

KRZYSZTOF RACZYNSKI

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As a hydrologist with a decade of experience in hydrology, data analysis, and environmental modeling, I specialize in geospatial analysis and climate change adaptation. My expertise lies in hydrologic extremes protection and management. I am passionate about a data-driven approaches to advance sustainable solutions in the hydrological sciences.



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EDUCATION



Maria Curie-Sklodowska University (Lublin, Poland) Doctor of Philosophy in Geography (Hydrology) Thesis: <i>Low-flows of Lublin region rivers</i> Mentor: prof. dr hab. Zdzislaw Michalczyk	X 2014 – VI 2018
Cracow University of Technology (Cracow, Poland) Master of Engineering in Environmental Engineering (Hydrotechnics and Geoengineering) Thesis: <i>Water shortages in upper Raba river basin in years 1971-1981</i> Mentor: dr hab. inz. Marta Cebulska	II 2012 – VI 2013
Cracow University of Technology (Cracow, Poland) Engineer in Environmental Engineering (Hydrotechnics and Geoengineering) Thesis: <i>Flood in 2010 against the historical floods in Lesser Poland Vistula Gorge</i> Mentor: dr hab. inz. Marta Cebulska	X 2008 – II 2012

EMPLOYMENT



Mississippi State University (Starkville, Mississippi, USA) High Performance Computing Collaboratory Assistant Research Professor, Geosystems Research Institute (VI 2023 – present) Postdoctoral Associate, Northern Gulf Institute (X 2021 – VI 2023)	X 2021 – present
Maria Curie-Sklodowska University (Lublin, Poland) Institute of Earth Sciences and Environment, Faculty of Earth Sciences and Spatial Management Research and Teaching Adjunct (X 2018 – III 2022) Research and Teaching Assistant (X 2016 – X 2018)	X 2016 – III 2022
M31 EDU LLC (Starkville, Mississippi, USA) Founder, Instructor	III 2019 – present
Udemy (online) Courses Creator and Instructor	III 2019 – present
Jardox Ltd (Sevenoaks, Kent, GB) Fine Weight Operative	XII 2013 – VII 2014
Dam Control Center (Cracow, Poland) Office and Field Internship Worker	VI 2011 – VIII 2011

GRANTS AWARDED



<i>The impact of climate change on the dynamics of hydrological extreme events : Development of the assumptions and methodology for the project.</i> National Science Centre (Poland)	2019 – 2021 2019/03/X/ST10/00167 44,221.00 PLN
<i>A conceptual model of the dynamics of changes in water resources of the Bystrzyca River.</i> Faculty of Earth Sciences and Spatial Management (Poland)	2018 – 2019 BS-M-12-011-18-A-02 6,853.56 PLN
<i>Low flows of Lublin Region rivers.</i> Faculty of Earth Sciences and Spatial Management (Poland)	2014 – 2017 BS-M-12-011-15-C-03 11,786.69 PLN

