

Irene Palazzoli

Postdoctoral researcher

Department of Civil, Chemical, Environmental and Materials Engineering

Alma Mater Studiorum - Università di Bologna

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Research Interests

- Human pressure on water resources;
- Effects of climate variability on the hydrologic cycle;
- Machine learning and big data;
- Numerical modeling;
- Data statistical analysis.

Employment

May 2022 - **Visiting Postdoctoral Research Scientist**

December 2022 *Columbia University in the City of New York, New York, NY, USA*

Advisors: Prof. Pierre Gentine

February 2022 - **Postdoctoral Research Scientist**

present *Alma Mater Studiorum - Università di Bologna, Bologna, Italy*

Advisors: Prof. Serena Ceola, Prof. Alberto Montanari

September 2017 - **Research Assistant**

December 2018 *Boston University, Boston, MA, USA*

Advisor: Prof. Lucy Hutyra

November 2014 - **Research Assistant**

March 2015 *Polytechnic of Milan, Milan, Italy*

Advisor: Prof. Daniele Bocchiola

April 2014 - **Internship - Facility Management**

September 2014 *Robert Bosch GmbH, Milan, Italy*

Education

January 2019 - **Ph.D. Student in Structural and Environmental Health Monitoring and**

January 2022 **Management - SEHM2**

Alma Mater Studiorum - Università di Bologna, Bologna, Italy

Dissertation Title: Anthropogenic and climatic controls on surface water across the contiguous United States

Supervisor: Prof. Serena Ceola

Co-supervisor: Prof. Alberto Montanari

September 2015 - **Master of Arts in Earth Sciences**
May 2017 *Boston University, Boston, MA, USA*
Supervisor: Prof. Sergio Fagherazzi

October 2010 - **Master of Science in Environmental Engineering**
December 2013 *Polytechnic of Milan, Milan, Italy*
Supervisor: Prof. Daniele Bocchiola
Co-supervisors: Prof. Dr. Stefan Uhlenbrook, Prof. Dr. Shreedhar Maskey

September 2007 - **Bachelor of Science in Environmental Engineering**
September 2010 *Polytechnic of Milan, Milan, Italy*

Teaching Experience

January 2017 - **Teaching Assistant**
May 2017 *Department of Earth and Environment, Boston University, Boston, MA, USA*
Undergraduate course: "Environmental Earth Sciences"
Topic: study of the environmental issues from the Earth Sciences perspective

September 2015 - **Teaching Assistant**
December 2015 *Department of Earth and Environment, Boston University, Boston, MA, USA*
Undergraduate course: "Natural Environments: The Atmosphere"
Topic: introduction to the science of weather and climate

Student Supervision

September 2021 - **Co-supervisor** of the Master Thesis of the student Gianluca Lelli at Alma
Present *Mater Studiorum - Università di Bologna*
Main supervisor: Prof. Serena Ceola

April 2019 - **Co-supervisor** of the Master Thesis of the student Andrea Mazzola at Alma
July 2019 *Mater Studiorum - Università di Bologna*
Main supervisor: Prof. Serena Ceola

Awards, Travel Grants, and Funds

2020 **Marie Skłodowska-Curie grant in the framework of EU GHAIA Project**
Funding for a visiting period at Columbia University in the City of New York, New York, NY, USA

2017 **Teaching Assistant Fellowship**
Boston University, Boston, MA, USA

2016 **Teaching Assistant Fellowship**
Boston University, Boston, MA, USA

February 2013 - **Exchange Program - Master's Thesis Abroad**
July 2013 *UNESCO-IHE Institute for Water Education, Delft, The Netherlands*

