

**Call for application for research scholarships
for post-graduate international candidates**

RESEARCH PROJECT N. 21

Title
Environmental flows assessment in Intermittent Rivers and Ephemeral Streams (IRES)
Scientific responsible (name, surname, role)
Paolo Vezza, Assistant Professor (paolo.vezza@polito.it)
Short description of the research activity (max 250 words)
<p>The main aim of the research activity is to develop a methodology for environmental flows (e-flows) assessment in Intermittent Rivers and Ephemeral Streams (IRES). Although IRES hold considerable potential for sustaining biodiversity and taxonomic richness at the catchment scale, hydro-ecological processes in such intermittent ecosystems are poorly documented in literature, and no comprehensive instrument is currently available to quantify (i) the ecological impacts of hydro-morphological alterations and (ii) define the e-flows to be released from water abstractions.</p> <p>The e-flows methodology developed within the research scholarship will be based on recent progresses in the fields of fluvial geomorphology, habitat-hydraulic modeling and aquatic ecology developed in the European Cost Action SMIRES (Science and Management of Intermittent Rivers and Ephemeral Streams, www.smires.eu). Specifically, mesohabitat simulation models integrated with a multi-scale hierarchical framework of stream geomorphic units will be used to quantify the ecological impacts of hydro-morphological alterations.</p> <p>The research will be focused on:</p> <ol style="list-style-type: none">1. developing advanced mesohabitat models in IRES (Research Task 1, RT1) for different taxonomic and functional groups (fish and macroinvertebrates) to describe the dynamic of biological responses in IRES;2. investigating new frameworks to represent IRES at broad spatial and temporal scales (RT2) to reveal ecological patterns, whole-system properties and morphological dynamics;3. devising innovative techniques for e-flows definition in IRES (RT3), able to describe the behavior of intermittent ecosystems and quantify environmental impacts;
Specific requirements (experiences, skills)
Base knowledge on hydrology, hydraulics, aquatic ecology, and environmental management of rivers
Website of the research group (if any)
www.diat.polito.it
https://paolovezza.altervista.org (personal web page of the scientific responsible)
Keywords (min 3, max 6)
Environmental flows, intermittent rivers, hydromorphology
Research Area (max 1)
<ul style="list-style-type: none">• Environment, Land, Infrastructure