

Jack Fruit (*Artocarpus integrifolia*), and Avocado (*Persea gratissima*), for both food and income generation which also has helped a lot.

Other Public Involvement

Public meetings of local councils, churches' involvement, and holding of Nature talks in public places, have started bearing fruit, as has the obligation that anyone who cuts a tree must plant two others. Moreover, villagers are now forced to apply for government licences to cut down trees.

Recent developments in farming systems' research, especially regarding agro-ecosystems, have led to some invaluable regeneration of the environment: e.g. agricultural people have started rearing fish to help in the utilization of natural resources in rural areas, while poultry-farming and piggeries are on the increase to substitute for charcoal-burning activities — as does the 'send-a-cow' project by Anglican church-goers for the alleviation of poverty. A major public concern now is to educate and sensitize the community in local languages.

Problems Still To Be Solved

Extension of the Owen Falls Dam to increase power generation is being undertaken by the British Government and others. Whereas electricity has been an exclusive luxury of the relatively wealthy, and this has led the majority to use charcoal which is cheaper and still sufficiently abundant for domestic use, the Government is confident that if power can be made available in plenty for rural electrification, the rate of wood fuel (especially charcoal) consumption will fall dramatically.

Although alleviations of the above problems are being put into action, there are still other big ones that are not — such as Water-hyacinth (*Eichhornia crassipes*) covering freshwater lakes and reservoirs, inadequate garbage-disposal in Kampala City, and the ignorance of indiscriminate use of chemicals in agriculture and elsewhere. But the Government is saying that the 21st Century is projected to be the Environmental Century, and so we all need to work to have it be.

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The Uganda Biosphere Club

The Uganda Biosphere Club is an action organization that is dedicated to conserving the environment in general and, in particular, safeguarding The Biosphere as the sole habitat and life-support of all Humankind and Nature. Although Uganda is not a very large country, it constitutes an integral and in some ways unique part of The Biosphere, which is the only known source of life in the entire universe and hence our bounden duty to preserve at all costs.

The Club shall continue as established to be a non-political and non-profit-making action-oriented concern cooperating and collaborating with any other appropriate bodies-corporate, concerns, or individuals, in the fulfilment of its objectives.

AIMS AND OBJECTIVES

1. To sensitize the public about the need for environmental protection and to provide the knowledge therefor by means of public and private lectures, seminars, and conferences, as well as by producing, publishing, and disseminating, tracts, pamphlets, books, periodicals, and films, and sponsoring, producing, directing, and presenting, cinema, radio, and/or television programmes, and by all other possible means, thereby:

- a) Creating awareness of local or wider environmental hazards and ways of avoiding them, such as discouraging the use of environmentally dangerous chemicals which in many cases have been abolished in other countries but are still liable to be used in Uganda.
- b) Promoting ecologically *sustainable* development through appropriate agricultural practices such as organic farming and agroforestry, and sustainable exploitation of forest and other environmental resources.
- c) Promoting (where existing) or developing (where not existing) waste-recycling techniques and improved disposal of wastes to ease the problems of waste-created pollution and general wastefulness of all kinds.
- d) Promoting energy-saving techniques and alternative 'fuel' sources substituting for wood fuel.

- e) Promoting good soil management and conservation skills.
 - f) Protecting water-catchment areas, wetlands, and forests, and participating in tree-planting and reforestation programmes.
 - g) Promoting improved sanitary arrangements and health and other standards as a whole through realization of a better-to-live-in environment.
 - h) Practising all possible economy in the use especially of irreplaceable raw materials and of finite assets such as space on land.
2. To entertain any arrangement with the Ugandan Government and/or Environment Ministry and the National Environment Management Authority, and to obtain from any such Government or Authority any rights, privileges, and concessions, which the Club may consider desirable in the public interest to obtain, and to carry out, exercise, and comply with, any such arrangements, rights, privileges, and concessions, thereby:
- a) Airing the Club's considered views concerning impending decisions and/or policies affecting the environment in any major way.
 - b) Endeavouring to find environmentally-acceptable ways of dealing with the Water-hyacinth and other foreseeable local problems.
 - c) Promoting research on environmental issues and conservation and uses of medicinal plants, etc.
3. To think and act holistically in deference to the tendency in Nature for the outcome to be different from the sum of the parts (or any local effects on a part), realizing that most people are interested only in their own particular environment without thinking of The Biosphere of which they constitute an integral part and without conceding that what they do may have a profound effect, collectively, on The Biosphere, its effective survival, and with it the conditions of life of any future generations of humans and other biota.
4. Generally to perform all such acts, and to promote all such activities, as are incidental or conducive to the achievement of any — and ultimately all — of the objectives of the Club.

EXECUTIVE COMMITTEE OF THE UGANDA BIOSPHERE CLUB

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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.

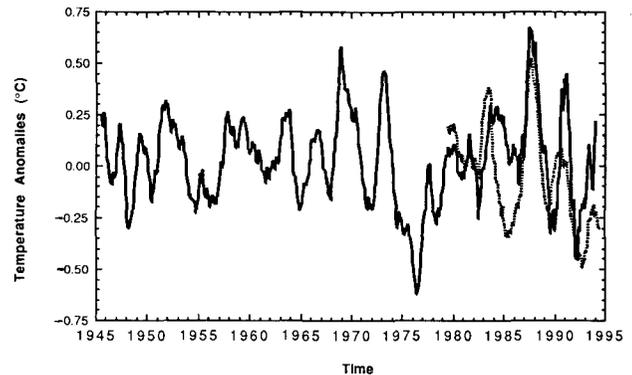


FIG. 1. Ghana monthly temperature anomalies based on the Jones (1994) near-surface air temperatures (solid line) and updated Spencer & Christy (1990) satellite-based lower-tropospheric temperature measurements (dotted line).

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

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