EU eliminates citation gap with America

[WASHINGTON] The United States remains the most scientifically productive region in the world — but only just. The member states of the European Union (EU) are about to take the number one spot, suggesting that Western Europe has regained its position as the world's leading producer of scientific knowledge.

At the same time, however, the quality of US science, at least as measured by the rate at which US papers are cited by other researchers, remains substantially higher than that of its main economic competitors, with the United Kingdom coming second, Germany third and France fourth.

These conclusions are based on analysis by the Institute for Scientific Information (ISI) in Philadelphia, and published in the May/June issue of ISI's *ScienceWatch*. They are based on citation statistics covering 102 subfields representing all areas of science, as well as the social sciences and humanities.

Production of scientific papers, 1992–96

	Total no. of papers	*Citations per paper*
United States	1,239,188	5.03
United Kingdom	300,377	4.19
Japan	280,855	3.18
Germany	258,946	3.78
France	197,816	3.66
Canada	167,326	3.83
Italy	116,534	3.42
Australia	85,215	3.23
Netherlands	80,016	4.45
Spain	73,224	2.72
Sweden	61,072	4.38
Switzerland	55,213	5.66

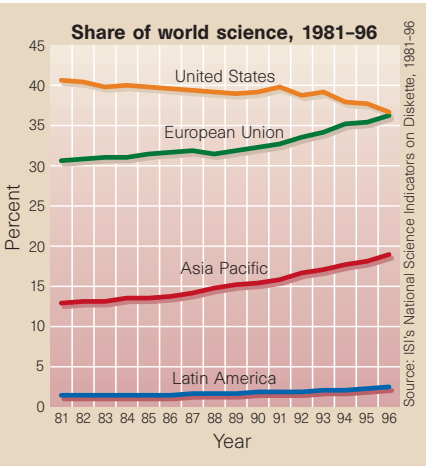
Countries ranked by number of papers 1992-96
Source: Institute for Scientific Information

ISI's analysis reveals that between 1981 and 1996 the proportion of such papers with at least one author from the United States fell from 40.5 per cent to 36.5 per cent, with a particularly marked fall since 1991. In contrast, the proportion with at least one author coming from a member state of the EU increased from 30.5 to 36.2 per cent.

Europe's figures were, admittedly, bolstered by the fact that the number of countries belonging to the union rose from 10 to 15 during this period. The decline in the US lead also reflects the fact that the Asia–Pacific region increased its output significantly during this period — from 12.8 to 18.8 per cent of the total — as did Latin America.

But the new EU members are relatively small science-producers. The overall trend (see chart, right) indicates that, measured at least in terms of the quantity of scientific output, Europe has regained a role that it occupied from the scientific revolution of the seventeenth century up to the end of the Second World War.

In terms of scientific impact, measured by the number of citations to each of the papers published in the 102 specialist journals, Switzerland maintains the top ranking which it held in the previous comparative analysis, carried out by ISI in 1991. The Netherlands, Denmark and Sweden also remain in the top five — a reflection of the traditional high quality of the science in these relatively small countries.



Among the larger countries, however, the United States remains ahead, recording an average 5.03 citations to each of its 1,239,188 published papers. "Although the United States has lost some of its world share of papers the overall strength of US science as measured by citation impact seems to be holding steady," comments ISI. The institute argues that the new figures appear to belie "grim predictions" about the state of US science at the time of the 1991 survey.

In terms of the relative strengths of different geographic regions in different scientific fields, the ISI analysis shows that the EU had a considerably higher-than-average citation rate in geological/petroleum/mining engineering, agriculture/agronomy, metallurgy and nuclear engineering. □

Europe seeks to head off oil-exporters' veto on climate treaty

[LONDON] European countries are making a bid to prevent members of the Organization of Petroleum Exporting Countries (OPEC) from blocking the signing of a new international treaty limiting the emissions of greenhouse gases that are believed to contribute to global warming.

The government of the Netherlands, acting on behalf of the 15 members of the European Union (EU), has tabled an amendment to the United Nations Framework Convention on Climate Change that would allow the treaty to be adopted by a three-quarters majority of countries if the parties fail to reach a consensus.

The requirement that such a treaty be backed by a consensus has put OPEC countries in a strong bargaining position (see *Nature* 378, 524; 1997). Their delegates are expected to oppose the proposed amendment strongly when it is discussed at the convention's annual conference in Kyoto, Japan, in December.

But EU governments are apparently worried that, unless parties to the convention are able to vote on the treaty by majority, the oil-exporting countries and their allies could use the consensus requirement to block any proposals they disagree with.

Parties to the climate convention have already agreed to approve a treaty to reduce emissions of greenhouse gases such as carbon dioxide at the Kyoto meeting. Oil-exporting countries are demanding compensation for revenues they will lose if countries reduce their fossil fuel use to comply with the treaty. They are backed by the G77 group of developing countries, including India and China, and by at least one US fossil-fuel lobby group.

But observers such as Farhana Yamin, director of the Foundation for International Environmental Law and Development at the University of London, say that the treaty is unlikely to include such provisions.

Yamin says the EU proposal appears to have two goals. "It ensures that the adoption of [the treaty] at Kyoto cannot be blocked by a small minority, and it weakens the bargaining position of such countries in the negotiations leading up to Kyoto."

Amendments to the climate convention normally need to be ratified by the parliaments of each signatory country before entering into force. This could potentially delay a vote on a greenhouse gas treaty for at least two or three years.

EU lawyers point out that the Vienna Convention on the Law of Treaties allows an amendment to come into force provisionally if it receives enough support, opening up the possibility of majority voting on a greenhouse gas treaty.

But one leading environment lawyer says that the proposed amendment could still be legally vulnerable, particularly if the treaty is approved by close to the required majority. "If one or two countries decided to change their minds afterwards, the entire treaty could potentially collapse," he warns.

Ehsan Masood