Conferences, Seminars, and Meetings

The underlined name identifies the presenter

- 12th - 16th
December 2022 **AGU General Assembly**
Online
Palazzoli I., Zhao W., Ceola S., and Gentine P., "*A Machine-Learning Model of Terrestrial Water Storage Changes at the Global Scale*". H26A: Advances in Machine Learning for Earth Science: Observation, Modeling, and Applications.
Oral presentation
- 12th - 16th
December 2022 **AGU General Assembly**
Online
Palazzoli I., Ceola S., and Montanari A., "*Anthropogenic and Climatic Factors Contributing to the Change in Surface Water Extent across the Contiguous United States*". H25G: Water and Society: Water Resources Management and Policy in a Changing World.
Oral Presentation
- 9th - 11th
November 2022 **Giornate dell'Idrologia 2022**
Università degli studi di Genova, Genova, Italy
Palazzoli I., Montanari A., and Ceola S., "*Interaction between Anthropogenic and Hydroclimatic Factors and Surface Water Extent in the Contiguous United States*".
Poster Presentation
- 4th - 7th
September 2022 **XXXVIII National Assembly of Hydraulic and Hydraulic Constructions IDRA 2022**
Università degli Studi Mediterranea di Reggio Calabria, Reggio Calabria, Italy
Palazzoli I., Ceola S., and Montanari A., "*Urbanization Effects on Surface Water Loss Across the Contiguous United States*". Session 20 – Socio-idrologia e dinamiche di interazione tra società, gestione sostenibile delle risorse idriche e rischio idrogeologico.
Oral Presentation
- 2nd
August 2022 **Gentine Lab Group Meeting**
Columbia University in the City of New York, New York, NY, USA
Palazzoli I., "*Anthropogenic and climatic controls on surface water across USA*".
- 29th May - 3rd
June 2022 **IAHS XIth Scientific Assembly**
Montpellier, France
Palazzoli I., Montanari A., and Ceola S., "*Spatial influence of urban areas on surface water loss across the contiguous United States*". Session S6 - Understanding the human footprint on the hydrological cycle/processes in a changing world.
Oral Presentation

- 23rd - 27th **EGU General Assembly**
 May 2022 *Online*
Palazzoli I., Montanari A., and Ceola S., "*Spatial Distribution of Surface Water Losses from Urban Areas Across the Contiguous United States*". Session HS1.1.4 – Panta Rhei: Hydrology, Society & Environmental Change.
Oral Presentation
- 13th - 17th **AGU General Assembly**
 December 2021 *Online*
Palazzoli I., Montanari A., and Ceola S., "*Spatial Influence of Urban Areas on Surface Water Loss Across the Contiguous United States*". Session E31E – Monitoring the Effects of Human Management of Hydrological Systems: From in Situ Observations to Remote Sensing and Modeling.
Oral Presentation
- 13th - 17th **AGU General Assembly**
 December 2021 *Online*
Palazzoli I. and Ceola S., "*Contribution of Anthropogenic and Climatic Drivers on the Variation of Surface Water Extent Across the Contiguous United States*". Session H55V – Panta Rhei: Hydrology, Society, and Environmental Change.
Poster presentation
- 6th - 8th **Delft International Conference on Sociohydrology**
 September 2021 *Online*
Palazzoli I., Montanari A., and Ceola S., "*Influence of urban areas on surface water loss across the contiguous United States*". Theme 03 – Water Resources and Human Behavior: Analysis and Modeling of Coupled Water-Human Systems Feedbacks and Coevolution.
Oral Presentation
- 14th - 16th **XXXVII National Assembly of Hydraulic and Hydraulic Constructions**
 June 2021 **IDRA 2020**
Online
Palazzoli I. and Ceola S., "*Anthropogenic controls on surface water loss across USA*". Session 15 – Risorse idriche e scarsità: monitoraggio, previsione, gestione, resilienza e adattamento ai cambiamenti climatici e socioeconomici.
Oral Presentation
- 19st - 30th **EGU General Assembly**
 April 2021 *Online*
Palazzoli I., Montanari A., and Ceola S., "*Influence of urban areas on surface water loss across USA watersheds*". Session HS3.3 – Advanced geostatistics for water, earth and environmental sciences & Spatio-temporal and/or (geo) statistical analysis of hydrological events, floods, extremes, and related hazards.
Poster Presentation

19st - 30th **EGU General Assembly**
April 2021 *Online*
Ceola S. and Palazzoli I., "*Contribution of urbanization and climate variability on surface water depletion across USA watersheds*". Session HS7.4 – Hydroclimatic change and unchange: exploring the mysteries of variability, nature and human impact.
Poster Presentation

