

## PERSONAL INFORMATION

**Alberto Montanari**

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🌐 <https://www.albertomontanari.it>

Date of birth | Nationality Italian

🐦 <https://twitter.com/almontanari>

Researcher ID <https://publons.com/researcher/1692841/alberto-montanari/>

Google Scholar <https://scholar.google.com/citations?user=fqgGMEYAAAAJ&hl=en>

Orcid <https://orcid.org/0000-0001-7428-0410>

- Head of the Department of Civil, Chemical, Environmental and Material Engineering at the University of Bologna ([www.unibo.it](http://www.unibo.it) – [www.dicam.unibo.it](http://www.dicam.unibo.it))
- President of the European Geosciences Union ([www.egu.eu](http://www.egu.eu))

## WORK EXPERIENCE

27/12/2012 – present

**Full professor of hydraulic and maritime engineering**

Alma Mater Studiorum – University of Bologna, Italy ([www.unibo.it](http://www.unibo.it))

- Head of the Department of Civil, Chemical, Environmental and Material Engineering from 03/05/2015 to present (term ending on May 3, 2021), with responsibility for providing science policy vision, supervising all scientific and educational activities and allocating and managing human and economic resources.
- Coordinator of the International Degree Programme in Civil Engineering from 2012 to 2015.
- Tutor of the Superior College of the University of Bologna from 2019 to present.

**Fields of teaching:** Climate change impact and adaptation, Hydraulic engineering, Water resources management, Sustainable Development

01/11/2001 – 26/12/2012

**Associate professor of hydraulic and maritime engineering**

Alma Mater Studiorum – University of Bologna ([www.unibo.it](http://www.unibo.it))

- President of the Commission of research and innovation of the Department of Structural, Transportation, Water, Surveying and Environmental Engineering

**Fields of teaching:** Hydraulic engineering, Water resources management, Hydrology

01/02/1998 – 31/10/2001

**Assistant professor of hydraulic and maritime engineering**

Alma Mater Studiorum – University of Bologna ([www.unibo.it](http://www.unibo.it))

**Fields of research:** Stochastic modelling of hydrological processes, real time prediction of extreme rainfall and floods, variability assessment for environmental processes

MAIN OTHER POSITIONS  
CURRENTLY HELD

2019 – present

**President of the European Geosciences Union**

Scientific association with more than 22 000 members with a rich portfolio of activities ranging from conference organisation, open access, publication, education, outreach, science policy, diversity-equality-inclusivity (EDI) ([www.egu.eu](http://www.egu.eu))

2019 – present

**National representative for Italy of the International Association of Hydrological Sciences (IAHS)**

IAHS is a global society with about 9 000 members in over 150 countries. It promotes research in hydrology and water resources management. It is one of the member societies of the International Union of Geodesy and Geophysics ([www.iahs.info](http://www.iahs.info))

01/01/2020 – present

**Editor of AGU Advances, published by the American Geophysical Union**

AGU Advances is a high profile open access journal publishing excellent contributions in geosciences ([www.advances.agu.org](http://www.advances.agu.org)).

**MAIN OTHER POSITIONS  
HELD IN THE PAST**

- 2013 – 2017** Editor in Chief of the scientific journal *Water Resources Research*, published by the American Geophysical Union ([www.agu.org](http://www.agu.org)). It is generally considered the most important international scientific journal for hydrology and water resources management with about 1200 submissions/year.
- 2013 – 2017** President of the International Commission on Water Resources Systems of the International Association of Hydrological Sciences (IAHS), with responsibilities for providing scientific vision and guidance for water management.
- 2009 – 2016** Chair of the Union Awards and Medals Committee of the European Geosciences Union, in charge of supervising 32 award and medal committees.
- 2011 – 2015** Founding Chair of the scientific decade 2013-2022 “Panta Rhei – Everything flows” of the International Association of Hydrological Sciences, with the responsibility of conducting an international consultation among more than 350 scientists as the basis for the Panta Rhei science plan.
- 2007 – 2011** President of the Division of Hydrological Sciences of the European Geosciences Union (EGU), counting more than 1000 members, with the responsibility of supervising mentoring and publication activities and more than 40 scientific sessions at the annual General Assembly of EGU.
- 2012 – 2017** Member of the International Scientific Steering Committee “Florence 2016”, which was tasked to develop solutions to mitigating flood risk in the city.
- 2004 – 2013** Associate Editor of *Water Resources Research*, *Hydrology and Earth System Sciences*, *Survey in Geophysics*, *Hydrological Sciences Journal*.

