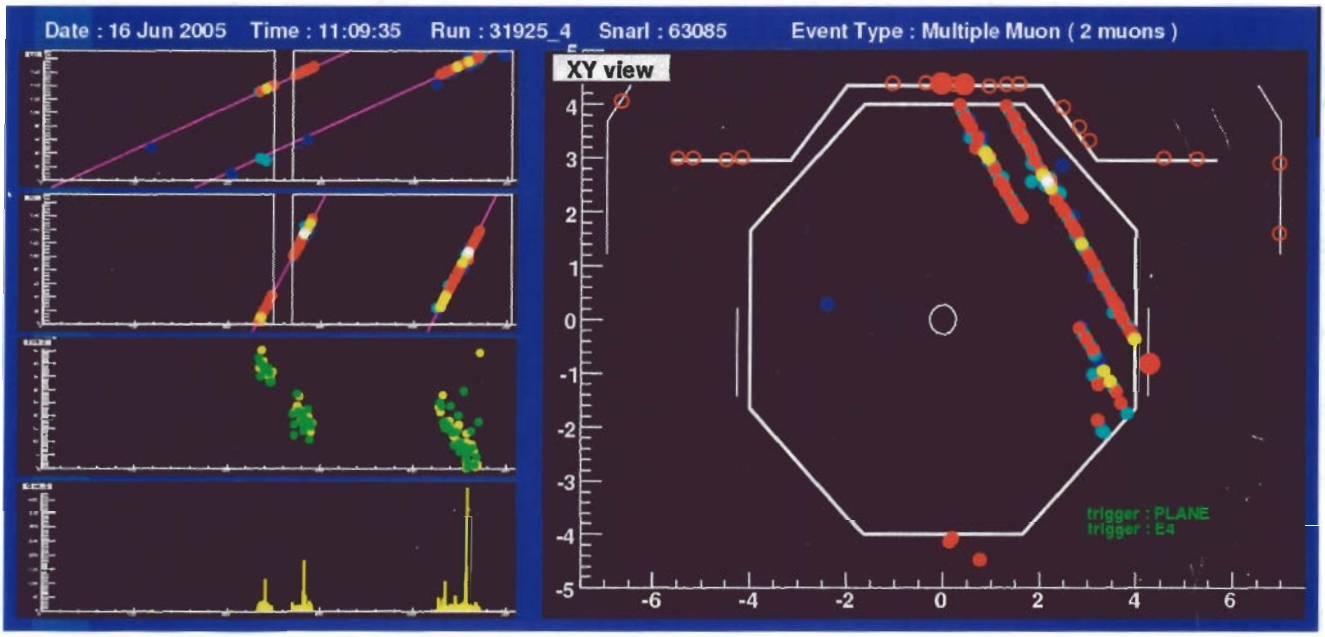


FIGURE 9: An approximate indication of the development of our recommended neutrino program with time. Some branchpoints are also indicated. Colors indicate U.S. contribution. Yellow: ≤ $10 M per year. Green: $10 – 40 M per year. Blue: $40 – 100 M per year. Red: ≥ $100 M per year.

MINOS Far Detector : Latest Event



Pause Resume (requires javascript to be enabled)

Latest Events in various online classifications

Time is in GMT (6 hours ahead of CST). The big window to the right is an "end-on" view, the two small windows in the upper left are top and side views, and the graphs in the lower left are additional timing information. This link has a more detailed explanation of what you're looking at.