1st - 17th **AGU General Assembly**
December 2020 *Online*
Palazzoli I. and Ceola S., "*Urbanization influence on surface water loss across USA watersheds*". Session H139 – Hydrology, Society, and Environmental Change: Convergent Approaches to Human–Water Interactions.
Poster Presentation

4th - 8th **EGU General Assembly**
May 2020 *Online*
Palazzoli I. and Ceola S., "*Anthropogenic and climatic controls on surface water loss across USA*". Session HS1.2.4 – Panta Rhei: Hydrology, Society & Environmental Change.
Poster Presentation

Fall 2019 **AGU Virtual Poster Showcase**
Palazzoli I. and Ceola S., "*Anthropogenic and climatic controls on surface water decrease across USA*". Virtual Poster Division: Environmental Sciences.
Poster presentation

8th **DICAM Hydro Meeting**
March 2019 *Alma Mater Studiorum - Università di Bologna, Bologna, Italy*
Palazzoli I., "*Estimating the biological exchange of CO₂ in urban environments*".

15th **Hutyra Lab Meeting**
February 2018 *Boston University, Boston, MA, USA*
Palazzoli I., "*Urban Vegetation Photosynthesis and Respiration Model*".

27th April - **EGU General Assembly**
2nd May 2014 *Wien, Austria*
Palazzoli I., Bocchiola D., Nana E., Maskey S., Uhlenbrook S., "*Assessing the impact of climate change on agriculture in Indrawati basin, Nepal*". Session HS2.4.5 – Hydrological change: Regional hydrological behaviour under transient climate and land use conditions.
Poster presentation

International Workshops and Schools

4th May - **Data science: an algorithmic approach**
3th *Case Western Reserve University, Cleveland, Ohio, USA (Online)*
June 2021

- 5th and 12th February 2021 **Python Seminar**
Institute for Artificial Intelligence, University of Georgia, USA (Online)
- 1st - 5th July 2019 **Runoff Predictions in Ungauged Basins (PUB) - Summer School**
Centre for Water Resource Systems, Vienna University of Technology, Wien, Austria
- 13th - 17th May 2019 **ESA Living Planet Symposium 2019**
MiCo Milano Congressi, Milano, Italy
- 28th January - 1st February 2019 **Data Rich Hydrology - International Winter School on Hydrology**
UNESCO WWAP Headquarter, Villa la Colombella, Colombella, Perugia, Italy
- 24th - 25th October 2018 **CO₂ - Urban Synthesis and Analysis Workshop**
University of Utah, Salt Lake City, Utah, USA

Courses and Qualifications

- February 2019 **Risorse Bibliografiche e Servizi Bibliotecari per l'Ingegneria e l'Architettura**
Alma Mater Studiorum - Università di Bologna, Bologna, Italy
- February 2015 - April 2015 **Seminar in Geomorphology**
Massachusetts Institute of Technology, Boston University, and Boston College, Boston, MA, USA
- September 2015 - December 2015 **Teaching Skill Seminar**
Boston University, Boston, MA, USA
- September 2015 **CPR/First Aid**
Boston University, Boston, MA, USA
- September 2015 **Qualification to practice Engineering profession**
University of Florence, Florence, Italy

Computational Skills

- Operating Systems *Mac OS, MS Windows*
- Programming Languages *R, Bash scripting, Python, Matlab, C++, SQL*
- Software *RStudio, Latex, Matplotlib, Numpy, SciPy, ArcGIS, QGIS, SagaGis, SWAT, Delft3D, MsWord, MsExcel, MsPowerPoint*

Memberships

- Member of the American Geophysical Union (AGU)
- Member of the European Geosciences Union (EGU)
- Member of the Italian Hydrological Society (IHS)

