CIESM Congress Session : Atmospheric chemical pollutants

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Moderator's Synthesis

Monitoring data and modelling results presented in this session provided evidence that nutrient inputs from atmospheric deposition may lead to increased primary production in specific areas of the Mediterranean Sea. However, participants noted that there is still uncertainty on the magnitude of the impact of atmospherically transported nutrients on the Mediterranean marine environment and that related research should be maintained. It was underlined that in order to understand the magnitude of the potential impact, it is important to know more accurately the load of nutrients (and soluble Fe) transported to the Mediterranean. Actual atmospheric deposition models are using precipitation estimations based on satellite data and available meteorological models. However, in order to improve the accuracy of estimations on nutrients loads transported to the marine environment, it is important to gather more data on the volume of precipitation at the open sea.

One presentation provided evidence that atmospheric transportation of microorganisms may impact the ambient microbial population in the marine environment, through viral infection and/or predation and may also influence C and N fixation. The influence of airborne microorganisms on the receiving marine environment is an issue that needs further study. The discussion pointed out recent evidence that atmospheric deposition may also be an important pathway for the transport of microplastics (mainly microfibers) to the surface microlayer of the sea. Important information on the distribution pattern of microplastics in the ocean could be gathered by including microplastics determination in the protocols of wet deposition studies.

Participants noted that certain important issues were not presented in the Session. Specific mention was made to the atmospheric transfer of POPs to the Mediterranean Sea, as well as to the deposition and methylation of Hg in the marine water column. Studies in the open ocean suggest that although anthropogenic Hg emissions are relatively constant for the last decade, Hg burden in intermediate ocean waters will continue to increase maybe due to cycling of “legacy” Hg between compartments. Given the natural and anthropogenic Hg enrichment in the Mediterranean basin, further studies would be needed to better understand the transfer, cycling and transformation of Hg in the Mediterranean atmospheric/marine environment.

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