

## SYNOPSIS

Francesco Laio is a water scientist with expertise in hydrology, water resources assessment, environmental modelling, and statistics. He holds a degree in Environmental Engineering (from Politecnico di Torino) and a Ph.D. in Water Engineering (from Politecnico di Milano), and now serves as a Full Professor in Hydrology. His scholarly activities are documented by more than 160 publications, including 130 papers in Scopus-indexed peer-reviewed international journals, and a book published by Cambridge University Press. His papers have received nearly 5500 citations in total (according to Scopus), 4900 if one excludes self-citations. His h-index of 42 (source: Scopus) indicates that his work is generally well regarded. In the past few years he has served as the coordinator of 11 national and international research projects (including a FIRB project and a ERC Consolidator Grant, see list below) for a total budget of 2.7 M€. The scholarly production resulting from this research is interdisciplinary, as evidenced by the diversity of the journals in which it has appeared: his papers have been published in 38 different journals belonging to 18 different ISI-categories. A transdisciplinary approach is also the trademark of his activity as a project leader, with the fruitful coordination of research consortia involving researchers in economics, physics, agronomics, etc.

## ACADEMIC APPOINTMENTS

Research Associate, 1999-2000, Princeton University (USA)

Assistant Professor, 2004-2010, DIATI, Politecnico di Torino (Italy)

Associate Professor, 2011-2014, DIATI, Politecnico di Torino (Italy)

Full Professor, 2014-present, DIATI, Politecnico di Torino (Italy)

Department Head, 2019-present, DIATI, Politecnico di Torino (Italy)

## TEACHING ACTIVITY

He has been teaching at the Politecnico di Torino (student evaluations available upon request) since 2004. His teaching portfolio includes courses in Hydrology, Water Resources Management and Planning, Hydraulic Infrastructures, Hydrology and climatology, Land and environment protection, Climate and Socio-Economic Change,

## ADVISING ACTIVITY

70 out of his 130 Scopus papers have been written with one of his Ph.D. students. Ph.D. students advised or co-advised: Stefania Tamea (2004/2006), Alberto Viglione (2004/2006, winner of Best Dissertation Award, AMGA foundation), Paola Allamano (2005/2007), Lorenzo Alfieri (2005/2007, winner of Best Dissertation Award, SIMA foundation), Fabio Borgogno (2006/2008), Daniele Ganora (2007/2009), Elisa Bartolini (2008/2010), Stefania Borra (2009/2011), Stefania Tron (2011/2013), Anna Botto (2012/2014), Mohammed Azmat (2012/2014), Alberto Croci (2014/2017), Roberta Paranunzio (2014-2017), Marta Tuninetti (2015-present), Irene Soligno (2016/2019), Carla Sciarra (2017-present), Benedetta Falsetti (2019-present).

He also served as the advisor of the following post-doc researchers: Daniele Ganora (2010-2015); Stefania Scarsoglio (2011); Stefania Tamea (2013-2015); Paolo Cavagnero (2015-2016), Tiziano Distefano (2016-2019), Ignazio Giuntoli (2017-2018), Elena Vallino (2019-present).

## MEMBERSHIP OF EDITORIAL BOARDS

Water Resources Research (IF 4.397), edited by Wiley for the American Geophysical Union, 2008-present.

Hydrology and Earth System Sciences (IF 3.148), edited by Copernicus for the European Geophysical Union, 2007-2015.

Advances in Water Resources (IF 3.221), edited by the Elsevier Editorial System, 2010-2017.

Guest editor for the special issue "Advances in Statistical Hydrology" for Hydrology and Earth System Sciences, 2010.

Guest editor for the special issue "The challenge of understanding the water-food nexus complexity" for Advances in Water Resources, 2017.

## REFeree ACTIVITY

Referee and reviewer for various scientific journals including: Water Resources Research, Journal of Hydrology, Nonlinear Processes in Geophysics, Physics and Chemistry of the Earth, Journal of Hydrological Sciences, Advances in Water Resources, Hydrology and Earth System Sciences, Geophysical Research Letters, Physica A, Proceedings of the Royal Society of Sciences Journal, Physical Review E, Proceedings of the National academy of Science of the US, Scientific Reports.

Reviewer for national and international projects funded by MIUR and the US National Science Foundation, The Swiss National Science Foundation, The Dutch Science Foundation, The European Research Council (ERC).

Member of the evaluation panel of the FIRB projects for Physical Sciences and Engineering, year 2015.

## OTHER SERVICE TO THE SCIENCE COMMUNITY

Chair of the Subdivision on Estuaries, Wetlands and Eco-Hydrology of the European Geophysical Union in the years 2007/2011.

Member of the "Statistics in Hydrology Working Group", and of the organizing committee for the pertinent annual meeting (2008-2015).

Convener for the "How to write (and publish) a scientific paper in Hydrology" at each year's EGU general meeting (2008-2012).

Coordinator of the organizing committee for the "diffuse seminar" on flood-hydrology, hold in 20 Italian towns in November 4, 2016 to celebrate the 50<sup>th</sup> anniversary of Florence 1966 flood.

Coordinator of the GRAL group (<http://www.gruppoalluvioni.it/>), an organization promoting actions and projects to reduce flood risk in Italy.

