



PhD in INGEGNERIA AMBIENTALE E DELLE INFRASTRUTTURE / ENVIRONMENTAL AND INFRASTRUCTURE ENGINEERING - 39th cycle

Research Area n. 2 - Transport Infrastructures and Geosciences

PNRR 118 PA Research Field: GROUNDWATER MODELING FOR GROUNDWATER
RESOURCE MANAGEMENT IN LOMBARDY REGION

Monthly net income of PhDscholarship (max 36 months)

€ 1195.5

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Public authorities increasingly feel the need for new tools for the management of their territory and in particular of water resources management. Hydrogeological risk (PNRR Mission 2 Component 4) is one of the environmental issues that the Lombardy Region is facing in a context of climate change which is increasing the intensity and frequency of hydrogeological phenomena. This is impacting the Lombard territory and its resources, including groundwater resources, whose future availability is currently under threat.

The doctorate case study will mainly concern the Adda-Ticino groundwater basin and the main aim is to improve the groundwater flow model previously developed in the MODEL-MI project. Further objectives are i) improve the knowledge of its hydrogeological structure; ii) assess the groundwater resources availability in the area; iii) evaluate the feasibility to apply at basin scale the adaptation measures investigated in the running MAURICE EU project; iv) support Lombardy Reg. in groundwater resource management.

Methods and techniques that will be developed and used to carry out the research

The PhD candidate will carry on the work starting from hydrogeological data gathering and participating to the



	MAURICE project field investigation activities. Then a conceptual and numerical model development phase will start, improving the existing groundwater flow model (MODFLOW-USG). Finally, climate change adaptation solutions will be investigated and tested at basin scale through the developed numerical model, assessing the scale effects of such solutions.
Educational objectives	The doctoral program offers advanced training in groundwater flow modeling and hydrogeological data analysis. The main objective is the education of future public authorities professionals and scientists who can design and develop autonomous research plans and activities with critical expertise in environmental and hydrogeology field, with the specific competence of developing numerical models to support adaptation strategies in a changing climate.
Job opportunities	The experience and skills developed through this doctoral program allows career opportunities as analysts or managers in environmental policy authorities and environmental agencies, senior consultants for engineering companies, researcher in universities/research centers, and R&D departments.
Composition of the research group	0 Full Professors 1 Associated Professors 4 Assistant Professors 1 PhD Students
Name of the research directors	Luca ALBERTI

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad



Amount monthly	597.75 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Regione Lombardia - Direzione Generale Territorio e Protezione Civile - Struttura Risorse Idriche - https://www.regione.lombardia.it
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	To be defined
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): approximately 1630,00 euros per PhD candidate per year, on average. <u>Teaching assistantship</u> (availability of funding in recognition of support to teaching activities by the PhD student): there are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations. <u>Computer availability and desk availability</u>: individual assignment for the entire career.