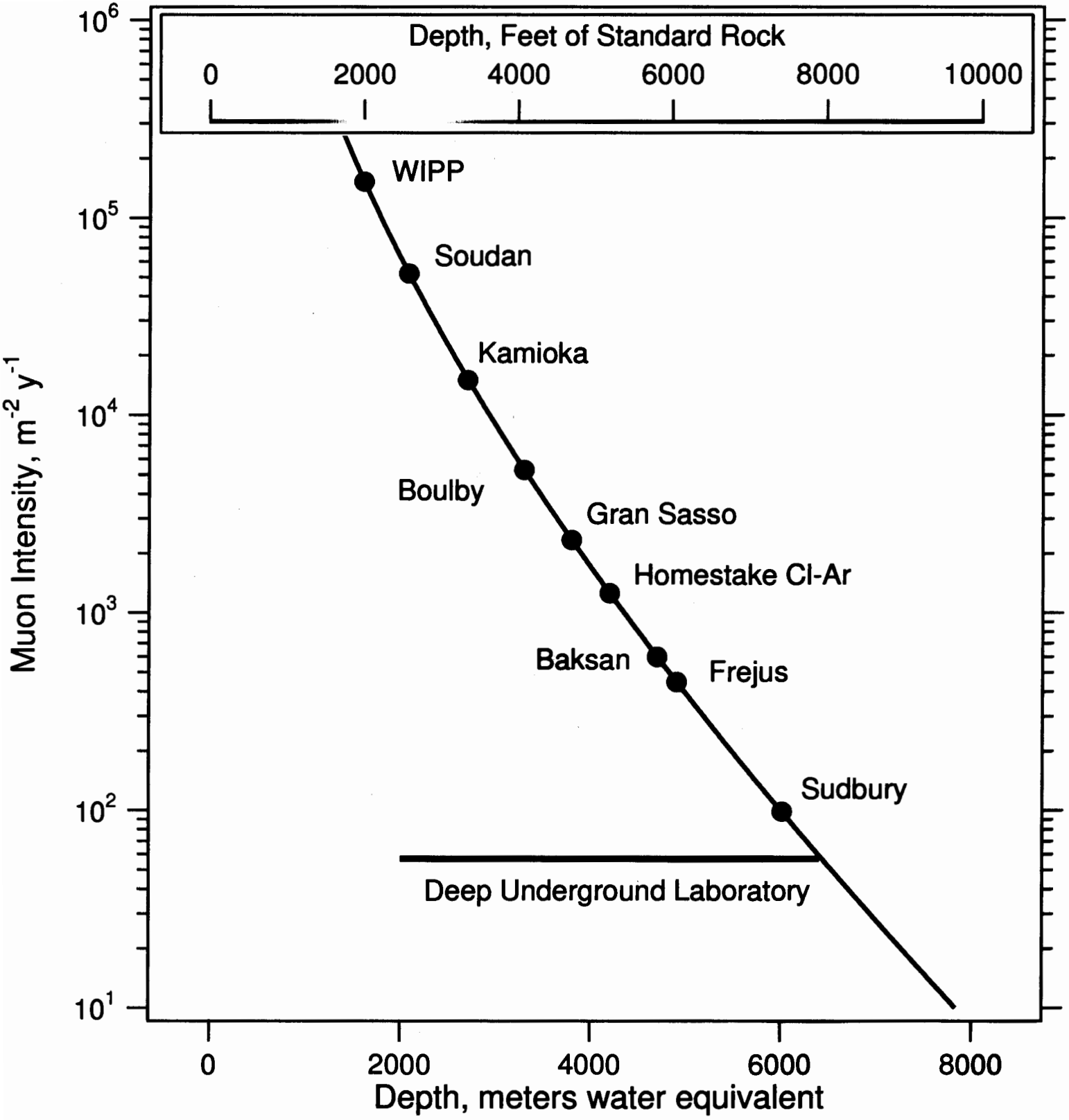
Please note that the event classification is based on a fast online reconstruction and is only indicative.

The cosmic ray muon rate in the MINOS Far Detector is about one every couple seconds. This page refreshes once every ten seconds to reduce web load.

Almost all of the tracks shown in this display are produced by cosmic rays, which are produced by high energy particles from space hitting the upper atmosphere. They are around us on both the surface and for about two miles underground all the time. Only about one in a million events observed in the MINOS far detector comes from the neutrino beam from Fermilab. In fact, this is why the experiment is so far underground. On the surface (without all that rock to slow down the cosmic rays) seeing the very rare neutrino would be 100,000 times harder. Click here for more information about the experiment.

