

**SCOR WORKING GROUP 47
OCEANOGRAPHIC PROGRAMMES DURING FGGE**

Report of Chairman: H. Stommel

May 1977

Achievements

1. Draft Report for September 15, 1977

I report that we are about to complete the first part of our terms of reference:

“To develop plans for comprehensive oceanographic programmes associated with FGGE . . .”

During June and July 1977 all three Equatorial Panels* will meet to produce draft plans, and these will be combined into a single draft report dated September 15, 1977. This will represent the culmination of our planning efforts, begun February 2, 1974. As a foretaste of what SCOR may expect, the preliminary draft report of the Atlantic Panel Reunion held in Miami (February – March 1977) under the chairmanship of Ph. Hisard, dated 20 April, 1977, identified 26 ships for participation in the Atlantic equatorial region alone, among which there are already *seven* major research vessels clearly identified by name of vessel, principal scientist, specific research plans and ship tracks. This Atlantic draft report will be refined in Sao Paulo during July 1977. Panel Chairmen J. Swallow (Indian) and B. Taft (Pacific) will produce equivalent draft reports during June and July 1977 at La Jolla.

2. FINE Workshop**

The increase in interest in equatorial studies has encouraged theoreticians to hold a workshop during June and July 1977 in La Jolla on problems of equatorial dynamics in all three oceans, under the chairmanship of Dr Dennis Moore and general sponsorship of the US National Science Foundation. SCOR is funding the travel for some participants in this workshop. It is hoped that the theoretical results of this workshop will help stimulate the design of a major equatorial experiment during the 1980's (see recommendation 3 below).

Constraints and Limitations

The planning of the oceanographic programme for FGGE has encountered certain constraints, about which it may be helpful to be explicit:

(i) There is no *single unifying* scientific oceanographic idea or theory that can be offered as overall basis for design of the oceanographic programme and that is compatible with a uniform grid of 5° spacing in the meteorological plans for FGGE.

(ii) Physical oceanographers in many nations must compete with scientists of other oceanographic disciplines for the use of their ships and do not have exclusive control of ship operations.

* The Equatorial Panel of the Indian Ocean includes a MONEX component.

** FINE means FGGE Index Norpax Equatorial Workshop.

(iii) FGGE is not the single most important experimental opportunity of the decade for oceanographers. It is simply a rather special interlude of a few months, but most oceanographic research programmes continue over many years. FGGE therefore does not dominate the attention of the international research community of oceanographers in the way that it does for meteorologists.

(iv) The decision making processes that determine what commitments of ships and scientists can be made differ from one country to another. This is reflected in the specific nature of the plans as defined in the reports, and to a large extent explains the looseness of the organization and unevenness in other respects of the reports. There is real difficulty of communication between individual scientists in academic institutions on one hand, and authorities in large ministries and naval establishments on the other, which have been almost unbridgeable within the informal framework of our Panels.

(v) In some cases proposed national commitments already appear to exceed the funds available, and it is uncertain how at the national level these dilemmas will be resolved and which parts of the programmes will be dropped for financial reasons.

(vi) The draft plans as yet do not make effective use of the TWOS. As we know research oceanographers have in the past made only little use of Weather Ships occupying certain stations for very long periods of time, and it perhaps is not to be expected that they will know how to make use of Weather Ships that are going to be in location for only a few months at most.

(vii) Some plans are contingent upon obtaining permission from coastal countries to work in their waters. An example is the MONEX programme for studying cooling of the Arabian Sea during the southwest monsoon. At present some of these permissions have not yet been obtained, and members of the Panels do not have any guidance or ideas about how to obtain the permission. This is a very serious constraint, the solution of which appears to be outside the competence of Working Group 47.

(viii) A volunteer group of scientists such as that which constitutes Working Group 47 and its Panels cannot adequately meet the demands of WMO for frequent reports, other paper work and providing representation at numerous meetings.

(ix) Oceanographers are unfamiliar with and unable to cope with requirements for data handling and processing to which meteorologists are accustomed.

Opportunities for IOC and GAO to render assistance

It appears to us that IOC and GAO/WMO may be able to assist in furthering the oceanographic programme for FGGE in many ways. The following are some suggestions of possibilities:

(i) In obtaining permission to work in territorial waters, clearance for port visits and customs.

(ii) In clarifying information about the possible oceanographic use of TWOS by providing details about possibilities for oceanographic use of TWOS and initiating correspondence between oceanographers and the TWOS operating authorities.

(iii) In intercepting and redirecting requests for reports, correspondence, attendance at meetings etc. which are inappropriate for SCOR WG 47 and its panels to undertake. This is simply an appeal to make efficient use of the scientists' time, so that they can direct their efforts toward the pressing scientific problems that they have in implementing their actual contributions to the field experiment.

(iv) In assuring a data exchange within time requirements that are consonant with oceanographic practice.

Requests and Recommendations

(i) The Chairman of WG 47 recommends that SCOR clarify the second part of the terms of reference:

“ . . . and to assist other appropriate international and national bodies in the implementing of such programmes.”

As explained in the letter of Stommel to Döös of March 26, following the issuance of the September 1977 Report, the oceanographic programme will enter into an operational or “implementing” phase. Clearly there will be great demands for many decisions, a great deal of management requirements, etc. during the operational phase. The equatorial experiments involved are much greater than the GATE experiment or the International Indian Ocean Expedition. If the terms of reference as they presently stand were to be interpreted broadly it would put an impossibly heavy responsibility on WG 47 – one that it cannot discharge satisfactorily as presently constituted. Already the EC Intergovernmental Panel on FGGE (14-18 February 1977; JOC-XIII Doc 5) has “expressed concern that the rate at which the oceanographic programme is being developed is not commensurate with that of other elements of the Global Experiment.” WG 47 can only present its Panel Reports, and its coming September 1977 report as evidence of whether or not this concern is justified. Whatever the truth may be, at present WG 47 does not see any possible way in which it can accelerate the development of the programme beyond what it already plans to achieve.

Perhaps the wording of the second part of the terms of reference could be amended to read:

“ . . . and to *advise* appropriate international and national bodies in the implementing of such programmes.”

(ii) WG 47 *requests* SCOR, IOC and GAO/WMO to clarify the terms of reference of the responsibilities of IOC staff members and the new FGGE oceanographic programme liaison officer at Geneva, in particular to determine whether it will be possible for them to undertake some of the tasks mentioned under the preceding section.

(iii) WG 47 *requests* the new COG to consider plans for a major field experiment in Equatorial Dynamics in one (unspecified as yet) ocean, to extend over at least two years, during the 1980's as an opportunity for oceanographic research which is ripe for further development. Recent discoveries of deep layered current systems trapped on the equatorial wave guide, and rather short time series of current measurements that show evidence of waves moving along the equator, and the rapidly developing body of theoretical knowledge

of such systems suggest that a determined effort to understand Equatorial Dynamics may be the most significant immediate task that merits a large concerted effort in the near future. This proposed experiment is too long extended in time, and too restricted geographically to be compatible with FGGE plans, and so should be planned for following years. It may also be an opportunity for oceanographers to invite meteorologists to participate in a predominantly oceanographic experiment.