University of Genova

Department of Earth, Environmental and Life Sciences

Doctorate Course in Earth and Environmental Science and Technology

Curriculum in Earth science

Università degli Studi di Genova

SIAT

Dottorato in Scienze e Tecnologie per l'Ambiente e il Territorio

Research Theme n 2

Titolo Studio idro-geomorfologico in ambito ligure applicato alla rete di multi-servizi finalizzata al monitoraggio integrato, alla gestione e alla mitigazione di fenomeni geo-idrologici in contesto di cambiamento climatico Title Hydro-geomorphological research in Liguria applied to the multi-service network for integrated monitoring, management and mitigation of geo-hydrological hazards in context of climate change
Tutor: Prof. Francesco Faccini (DISTAV-Unige), faccini@unige.it Co-tutors: Prof. Giorgio Boni (DICCA – Unige), giorgio.boni@unige.it Prof.ssa Adriana Del Borghi (DICCA – Unige), adriana.delborghi@unige.it
Program description including the formation program Due to climate change, frequent and extreme events have effects that impact on land and population, depleting natural resources and important assets (water, gas, sewerage pipelines). In a hilly and mountainous region such as Liguria, the geo-hydrological phenomena mitigation is carried out both realizing conventional and natural (NBS - Nature based-solutions) engineering works and integrating monitoring plans with specific cartography for recognized and potential phenomena. The PhD student, co-working with IREN SPA, a multi-utilities company, will be asked to develop an original and unpublished study focused on the interference between surface water/groundwater reservoirs, their own network pipelines and the geo-hydrological phenomenologies (landslides and floods) which can also cause physical and chemical degradation of the water resource. Therefore, it will be possible, for the first time, to obtain environmental data through the combination between geomorphological and hydrogeological perspectives as tools against climate change effects. Ground and remote sensing (satellite interferometry, GNSS data) and conceptual and numerical models will be used to comprehensively describe the phenomenological complexity collecting, elaborating, analyzing and interpreting environmental data. In IREN, the PhD student will be the promoter for the exchange between science and business practices. Conversely, the PhD student will learn to optimize the knowledge acquired in the decision-making procedures.
Company hosting the PhD: Iren SpA
Financial support: funds prof. Francesco Faccini (Bando Fondazione AMGA 2021, progetto H2020 Reconect, progetto Interreg Maritime Trig-Eau)
Tutor's publications (max 3) **Boni, G.**, De Angeli, S., Taramasso, A.C., Roth, G. (2020) - *Remote sensing-based methodology for the quick update of the assessment of the population exposed to natural hazards*. Remote Sensing, 2020, 12(23), 3943. Paliaga, G., Luino, F., Turconi, L., Marincioni F., **Faccini F.** (2020) – *Exposure to geo-hydrological hazards of the Metropolitan Area of Genoa, Italy: a multi-temporal analysis of the Bisagno Stream.* Sustainability, 12(3), 1114. Perini, K., Magrassi, F., Giachetta, A., Moreschi, L., Gallo, M., **Del Borghi, A.** (2021) - *Environmental sustainability of building retrofit through vertical greening systems: A life-cycle approach*. Sustainability, 13(9), 4886.