

PERSONAL INFORMATION **Mauro GIUDICI**

## PRESENT POSITION

Full Professor of Geophysics at Dipartimento di Scienze della Terra “A. Desio”, Università degli Studi di Milano

## WORK EXPERIENCE

From March 1, 2012  
to present-day

**Professore ordinario (Full professor)**

Università degli Studi di Milano, Italy

From November 1, 1999  
to February 29, 2012

**Professore associato (Associate professor)**

Università degli Studi di Milano, Italy

From November 16, 1990  
to October 30, 1998

**Ricercatore (Assistant professor)**

Università degli Studi di Milano, Italy

## ➤ Scientific activity

## ○ Research topics

## ■ Development of mathematical models of ground water flow.

- Study of aquifers with different hydrogeological situations (phreatic, confined, multilayered aquifers, unsaturated soils) and flow conditions (stationary and transient).
- Applications to alluvial aquifers: urban area of Milano at different scales (city scale, single pumping station, province scale); apenninic alluvial fans; aquifer system of the Adda-Oglio hydrological basin.

– Applications to fractured coastal aquifers (Salento peninsula, Southern Italy).

– Change of scale of hydrodynamic parameters and study of the effects of facies heterogeneity on groundwater flow and transport.

– Thermo-mechanical modelling of the Antarctic ice sheet to study the subglacial hydrographic network.

## ■ Identification of physical parameters by solution of inverse problems.

– Fundamental results on identifiability of physical parameters for transport equations.

– Development of analytical and numerical techniques for solving the inverse problem of water flow in porous media and heat conduction.

## ■ Geophysical prospecting.

– Theoretical and experimental studies on electrical and electromagnetic prospecting with applications to geology (alpine and apenninic domains), hydrogeology and hydrostratigraphy (Po plain), geo-archaeology (Terramara Santa Rosa di Poviglio, Reggio Emilia, Italy).

– Seismic and gravimetric prospecting.

## ○ Author of more than 120 publications, 2/3 of which with international diffusion.

## ○ Reviewer of papers for some of the most important scientific journals of geophysics.

Associate editor of Hydrogeology Journal from 2006 to 2009, of Hydrology and Earth System Sciences since November 2013 and of Geofluids since November 2018.

## ○ Principal investigator of national research projects.

## ○ Consultant for public organizations and administrations, for private companies and for penal and civil courts on problems of management and contamination of ground water resources.

## ○ Reviewer of national and international (EU, Czech Republic, France, Germany, Austria, Belgium, Israel) research projects, for the 1st VTR (Evaluation of national research) and for the CIVR (Advisory panel for research evaluation).

## ➤ Teaching activity

## ○ Responsible of the following course units: Laboratory of Earth Physics for the Degree Course in Physics from 1995/96 to 2003/04 (UNIMI); Geophysical fluid dynamics for the Degree Course in Geological Sciences from 2000/01 to 2003/04 (UNIMI); Ground water hydrology for the Degree Course in Environmental and Land Engineering in 2001/02 and 2002/03 (Politecnico di Milano).

## ○ Responsible of the following course units after the national University system reform: Microclimatology for cultural heritage for the Laurea magistrale course in Diagnostic and conservation science for cultural heritage since 2015/16 (UNIMI); Fundamentals of environmental modelling for the Laurea magistrale course in Physics from 2005/06 to 2016/17 (UNIMI); Earth Physics for the Laurea and Laurea magistrale courses in Physics since 2010/11 (UNIMI); Applied geophysics for the Laurea course in Geological Sciences in 2010/11 (UNIMI); Geophysical fluid dynamics from 2010/11 to 2014/15 and Shallow geophysical