Here is a picture of our first beam-neutrino event seen in the Far Detector! In this event, the neutrino interacted in the rock in front of the detector, and the resulting muon entered the south face of the detector, spiraling in the magnetic field, before stopping in the second half

This page was last retrieved on : **giovedì 16 giugno 2005 13:10:06**


Depth, Feet of Standard Rock
0
2000
4000
6000
8000
10000
WIPP
Soudan
Kamioka
Boulby
Gran Sasso
Homestake Cl-Ar
Baksan
Frejus
Sudbury
Deep Underground Laboratory
Muon Intensity, m-2 y-1
10^6
10^5
10^4
10^3
10^2
10^1
0
2000
4000
6000
8000
Depth, meters water equivalent

The DUSEL Process

Motivations

Early 1980's first investigation (Nevada, San Jancinto)

2000 Renewed interest in a US Deep Underground Science Laboratory

⇐ Rapid expansion of Nuclear and Particle Astrophysics

⇐ Potential availability of Homestake on a short time scale

Strong scientific support. A number of reports.

Recent realization that such a facility would bring tremendous opportunities to earth sciences, biology and engineering: DUSEL

March 2004: New process put in place by NSF

Solicitation 1: Community wide study of

- Scientific roadmap: from Nuclear/Particle/Astro Physics to Geo Physics/Chemistry/Microbiology/Engineering
- Generic infrastructure requirements