The full list of held positions is available at <https://www.albertomontanari.it>

**EDUCATION AND TRAINING**

- 01/11/1992 – 31/10/1995** **Doctor of Philosophy (Ph.D.) in Hydraulic Engineering and Hydrology**  
Politecnico di Milano, Italy ([www.polimi.it](http://www.polimi.it))
- Ph.D. Thesis title: “Stochastic modelling of hydrological variables affected by long term persistence” (in Italian). Advisor: Prof. R. Rosso
- 01/10/1985 – 18/03/1992** **Master Degree in Civil Engineering**  
University of Parma, Italy ([www.unipr.it](http://www.unipr.it))
- Master Degree Thesis title: “A water quality model for the Baganza River” (in Italian). Advisor: Prof. R. Rosso. Summa cum laude.

**AWARDS AND RECOGNITIONS**

- 2019** Elected member of the *Academia Europaea*
- 2019** **Dooge Medal of the International Association of Hydrological Sciences**  
<https://iahs.info/About-IAHS/Competition-Events/International-Hydrology-Prize.do>
- 2018** **Kaula Award of the American Geophysical Union**  
<https://www.agu.org/Honor-and-Recognize/Honors/Union-Awards/William-Kaula-Award>
- 2018** **Darcy Medal of the European Geosciences Union**  
<https://www.egu.eu/awards-medals/henry-darcy/2018/alberto-montanari/>
- 2017** **Fellow of the American Geophysical Union**  
<https://www.agu.org/Honor-and-Recognize/Honors/Union-Fellows>
- 2017** **Union Service Award of the European Geosciences Union**  
<https://www.egu.eu/awards-medals/union-service-award/2017/alberto-montanari/>

## RESEARCH ACTIVITY AND BIBLIOMETRICS

### Synthesis of the research activity

Alberto Montanari has developed his scientific activity along a coherent path by focusing on the study of floods, droughts and water resources management under environmental and climate change. He is best known for having introduced a new physico-statistical framework to represent random environmental processes across various geo-environmental disciplines. The framework allows quantification of the uncertainty of environmental change impacts and has already had adopted by policy makers in areas such as water resources management. In detail, the main theoretical contributions by Alberto Montanari are:

- He proposed a new unified theoretical framework for combining the strengths of stochastic and physically-based models for the assessment and prediction of natural hazards. The theory bridges a decadal gap between statistical and physical models and provides an integrated approach to hydrological modeling with uncertainty assessment. The above framework is explained in a series of papers starting from “A blueprint for process-based modeling of uncertain hydrological systems” that was published in *Water Resources Research* in 2012. The theoretical framework has been applied, for instance, to predict urban water demands for the city of Montreal (Canada).
- He developed a methodology for assessing the interannual and long term variability of climate and water cycle, through detection and modeling of long term persistence properties of environmental time series. An example of a relevant contribution in this context is the single-author paper “Hydrology of the Po River: looking for changing patterns in river discharge”, published in *Hydrology and Earth System Sciences* in 2012. A more recent example is “A large sample analysis of European rivers on seasonal river flow correlation and its physical drivers”, published in *Hydrology and Earth System Sciences* in 2019.
- He proposed a theoretical framework for climate analysis and climate impact assessment for the purpose of improving hydrological predictions and water resources management. In particular, he proposed to model change in water related processes with an integrated approach, demonstrating the importance of interaction and synergies of climate change, land use change and social effects for future water resources. He put the framework in a visionary context in “Toward a theoretical framework for integrated modeling of hydrological change” –published in *Wires Water*.
- He is an advocate for the use of innovative information to support natural hazards risk assessment. His efforts in this respect culminated in two milestone papers: “On the calibration of hydrological models in ungauged basins: A framework for integrating hard and soft hydrological information”, published in *Water Resources Research* in 2009, and “Satellite nighttime lights reveal increasing human exposure to floods worldwide”, published in *GRL* in 2014. The latter represents a revolutionary new approach for ‘linking the dots’ of disciplines, i.e. hydrology, remote sensing and social sciences. This body of work has been received enthusiastically by the scientific community and the media.

