

Curriculum Vitae**Personal Data**

Name **GIORGIO ROTH**
Citizenship Italian, German
Birth date October 9, 1956
Present position Full Professor of Hydrology and Hydraulic and Coastal Structures and Director
Department of Civil, Chemical and Environmental Engineering
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Education Civil Engineer, University of Genoa, 1982, cum laude
Ph.D. in Hydrodynamics, University of Padova, 1987
Languages Italian, English

Experience

Research and operational experience in the fields of hydrology, hydraulics and hydraulic structures with main emphasis on geomorphology, fluvial dynamics, natural drainage network formation and dynamics, flood formation and propagation, water resources planning and management, and hydraulic plants. Teaching experience in University courses at the Universities of Genoa and Perugia and in a number of seminars and professional post-graduation courses. Author or co-author of more than 150 papers published in international refereed journals or in international proceedings in the fields of hydrology and hydraulic structures.

Record

- 1982/90 Research and teaching activity, Institute of Hydraulics, Faculty of Engineering, University of Genoa;
- 1984/86 Ph.D. student, Course in Hydrodynamics, Faculty of Engineering, University of Padova;
- 1989/90 Temporary teaching appointment, course of Hydraulic Structures, University of Perugia;
- 1990/92 Assistant professor, Faculty of Engineering, University of Genoa;
- 1992/96 Associate professor, Faculty of Engineering, University of Perugia;
- 1996/00 Associate professor, Faculty of Engineering, University of Genoa;
- 1996/04 Member, Teaching committee, Ph.D. Course in Hydraulic Engineering, University of Padova;
- 1996/00 Director, Centro di ricerca Interdipartimentale in Monitoraggio Ambientale (CIMA), University of Genoa;
- 1997/00 Member, Committee for Soil Conservation, Provincia di Savona;
- 1998/04 Member, Scientific council, GNDICI, Italian National Research Council (CNR);
- since 00 Full professor, Faculty of Engineering, University of Genoa;
- 2000/07 Director, Centro di ricerca Interuniversitario in Monitoraggio Ambientale (CIMA);
- 2002/04 Member, Mission Advisory Group, European Space Agency, EGPM Mission;
- 2005/11 Member, Teaching committee, Ph.D. Course in “Scienze e tecnologie dell’informazione per il monitoraggio dei sistemi e la gestione dei rischi ambientali”, University of Genoa;
- since 07 Member, Scientific Board and Board of Directors, H2CU - Honors Center of Italian Universities, University of Rome “La Sapienza”;
- 2012/13 Member, Teaching committee, Ph.D. Course Fluidodinamica e processi dell’ing. ambientale, Univ. Genoa;
- since 13 Member, Teaching committee, Ph.D. Course Civil, Chemical and Environmental Eng., Univ. of Genoa;
- since 13 Director, Department of Civil, Chemical and Environmental Eng., Polytechnic School, Univ. of Genoa;
- since 15 Member, Academic Senate, University of Genoa.

Affiliations

- Italian Engineering Association;
- Italian Hydro-technical Association;
- American Geophysical Union;
- European Geophysical Union;
- International Association of Hydrological Sciences;
- American Meteorological Society;
- International Association of Wildland Fire;
- Centro Lamberto Cesari, Perugia, founder.

For all living beings on Earth water is an essential element: it means life. My education and career are entirely involved with water, starting from my undergraduate studies in Civil engineering, back in 1975. At that time I selected hydrology, hydraulics and water resources as key elements of my education: central points to which I have tied all other components of the curriculum. Since then, going through PhD studies and all academic levels, from assistant to associate professor and up to the present full professor status, the focus of my career to the world of water, with all connected issues, remains central.

The competences I have developed can be viewed from different perspectives: education, basic and applied research, and research management. In my opinion, a strong relationship exist between these aspects: research should be performed within a well defined scheme, taking into account application's results, including students' education and professionals' continuous training.

Education experience refers to more than 30 years of teaching graduate and undergraduate courses at the Universities of Genoa and Perugia and in a number of seminars and professional post-graduate courses.

My present research interests belong to the fields of Hydrology, Hydrometeorology, Hydroclimatology, Environmental monitoring, Remote sensing, and Flood risk identification and management.

In these fields, I share an intense international scientific cooperation with researchers of the University of Barcelona, the Ecole des Mines de Paris, Koeln University, Colorado State University, Princeton University, MIT, the European Space Agency, CNR and NASA. Research work is documented by more than 150 papers published in international refereed journals or in international conference proceedings.