Outreach Activity

- 31st May 2022 **Invited Article in the newsjournal of the *Society for Industrial and Applied Mathematics - SIAM News Online***
<https://sinews.siam.org/Details-Page/a-mathematical-model-to-analyze-sinking-surface-water-bodies>
- 7th March 2022 **Interview for an article in the italian newspaper *Corriere della Sera***
https://corrieredibologna.corriere.it/bologna/cronaca/22_marzo_06/laghi-fiumi-studio-dell-universita-bologna-alle-citta-si-riducono-soffrono-0a999316-9d90-11ec-ad87-df1f86f5e3ed.shtml
- 24th February 2022 **Editor Highlight on the science magazine *Eos* by AGU**
<https://eos.org/editor-highlights/urbanization-and-surface-water-loss-go-together>
- 10th February 2022 **Press release on *EurekAlert!***
<https://magazine.unibo.it/archivio/2022/withdrawal-of-rivers-and-lakes-is-faster-near-cities>
- June 2020 **Contributor for the documentary series *SEVA Project - Serviamo il pianeta insieme***
<https://sevaproject.it>

Organization of conferences and workshops

- 17th - 18th September 2019 **Giornate dell'Idrologia della Società Idrologica Italiana**
Alma Mater Studiorum - Università di Bologna, Bologna, Italy
Organizing Committee

Editorial Activity

- From 2018 **Reviewer for the peer-review journal *Hydrological Sciences Journal (Taylor & Francis)***

Languages

Italian **native language**

English **fluent**

GRE Test 2015 - Verbal reasoning: 152, Quantitative reasoning: 156
TOEFL iBT 2012: 99/120

Publications

- 2022 Winbourne J., **Palazzoli I.**, Schifman L., Gately C., Smith I. A., and Hutyra L. Spatial and seasonal trends in biogenic and fossil fuel carbon dioxide fluxes among three metropolitan regions. *In preparation*.
- 2022 **Palazzoli I.**, Montanari A., and Ceola S. Contribution of anthropogenic and hydroclimatic factors on the variation of surface water extent across the contiguous United States. *Under review*.
- 2022 **Palazzoli I.**, Montanari A., and Ceola S. Influence of urban areas on surface water loss in the contiguous United States. *AGU Advances*, 3, e2021AV000519. doi:10.1029/2021AV000519. *Editor's highlight*.
- 2022 **Palazzoli I.**, Montanari A., and Ceola S. Spatial distribution of surface water losses from urban areas across the contiguous United States. *Geophysical Research Abstracts*, EGU22, 8511. doi:10.5194/egusphere-egu22-8511.
- 2022 **Palazzoli I.**, Montanari A., and Ceola S. Spatial influence of urban areas on surface water loss across the contiguous United States. *IAHS-AISH Scientific Assembly 2022*, IAHS2022, 7. doi:10.5194/iahs2022-7.
- 2021 Ceola S. and **Palazzoli I.** Contribution of urbanization and climate variability on surface water depletion across USA watersheds. *Geophysical Research Abstracts*, EGU21, 484. doi:10.5194/egusphere-egu21-484.
- 2021 **Palazzoli I.**, Montanari A., and Ceola S. Influence of urban areas on surface water loss across USA watersheds. *Geophysical Research Abstracts*, EGU21, 554. doi:10.5194/egusphere-egu21-554.
- 2020 **Palazzoli I.**, Leonardi N., Jiménez-Robles A. M., and Fagherazzi S. Velocity skew controls the flushing of a tracer in a system of shallow bays with multiple inlets. *Continental Shelf Research*, 192, 104008. doi:10.1016/j.csr.2019.104008.
- 2020 **Palazzoli I.** and Ceola S. Anthropogenic and climatic controls on surface water loss across USA. *Geophysical Research Abstracts*, EGU2020, 254. doi:10.5194/egusphere-egu2020-254.
- 2015 **Palazzoli I.**, Maskey S., Uhlenbrook S., Nana E., and Bocchiola D. Impact of prospective climate change on water resources and crop yields in the Indrawati Basin, Nepal. *Agricultural Systems*, 133, 143–157. doi:10.1016/j.agry.2014.10.016.
- 2014 **Palazzoli I.**, Bocchiola D., Nana E., Maskey S., and Uhlenbrook S. Assessing the impact of climate change upon hydrology and agriculture in the Indrawati Basin, Nepal. *Geophysical Research Abstracts*, 16, 12732. url: <https://ui.adsabs.harvard.edu/abs/2014EGUGA..1612732P>.

References

Prof. Pierre Gentine

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Prof. Alberto Montanari

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Prof. Lucy Hutyra

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Prof. Sergio Fagherazzi

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sergio@bu.edu