EMS7/ECAM8 Abstracts,
Vol. 4, EMS2007-A-00255, 2007
7th EMS Annual Meeting / 8th ECAM

Measurement and modelling of the exchange of ammonia gas between atmosphere and aquatic ecosystems

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Ammonia has bi-directional flux between the atmosphere and aquatic ecosystems especially when water pH>7, where both dissolved ammonia and ammonium ions exist. A compensation model was applied to calculate the flux of ammonia within the air and the water. Compensation point concentrations were computed by the Henry-law taking into account the decreasing effect of dissolved carbon dioxide on the solubility of ammonia. The model was applied for the years of 2002-2003 for Lake Balaton, Hungary (mean pH of the water is similar to the sea, pH=8.5). Model was validated by direct gradient flux measurements carried out on campaign basis. Results show, in the years of investigation ammonia was near to equilibrium with the water. Model was also applied for estimation of ammonia flux between the atmosphere and the Baltic Sea.