The main methodological contributions by Alberto Montanari are:

- He developed innovative methods for uncertainty assessment in hydrology, which culminated in methods that bridged the gap between hydrological modeling and uncertainty assessment. Examples of such contributions are “A stochastic approach for assessing the uncertainty of rainfall-runoff simulations” published in *Water Resources Research* in 2004 and “Estimating the Uncertainty of Hydrological Predictions through Data-Driven Resampling Techniques”, published in the *Journal of Hydrologic Engineering* in 2015.
- He proposed innovative approaches to parameter estimation of hydrological models in the presence of change. A significant paper in this context is the paper “Calibration of hydrological models in the spectral domain: an opportunity for ungauged basins?”, published in *Water Resources Research* in 2007.
- With the paper “Estimating the flood frequency distribution at seasonal and annual time scales”, published in *Hydrology and Earth System Sciences* in 2012, he proposed a new approach to estimate flood frequency distribution at seasonal time scale. The results were used for the hydraulic design of the Millenium Dam, in Ethiopia.

Alberto Montanari has been constantly inspired by the idea of making the results of his research activity accessible and repeatable. He has adopted a policy of freely distributing distributed the codes he develops, which culminated in a virtual laboratory devised by him that was presented in a recent paper – “Virtual laboratories: new opportunities for collaborative water science” – published in *Hydrology and Earth System Sciences* in 2014. He is an internationally recognised advocate for open science, open teaching, and equality, diversity and inclusivity in science. His tutorial for students are freely available on his web site, and the videos of his lectures are publicly available in his YouTube channel since 2012.

**Bibliometrics**

Alberto Montanari authored about 200 publications in international scientific journals (136 papers), conference proceedings or book chapters (55 contributions) and monographs (8 contributions).

According to the ISI Web of Science data base the publications by Alberto Montanari are 136, which received a total number of more than 6500 citations. The average number of citation to each paper is 49. The most cited and the second cited paper count 446 and 342 citations, respectively. The H index is 43 according to the Web of Science database (54 in Google Scholar, with more than 11000 citations).

**Highlighted and high profile papers**

Alberto Montanari is a co-author of the papers:

- Bloeschl, Guenter; [..]; Montanari, Alberto et al., Changing climate both increases and decreases European river floods, *Nature*, 573, 108, 2019
- Bloeschl, Guenter; [..]; Montanari, Alberto et al., Changing climate shifts timing of European floods, *Science*, 357, 588-590, 2017

The articles below were showcased by scientific journals and/or mass media:

- Mangini, W., Viglione, A., Hall, J., Hundecha, Y., Ceola, S., Montanari, A., Rogger, M., Salinas, J.L., Borzi, I., Parajka, J. (2018). Detection of trends in magnitude and frequency of flood peaks across Europe. *Hydrological Sciences Journal*, 63(4), 493-512.
- O'Connell, P. E., Koutsoyiannis, D., Lins, H. F., Markonis, Y., Montanari, A., Cohn, T., The scientific legacy of Harold Edwin Hurst (1880-1978), *Hydrological Sciences Journal*, 61(9), 1571-1590, 2016.
- Ceola, S., Montanari, A., Krueger, T., Dyer, F., Kreibich, H., Westerberg, I., ..., Van Der Zaag, P., Adaptation of water resources systems to changing society and environment: a statement by the International Association of Hydrological Sciences, *Hydrological Sciences Journal*, 61(16), 2803-2817, 2016.
- Ceola, S., Laio, F., Montanari, A., Human impacted waters: New perspectives from global high resolution monitoring. *Water Resources Research*, 51(9), 7064-7079, 2015.
- Ceola, S., Laio, F., Montanari, A., Satellite nighttime lights reveal increasing human exposure to floods worldwide, *Geophysical Research Letters*, 41, 7184-7190, 2014.
- Montanari, A., et al. Panta Rhei—everything flows: change in hydrology and society—the IAHS scientific decade 2013–2022. *Hydrological Sciences Journal* 58.6, 1256-1275, 2013.
- Di Baldassarre, G., Montanari, A., Lins, H., Koutsoyiannis, D., Brandimarte, L., Bloeschl, G., Flood fatalities in Africa: from diagnosis to mitigation, *Geophysical Research Letters*, 37, L22402, doi:10.1029/2010GL045467, 2010

**Invited talks**

Alberto Montanari delivered more than 50 invited presentations at scientific conferences, educational meetings and keynote lectures. He was invited to deliver seminars at foreign universities including: Boston University (USA, 1995), Uppsala University (Sweden, 2011 and 2018), Vienna University of Technology (Austria, 2012), Delft University of Technology (The Netherlands, 2012), Hohai University (China, 2012), Durham University (UK, 2014), EPFL (Switzerland, 2014), University of Saskatoon (Canada, 2016), Lancaster University (UK, 2020). He also delivered two invited lectures at the Accademia Nazionale dei Lincei (Italian National Academy).

