RAPPORT DE SYNTHESE DU GROUPE DE TRAVAIL VII-7

W. G. VII-7 Report

"OCEANOGRAPHIE ET ZONES COTIERES"

"Oceanography and coastal zone"

par / by

H. OCHIAI

K.A. ULBRICHT

A) DEVELOPMENT OF GROUP

A Working Group of Commission VII, n°4, entitled "Oceanography and Sea Ice", was founded under the auspices of Professor Dr. G. HILDEBRANDT at the 1978 Commission VII symposium on "Remote Sensing for Observation and Inventory of Earth Resources and the Endangered Environment".
Founding the group were Professor H.G. GIERLOFF-EMDEN of Munich, Germany, Professeor FRASSETTO of Venice, Italy, Doctor C. ROMEO-NEDWED of Barcelona, Spain, Doctor R. THOREN of Stockholm, Sweden, Doctor K.A. ULBRICHT of Oberpfaffenhofen, Germany, and a few other interested persons.

With a few hundred letters mailed around the world, H.G. GIERLOFF-EMDEN and K.A. ULBRICHT made publicity for the newly founded group and asked for papers for the 1980 Hamburg ISP Congress. This proved to be very successful, as can be seen from the Hamburg conference proceedings. In Hamburg, DR K.A. ULBRICHT was made chairman of the group, with PROF H.G. GIERLOFF-EMDEN and PROF FRASSETTO being co-chairman.

After the routine change of presidency of Commission VII from PROF HILDEBRANDT to MR L. LAIDET of Toulouse, France, MR LAIDET generally kept the partitioning of Commission VII, however, decided to split up the working group "Oceanography and Sea Ice" into two groups : "Oceanography and Coastal Zone" being working group 7 and "Ice and Snow", working group 8.

Working group 7 is now co-chaired by DR H. OCHIAI of Japan, and DR K.A. ULBRICHT of Oberpfaffenhofen, Germany, the latter one representing more the European part of the Community.

The group 7 of Commission VII now is so well established, that we did have no trouble getting papers of good quality, and we registered 19 papers for working group 7, of which 3 papers were given to other working groups because of conflicting topics.

B) SATELLITE REMOTE SENSING IN REGARD TO OCEANOGRAPHIC PURPOSES

The technical feasability of viewing the oceans from space, obviously has been established during the last years, and results have been documented in literature.
Aims and purposes of viewing the oceans via satellite in a systematic manner can be associated with or attached to three general categories :

1. the study of the circulation, heat content, and horizontal heat flux of the global oceans, their susceptibility to the atmosphere and their influence on climate.

2. the investigation and the study of the primary productivity of the ocean and it's susceptibility by the oceanic circulation and the atmosphere, as well as its influence on the marine food web, CO_2 uptake, and climate,

3. the caracteristics of sea ice, how they are influenced by the atmosphere and the ocean, and in turn they influence climate.

During the last years there have been fundamental technological developments influencing future remote sensing (I), generally and also with regard to oceanographic remote sensing :

I. the development of the space shuttle and its reusable principal component, the orbiter vehicle.

II. the multi mission modular spacecraft (MMS), a basic vehicle for future unmanned missions in low earth orbit, to be launched and retrieved by the shuttle.

III. the tracking and data relay satellite system (TDRSS), consisting of two geostationary communication satellites and a single ground station in White Sands, New Mexico. The system serves to relay communication from the space craft, and data vice versa.

IV. the thematic mapper of LANDSAT 4, started on July 16, 1982 having an instantaneous field of view of 30 m in the visible and short wave infrared wavelength bands, and.

V. the global positioning system, consisting of an array of ultimately 18 separate satellites, serving to establish the position of any vehicle on the ground or in space within several meters in all three coordinates.

The estimated impact of ocean remote sensing on commercial operations adds up to many millions of dollars : offshore oil and gas, environmental forecasting, marine transportation, deep ocean mining, and marine fisheries, ...

Spacerborne instruments for viewing the sea can be grouped into two different categories, active and passive instruments. Active instruments, lasers, lidars, radars, send out a signal and observe the reflected signal, intensity, angle of reflection, etc... The passive instruments like radiometers, observe the natural radiation. Wavelengths of observed radiation are the visible light, 0.4 to 0.8 µm, the infrared, 3.5 to 4.0 µm and 10 to 12 µm, and the radio signals with wavelengths between 1 and 10 cm.

The instantaneous field of view and the spectral distribution for resource satellites between 1972 and 1984 differ as much as 79 m for the LANDSAT satellite MSS, 825 m for the Coastal Zone Color Scanner and 10 m for the French SPOT satellite, to be started in the mid eighties.

C) OVERVIEW OF TOULOUSE SYMPOSIUM PAPERS, OUTLOOK TO RIO DE JANEIRO

Authors of the papers presented at the Toulouse Symposium in regard to the working group "Oceanography and Coastal Zone" came from Canada (1), France (4), Italy (1), Japan (4), Mexico (1), United Kingdom (1), USA (1), USSR (2), and the Netherlands (1).

Nearly all of the papers dealt with passive radiation instruments, 9 in coastal zone area, 4 in the open sea, 3 other.

A working group meeting was held during the first afternoon, with members attending voluntarily. About ten attendees were discussing reliability of data, data bank (standardization), comparison of parameters, future use of active instrumentation, on board data compression, image processing and their probable impact on the oceanographic research from space.

A special "piggy back" meeting of working group 7 into one of the larger symposia between now and the next general conference in Rio de Janeiro was discussed. Topics, date and place of this special workshop will be decided on by the two chairman DR ULBRICHT an DR OCHIAI, after careful consideration of possibilities and will be made known to the community.