
Preface

For more than two decades SCOPE's Projects on Biogeochemical Cycles has synthesized scientific information of the complex and dynamic network of flows and interactions of carbon, nitrogen, sulfur and phosphorus between various compartments of the global environment. The *modus operandi* of these projects has been to ask leading scientists working on mechanisms, sources, sinks and fluxes of the various cycles to review current knowledge and to subject these literature studies to critical review in interdisciplinary workshops. After several such workshops the accumulated information is synthesized, edited and published as SCOPE reports in the Wiley series.

The publication of this volume on *Particle Flux in the Ocean* brings to a close a phase of the Global Carbon Cycle project which has concentrated on understanding the flow, interaction and fate of carbon and other nutrients from land via rivers to lakes and to deep oceans. In 1977 SCOPE, following a meeting in Ratzeburg, Germany, decided to launch a large program on various aspects of carbon cycling. Initially five Units and Subunits were established. These were:

- Carbon Unit in Stockholm (Bert Bolin) to deal with *atmospheric carbon cycle and modeling aspects*. This unit was to concentrate on interactions with other cycles and later, on increased CO₂ and other greenhouse gases. It was to have a profound effect on global environmental policy.
- Subunit in Woods Hole (George Woodwell) dealing with the *role of vegetation* in the carbon cycle;
- Subunit in Brussels (Paul Duvigneaud) dealing with *mapping issues*;
- Subunit in Germany (K. Meyer-Abich) dealing with *socioeconomic aspects*. These Subunits each produced one workshop and one book and dissolved at their own call.
- Last, but not least, was the establishment of the Carbon Unit in Hamburg (Egon Degens). It was given the task of dealing more specifically with *carbon in seas* and the important task of the coordination of the carbon network, especially the establishment of an international documentation center on the biogeochemical carbon cycle.

Thus, in December 1978 a contract was signed between SCOPE, UNEP and Hamburg University for the establishment of the SCOPE/UNEP Carbon Unit. Prof. Egon Degens headed a team of researchers initially composed of Stephan Kempe, Venugopalan Ittekkot, Alejandro Spitzzy, Walter Michaelis and How Kin Wong, and attracted a large number of graduate students, visiting scholars and academics.

The first workshop held by his group in March 1979 in Hamburg dealt with *carbon in the sea*. It established priorities for further research emphasizing that

data on the sources, sinks and fluxes of carbon in major world river systems was urgently needed and beyond that *a study of carbon transport from land to sea*. In contrast to many other SCOPE projects the Carbon Unit had an active research arm and thus Egon Degens set about creating a vast network in developed and developing countries for the collection and analysis of data on these systems. During 1980–82 the first project on *carbon cycle in major world rivers* was prepared through a review of existing knowledge, establishment of main research issues and delineation of an agenda and also methodologies for a world-wide research effort. Between 1982–88 their work concentrated on *Carbon and Nutrient Transport in Major World Rivers*, this was followed in 1987–89 with *Carbon and Nutrient Transport in Lakes and Estuaries*, and finally in 1991–95 by *Particle Flux in the Ocean*.

During most of this time the Carbon Unit was directed, inspired and sustained by Egon Theodor Degens, a scientist of immense productivity and creativity. He and his research group focused on the biogeochemical cycling of elements and on anthropogenic effects in these processes. In this capacity and through the Carbon project they have trained and inspired many biogeochemists who continue this work around the world. Degens greatly enjoyed interdisciplinary meetings where ideas were traded and explored. His special interest was in creating active functioning research institutions in developing countries and this may be his greatest legacy. Unfortunately he died in 1989 just as the synthesis of the first two parts of the program were completed. His colleagues in the unit, notably Venugopalan Ittekkot and Stephan Kempe continued the project and worked to ensure that the task was completed.

The productivity of this unit has been prodigious (see Bibliography - Carbon Unit). This alone would ensure that their work was successful but the main legacy of the Hamburg C unit will be the manner in which they provided inspiration and allowed hands on experience in interdisciplinary data collection and synthesis to many young scientists from all over the world.

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