



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DICEA
DIPARTIMENTO
DI INGEGNERIA CIVILE
E AMBIENTALE

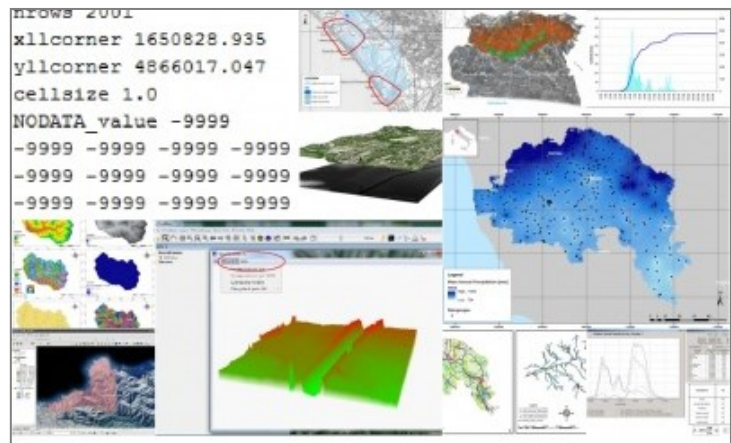
SPATIAL DATA LABORATORY

The Spatial Data Laboratory (LDT) is the reference point of DICEA (Department of Civil and Environmental Engineering) for the territorial and environmental data processing with Geographic Information Systems (GIS). The main focus of the lab is the definition of frameworks aimed at:

- **monitoring** and **control** of the interaction between the environmental system and the human activities;
- **assessment of impacts**;
- **planning of interventions/actions** for **environmental risks mitigation**;
- **protection of natural resources**.

Fields of activity

- analysis and mitigation of environmental risk;
- protection and enhancement of natural resources;
- territory monitoring and defence;
- infrastructures management.



Since its inception, in 1990, the LDT has been very functional within the DICEA both for the software testing and for the variety of people involved - researchers, university students, trainees, graduate students and post-doc, contract workers, foreign guests, etc.- as well as for the interdisciplinary research projects here developed.

Currently, the LDT has two sections: a scientific section mainly used for research purposes, and an education section. Within the latter, support to the development of bachelor, master and PhD theses and project works as well as traineeship and laboratory exercise activities, is provided. The students involved are those enrolled in degree courses of the sector Civil, Building and Environmental Engineering.

EDUCATION

Educational support in the disciplines of the following degree courses:

- Civil, Building and Environmental Engineering (bachelor/I cycle degree),
- Civil Engineering (master of science/II cycle degree)
- Building Engineering (master of science/II cycle degree)
- Environmental Engineering (master of science/II cycle degree).

Post-graduate Master in Geographic Information Systems for the management and the monitoring of the territory.

International Research Doctorate in Civil and Environmental Engineering.

At the LDT, curricular and extra-curricular internship can be performed, as well as stages under the programs **ERASMUS+ Studio e Traineeship**.

RESEARCH ACTIVITY

Recent research projects

Regional frequency analysis of extreme rainfall in Tuscany. Agreement on scientific cooperation between the Tuscany Region and DICEA-UNIFI for Research Activity for the mitigation of hydraulic risk in Tuscany Region-Macro-activity B: Hydrological Modeling-activity B1: rainfall regionalization”.

Hydrology and Hydrogeology: Agreement on scientific cooperation between the Central Tuscany Interporto SpA and DICEA-UNIFI for studies in support of the environmental impact assessment procedure related to the expansion project.

Water over the wall: feasibility study of irrigation systems in Biddu enclave in Palestine. Project financed by the fund "L'Acqua è di tutti" - Water Right Foundation.

UNIFI research projects on: *hydrology and territory hydraulic protection; hydrological extreme events; risk assessment for the promotion of risk perception and adaptation strategies.*

IDROVAT: Hydropower and enhancement of the territory. Project co-funded by the Tuscany Region - PRAA 2004-2006-Actions system for research and innovation.

Study and research activity in the investigation of environmental impact of the Giudea reservoir in the small town of Gello (PT) and actions for hydraulic risk mitigation on the Ombrone Pistoiese creek in the city of Pistoia. Research agreement with the Land Reclamation Consortium of the Ombrone Pistoiese and Bisenzio river basins.

The LDT collaborates with the following research organizations:

CERAFRI – Centro per la Ricerca e l'Alta Formazione per la prevenzione del Rischio Idrogeologico (*Center for Research and Higher Education for the Prevention of Hydrogeological Risk*).

CINID - Consorzio INteruniveristario per l'IDrologia (*Interuniversity Consortium for Hydrology*)

CIST – Centro Interuniversitario di Scienze del Territorio (*Interuniversity Centre of Territorial Sciences*).

EURO FRIEND - Flow Regimes from International Experimental and Network Data.

UNESCO Chair - Prevention and sustainable management of geo-hydrological hazards

WRF – Water Right Foundation

Interdepartmental Research Unit

Progetto Bioregione Urbana

Transizione energetica e ambientale

WaVe - Water & Vegetation

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Research Team

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Eng. Ilaria Defina (Scholarship Holder)

Eng. Matteo Isola (PhD student)

Eng. Tommaso Pacetti (PhD student)