O-III7

SOME SOURCES OF EXTINCTION OF DIFFERENT SPECTRAL REGIONS

Mira MOROVIC
Institute of Oceanography and Fisheries, Split (Yugoslavia)

During the intensive period of MEDALPEX project optical measurements were analyzed in relation to hydrographic and dynamic characteristics of the northern Adriatic for the stations shown in fig. 1.Total extinction coefficient is the sum of the absorption and scattering coefficients for pure water, suspended particles and dissolved substances but only scattering on suspended particles and absorption on suspended particles and yellow substrance were significant for relative extinction coefficients wich were calculated. Nonselective scattering on particles of diameter larger than 1μm is equal in all spectral regions of visible light but the extinction of red light is caused mainly by scattering on these particles (Joseph, 1955). It is shown in this paper that this may not be true for sea water of the northern Adriatic. Mean extinction coefficients for all stations for both cruises were presented in fig. 2.a while situations for March and May were shown at fig. 2.b and c. It may be seen that the extinction of red light is the smallest, extinction of green light is somewhat higher while extinction in blue is the highest one. Subtracting the extinction of red light from green and blue extinctions the part caused by absorption is obtained. From the absorption curve for yellow substance (Jerlov, 1968) it can be seen that it absorbed blue light about five timas stronger than the green light. Taking this into account by further subtracting of the amount $5x\Delta a_{yG}$ from blue extinction the remaining part is attributed to the absorption from organic particles. It may be seen that the absorption from particles was stronger in March than in May, while scattering and absorption by yellow substance was higher in May.The same analysis was made after distributing the data into two regions according to the possition of the frontal zone show by hydrographic data of this region (Zore-Armanda et al,m 1983). In this new arrangement (fig. 3 and 4) different characteristics were found and previous procedure cannot be applied.There are indications for the additional sources of extinctions in red and green light. Relative absorption maximum was observed in red light (Smodlaka, 1973) for chlorophyl a, while most probably the extinction caused by organic particles is not sufficiently known and needs further investigations. It is also possible that there are differences in the absorption spectra of dominant phytoplankton groups in different seasons: nanoplankton is most abundant in stratification period while relative abbundance of microplankton is increased in the mixing period (Revelante, 1975, Smodlaka, 1985).

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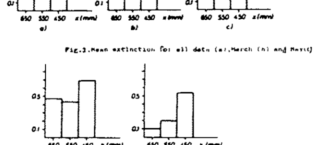

Fig.2.Mean extinction for all data (a),March (b) and May(c)

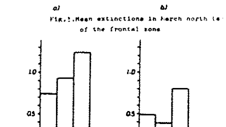

Fig.3.Mean extinctions in March north (a) and south (b) of the frontal zone

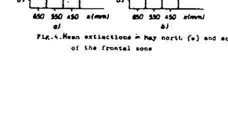

Fig.4.Mean extinctions in May north (a) and south (b) of the frontal zone

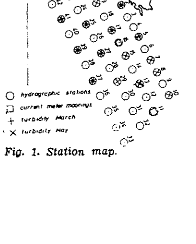

Fig. 1. Station map.

O-IV1

SURFACE FLUXES AND AIR-SEA INTERACTIONS

Antonio NAVARRA

Estimates of the transfers of sensible heat, moisture and momentum are important forcing functions for the ocean circulation. Though a proper flux description is thought to be crucial to the simulation of the general circulation, mesoscale features may be heavily affected too. The POEM experiment provides a unique opportunity for studying the impact of these atmospheric parameters in a particularly data-rich context. In order to properly introduce the topic, a brief description of the climatology of the Mediterranean region will be given with emphasis on the surface/low level winds characteristic. The existing data produced by the operational centers will be reviewed and to some extent compared. Climatological data sets of wind stresses will also be reviewed. The topic of the surface layer and its relation to the PBL and to the OBL will be introduced.

After the data survey, the attention will focus on the theories of the surface layer profiles that enable us to calculate the fluxes at the surface. The classical Prandis formulation of bulk aerodynamical laws and the similiarity (Monin-Obukhov) theory will be discussed. Some peculiarity of the formulation of the roughness length over sea and over land will be pointed out. A brief overview of the status of recent developments in the field will be given. The implementation of these paramaterizations in actual coupled models will then be analyzed and some indication for future development of the interface physical paramaterization will be attempted.

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