

Asian states take 'first step' on acid rain

[TOKYO] Concern about the problem of acid rain in East Asia has led nine countries, including Japan, South Korea, Indonesia, Thailand, Malaysia and Russia, to discuss setting up a regional monitoring network.

The proposal was the subject of a meeting in Yokohama, Japan, last month, which had been called for by the government of Japan. In addition to delegates from the nine countries involved, observers from China, the World Meteorological Organization and the United Nations also took part.

No-one is expecting an international emission control agreement on sulphur dioxide in East Asia to emerge easily. But officials at Japan's Environmental Agency argue that cooperative research and monitoring could pave the way towards concerted action.

Total sulphur emissions from 20 Asian countries have been estimated at 34 million tonnes in 1990, with north Asian countries accounting for more than three-quarters. According to calculations by the World Bank before last year's financial crisis, emissions could rise to 78 million tonnes by 2010 if no firm action is taken. In Europe, sulphur emissions are expected to decrease from 38 million to 14 million tonnes over this period as a result of stringent controls.

A consensus document agreed by delegates at the meeting calls for a two-year preparatory phase of the monitoring network, starting this month. During this period, a few monitoring sites will be set up in each country. Financing throughout the preparatory phase will be provided by Japan, which will also host the network's secretariat and data analysis centre.

But the consensus document says that further discussions are needed on several

issues. These include the role of the scientific advisory board to be attached to the network, the implementation of quality control protocols, the location of the permanent network centre and secretariat, and the possibility of setting up branches of the network centre in other countries. The final shape of the network will be discussed at a second inter-governmental meeting scheduled for 2000, the year in which the network is expected to start full operation.

Delegates to the meeting said they welcomed the Japanese initiative. But a spokesperson for the Japanese foreign ministry admitted at a press conference after the meeting that there remains suspicion on the part of other East Asian countries as to a possible political motivation for the network.

Such suspicion is understandable, as Japan is keen to demonstrate that an increasing percentage of the acid rain falling on the country originates in the industrial districts of north China and Korea. A Japanese proposal to provide a permanent home for both the network's centre and its secretariat appears to have been vigorously opposed.

Further suspicion was generated because the intergovernmental meeting was convened only after the design of the network had been drawn up in informal expert meetings organized by the Japanese Environmental Agency. At these meetings, scientists from Japan outnumbered those from other countries.

Delegates from other Asian countries argued that the network design should be reviewed by the scientific advisory body, on which scientists from all participating countries are equally represented, says Seok-Young Choi, director of the environment and

science division at the South Korean Ministry of Foreign Affairs and Trade. Delegates emphasized "the need to enhance full transparency in organization and operation of the network", says Choi.

Alexandre Soudine, senior scientific officer at the environmental division of the World Meteorological Organization, who attended the meeting, says that "a first step has been made" towards addressing the acid rain problem. He added that his agency "supports the Japanese initiative".

The organization has released an assessment report on the global state of acidic deposition last year. Soudine points out that reliable data on acidic deposition are not yet available for many parts of the world, including East Asia. He argues that, to assess the problem in East Asia, considerable modelling will be needed in addition to monitoring.

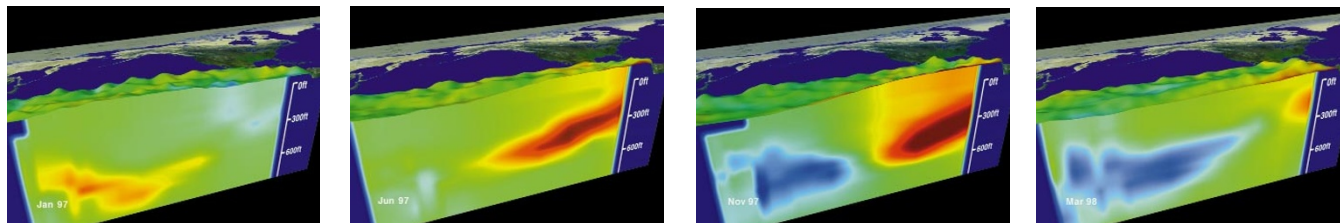
The European Monitoring and Assessment Programme, which has served as a model for the Japanese initiative, gathers data from more than a hundred monitoring sites all over Europe. In contrast, the East Asia network will initially have few monitoring sites.

Initial modelling has been carried out by the International Institute for Applied System Analysis in Vienna, and by Japanese research institutes. In a five year-project funded by the World Bank, the Vienna institute has adapted its RAINS model of acidification to the Asian situation.

The Asia version of the RAINS model is commercially available and has been distributed widely in Asia. But critics say that it provides only a very broad assessment of the acidic deposition problem in the region, and lacks sufficient detail to be of significant value.

Robert Triendl

El Niño in the frame for Pacific temperature and height increases



[LONDON] Three forms of data have been used to provide a dramatic three-dimensional visualization of increased sea level height and raised sea temperatures in the eastern Pacific linked to the El Niño event (above). Data from three separate instruments, including the US National Aeronautics and Space Administration's (NASA)'s Topex radar altimetry satellite, released last week, show a 34-cm rise in the height of the eastern Pacific Ocean between January 1997 and March this year. Sea

surface temperature increased by 5.4 °C during the same period.

The height of the sea is indicated by the bumps in the images. Sea surface temperature is represented by the colour, with red being 10 °C above normal, and blue 10 °C below normal. The large area of blue in the final frame indicates colder than normal water being left behind as warmer water moves further eastwards.

The winter El Niño forecast of warmer waters moving eastwards across the Pacific

Ocean was issued last summer. Data from the instruments show that the 1997–98 El Niño arrived earlier than the last comparable event in the winter of 1982–83. But projections of drier than normal weather in parts of Asia have not quite materialized (see *Nature* 388, 108; 1997). India, for example, experienced a near-normal monsoon.

The frames, as well as a computer simulation of the movement of water, can be viewed on the NASA El Niño Web site, http://nsipp.gsfc.nasa.gov/enso/nino_update.