



Seasonal variations of phytoplankton community in relation to environmental factors in a protected meso-oligotrophic southern Mediterranean marine ecosystem (Mellah lagoon, Algeria) with an emphasis of HAB species

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Abstract The spatial and temporal variation of phytoplankton communities including HAB species in relation to the environmental characteristics was investigated in the protected meso-oligotrophic Mellah lagoon located in the South Western Mediterranean. During 2016, a biweekly monitoring of phytoplankton assemblages and the main abiotic factors were realized at three representative stations. Taxonomic composition, abundance, and diversity index were determined. In total, 227 phytoplankton species (160 diatoms and 53 dinoflagellates) were inventoried. There was a clear dominance of diatoms (62.9%) compared with dino-flagellates (36.8%). Diatoms dominated in spring and dinoflagellates

developed in summer and early autumn in Mellah showing a marked seasonal trend. Data showed that the dynamic of the phytoplankton taxa evolving in the lagoon was mainly driven by temperature and salinity. For the first time, a number of potentially toxic species have been identified, including 2 diatoms (*Pseudo-nitzschia* group *delicatissima*, *Pseudo-nitzschia* group *seriata*) and 5 dino-flagellates (*Alexandrium minutum*, *Alexandrium tamarense/catenella*, *Dinophysis acuminata*, *Dinophysis sacculus*, *Prorocentrum lima*). These harmful species could threaten the functioning of the Mellah lagoon and human health and require the establishment of a monitoring network. Finally, our study suggests that the observed decrease of the phytoplankton diversity between 2001 and 2016 could result from the reduction in water exchanges between the lagoon and the adjacent coast following the gradual clogging of the channel.

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