Solicitation 2 : Pre-selection of 3-5 sites

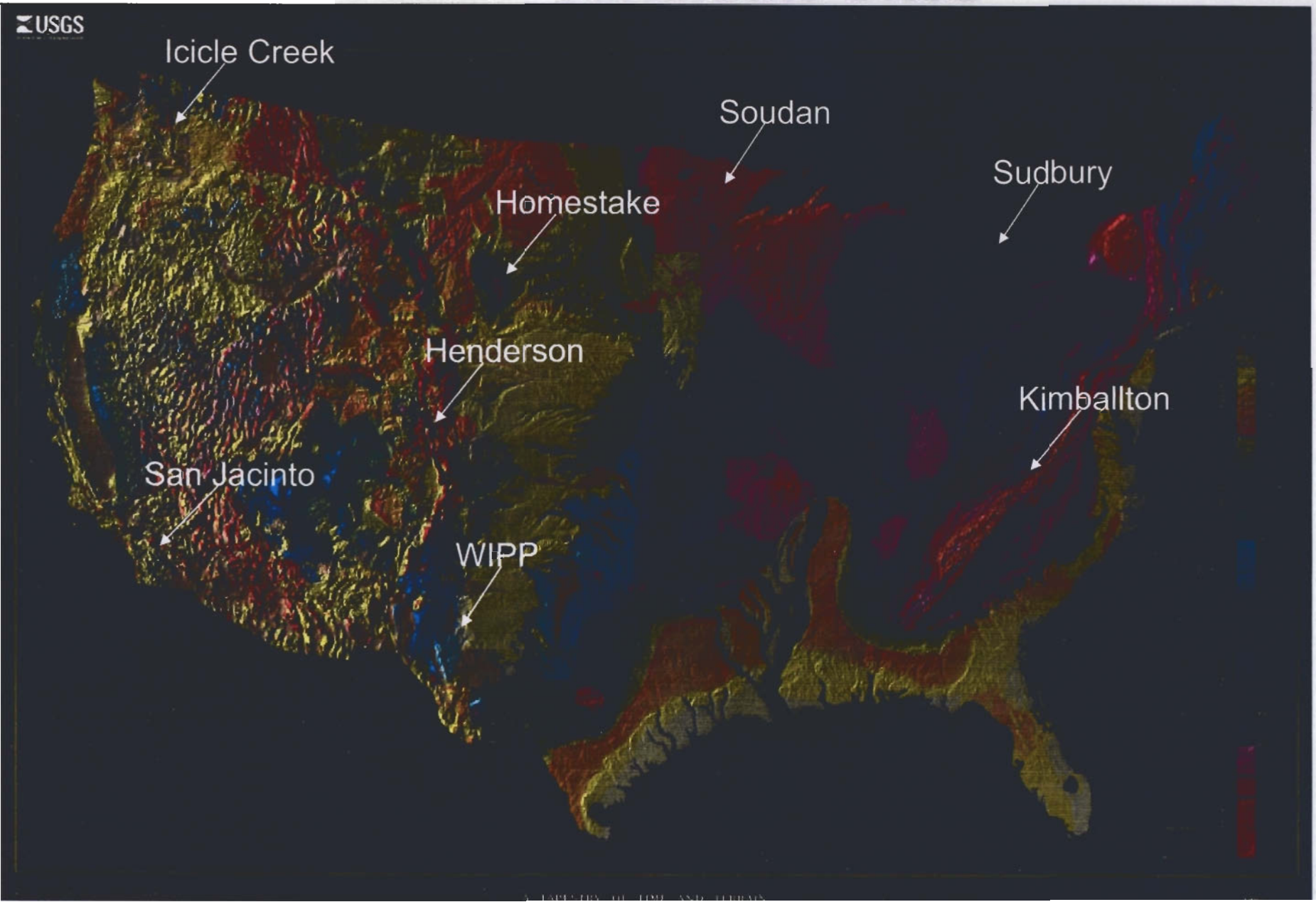
- Proposals due