## SCIENTIFIC PROJECTS COORDINATED

A list of the finalized projects wherein he has served as the project coordinator and/or scientific responsible includes 11 national and international projects. The total funded amount is about 2.7 M€. The most important ones are the following:

- Design floods estimation in Piedmont, with particular reference to catchments closed by dams, Funded by ENEL spa, Period 2006-2008, Coordinated with P. Claps, Project Value 144.000 €
- FLORA: Flood estimation in complex orographic areas for Risk mitigation in Alpine space, Funded by the EU (Interreg IV), Period 2010-2011, Coordinated with P. Claps, Project Value 150.000 €
- RISKMAT: Natural Risk management in mountain areas, Funded by EU (Interreg IV), Period 2010-2011, Coordinated with P. Claps, Project Value 150.000 €
- VIWAN, The global virtual water network – Environmental and Socio-economic implications, FIRB project funded by MIUR, Period 2014-2016, National coordinator, Project Value 770000 € (project value for the POLITO research unit 244.000 €)
- CWASI, Coping with water scarcity in a globalized world, ERC Consolidator grant #647473 funded by the EU, Period 2015-2019, Project Value 1.222.000 €

#### TECHNOLOGY TRANSFER ACTIVITY

His research activities have brought to the development of regional-scale flood and rainfall frequency analysis tools that are currently used by ARPA Piemonte and Regione Calabria for their institutional activities. Similarly, a regional tool for estimating the flow duration curves at ungauged sites is used by Regione Piemonte in official applications. An experimental instrument for measuring the snow water equivalent is currently being tested by ENEL Produzione SPA for possible applications in water resources availability assessments. He is one of the inventors of a “Method for measuring a particle precipitation rate, and device thereof”, patent N. TO2015A000029. He serves as the main scientific advisor of the startup Waterview, a spinoff company of Politecnico di Torino founded in 2015 which develops and commercializes innovative tools for the monitoring of environmental variables.

#### DISSEMINATION AND COMMUNICATION ACTIVITIES

His research activity has quite often attracted the attention of the media, including WIRED for his research linking nightlight data to flood risk, and TuttoScienze, l’Avvenire and RAI television for his work on the virtual water trade, and La Repubblica. WIRED and others for his activity on innovative rainfall sensing with WaterView SRL.

He has been recently involved in several scientific communication events, including participation in public debates on water-related issues at the International Book Fair (Salone del Libro) and at the International Food Fair (Salone del Gusto).

#### AWARDS

Torricelli Prize (5000 €) for the best young Italian scientist in Water Engineering, 2006. The prize was awarded by the Italian Water Engineers Association (GII), under the recommendations of an international selection committee.

Recipient, in years 2007, 2008, 2009, and 2010, of the award for excellence in research granted by the Polytechnic of Turin.

The associate professorship he has been holding was created by his institution in recognition of his achievements, based on an assessment of the scholarly record of all the Assistant Professors at the Politecnico di Torino (9 positions for 250 competitors).

Excellence in reviewing award, *Advances in Water Resources*, 2013.

Water Resources Research 2015 Editors' Choice Award for the paper "Drivers of the virtual water trade" (doi: 10.1002/2013WR014707)

### **National and international grants**

- 1) Methods for verifying the quality of design flood estimates in North Western Italy, Funded by National Research Council, Period 2005, Coordinated with P. Claps, Project Value 27.500 €
- 2) Uncertainty in the estimation of design floods, Funded by the Italian Ministry for University and Research, Period 2006-2008, Project Value 26.500 €
- 3) Design floods estimation in Piedmont, with particular reference to catchments closed by dams, Funded by ENEL spa, Period 2006-2008, Coordinated with P. Claps, Project Value 144.000 €
- 4) Assessment of agricultural water demands in the river Sesia Catchment, Funded by Consorzio Ovest-Sesia Baraggia, Period 2007-2008, Coordinated with P. Claps, Project Value 50.000 €
- 5) Regional-scale analysis of water use from hydropower production plants, Funded by Regione Piemonte, Period 2008-2010, Coordinated with P. Claps, Project Value 80.000 €
- 6) Methods for quantifying observational uncertainty in hydrological variables and implications for design flood estimation, Funded by the Italian Ministry for University and Research, Period 2008-2010, Project Value 22.500 €
- 7) Regional flood frequency analysis in Calabria, Funded by Regione Calabria, Period 2009-2010, Coordinated with P. Claps, Project Value 37.500 €
- 8) FLORA: Flood estimation in complex orographic areas for Risk mitigation in Alpine space, Funded by the EU (Interreg IV), Period 2010-2011, Coordinated with P. Claps, Project Value 150.000 €
- 9) RISKMAT: Natural Risk management in mountain areas, Funded by EU (Interreg IV), Period 2010-2011, Coordinated with P. Claps, Project Value 150.000 €
- 10) VIWAN, The global virtual water network – Environmental and Socio-economic implications, FIRB project funded by MIUR, Period 2014-2016, National coordinator, Project Value 770000 € (project value for the POLITO research unit 244.000 €)
- 11) CWASI, Coping with water scarcity in a globalized world, ERC Consolidator grant funded by the EU, Period 2015-2019, Project Value 1.222.000 €

## **National and international acknowledgements**

The scientific activity by the PI is internationally well recognized, as testified by the high number of citations his publications has received (3750 from the Scopus database, after exploding self-citations), by the frequent invitations to speak at international conferences (a list is reported in the CV), and by his role in the editorial board of some of the most important journals in the hydrological field (Water Resources Research, Hydrology and Earth System Sciences, Advances in Water Resources). At the national scale, his strong expertise in hydrological risk assessment, ecohydrology and global hydrology is widely recognized by his community, as testified by the Torricelli award he received in 2006 from GII (Gruppo Italiano di Idraulica), by his leading role in the activities of the GRAL group (<http://www.gruppoalluvioni.it/>), and by the frequent invitations he receives to give lectures and seminars at national-scale events. The transdisciplinary nature of his research has also attracted the attention of other scientific communities (for example, he provided the keynote lecture at the Italian Society for Remote Sensing national conference) and of the non-scientific community (see the CV for some details on media appearances and communication activities).