

## EDITORIAL

The main foci of the present Newsletter are the Pole-Equator-Pole Transect that runs through Europe and Africa (PEP III) and the International Marine Global Change Study (IMAGES).

PEP III poses formidable logistic and scientific challenges. It spans extremes in terms of existing data.

In many parts of Western and Central Europe the need to coordinate and assimilate the results already available from published studies is at least as urgent as the need for new research.

By contrast, the record of past environmental change in vast areas of Africa is poorly documented and there is an over-riding need to expand the data base through new research. This contrast is mirrored in problems of access and logistic support for field and laboratory research in many African countries. There are also stark contrasts in the types of natural archives available for study along the full length of the transect. In the north, high resolution records, for the Holocene at least, exist in lake sediments, tree rings, peat and documentary records. In many arid and semi-arid regions on either side of the humid tropics, ground-water and discontinuous sedimentary archives are the main sources of data, but they provide a much lower resolution record and one that often fails to bring the paleo-record up to the present day. On the other hand, the lands south of the limit of the last glaciation provide quantitative evidence for the nature of lower latitude climates in glacial times and these are of outstanding significance in climate model development and validation. Moreover, the Sahara and Sahel regions provide some of the world's most dramatic evidence for massive hydrological fluctuations during the Holocene. This forms a vital antithesis to the polar perspective of a relatively stable Holocene climate. The significance of the evidence for major hydrological fluctuations in much of Africa is heightened by the vulnerability of ecosystems and human populations in the region.

Even within Europe, especially in the Mediterranean area where it is often difficult to disentangle human impacts from responses to climatic change, there is an urgent need to reconstruct the antecedents of fragile, stressed ecosystems.

The Workshop held in Bierville in September 1996 was a major landmark in responding to the challenges posed by PEP III. The present Newsletter highlights the outcome of this Meeting and subsequent progress.

The IMAGES programme is co-sponsored by PAGES and SCOR, the Standing Committee on Oceanic Research.

IMAGES is now at the stage where its Science Plan has been published and its organizational structure approved by both SCOR and IGBP. Results of the highest quality from the first IMAGES cruise have already been demonstrated, notably at the Fall AGU Meeting in San Francisco last December. A crucial aspect of the IMAGES strategy is to target high resolution records from parts of the world's oceans of particular significance in terms of energy transfer, productivity or linkage to other aspects of the earth system. Emphases on multiproxy records and on developing connections between marine and terrestrial sequences are of vital importance and here IMAGES is also leading the way and setting new standards for these endeavours.

The present Newsletter profiles some of the recent achievements of IMAGES and outlines its plans for the near future.

FRANK OLDFIELD

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linkages within and outside the PAGES framework, key scientific questions for the PEP III community as a whole, the potential contribution of specific regions and archives to PEP III and the future organization of PEP III activities at regional and national scale. The posters illustrated scientific results from specific sites and methods.

Several working-group meetings were held from which emerged a series of recommendations. Some of these are summarised briefly in the text that follows and they will form the main thrust of the final Workshop Report. The text and illustrative material that follows is selective rather than comprehensive. It is intended to give a flavour of the Meeting, to introduce the PAGES community as a whole to some of the challenges and opportunities that lie ahead for PEP III scientists and to foreshadow the Workshop Report being prepared for publication later this year.

### • Time Stream I studies in PEP III

The report from this group recognized at the outset the desirability of high temporal resolution: seasonal wherever possible, though many valuable records will not achieve better than decadal resolution and some significantly less. Several methodological themes were emphasized, notably:

- the need to determine and make clear the true resolving power of any given archive and the extent to which this may have varied through time,
- the vital role of chronology and the need to adopt a multiple approach to developing the time frame in situations where absolute chronology is not available
- the need for replication of data with a view to reducing noise and revealing clearer records of underlying forcing mechanisms
- the essential role of calibration, in the time domain wherever possible, in order to reduce reliance on spatially derived relationships
- the strong desirability of placing realistic confidence limits on paleoclimate reconstructions
- the problems posed by reliance on the recent period of maximum human impact for calibration of paleodata against modern instrumental records

Emphasis was also placed on the potential importance of hitherto under-utilized archaeological data, especially from sites and regions that can provide high resolution records and good chronologies. This suggestion was further amplified in plenary session with special reference to the tufa deposits of the Kharga Oasis (Egypt) and the region of the Egyptian Sahara and the Nile Valley.