February 28 2005

Solicitation 3

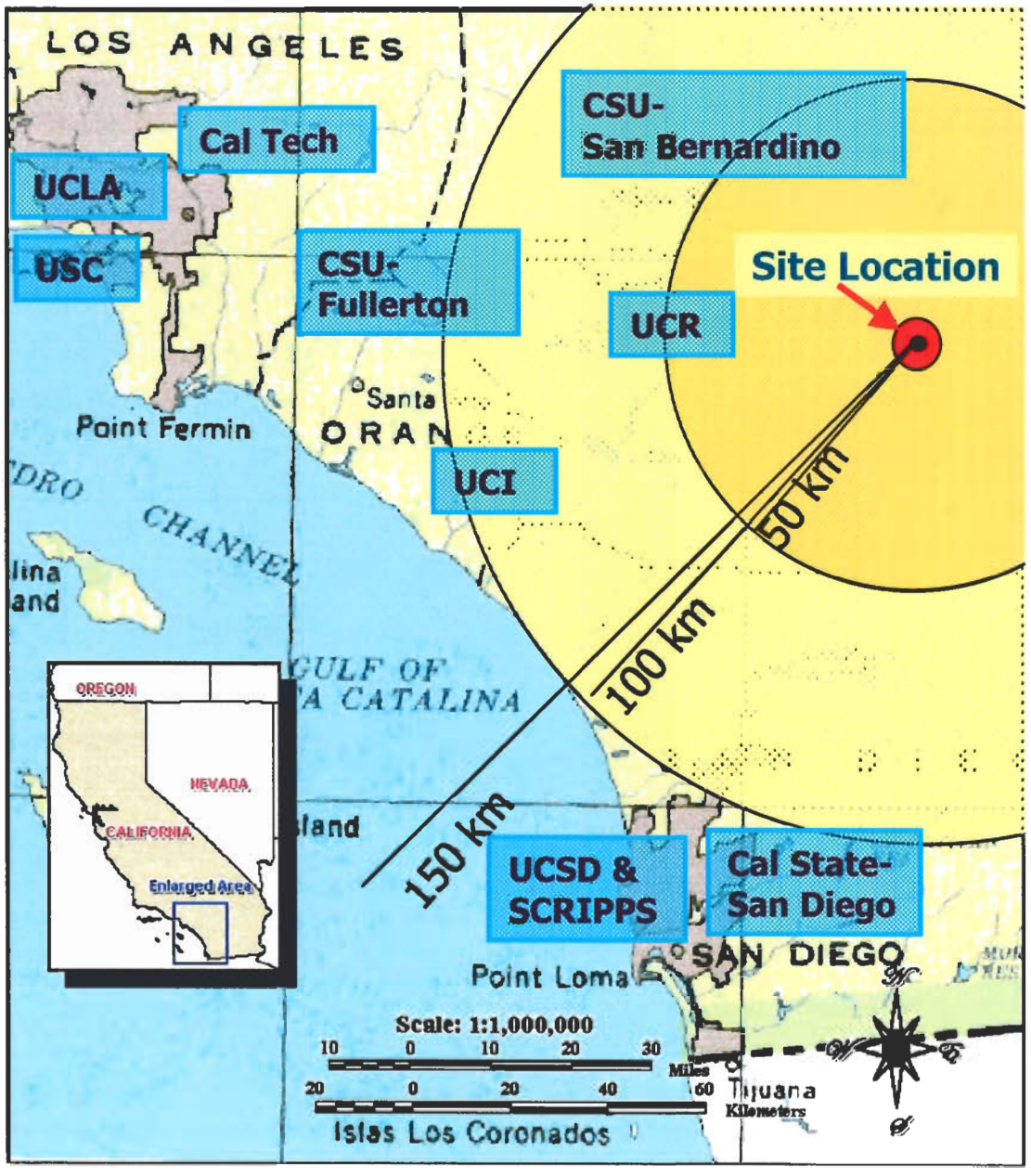
⇒Selection of initial site(s)