**Coordination of research projects and participation at international projects**

Alberto Montanari was National Coordinator of the following research projects financed by the Italian Government:

- "Advanced Techniques for Estimating and Predicting Extreme Hydrological Events with Uncertainty Analysis (SPIE)" (2007-2008)
- "Uncertainty Analysis for Rainfall and River Flow Data and Effects on Water Resources Management" (2009-2012).

He was local principal investigator and workpackage leader of the research project "Sharing Water-related Information to Tackle Changes in the Hydrosphere – for Operational Needs (SWITCH-ON)", financed by the European Union within the 7<sup>th</sup> Framework Programme.

He also participated at the following international research projects:

- "Production of precipitation scenarios for impact assessment of climate change in Europe (POPSICLE)", financed within the 4th Framework Programme of the European Union. Member of the local research team.
- "Flash-flood risk assessment under the impacts of land use changes and river engineering works (Framework)", financed within the 5th Framework Programme of the European Union. Member of the local research team.
- "Multi-sensor precipitation measurements integration, calibration and flood forecasting (MUSIC)", financed within the 5th Framework Programme of the European Union. Member of the local research team.
- "Transitions to the urban water services of tomorrow (TRUST)£, financed within the 7th Framework Programme of the European Union. Member of the local research team.

**ADMINISTRATION AND SCIENCE POLICY**

Synthesis of the experiences in science administration and science policy

Alberto Montanari is internationally known and trusted as an experienced and independent leader in science policy and science and education administration. He was given leadership positions by the American Geophysical Union, the European Geosciences Union, the International Union of Geodesy and Geophysics and the International Association of Hydrological Sciences. He also served as panel member and is serving as panel chair for ERC, PE10.

The three most relevant leadership positions held by Alberto Montanari are the position of Head of the Department of Civil, Chemical, Environmental and Material Engineering at the University of Bologna (2015-present), the presidency of the European Geosciences Union (2019-present) and the position of Editor in Chief of Water Resources Research (2013-2017), a scientific journal published by the American Geophysical Union.

As Head of the Department, he substantially strengthened scientific output, talent pool discovery, openness and transparency. For example, 32 Horizon 2020 projects have been funded during his term, an increase of more than 50% over the previous period. The projects cut across numerous disciplines including engineering, materials, environmental sciences, chemistry, biotechnologies and biomedicine. He also promoted open teaching to ensure equality of opportunities to students.

As President of the EGU, he launched a new open access repository and forum for scientific contributions, supervised a union governance review, established a science policy task force and promoted and chaired a series of science policy events. He also made EGU an internationally recognised leader for diversity, equality and inclusivity in geosciences, as demonstrated by the activity of the EGU Diversity, Equality and Inclusivity working group and the gender balance of both EGU governance and EGU awards and medals.

As Editor in Chief of Water Resources Research he was responsible for supervising 8 Editors and more than 100 associate editors. He personally screened all the submissions to the journal, which exceeded the number of 1500/year. He introduced a new paper category and a systematic quick review process that he managed in first person. He also significantly contributed to the gender balance of the Editorial Board. For his unselfish and unbiased service as Editor he was honoured with the Kaula Award by the American Geophysical Union, recognising him as an independent and unbiased evaluator.

Other administrative experiences

Alberto Montanari has been the President of the Emilia-Romagna Regional Committee of the Italian Athletic Federation from 2004 to 2012. In this voluntary activity he was responsible for the coordination of 4 staff members and the organisation of sport activities and regional, national and international competitions.

