

ATMOSPHERIC DYNAMIC PROCESSES AFFECTING THE CYCLE OF MERCURY IN THE MEDITERRANEAN REGION

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Most research on atmospheric mercury has focused on sources and deposition to terrestrial watersheds and freshwater lakes. Recently, several findings have highlighted the need for information on atmospheric mercury and its cycling in the marine environment. Modelling studies and measurement campaigns over the Mediterranean sea region suggest Hg^0 (g) is oxidised in the MBL to a more easily deposited form such as RGM, thereby increasing local and regional deposition. MERCYMS is an EU funded project aimed to investigate the major patterns affecting the cycle of mercury within and between the atmospheric and marine ecosystems of the Mediterranean basin by integrating modelling and experimental tasks. The main goals are: (1) Improvement in modelling the fate of Hg in the marine environment, specifically its translocation between environmental compartments; (2) Assessment of the qualitative/quantitative relationships between atmospheric input – direct marine discharges, the aquatic Hg cycle and re-emission to the atmosphere; (3) Development of an integrated modelling system for the implementation of EU Directives; (4) Application of this modelling system to various socio-economic scenarios to evaluate emission reduction strategies and control policies. Chemical and physical processes involved in the biogeochemical cycle of Hg and its compounds were investigated during intensive cruise campaigns in the Mediterranean in 2003 and 2004. This paper presents our understanding to date of the atmospheric Hg measurements performed during the campaigns and the key measurements required to improve our understanding of the Hg cycling in the marine environment.