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# Investigating the potential of floating mires as record of palaeoenvironmental changes

C Zaccone (1), P Adamo (2), S Giordano (3), and TM Miano (4)

(1) Dept. of Agro-Environmental Sciences, Chemistry and Plant Protection, University of Foggia, Foggia, Italy (c.zaccone@unifg.it), (2) Dip. di Scienze del Suolo, della Pianta, dell'Ambiente e delle Produzioni Animali, Università di Napoli Federico II, Portici, Italy, (3) Dip. di Biologia Strutturale e Funzionale, Università di Napoli Federico II, Napoli, Italy, (4) Dept. of Biology and Chemistry of Agro-Forestry and Environment, University of Bari, Italy

Peat-forming floating mires could provide an exceptional resource for palaeoenvironmental and environmental monitoring studies, as much of their own history, as well as the history of their surrounds, is recorded in their peat deposits.

In his *Naturalis historia* (AD 77–79), Pliny the Elder described floating islands on Lake Vadimonis (now Posta Fibreno Lake, Italy). Actually, a small floating island (ca. 35 m of diameter and 3 m of submerged thickness) still occurs on this calcareous lake fed by karstic springs at the base of the Apennine Mountains.

Here the southernmost Italian populations of *Sphagnum palustre* occur on the small surface of this floating mire known as "La Rota", i.e., a cup-formed core of *Sphagnum* peat and rhizomes of Helophytes, erratically floating on the water-body of a submerged *doline*, annexed to the easternmost edge of the lake, characterised by the extension of a large reed bed.

Geological evidence point out the existence in the area of a large lacustrine basin since Late Pleistocene. The progressive filling of the lake caused by changing in climatic conditions and neotectonic events, brought about the formation of peat deposits in the area, following different depositional cycles in a swampy environment. Then, a round-shaped portion of fen, originated around lake margins in waterlogged areas, was somehow isolated from the bank and started to float.

Coupling data about concentrations and fluxes of several major and trace elements of different origin (i.e., dust particles, volcanic emissions, cosmogenic dusts and marine aerosols), with climate records (plant micro- and macrofossils, pollens, isotopic ratios), biomolecular records (e.g., lipids), detailed age-depth modelling (i.e., $^{210}$Pb, $^{137}$Cs, $^{14}$C), and humification indexes, the present work is hoped to identify and better understand the reliability of this particular "archive", and thus possible relationships between biogeochemical processes occurring in this floating bog and environmental changes.