- exploration since 2011/12 for the Laurea magistrale course in Earth Sciences (UNIMI); Laboratory of Earth Physics for the Laurea and Laurea magistrale courses in Physics from 2004/05 to 2009/2010 (UNIMI); Electrical and electromagnetic prospecting for the Laurea course in Geological Sciences from 2006/07 to 2009/10 (UNIMI); Basic applied geophysics for the Laurea course in Geological Sciences in 2007/08 and 2008/09 (University of Parma).
- Co-ordinator of the Master course in “Hydrodynamics in porous geological formations” in 2000/01 (UNIMI).
- International teaching activity within the ERASMUS/SOCRATES Programme of the European Union.
- Exercises, lectures and seminars for course units of the Degree courses in Geological Sciences and Physics (UNIMI).
- Supervisor of eight PhD theses in Earth Sciences, one in Polar Sciences, one in Physics, Astrophysics and Applied Physics and of more than 100 Masters’ Degree theses in Physics, Geological Sciences and Environmental and Land Engineering.
- Managerial and organizational activities
  - Vice-director of the Dipartimento di Scienze della Terra “A. Desio” (DST - UNIMI) from May 31, 2012 to September 30, 2014.
  - Director of DST from October 1, 2014 to September 30, 2017.
  - President of the Assessment unit of DST, since October 1, 2017.
  - Vice-president of the Teaching committee for the courses in “Science and technology for conservation and diagnostics of cultural heritage”, since October 1, 2017.

**EDUCATION AND TRAINING**

- From October 1982 to February 1987 **Laurea in Fisica (Degree in Physics, 110/110 cum laude)**  
Università degli Studi di Milano, Italy
- From September 1976 to July 1982 **Maturità classica (55/60)**  
Liceo classico “Cesare Beccaria”, Milano, Italy

**PERSONAL SKILLS**

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Independent user	Proficient user	Independent user	Independent user	Proficient user
	Self-assessment				
Russian	Basic user	Basic user	Basic user	Basic user	Basic user
	Self-assessment				
French	Basic user	Independent user	-	-	-
	Self-assessment				

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

- Communication skills
  - Communication skills gained through my experience as university teacher.
  - Excellent skills as chairman of sessions in scientific conferences.
- Organisational / managerial skills
  - Ability to manage institutions with complex organization.
  - Ability to manage research projects.
  - Ability to manage recruitment commissions for universities and research centers.

- Job-related skills**
- Excellent skills in mathematical modelling of complex systems.
  - Skills of field and lab geophysical data acquisition.
  - Skills in data processing and interpretation.
  - Excellent skills as papers' reviewer and evaluator of scientific projects.
  - Skills in technology transfer in the field of environmental research, mostly acquired through consultancy experiences for local and regional institutions.

**Digital skills**

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Proficient user	Independent user	Independent user	Independent user

- Good command of MS Office instruments (Word, Excel, Powerpoint).
- Good command of tools for word processing (TeX/LaTeX, Acrobat).
- Command of software for processing and interpretation of geophysical data (Surfer, Res2divn, Radan).
- Command of programming languages (Fortran, C, Python), acquired during the development of scientific computer codes.

- Other skills**
- Experience as elected or appointed officer in local public administration.