My research activity was funded by the European Union (INTERREG projects on Environmental risk management and Flood prevention for land management), the Italian National Research Council (GNDCI projects on the Prediction of extreme hydro-meteorological events and on the Study of the hydrological response of small catchments), the Italian National Civil Protection Department (Program on flood scenarios design), the Italian Insurance Association (SIGRA project on the Study and development of an integrated flood risk management system for insurance and re-insurance purposes), the University of Genoa (Satellite data assimilation for the estimation of mass and energy land/atmosphere fluxes), the Regione Piemonte (Application of methodologies of hydro-meteorological forecast for environmental risk evaluation), the Regione Val d'Aosta (Rainfall and discharge regionalization and Hydrological modelling for hydro-geological risk prevention), DHI Water and the Environment (development of DRiFt, a linear semi-distributed rainfall runoff model based on a geomorphologic approach; DRiFt is fully integrated in the MIKEZERO environment), and supported by the European Space Agency through the European contribution to the Global Precipitation Mission by NASA and JAXA.

Aspects related to developing Countries where tackled in teaching courses on Hydrological bases and Applied hydraulics, in both cases finalized to water resources management - WARREDOC International Advanced Courses on Water Resources Management - and on Water resources for developing Countries, Mini and micro hydro systems analysis and planning, Hydro energy in rural insulated areas and Appropriate machinery for developing Countries - SIES courses on Local energy planning, Mini hydro and Energy in agriculture. Within these courses, case studies were made on water resources quantification, allocation and use in developing Countries, including water policy and strategic optimization. The relevance of some aspects motivated further advances. This is the case for studies related to the planning of hydropower development, in which emphasis is on reliability aspects of small plants in developing Countries, and in studies investigating possible hydrological changes produced by land reclamation projects, with main reference to East African Countries. Specific applied research projects were developed for the design and construction of the hydraulic model of the Baardhere Dam, Somalia – funded by the Italian Minister for Foreign Affairs – and to identify suitable technologies for the irrigation of arid zones in Egypt – funded by the European Union.

For more than 10 years, from 1996 to 2007 with confirmation steps in 2000 and 2003, I have served as director of CIMA – Centro di ricerca Interuniversitario in Monitoraggio Ambientale – a public research and technology cooperation body. From July 2013, with a confirmation step in 2015, I serve as director of the Department of Civil, Chemical and Environmental Engineering, Polytechnic School and, from November 2015, as member of the Academic Senate of the University of Genoa.

Selected Scientific Publications

GNECCO G., MORISI R., ROTH G., SANGUINETI M. & A.C. TARAMASSO, **Supervised and semi-supervised classifiers for the detection of flood-prone areas**, *Soft Computing*, DOI 10.1007/s00500-015-1983-z, 2016.

ROTH, G., DEGIORGIS M. & A.C. TARAMASSO, **Flood hazard detection at the catchment scale from remote sensed information**, In: Moramarco T., Barbetta S. & L. Brocca (eds), *Floris Melone Memorial book Advances in Watershed Hydrology*, Water Resources Publications (WRP), LLC, ISBN: 978-1887201858, 498 pp., Chapter XVI, 2015.

MANFREDA S., NARDI F., SAMELA C., GRIMALDI S., TARAMASSO A.C., ROTH G. & A. SOLE, **Investigation on the use of geomorphic approaches for the delineation of flood prone areas**, *Journal of Hydrology*, 517(9): 863–876, doi:10.1016/j.jhydrol.2014.06.009, 2014.

LOMAZZI M., ENTEKHABI D., PINTO J.G., ROTH G. & R. RUDARI, **Synoptic preconditions for extreme flooding during the Summer Asian Monsoon in the Mumbai Area**, *Journal of Hydrometeorology*, 15(1): 229-242, doi: 10.1175/JHM-D-13-039.1, 2014.

DEGIORGIS M., GNECCO G., GORNI S., ROTH G., SANGUINETI M. & A.C. TARAMASSO, **Flood hazard assessment via threshold binary classifiers: The case study of the Tanaro River Basin**, *Irrigation and Drainage*, 62(2): 1-10, doi:10.1002/ird.1806, 2013.

DEGIORGIS M., GNECCO G., GORNI S., ROTH G., SANGUINETI M. & A.C. TARAMASSO, **Classifiers for the detection of flood prone areas from remote sensed elevation data**, *Journal of Hydrology*, doi: 10.1016/j.jhydrol.2012.09.006, 2012.

