

International expedition studies Arctic ozone

- Differences in Arctic and Antarctic depletions
- Specially designed aircraft to be used

Washington

AN international expedition to study stratospheric ozone concentrations in the Arctic begins this week in Stavanger, Norway. Led by the United States, the six-week expedition will employ balloons, satellites, high-altitude aircraft and an international data network to obtain a clearer picture of how Arctic ozone concentrations are affected by the unique conditions at the pole.

Arctic stratospheric ozone concentration exhibits some seasonal variation, but nothing like the severe declines observed over Antarctica. Nevertheless there are indications that similar processes are at work in the Arctic stratosphere, leading to a measurable depletion of ozone. More puzzling, according to Daniel Albritton of the National Oceanic and Atmospheric Administration (NOAA) Aeronomy Laboratory in Boulder, Colorado, is a discrepancy between observed ozone depletion and predicted levels based on models that account for Antarctic depletions, suggesting that some other mechanism is at work in the Arctic.

Two specially designed aircraft will be used to collect data on gas concentrations in the stratosphere. A National Aeronautics and Space Administration (NASA)

ER-2 aircraft, a modified U2 reconnaissance aircraft, will carry instruments as high as 20 km for seven-hour flights up to 80 degrees North. A DC-8 will operate during the same period, its greater range allowing it to survey the polar vortex. NASA's Robert Watson, chief program officer for the expedition, says that ozone measurements from the Nimbus 7 satellite will help to develop flight plans for the aircraft.

Of particular interest is how chlorine compounds — primarily from chlorofluorocarbons — react with ice crystals in polar stratospheric clouds to form free chlorine which destroys ozone. Because the Arctic is on average warmer than the Antarctic, there are far fewer of these ice-containing clouds. Albritton says this may partly explain why the decrease in stratospheric ozone is not nearly as large as in the south. Albritton is hoping for a cold polar winter so there will be lots of polar stratospheric clouds to test the ice crystal hypothesis.

NASA, NOAA and the National Science Foundation together are contributing some \$10 million to the expedition. Additional support, comes from Norway, the United Kingdom, West Germany and the Soviet Union.

Joseph Palca

Computer smugglers too quick

Washington

LAST week's arrest in Miami of a Dutch man accused of attempting to smuggle a Vax 8800 computer to Bulgaria highlights the difficulties the United States is experiencing in stopping advanced computer technology from reaching eastern-bloc countries. The difficulties will get worse, according to a new report* on export controls and computer technology released this week by the US National Research Council, as computers become ever smaller and more powerful and international computer networks flourish.

The nations of the Coordinating Committee for Multilateral Export Control (CoCom) have managed to maintain a five-to-ten-year lead in computer technology over the USSR and eastern-bloc countries, claims the report, but far more "focused and flexible" controls will be needed in the future. The biggest problem is that "computer technologies advance much faster than most bureaucratic processes".

A clumsy bureaucracy will end up stifling industry if it does not distinguish

between products that can be controlled and those that cannot — such as computers available from foreign sources and computers that are so cheap or small that their trade cannot be effectively halted. "More timely, rapid and expert" reviews are the answer, according to the report.

To help stop the industrializing Asian nations of Singapore, Hong Kong, Taiwan and South Korea from supplying their own increasingly sophisticated hardware to the eastern bloc, the report urges their integration into the CoCom programme.

The rapid development of computer networks has provided an easy conduit for the export of software. The report calls for "further study" to control transborder flow via computer networks.

Software is intrinsically difficult to protect and most should be freely traded, according to the report, with tight controls reserved for military software and for software tools that could help create military software.

Alun Anderson

*Global Trends in Computer Technology and Their Impact on Export Control, published by the National Academy Press, 30 December 1988.

Ecologist murdered

Washington

LAST week's murder of the prominent Brazilian environmentalist and union organizer, Francisco Mendes Filho, at his home in Xapuri, in Acre province, is expected to increase pressure on the World Bank and Inter-American Development Bank to demand environmental safeguards before they lend money for large-scale development projects. Through his efforts to organize and protect poor rubber-tapping families Mendes, 44, inadvertently found himself allied with ecologists who wanted to stop the destruction of the rain forest for cattle ranching. His murder, allegedly at the hands of local land barons, has provoked an international outcry and a campaign in Brazil to stop foreign loans until justice has been done. Last year, Mendes received the Global 500 award from the United Nations for his efforts to save the rain forest.

A.A.

Shuttle complacency

Washington

ALTHOUGH the US space shuttle has successfully resumed flights, the final report of a special National Research Council panel evaluating the redesign of the shuttle's solid rocket booster concludes that there are still problems with the booster.

In addition to specific, minor problems that cropped up on the two recent shuttle flights, the final report, transmitted in a 21 December letter from panel chairman H. Guyford Stever to National Aeronautics and Space Administration head James Fletcher, suggests there is still work to be done. The report warns that budget, time and complacency will push NASA towards a relaxation of quality control. Although the "relaxation" may be justified, the report urges that it be a planned, deliberate process, and calls for continuous system performance checks to establish a data base against which the shuttle's future performance can be judged.

J.P.

Animals' legal rights

Washington

A GROUP of animal rights organizations, led by the Animal Legal Defense Fund, has filed suit against three US government agencies. The group is accusing the Department of Agriculture (USDA), the Department of Health and Human Services, and the Office of Management and Budget of "unreasonably delaying" the establishment of regulations to protect animals used in research which were stipulated by the 1985 amendments to the Animal Welfare Act. The amendments would require researchers to anaesthetize animals subjected to pain, and to provide dogs and primates with living environments conducive to their well-being. The USDA says it is still sifting through the roughly 8,000 comments it has received.

C.E.