



Dynamics of Phragmites Pattern using Multi-temporal Satellite Earth Observation and its Relation to Soil-ecohydrological Processes

T. Alexandridis (1), T.L. Crisman (2), E. Lazaridou (1), V. Takavakoglou (1), I. Giannelos (1), G. Kouloumtouri (1) and G.C. Zalidis (1)

(1) Lab of Applied Soil Science, Lab of Remote Sensing and GIS, Faculty of Agronomy, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece, (2) Howard T. Odum Center for Wetlands, University of Florida, P.O. Box 116350, Gainesville, FL 32611

(thalex@agro.auth.gr / Fax: +302310 998738 / Phone: +302310 998739)

During recent decades, Lake Koronia (Greece) has undergone severe degradation as a result of human activities around the lake and throughout the basin. Surface and groundwater abstraction, and pollution from agricultural, industrial and municipal sources are the major sources of degradation. The gradual decrease of water level was the main factor that accelerated the expansion of the Phragmites reed bed, mainly by seeds germination on recently exposed sediment, as well as expansion by rhizomes. This study aimed at monitoring the multi-temporal alterations of Phragmites reed bed, as related to soil-ecohydrological processes acting in the lake. Specific objective was to map the pattern of colonization and retreat using a 30 years time-series of satellite observations. The second objective was to examine the relations of Phragmites pattern with the area favourable for colonization, which was defined by soil-hydrological criteria. The selected criteria were maximum depth of water, maximum elevation above water level, and area of exposed sediment. The resulting time-series was presented in tabular form as well as thematic maps. The preliminary results indicate that colonization was a slow process before the exposure of sediment, and was vastly accelerated after that point.