

A PREPROPOSAL TO

The Long-Term Ecological Research Intersite Coordinating  
Committee

For

THE CONTINUED OPERATION OF THE LTER CLIMATOLOGY COMMITTEE

Submitted by

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Niwot Ridge-Green Lakes Valley Site.

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## PREFACE

Over the last three years the LTER Climatology Committee has been very active. It has been operating on a small grant from the Intersite Coordinating Committee and has been charged with three tasks which, with the development of the present proposal, have all been successfully completed.

The tasks were 1) to complete and disseminate a document on the standardization of meteorological observations at LTER sites, 2) to produce a document describing the climate and relevant aspects of the bioclimate at each LTER site, and 3) to produce a proposal for continuing activity of the committee.

It is proposed here to continue the operation of the climate committee and to identify some specific tasks for the next period of operation - specifically January 1988 to June 1990. The tasks identified below have evolved from the ideas of members of the climate committee as a result of our past activities and because of an increasing focus and understanding of both the manner of operation of the ecosystems at our own sites and the LTER program as a whole.

In developing this preproposal ideas were taken from committee members and the chair and further discussed between the chair and the representatives of certain sites (Coweeta, Northern Lakes, Illinois Rivers, Andrews, and Niwot). Other representatives were either not available or not contacted due to time constraints. Following feedback from the Intersite Coordinating Committee at its meeting of August 25-27, a revised proposal will be sent to the representatives of all sites for comment. After the incorporation of these comments a final proposal will be submitted to the Intersite Coordinating Committee.

## THE NATURE AND OBJECTIVES OF THE COMMITTEE 1987 - 1990.

It is proposed that the nature of the committee remains somewhat like it has in the past. In practice although all sites have had representatives on the committee (a practice which will continue), some members have been rather more active than others due to an inevitable variation in level of interest and expertise in bioclimatology. This is acceptable and appears to be an effective way of operation as long as a chair is willing to provide a focal point for the operation. With the enlarged LTER network the focal point and the enthusiasm and talents of representatives from new sites will be very important. Almost all of the business of the committee has been conducted by mail and phone. The committee met physically only once in the last three years - at the Las Cruces Data Management Workshop in January 1986. In the next period the operation will be in a similar manner but one specific workshop meeting is proposed for the summer of 1988.

The principal objectives of the Climate Committee for the next funding period are:

1) To conduct a workshop on climate variability at LTER sites and publish the resulting papers.

2) To produce a document summarizing and comparing the atmospheric chemistry environment of the LTER sites.

3) To organize the revision of the Observation Standardization Document (if necessary) and a second edition of the Climate of LTER Sites to incorporate the new sites in the network.

4) To propose continuing work of the committee into the next funding period.

#### WORKSHOP ON CLIMATE VARIABILITY

Many potential topics for further investigation became apparent from our earlier efforts. Two that seemed to create most interest among committee members were studies on the water balance and studies on climatic variability of the sites. The latter seemed to have slightly more interest and appears more appropriate to pursue in the first instance.

In particular, many sites have already detected some climatic variability of significance to their ecosystems. At Coweeta there seems to be a retreat of forest systems that previously expanded outside their natural range possibly in association with a more "helpful" climate. At the Northern Lakes, El Nino signals are apparent in the dates of freezing of some of the lakes. It has already been determined that El Nino signals are apparent in stream flow volumes in the Pacific Northwest (presumably including the Andrews site). The Niwot site has shown markedly lower temperatures in the first five years of LTER studies than in previous years.

More importantly, studies of climatic variation mesh well with the relationship between the LTER program and developing plans for the International Geosphere Biosphere Program. One of the focal points of the latter is to examine climate variation on the decadal time scale.

Consequently, it is proposed to hold a workshop on climate variability at the LTER sites. The workshop would be at the Niwot Site in the summer of 1988.

At the workshop Climate Committee representatives from all sites, and selected experts external to LTER, would present a paper on climate variability at each site. Each paper would include:

- 1) An analysis of climate variation at their site using the longest meteorological record available,
- 2) A discussion of what constitutes a climatic variation ("change", "excursion", "perturbation") at their site,
- 3) A discussion of the how the variation(s) affect(s) the ecosystem as judged by a) direct evidence, b) indirect evidence, c) speculation.