⇒MRE and Presidential Budget (optimistically in 09)

DUSEL Candidate Sites



Location: University Access



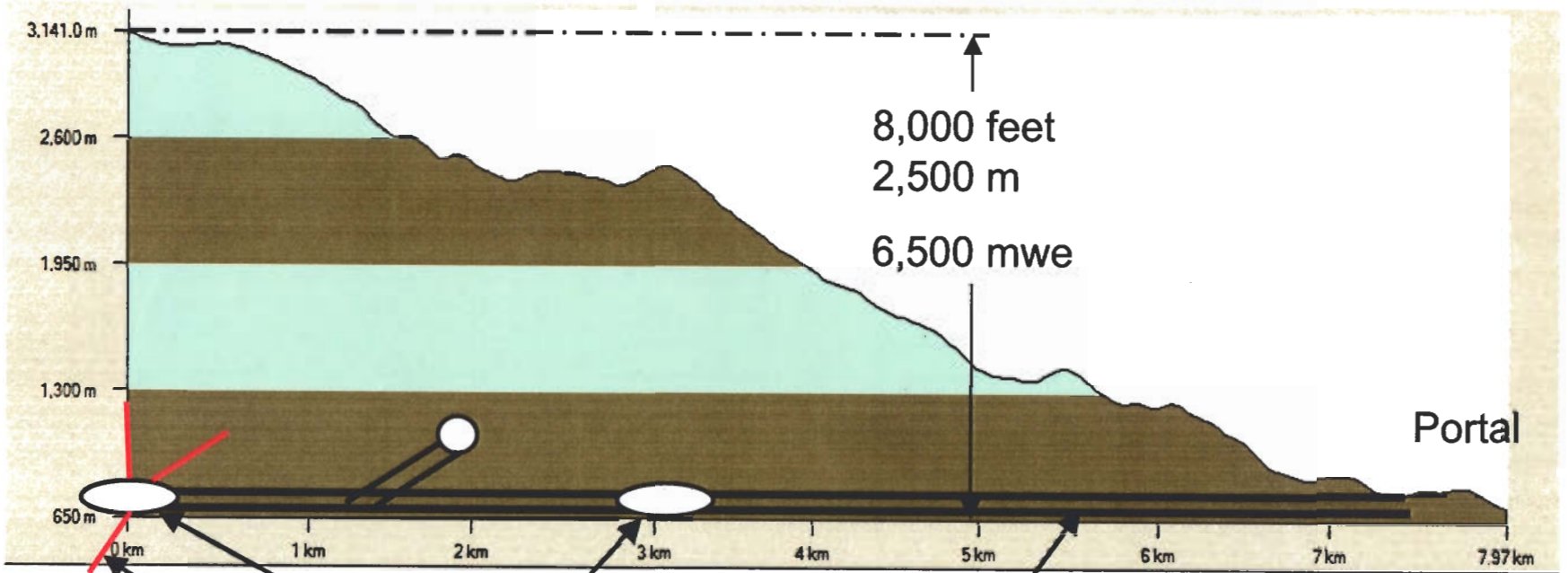
27 million people within 2 hour driving time from Palm Springs & Coachella Valley