**PERSONAL SKILLS**

Mother tongue(s)  
Other language(s)

Italian

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user
Certificate Cambridge Advanced English (CAE) of level C1 by Cambridge Assessment English				

English

**Communication skills**

Excellent communication skills acquired through:

- Management of scientific associations with international dissemination activities to the press, web and social media
- Supervision and coordination of scientific conferences and educational activities in low GDP countries
- Interaction with the public and stakeholders for the development of water resources management plans
- Compromise seeking among stakeholders for sustainable development planning on behalf of local and regional administrations in Italy
- Press article writing in the field of scientific research and sports

**Organisational / managerial skills**

Excellent organisational/managerial skills acquired through:

- currently chairing a university department counting 109 professors and a staff of 42, with an average budget of about 9 Mio.Euro/year (not including salaries);
- currently acting as President of the European Geosciences Union, the premiere European scientific association in geosciences, with about 22 000 members, a rich and diverse portfolio of activities including conference organisation, publication, education, outreach, science policy and awards, with an average budget of about 2 Mio.Euro/year;
- acting from 2013 to 2017 as editor in chief of the flagship scientific journal Water Resources Research of the American Geophysical Union, with about 1500 submissions/year and 600 published papers/year;
- acting from 2007 to 2011 as President of the Hydrological Sciences Division of the European Geosciences Union (EGU), counting more than 1000 members, with responsibilities for the supervision of more than 40 scientific sessions at the annual General Assembly of EGU;
- acting from 2009 to 2016 as Chair of the Union Award Committee of the EGU, with responsibility for the supervision of 32 award and medal committees;
- acting from 2013 to 2017 as President of the International Commission on Water Resources Systems of the International Association of Hydrological Sciences, with responsibilities for providing scientific vision and guidance for water management;
- being the founding chair of the “Panta Rhei scientific decade 2013-2022” of the International Association of Hydrological Sciences, with the responsibility of conducting an international consultation among more than 350 scientists as the basis for the Panta Rhei science plan.

**Research assessment and management skills**

Long experience in assessment and management of scientific research through:

- serving as ERC panel member for the advanced grant, PE10, in 2016;
- serving as ERC panel chair for the consolidator grant, PE10, in 2020;
- serving as the Editor in Chief of Water Resources Research, published by the American Geophysical Union (2013-2017);
- serving as associate editor of Water Resources Research (2005-2013), Hydrology and Earth System Sciences (2004-2013), Hydrological Sciences Journal (2011-2013), Survey in Geophysics (2010-2013);
- serving as reviewer for numerous scientific journals including PNAS, Nature, Science;
- serving as reviewer for numerous funding agencies including ERC and NSF.

**Computer skills**

Excellent computer skills related to:

- operating systems: Windows, Linux, Mac
- Microsoft Office™ and LibreOffice tools
- Graphic design with Gimp
- R platform
- programming in Fortran, R, Visual Basic, Php, Html
- data management with Mysql
- Dynamic Web design with Drupal and Wordpress

## ADDITIONAL INFORMATION

<b>Publications</b>	The full list of publication is available at the web address: <a href="https://www.albertomontanari.it/?q=publications">https://www.albertomontanari.it/?q=publications</a>
<b>Extended curriculum</b>	The extended curriculum vitae is available at the web address: <a href="https://www.albertomontanari.it/?q=curriculum">https://www.albertomontanari.it/?q=curriculum</a>
<b>Scientific presentations</b>	The scientific presentations by Alberto Montanari from 2010 are available at the web address <a href="https://www.albertomontanari.it">https://www.albertomontanari.it</a>
<b>Educational material</b>	The educational material, including tutorial for students, is available at the web address <a href="https://www.albertomontanari.it">https://www.albertomontanari.it</a>
<b>Videos of the university lectures</b>	Videos of the university lectures by Alberto Montanari are available at <a href="https://www.youtube.com/user/albertomontanari">https://www.youtube.com/user/albertomontanari</a>
<b>References</b>	Prof. Francesco Ubertini – Rector of the University of Bologna – <a href="mailto:rettore@unibo.it">rettore@unibo.it</a> Dr. Helen Glaves – President Elect of the European Geosciences Union – <a href="mailto:hmg@bgs.ac.uk">hmg@bgs.ac.uk</a> Prof. Fabio Fava – University of Bologna – <a href="mailto:fabio.fava@unibo.it">fabio.fava@unibo.it</a> Prof. Guenter Bloeschl – Vienna University of Technology – <a href="mailto:bloeschl@hydro.tuwien.ac.at">bloeschl@hydro.tuwien.ac.at</a> Prof. Murugesu Sivapalan – University of Illinois at Urbana Campaign – <a href="mailto:sivapala@illinois.edu">sivapala@illinois.edu</a>

October 30, 2020