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Soaring Temperatures in Ghana?

Stephens (1995) recently reported that temperatures in Ghana were increasing during this century and that the temperature rise could be evidence of a global warming signal. Using data from 11 stations, Stephens shows that the temperatures in the 1961 to 1990 period were higher than temperatures in the 1930 to 1960 period, noting that, between 1945 and 1990, temperatures in Ghana were 'soaring' upwards; suggested causes included the 'greenhouse' effect and the potential influences of urbanization. While I commend Stephens for the effort, I conducted the following research that may be of interest to individuals concerned with regional climate changes over the period of reliable historical records.

I collected the 1945 to 1994 monthly temperature anomaly data from the widely-used Jones (1994) data-set for the 5° latitude by 5° longitude grid cell that contains most of Ghana (centred on 7.5°N, 2.5°W). A plot of the 12-months' smoothed anomalies (Fig. 1) shows variability from year to year, but absolutely no evidence of any 'quite significant soaring of temperatures'. From 1945 to 1994, the temperatures in this grid cell actually cooled slightly, but at a statistically insignificant rate. From 1945 to 1990, there is simply no warming in the record.

The satellite-based lower-tropospheric temperature data developed and described by Spencer & Christy (1990) provides another opportunity for testing temperature trends in Ghana. I collected the updated satellite data for the five 2.5° latitude by 2.5° longitude grid cells that cover Ghana for the period 1979 to 1994, then smoothed the data using a 12-months filter, and plotted the data in Fig. 1. The satellite-based lower-tropospheric temperature data reveal a statistically highly significant cooling of 0.027°C per year over the period of record.

Although Ghana represents only 0.05% of the Earth's surface, it is important to analyse temperature trends even at this spatial scale. Stephens has shown that the temperatures at 11 stations in Ghana have increased since the end of World War II. However, this warming signal does not appear in the widely-used Jones (1994) data and it is certainly not found in the updated satellite-based Spencer & Christy (1990) lower-tropospheric temperature data.

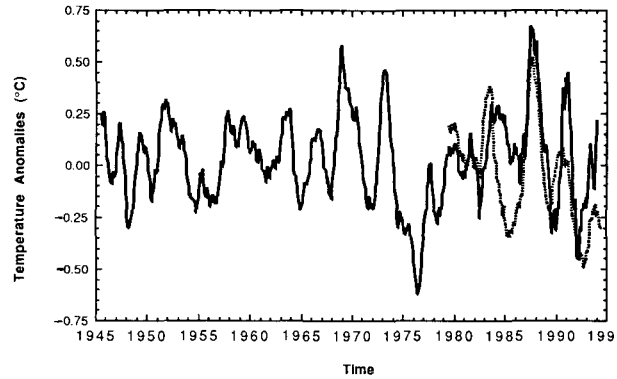

FIG. 1. *Ghana monthly temperature anomalies based on the Jones (1994) near-surface air temperatures (solid line) and updated Spencer & Christy (1990) satellite-based lower-tropospheric temperature measurements (dotted line).*

While there may be any number of causes for the patterns reported by Stephens, it seems likely that the reported temperature rise in Ghana is more related to local urbanization effects than to any regional signal associated with the buildup of 'greenhouse' gases.

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UN Recommendations on Transport of Dangerous Goods

During the past 40 years, the 'Orange Book' has been a 'must' for all public authorities, carriers, and consigners handling substances which are hazardous for people and/or the environment. This '*United Nations Recommendations on the Transport of Dangerous Goods*'* has become the generally acknowledged source of technical provisions, which are now implemented world-wide. Many Governments in all inhabited continents have based their national legislation on these recommendations, and their implementation is also guaranteed through international conventions regulating all modes of transport — whether by road, rail, inland waterways, air, or maritime shipping.

**Recommendations on the Transport of Dangerous Goods*, Ninth revised edition. United Nations, New York and Geneva, ISBN 92-1-139084-6, ISSN 1014-5753, UN Sales Nr E.95.VIII.1, Price US $95. Also available on diskette (Sales Nr 94.VIII.2, Price US $250.)

All the dangerous substances and articles that are most commonly carried are listed in this 'Orange Book'. They are divided into nine classes: namely 1 Explosives; 2 Gases; 3 Flammable liquids; 4 Flammable solids; 5 Oxidizing substances and organic peroxides; 6 Toxic and infectious substances; 7 Radioactive material; 8 Corrosive substances; and 9 Miscellaneous dangerous substances and articles.