Also at the workshop there would be considerable time for discussion of what appears to be similarities or dissimilarities in climate variability between the sites.

Following the workshop participants would have a chance to revise their papers. Then they would be resubmitted for publication in a volume which would include a synthesis and intersite comparison chapter.

#### ATMOSPHERIC CHEMISTRY

The very first LTER meteorology committee (directed by Drs Swift and Ragsdale from Coweeta) decided to exclude atmospheric chemistry from its deliberations because this fell under some other committee. This other committee did not function. Consequently it has been suggested independently by two sites that the LTER Climate Committee produce a document summarizing and comparing the atmospheric chemistry environment of the LTER sites.

Such a document would be similar in conception to the climate description publication recently completed. A standard set of variables and parameters would be agreed upon. Values of these for a specified time period and probably for the whole length of record would be reported for each site where available. A brief intersite comparison analysis would be made and included in the resulting document.

This activity would rely heavily on the operation of the National Atmospheric Deposition Program (NADP). The variables selected would be guided by the variables measured and data available in this program. Not all LTER sites are members of the NADP and in these cases the document would consider whatever atmospheric chemistry (nutrient budgeting) studies that have been made for the site.

Given the experience of the LTER Climate Committee operation, and specifically that of its production of a climate description document, such an atmospheric chemistry document would no doubt generate great interest in further intersite studies. It is also conceivable that it would spawn the development of a separate LTER Atmospheric Chemistry (or possibly nutrient budgeting) Committee which would be very beneficial to the LTER program as a whole.

## REVISION OF CURRENT DOCUMENTS

It will be necessary to plan for the revision of both documents which the LTER Climate Committee have so far produced.

It was always planned that the LTER Meteorological Observation Standardization Document would be subject to ongoing revision. This is not anticipated to be a difficult task, but simply one which represents good housekeeping and scientific procedure. It is proposed that a session at the summer 1988 Climate Variability Workshop be set aside for the discussion of this matter. Following this discussion any necessary alterations or addenda will be made and disseminated to current holders of the original document.

With the addition of ten and possibly more new LTER sites there is a need to revise the Climate Description Monograph. It is proposed that a second edition of the monograph be produced using a similar format to the first edition but including comparable data from the new sites and a new, and more sophisticated, intersite synthesis and analysis chapter.

## PROPOSED WORK SCHEDULE

Jan - June 1988.	Preparation of papers for Climate Variability Workshop. Preparation of draft document for format of Atmospheric Chemistry document.
July 1988	Workshop on Climate Variability.
Aug - Dec 1988	Revision of papers on Climate Variability. Collection of Atmos Chemistry data. Revision of Standards Document.
Jan 1989 - Dec 1989	Preparation and publication of documents on Climate Variability and Atmos Chemistry. Dissemination of revision of Standards Document.
Jan - June 1990	Preparation and origination of publication process of 2nd edition of Climate Description monograph.

## APPROXIMATE BUDGET

### Climate Variability workshop and publication

Includes:

Travel and accommodation at Niwot @ \$600 per person for 15 site representatives	9,000
Travel, accommodation, and honorarium for one external expert.	1,000
Purchase of data from National Climatic Data Center	1,000
Hourly support for grad students to work on organization and publication	4,000
Publication	3,000

\$18,000

### Atmospheric Chemistry document preparation and publication

Includes:

Purchase of data from NADP	1,000
Expenses at individual sites for collection and processing of data	1,000
Hourly support for grad student assistance in assembling document	2,000
Publication of document	2,500

\$ 6,500

### Revision of Standards

Includes:

Grad student hourly support for assistance in preparation of revision	1,000
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\$ 1,000

Second Edition of Climate Description  
Monograph

Includes:

Grad student hourly support for data  
processing and preparation  
Publication

3,000  
3,000

\$ 6,000

Copying, Office supplies, mail costs  
and telephone.

\$ 5,000

TOTAL COSTS

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\$ 36,500