GHIZZONI T., ROTH G. & R. RUDARI, **Multisite flooding hazard assessment in the Upper Mississippi River**, *Journal of Hydrology*, doi: 10.1016/j.jhydrol.2011.06.004, Vol. 412–413, 101–113, 2012.

GHIZZONI T., ROTH G. & R. RUDARI, **Multivariate skew-*t* approach to the design of accumulation risk scenarios for the flooding hazard**, *Advances in Water Resources*, 33, 1243–1255, doi: 10.1016/j.advwatres.2010.08.003, 2010.

MUGNAI A., GUZZETTI F. & G. ROTH, **Outcomes of the 9th EGU Plinius Conference on Mediterranean Storms**, www.nat-hazards-earth-syst-sci.net/10/875/2010/, *Natural Hazards and Earth System Sciences*, 10, 875-879, 2010.

MUGNAI A., GUZZETTI F. & G. ROTH (Eds.), **Mediterranean Storms**, www.nat-hazards-earth-syst-sci.net/special_issue81.html, *Natural Hazards and Earth System Sciences*, 2007.

GIANNONI F., ROTH G. & R. RUDARI, **The value of the Italian civil protection system in integrated water management for the Mediterranean environment**, in: Meire, P., Coenen, M., Lombardo, C., Robba, M. & R. Sacile (Eds.), *Integrated Water Management: Practical Experiences and Case Studies*, Springer, ISBN 978-1402065507, 390 pp., 33-50, 2007.

GHIZZONI T., GIANNONI F., ROTH G. & R. RUDARI, **The role of observation uncertainty in the calibration of hydrologic rainfall-runoff models**, *Advances in Geosciences*, 12, 33–38, 2007.

BONI G., FERRARIS L., GIANNONI F., ROTH G. & R. RUDARI, **Flood probability analysis for un-gauged watersheds by means of a physically based hydrologic model**, *Advances in Water Resources*, 30, 2135–2144, 2007.

GHIZZONI T., LOMAZZI M., ROTH G. & R. RUDARI, **Regional scale analysis of the altimetric stream network evolution**, *Advances in Geosciences*, 7, 79-83, 2006.

GABELLANI S., GIANNONI F., PARODI A., RUDARI R., TARAMASSO A.C. & G. ROTH, **Applicability of a forecasting chain in a different morphological environment in Italy**, *Advances in Geosciences*, 2, 131-134, 2005.

GIANNONI F., ROTH G. & R. RUDARI, **A procedure for drainage network identification from geomorphology and its application to the prediction of the hydrologic response**, *Advances in Water Resources*, 28(6), 567-581, 2005.

- RUDARI R., ENTEKHABI D. & G. ROTH, **Large-scale atmospheric patterns associated with mesoscale features leading to extreme precipitation events in Northwestern Italy**, *Advances in Water Resources*, 28(6), 601-614, 2005.
- TESTUD J., MUGNAI A., JOE P., BAUER P., KIDD C., ROTH G. & M.C. LLASAT, **European Contribution to Global Precipitation Measurement**, Reports for Mission Selection, The Six Candidate Earth Explorer Missions, European Space Agency, ISBN: 92-9092-962-6, ISSN: 0379-6566, 2004.
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- GIANNONI F., ROTH G. & R. RUDARI, **Can the behaviour of different basins be described by the same model's parameter set? A geomorphologic framework**, *Physics and Chemistry of the Earth*, 28(6-7), 289-295, 2003.
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- CALORE C., LA BARBERA P. & G. ROTH, **On the use of informational entropy in GIS**, In: Remote Sensing and Geographic Information Systems for Design and Operation of Water Resources Systems, M. F. Baumgartner, Schultz, G.A. e I. Johnson (eds), IAHS Publ. No. 242, 237-244, 1997.
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- ROTH G., LA BARBERA P. & M. GRECO, **On the description of the basin effective drainage structure**, *Journal of Hydrology*, 187(1-2), 119-135, 1996.
- MARCHI E., ROTH G. & F. SICCARDI, **The Po: centuries of river training**, *Physics and Chemistry of the Earth*, 20(5-6), 475-478, 1996.
- LA BARBERA P. & G. ROTH, **Comment on "Power law distribution of discharge in ideal networks"** by H. De Vries et al., *Water Resources Research*, 32(8), 2613-2614, 1996.
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- ROTH G., **Flood hazard control by multisensor storm tracking in Mediterranean areas**, In: Hydrological and Hydrogeological Risks, by R. Casale (ed.), European Commission, Office for Official Publications of the European Communities, Publication EUR 16799 EN, Luxembourg, 171-201, 1996.
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