Project acronym: CIRCE

Project title: SearChIng for EmeRging Contaminants in Sub-Arctic rivErs

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Kevo Subarctic Research Station (Finland)

CIRCE aims at quantifying emerging contaminants (including microbes and chemicals) in different environmental compartments of the Teno River area (Finland). Biological contaminants are hot issues in the pandemic climate we are experiencing, but it is a theme of great concern for researchers interested in the observation of the occurrence of bacterial antibiotic resistance, and the spread out of infectious diseases. With respect to chemical contamination, emerging contaminants such as pharmaceutical products and micro(nano)plastics have engendered significant scientific concern. In particular, plastics could serve as a carrier for other pollutants adsorbed and/or entrapped on their surfaces. They also constitute a novel and underexplored type of substrate for microbial colonization and transportation, including pathogenic and antibiotic-resistant bacteria and genes. Since many years the applicants are interested in cold-adapted microbial communities and polar areas and focused the research activities on the relationships between chemical and biological contamination. The CNR-ISP, together with Pisa University and SZN in Messina, has been involved in research focusing on the relationship between human contamination and pollutant removal by bacteria in the Pasvik River (Norway) within previous INTERACT TA (i.e. MicroRem, SedMicro, SpongePOP and BIP). The CIRCE proposal intends to contribute to the existing knowledge about the Arctic ecosystem functioning and quality by extending our observations to an Arctic area that includes also a second river in the Northern Fennoscandia, i.e. the Teno River, thus allowing a comparison with results from previously granted INTERACT TA projects on the Pasvik River. Analyses are addressed to abiotic (e.g. water) and biotic (benthic invertebrates and fish) matrices.