**Driving licence** B

**ADDITIONAL INFORMATION**

**Publications of international diffusion in the last five years (2013-2017)**

- 1 Mele, M., Bersezio, R., Giudici, M., Inzoli, S., Cavalli, E. and A. Zaja, Resistivity imaging of Pleistocene alluvial aquifers in a contractional tectonic setting: a case history from the Po plain (northern Italy). *Journal of Applied Geophysics*, 93, 114-126, DOI:10.1016/j.jappgeo.2013.03.015, 2013.
- 2 Ortuani, B., Benedetto, A., Giudici, M., Mele, M., and F. Tosti, A non-invasive approach to monitor variability of soil water content with electromagnetic methods. *Procedia Environmental Sciences*, 19, 446-455, DOI:10.1016/j.proenv.2013.06.051, 2013.
- 3 Mele, M., Cremaschi, M., Giudici, M., Lozej, A., Pizzi, C., and A. Bassi, The terramare and the surrounding hydraulic structures: a geophysical survey of the Santa Rosa site at Poviglio (Bronze Age, Northern Italy). *Journal of Archaeological Sciences*, 40, 4648-4662, DOI:10.1016/j.jas.2013.06.033, 2013.
- 4 De Filippis, G., Giudici, M., Margiotta, S., Mazzone, F., Negri, S., and C. Vassena, Numerical modeling of the groundwater flow in the fractured and karst aquifer of the Salento peninsula (Southern Italy). *Acque sotterranee - Italian Journal of Groundwater*, AS04016, 17-28, DOI:10.7343/AS-016-013-0040, 2013.
- 5 Cattaneo, L., Vassena, C., Giudici, M., and B. Petrucci, Modeling groundwater recharge in an alluvial aquifer of Somaliland with the groundwater flow model YAGMOD. *Acque sotterranee - Italian Journal of Groundwater*, AS04018, 47-57, DOI:10.7343/AS-018-13-0042, 2013.
- 6 Benedetto, A., Tosti, F., Ortuani, B., Giudici, M., and M. Mele, Soil Moisture Mapping with GPR for Pavement Applications. 7th International Workshop on Advanced Ground Penetrating Radar (IWAGPR), ISBN 978-1-4799-0937-7, DOI:10.1109/IWAGPR.2013.6601550, 2013.
- 7 Serrano, R.P., Guadagnini, L., Riva, M., Giudici, M., and A. Guadagnini, Impact of two geostatistical hydro-facies simulation strategies on head statistics under non-uniform groundwater flow. *Journal of Hydrology*, 508C, 343-355, DOI:10.1016/j.jhydrol.2013.11.009, 2014.
- 8 Mele, M., Inzoli, S., Giudici, M., and R. Bersezio, Relating electrical conduction of alluvial sediments to textural properties and pore-fluid conductivity. *Geophysical prospecting*, 62, 631-645, DOI:10.1111/1365-2478.12102, 2014.
- 9 dell'Arciprete, D., Vassena, C., Baratelli, F., Giudici, M., Bersezio, R., and F. Felletti, Connectivity and Single/dual domain transport models: tests on a point-bar/channel analogue. *Hydrogeology Journal*, 22, 761-778, DOI:10.1007/s10040-014-1105-5, 2014.
- 10 Baratelli, F., Giudici, M., and G. Parravicini, Single- and Dual-domain Models of Solute

