DEEP DRILLING

Japan plans holes on land . . .

Kyoto

JAPANESE geologists are planning to drill a hole 15 km deep into the Earth to penetrate the boundary of a plate that is subducting beneath Japan.

The Tartarus project, named after the Greek name for the abyss below Hades, began last month with a survey of potential sites by the Geological Survey of Japan and the Disaster Prevention Centre. The project is expected to take ten years and \$500 million to complete.

The best candidate for the deep drilling site is the seismically active Izu peninsula, south of Tokyo, where the Pacific and Philippine plates plunge beneath the

Eurasian plate on which Japan stands. One aim of the project is to study the region of the Earth's crust where deformation changes from brittle to ductile. In the Izu peninsula, this region lies only a few kilometres below the surface and some of the most destructive earthquakes in Japan develop there.

The survey involves both seismic and magnetic studies and has a budget this year of ¥30 million (\$200,000). Several different sites will be studied including the Izu peninsula. Work is now under way in Hokkaido and the Kanto region near Tokyo.

The Science and Technology Agency (STA) says that it is interested in providing funds for the deep-drilling project, although it cannot say when backing will be available. The Ministry of International Trade and Industry (MITI), to which the Geological Survey is affiliated, is also interested in deep drilling because it may help to provide a new energy source. Scientists at the University of Tokyo have recently suggested that methane in natural gas fields in Japan may be directly derived from the Earth's mantle (see *Nature* 305,

792; 1989).

Japan, and the Izu peninsula in particular, pose considerable technical difficulties for deep drilling because the region is so seismically and volcanically active. The deepest hole in the world is in the Kola Peninsula, where Soviet scientists have drilled to a depth of 13 km. But German plans to reach this depth in the Oberpfalz were abandoned after a pilot hole of 4 km showed unexpectedly high temperatures.

Simon Wallis

. . . and in the ocean

Japan's Science and Technology Agency (STA) hopes to build an ocean-going vessel for deep-sea drilling, similar to the US JOIDES ship and capable of drilling through the deep-ocean floor to a depth of 4 km. The STA ship would be quite independent of the international Ocean Drilling Program (ODP), which is at present partly funded by the Ministry of Education Science and Culture (MESC). The proposal to build a new ocean-going drilling vessel was made by the advisory committee to the STA ocean development section and a feasibility study with a budget of ¥13 million (£87,000) will begin in April.

Simon Wallis

COMPUTER NETWORKS

US launches transatlantic links

Washington

BUOYED by an exponential rise in traffic on its US computer network, the National Science Foundation (NSF) last week launched the first high-speed scientific computing link to cross the Atlantic. With the new line, NSFnet now has a full-speed link to the European Academic Supercomputing Initiative network (EASInet). Operating at 1.5 megabits per second (known as T1 speed), the fibre-optic link is about 24 times faster than previous inter-continental connections.

The European Laboratory for Particle Physics (CERN) in Geneva serves as the European 'gateway' for the link, which is connected at its other side to the NSF supercomputer centre at Cornell University in Ithaca, New York.

NSF's networking partners (IBM, MCI Communications and the Merit university consortium) also demonstrated the first prototype 'T3' link at a trade show in Washington last week. At 45 megabits per second, the T3 link is 28 times faster than the T1 connections.

NSF intends to begin upgrading the NSFnet 'backbone' — nodes at seven US universities and all six NSF supercomputer centres — to T3 speed later this year.

Figures released by NSF this month show that traffic on NSFnet has increased 445 per cent in the last year, to 2,500 million 'packets' a month. (A packet is a variable amount of data with some support-

ing information appended, such as a destination and routing symbols. Although packets can vary from 48 to 4,000 bytes, NSFnet packets statistically average 125 bytes.) The number of NSFnet users is expected to grow from about one million today to between four and six million — approximately one half of the US academic and research community — by the end of the decade. In congressional testimony last year, NSF officials warned that without new networking initiatives the rapidly climbing volume of network traffic would soon swamp NSFnet.

But new users alone are unlikely to inundate a T3 — or even a T1 — network in the near future, says Michael Conners, director of computing systems for IBM Research. Instead, traffic is expected to grow as scientists react to the increased responsiveness and reliability of the new high-speed links by expanding their network use from electronic mail to interactive operations of remote computers and the exchange of large amounts of graphic data.

Although electronic mail is still the largest single use of NSFnet, interactive applications (now 20 per cent) and file exchange (29 per cent) are gaining ground. Further network capacity, in the form of more T3 links, is sure to spawn "a whole new set of applications", including the interactive 'steering' of scientific simulations on remote supercomputers, Conners predicts.

G. Christopher Anderson

MARINE POLLUTION

UN report says concern is wrongly directed

London

PUBLIC and government concern over marine pollution should be refocused, according to a report on the state of the marine environment, sponsored by the United Nations and published this week. The report, by 20 marine scientists led by Professor Alisdair McIntyre of the University of Aberdeen, concludes that oil spills and heavy metal contamination pose less of a threat than was thought in the early 1980s.

Launching the report in London, McIntyre said that over-enrichment — eutrophication — of coastal waters from nitrates and phosphates in run-off from agricultural land is now a major concern, and pointed to recent algal blooms in the Dutch Wadden Sea. In tropical coastal waters, there is the additional problem of a build-up of chlorinated hydrocarbon pesticides, still used extensively in developing countries, he said. But despite problems near coasts, McIntyre said the open oceans remain largely unpolluted habitats.

He also suggested that much-publicized moves to reduce sewage dumping at sea may be misdirected. McIntyre believes there may be scope for increased disposal of treated sewage in deep waters.

Peter Aldhous