



On the Relative Abundance Determination of the Suspended Sediment Composition in the Surface Waters, Using MODIS Images.

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Many attempts has so far been assigned to the Suspended Sediment Concentration (SSC) estimation, using satellite imageries in which, almost in all of them the positive relation between SSC and spectral radiance were the basis of the techniques.

In a feasibility study of assessment of SSC in the Bahmansheer estuary at the North-East of Persian Gulf, a three months field experiment were conducted having MODIS sensor on board of Terra over-passed the scene simultaneously. 57 samples in fifteen trips were collected. Also the environmental parameters such as atmospheric visibility, air and water temperature, current direction and the speed of water at the sampling point, wind speed and humidity were measured simultaneously.

The collected samples were analyzed thoroughly by measuring density, diameters of the sediment particles and determining the sediment composition. It was found that the sediment were composed of Quartz, Kaolinite, Orthoclase, Chlorite, Calcite, Gypsum, Muscovite, Halite, Anhydrite, Apatite, Biotite, and low amount of Albite. It is believed that the spectral characteristics of these compositions are partly responsible for the reflected and/or scattered energy in different bands. The particles diameters were ranging from less than one to more than 100 micrometers. The effects of the presence of each substance in the samples, on the reflection in first 7 MODIS bands were investigated.

In this work attempts has been devoted to unmix the effects of different constituents in the suspended sediments. Also Rayleigh and Mie scattering effects of the suspended sediments were considered and promising results were achieved. It seems plausible

to be able to determine the relative abundance of each composition in the suspended sediments.