- Transport in Alluvial Sediments: the Effects of Heterogeneity Structure and Spatial Scale. *Transport in Porous Media*, 105, 2, 315-348, DOI:10.1007/s11242-014-0371-y, 2014.
- 11 Giudici, M., Baratelli, F., Comunian, A., Vassena, C., and L. Cattaneo, Model calibration for ice sheets and glaciers dynamics: a general theory of inverse problems in glaciology, *The Cryosphere Discussion*, 8, 5511-5537, DOI:10.5194/tcd-8-5511-2014, 2014.
  - 12 De Filippis, G., Margiotta, S., Negri, S., and M. Giudici, The geothermal potential of the underground of the Salento peninsula (southern Italy). *Environmental Earth Sciences*, 73, 6733-6746, DOI:10.1007/s12665-014-4011-1, 2015.
  - 13 Mele, M., Ceresa, N., Bersezio, R., Giudici, M., Inzoli, S., and E. Cavalli, Resolving electrolayers from VES: A contribution from modeling the electrical response of a tightly constrained alluvial stratigraphy. *Journal of Applied Geophysics*, 119, 25-35, DOI:10.1016/j.jappgeo.2015.05.002, 2015.
  - 14 Benedetto, A., Tosti, F., Ortuani, B., Giudici, M., and M. Mele, Mapping the spatial variation of soil moisture at the large scale using GPR for pavement applications. *Near Surface Geophysics*, 13, 269-278, DOI:10.3997/1873-0604.2015006, 2015.
  - 15 Giudici, M., Mele, M., Inzoli, S., Comunian, A., and R. Bersezio, The application of hydrogeophysics to study water-based ecosystem services in alluvial plains. *First Break*, 33, 55-60, 2015.
  - 16 Inzoli, S., and M. Giudici, A comparison between single- and multi-objective optimization to fit spectral induced polarization data from laboratory measurements on alluvial sediments. *Journal of applied geophysics*, 122, 149-158, DOI:10.1016/j.jappgeo.2015.09.017, 2015.
  - 17 Cattaneo, L., Comunian, A., De Filippis, G., Giudici, M., and C. Vassena, Modeling groundwater flow in heterogeneous porous media with YAGMod. *Computation*, 4, 2, DOI:10.3390/computation4010002, 2016.
  - 18 Comunian, A., De Micheli, L., Lazzati, C., Felletti, F., Giacobbo, F., Giudici, M., and R. Bersezio, Hierarchical simulation of aquifer heterogeneity: implications of different simulation settings on solute transport modeling. *Hydrogeology Journal*, 24, 2, 319-334, DOI:10.1007/s10040-015-1343-1, 2016.
  - 19 Ortuani, B., Chiaradia, E.A., Priori, S., L'Abate, G., Canone, D., Comunian, A., Giudici, M., Mele, M., and A. Facchi, Mapping soil water capacity through EMI survey to delineate site-specific management units within an irrigated field. *Soil Science*, 181, 252-263, DOI:10.1097/SS.000000000000159, 2016.
  - 20 Giudici, M., D'Orsi, P., Caironi, V., Baratelli, F., Cattaneo, L., Comunian, A., De Filippis, G., Dell'Arciprete, D., Durante, C., Inzoli, S., Mele, M., and C. Vassena, Exposing high-school students to Geosciences through seminars, laboratory and field demonstrations. *Rendiconti on line della Società Geologica Italiana*, 40, 18-21, DOI:10.3301/ROL.2016.66, 2016.
  - 21 De Filippis, G., Foglia, L., Giudici, M., Mehl, S., Margiotta, S., and S. Negri, Seawater intrusion in karstic, coastal aquifers: current challenges and future scenarios in the Taranto area (southern Italy). *Science of the Total Environment*, 573, 1340-1351, DOI:10.1016/j.scitotenv.2016.07.005, 2016.
  - 22 Inzoli, S., Giudici, M., and J. A. Huisman, Estimation of sediment texture from spectral induced polarization data using cluster and principal component analyses. *Near Surface Geophysics*, 14, 433-447, DOI:10.3997/1873-0604.2016033, 2016.
  - 23 De Filippis, G., Giudici, M., Margiotta, S., and S. Negri, Conceptualization and characterization of a coastal multi-layered aquifer system in the Taranto Gulf (southern Italy). *Environmental Earth Sciences*, DOI:10.1007/s12665-016-5507-7, 2016.
  - 24 De Filippis, G., Foglia, L., Giudici, M., Mehl, S., Margiotta, S., and S. Negri, Effects of different boundary conditions on the simulation of groundwater flow in a multi-layered, coastal aquifer system (Taranto Gulf, southern Italy). *Hydrogeology Journal*, 25, 2123-2138, DOI:10.1007/s10040-017-1589-x, 2017.

## Membership in scientific associations

Member of the following scientific associations: EGU-European Geosciences Union, formerly EGS-European Geophysical Society (Secretary of the subsection "Hydrology and Applied Mathematics" of the section "Hydrological Sciences" from May 1999 to April 2002; convener and chairman of sessions at the "General Assemblies" of the EGS); EAGE European Association of Geoscientists and Engineers (formerly EEGS-Environmental and Engineering Geophysics Society); AGU-American Geophysical Union; IAMG-International Association of Mathematical Geology; IAHS-International Association of Hydrological Sciences; AGI-Associazione Geofisica Italiana; SII-IHS Società Idrologica Italiana.

## Identifiers of citational data banks

- Thomson Reuters ResearcherID: A-5916-2013
- Scopus Author ID: 35606895900
- ORCID: 0000-0002-6703-5748
- Google Scholar ID: VSz6AhUAAAAJ

## Bibliometric indicators

	Web of Science™ by Thomson Reuters™	Scopus® by Elsevier B.V.
Papers	72	83
Citations	530	613
h-index	13	14

## Personal information

I authorize the handling of personal information in this curriculum, according to D.Lgs n. 196/03 and following modifications and Regulations EU 679/2016 (General Regulations concerning Data Protection or GRDP) and art. 7 of University Regulations concerning protection of personal information.

I authorize, according to D.lgs 14/03/2013 n. 33 concerning transparency, in case of conferment of the position and of the fellowship, the publication of this curriculum in the web site of Università degli Studi di Milano in the section "Amministrazione trasparente", "Consulenti e collaboratori".

November 7<sup>th</sup>, 2018

Signature