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PROGRAMMA

Program

The emerging issue of microplastics: ongoing investigation in water and sediments of Subalpine lakes

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Widespreading presence of microplastics in aquatic environments is of increasing ecological concern because of their chemical persistence and their potential effects in biota. Most studies have been focused on marine environments and only a few investigations have been performed on microplastics in freshwater ecosystems. The present work is addressed at identifying the different microplastic polymer types and to characterize their occurrence, features, fate, and the evolution of their abundance in four South-Alpine lakes (Iseo, Idro, Ledro, Garda) in Northern Italy. To achieve this goal, microplastics will be sampled from sediment cores collected from two different locations for each lake. In addition, water samples will be collected at different depth along the water column and analyzed for the presence of microplastics. As these lakes are characterized by different features in relation to watershed extension, hydrological characteristics and human impacts, their study can provide a useful framework to assess the occurrence of microplastics as related to environmental variability. This investigation will provide first insights on the role of lakes as possible "sink" of microplastics, through an accumulation and segregation in deep sediments, or as a "source", due to a possible preferential distribution in the water column in relation to climate-related turnover patterns that could again bring large amounts of particles to the surface layers. The samples will be analyzed with innovative techniques (Raman spectroscopy and FTIR), which will allow the polymer identification of very small particles. This project will contribute to fill the knowledge gap regarding the abundance and distribution of microplastics in lake ecosystems, and will attempt relating types, occurrence and possible sources of microplastic in the watershed.