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Sr-Nd ISOTOPES OF MOSSES (Hypnum cupressiforme Hdw.) AS A TOOL FOR STUDYING THE ATMOSPHERIC POLLUTION IN NORTH-CENTRAL ITALY

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The use of biomonitors, such as mosses, lichens etc, is nowadays becoming more and more popular to detect the nature of heavy metals and metalloids, radioisotopes and organic molecules deposited by atmospheric pollution. Among radioisotopes, Sr-Nd isotope ratios have so far been poorly determined in mosses worldwide. Therefore, we have measured Sr-Nd isotopic ratios in several samples of mosses from an Apennine-Adriatic sea transect in northern Italy. The Sr-Nd isotope data are the first ones, reported for Italian mosses.
87Sr/86Sr ratios and Nd range from 0.7100 to 0.7117 and from -8.5 to -10, respectively; both isotopic ratios do not distinguish among the various sample provenances, suggesting a common source, although distinguished, for Sr and Nd. However, the measured Sr isotope ratios identify no typical sources; so they likely result from the contributions of different sources. Radiogenic Sr rich rocks (“old” rocks) likely represent a source of Sr, while less radiogenic, both geogenic and anthropogenic, materials constitute the other potential sources. In contrast, the Nd of the mosses are similar to those of the soils from the area; thus, local deflation probably accounts for the main contribution of Nd to the atmospheric deposition. As a whole, the Sr-Nd isotopes may help to characterize wet and dry depositions from the atmosphere and, thus, are a valuable tool in the study of environmental problems, and, lastly, may yield a contribution to the territorial planning.