- Interest general public and students in science
- K-12 school programs

Large number of universities in region

- Opportunity for graduate and undergraduate training
- Inclusion in UC's network for minority outreach and education

Profile Schematic

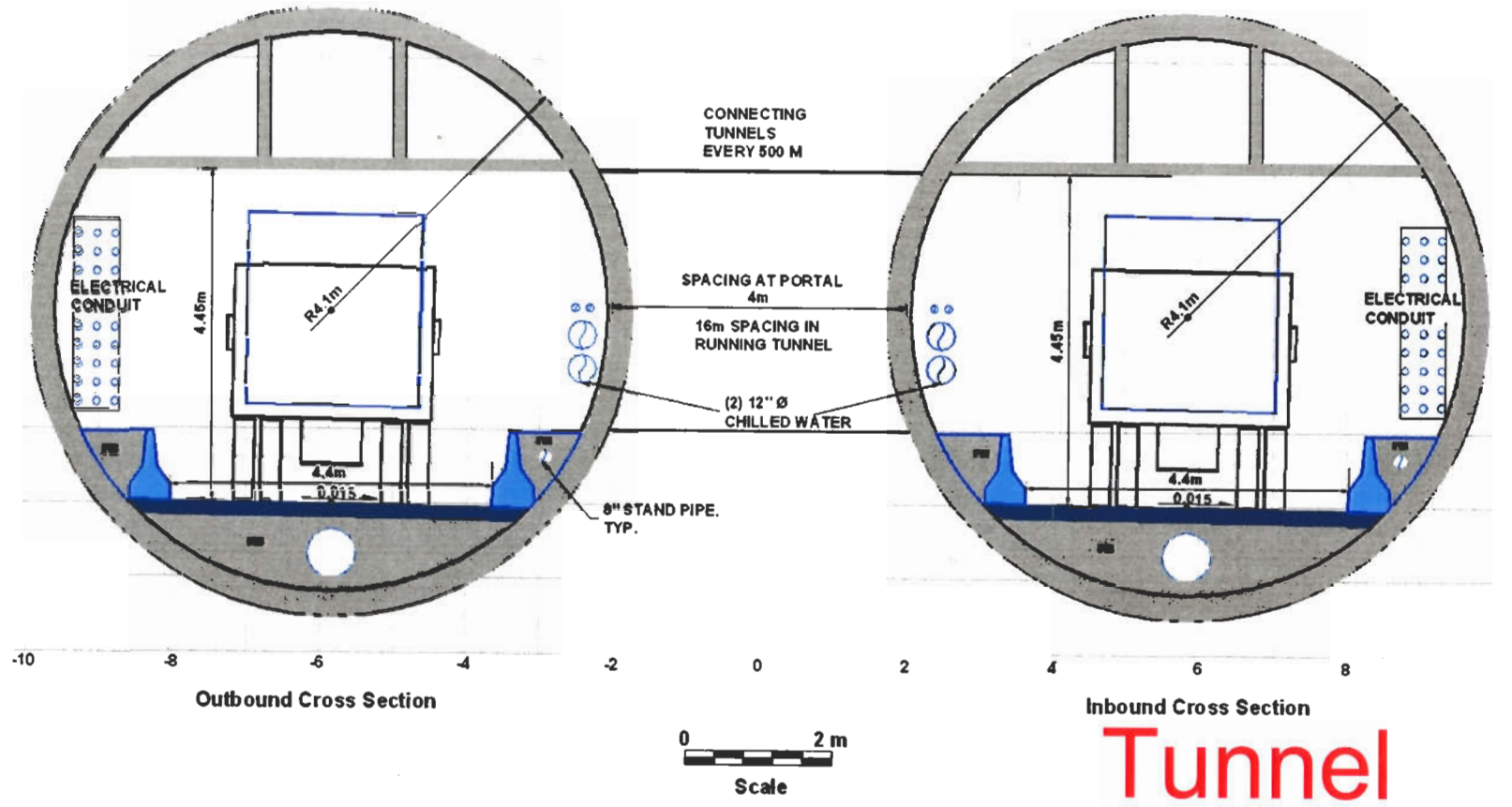


Seismic Array

Research Complexes

Twin tunnels - Variable spacing

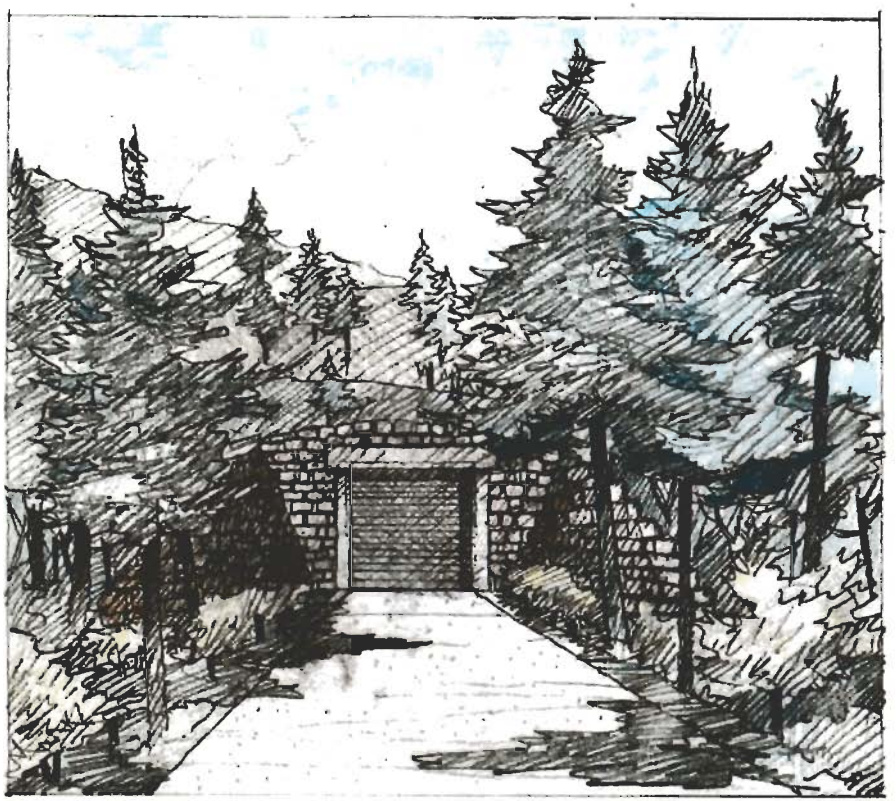
Additional earth science areas



Tunnel Schematic

- 3.83-meter radius TBM
- Concrete liner where necessary
- One tunnel inbound, one tunnel outbound
- Crosscuts every 500 meters
- 0 to 4 meter spacing near portal
- Enlarged spacing elsewhere for earth science
- Ventilation ducts, utilities, drainage

portal, ventilation system designed to preserve dark skies, quietness of national forestt



Conceptual sketch of portal entry