Light regime and components of turbidity in a Mediterranean coastal lagoon

The underwater light regime of a Mediterranean coastal lagoon (Albufera des Grau, Balearic Islands) was studied during four years in orderto characterise the spatial and temporal variations in the light attenuation coefficient and to assess the relative contribution of the different water components to total light attenuation. High temporal variability was observed in light attenuation coefficients, but the lagoon was spatially uniform.
Percentage bottom irradiance in relation to specific requirements for the dominant macrophyte species (Ruppia cirrhosa) was used as an indicator of benthic light limitation. Macrophyte light limitation was expected to occur in the deepest areas of the lagoon during winter, the most turbid period of the annual cycle. During the macrophyte growing season, higher bottom irradiances were observed but a significantpercentage of the lagoon benthos (17% in spring and 7% in summer) was expected to be light limited.
In the deepest areas of the lagoon (>2 m) changes in bottom irradiance were related more to variations in the light attenuation coefficient than to variations in water level. The partitioning of the light attenuation coefficient showed that phytoplankton was the main driver of the temporal dynamics of K, but only accounted for 44% of total light attenuation on average. TAt low values of K, attenuation by DOC was responsible for up to 75% of total attenuation. An equation to predict K from the concentration of water components explained 93% of the variance.

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