The 'Orange Book' contains provisions for packing dangerous goods, marking and labelling packages, placarding transport units, and shipping documentation. It also includes provisions for the construction of packagings, intermediate bulk containers, multimodal tank-containers, as well as for their testing and approval.

The ninth revised edition of the 'Orange Book' has recently been published in English but will, at a later stage,

be available in all United Nations official languages. The 'Orange Book' is supplemented by a 'Manual of tests and criteria' for the classification of goods to be transported. A second revised edition of this Manual will be issued soon.

The Recommendations are prepared by the Committee of Experts on the Transport of Dangerous Goods, a subsidiary body of the Economic and Social Council (ECOSOC) which is serviced by the secretariat of the United Nations Economic Commission for Europe (ECE). The ECE is also responsible for the elaboration of legal instruments regulating transport of dangerous goods by road, rail, and inland waterways, in its Region (Europe and North America).

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Short Courses on Life-zone Ecology and Tropical Dendrology

The classification of the Earth's ecosystems and eco-complexes affects almost all ecological and geographical science. Additionally, the identification of plants is closely related to the classification of ecosystems which on land are largely characterized by their plant components. From an academic perspective both these subjects are crucial, as they form the basis for sustainable resource management and biodiversity preservation.

Dr L.R. Holdridge's Life-zone Ecology classification system and Tropical Dendrology (a system to identify forest trees) have been used by scientists and other professionals in the tropics for more than 30 years. Furthermore, based on the Life-zone Ecology system, several practical and sound applications have been developed by the Tropical Science Center to be used in rural development, sustainable resource management, watershed management, land-use capability, assessment of environmental impact, territorial zoning, and ecosystem characterization in protected areas.

Recently, the US National Atmospheric and Space Agency (NASA) prepared an earth map of life-zone ecosystems which has been used to monitor and predict vegetation changes due to increase of atmospheric CO_2 (a leading basis of the so-called 'greenhouse effect'). Also, in 1992, the World Conservaton Monitoring Centre (WCMC) gave strong support to the Holdridge Life-zone system by including it in their official publication *Global Biodiversity: Status of Earth's Living Resources*. WCMC is jointly directed by IUCN, UNEP, and WWF.

Through participation in the Life-zone Ecology course, students should have gained enough knowledge to implement sound, practical applications of the system on such activities as are mentioned in the preceding paragraphs. After attending the Tropical Dendrology course, students should be fully accomplished at identifying a large proportion of tropical trees and shrubs, including their family, genus, and in some cases species. Course participants will also gain special skills that should enable them to continue making progress on their own upon returning to their respective countries.

Courses last 3 weeks each and will be offered consecutively during the first semester every year. Costs are US $2,500 for Tropical Dendrology and US $2,700 for Life-zone Ecology (please note that these amounts do not include airfares). For any further information please contact:

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RELIEFNET: A Step Towards an Integrated Emergency Information System

The United Nations Department of Humanitarian Affairs (DHA) has recently provided a sample of what the international community can expect from a global system to manage information on complex emergencies and natural disasters. RELIEFNET, a network to allow real-time transfer and dissemination of information, received a test run of its online distributed information system *via* INTERNET, during a high-level two-days' meeting attended by representatives of governments, INGOs, and NGOs.

RELIEFNET's primary objectives are to enhance decision-making within governmental and humanitarian agencies and to improve the effectiveness of humanitarian assistance, particularly through the flow of critical information. 'Reliefnet is conceived as a decentralized system, built precisely to take advantage of the strengths of existing systems, in full recognition of the expertise and requirements of different but equal partners', says UN Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator Mr Peter Hansen, who chaired the meeting, adding that 'The sharing of timely information is critical to facilitate coordination and cooperation'.

RELIEFNET has to take into account not only the different needs of potential users, such as confidential transfer of sensitive information, but also the different computer systems which they use. Rather than duplicate existing networks, RELIEFNET will bring them together to build up a multifaceted picture of emergency situations.

An international discussion of RELIEFNET in Washington, DC, some months ago indicated that the international community supported the concept of an integrated international emergency information system, but this meeting in June was the first opportunity since then for participants to review the process. For further information please contact:

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