PUBLICATIONS



- Lehmann-Konera S.; Ruman M.; Frankowski M.; Małarzewski Ł.; **Raczyński K.**; Pawlak F.; Józwick J.; Potapowicz J.; Polkowska Z., 2024, Short-Term Observations of Rainfall Chemistry Composition in Bellsund (SW Spitsbergen, Svalbard). *Water*, 16, 299, [10.3390/w16020299](https://doi.org/10.3390/w16020299)
- Lehmann-Konera S., Zagórski P., Franczak Ł., **Raczyński K.**, Al Bakain R., Nowiński K., Frankowski M., Dobek M., Ruman M., Szumińska D., Polkowska Z., 2024, Spatial variability of the hydrochemistry of shallow groundwaters and surface waters of the Rensdyrbekken: A case study of a permafrost catchment in Bellsund (SW Spitsbergen, Svalbard). *Land Degradation and Development*, 1-14, [10.1002/ldr.5028](https://doi.org/10.1002/ldr.5028)
- Raczyński K.**, Dyer J., 2023, Changes in Streamflow Drought and Flood Distribution Over Poland Using Trend Decomposition. *Acta Geophysica*, [10.1007/s11600-023-01188-0](https://doi.org/10.1007/s11600-023-01188-0)
- Raczyński K.**, Dyer J., 2023, Quantifying patterns of streamflow peaks over the southeastern United States using a long-term retrospective data set. *Hydrological Processes*, 37(8), e14960, [10.1002/hyp.14960](https://doi.org/10.1002/hyp.14960)
- Raczyński K.**, Dyer J., 2023, Harmonic Oscillator Seasonal Trend (HOST) Model for Hydrological Drought Pattern Identification and Analysis. *Journal of Hydrology*, 620(B), 129514, [10.1016/j.jhydrol.2023.129514](https://doi.org/10.1016/j.jhydrol.2023.129514)
- Raczyński K.**, Dyer J., 2022, Variability of Annual and Monthly Streamflow Droughts over the Southeastern United States. *Water*, 14, 3848, [10.3390/w14233848](https://doi.org/10.3390/w14233848)
- Raczyński K.**, Dyer J., 2022, Development of an Objective Low Flow Identification Method Using Breakpoint Analysis. *Water*, 14(14), 2212, [10.3390/w14142212](https://doi.org/10.3390/w14142212)
- Dyer J., Mercer A., **Raczyński K.**, 2022, Identifying Spatial Patterns of Hydrologic Drought over the Southeast US Using Retrospective National Water Model Simulations. *Water*, 14(10), 1525, [10.3390/w14101525](https://doi.org/10.3390/w14101525)
- Lehmann-Konera S., Ruman M., Frankowski M., Małarzewski L., **Raczyński K.**, Pawlak F., Koziół K., Polkowska Z., 2022, Rainwater chemistry composition in bellsund (SW Spitsbergen, Svalbard), sources of elements and deposition discrepancies in the coastal area. *Chemosphere*, 137281, [10.1016/j.chemosphere.2022.137281](https://doi.org/10.1016/j.chemosphere.2022.137281)
- Lehmann-Konera S., Ruman M., Frankowski M., Małarzewski L., **Raczyński K.**, Pawlak F., Polkowska Z., 2022, Rainfall Chemistry Composition in Bellsund (Sw Spitsbergen, Svalbard). Part 1: Sources of Elements and Deposition Discrepancies in the Coastal Area. *SSRN*, [10.2139/ssrn.4181339](https://doi.org/10.2139/ssrn.4181339)
- Lehmann-Konera S., Ruman M., Frankowski M., Małarzewski L., **Raczyński K.**, Pawlak F., Polkowska Z., 2022, Rainfall Chemistry Composition in Bellsund (Sw Spitsbergen, Svalbard). Part 2: Elements Origin and Transport. *SSRN*, [10.2139/ssrn.4195357](https://doi.org/10.2139/ssrn.4195357)
- Raczyński K.**, Dyer J., 2021, Simulating low flows over a heterogeneous landscape in southeastern Poland. *Hydrological Processes*, 35(8), e14322, [10.1002/hyp.14322](https://doi.org/10.1002/hyp.14322)
- Raczyński K.**, 2020, Influence of a Multipurpose Retention Reservoir on Extreme River Flows, a Case Study of the Nielisz Reservoir on the Wieprz River (Eastern Poland). *Water Resources*, 47, 29–40, [10.1134/S0097807820010091](https://doi.org/10.1134/S0097807820010091)
- Raczyński K.**, Dyer J., 2020, Multi-annual and seasonal variability of low-flow river conditions in southeastern Poland. *Hydrological Sciences Journal*, 65:15, 2561-2576, [10.1080/02626667.2020.1826491](https://doi.org/10.1080/02626667.2020.1826491)
- Ferencz B., Dawidek J., Toporowska M., **Raczyński K.**, 2020, Environmental implications of potamophases duration and concentration period in the floodplain lakes of the Bug River valley. *Science of The Total Environment*, Volume 746, 2020, 141108, [10.1016/j.scitotenv.2020.141108](https://doi.org/10.1016/j.scitotenv.2020.141108)
- Raczyński K.**, 2018, Nielisz Reservoir's impact on the Wieprz River low flows alignment. *Gospodarka Wodna*, 7, 197-200
- Baran-Gurgul K., **Raczyński K.**, 2017, Dynamics of low flows in mountain and upland rivers on the example of Wisłoka and upper Wieprz. part 2: Long-term volatility. *Woda-Środowisko-Obszary Wiejskie*, 17, 1:57, 5-17
- Baran-Gurgul K., **Raczyński K.**, 2016, Dynamics of low flows in mountain and upland rivers on the example of Wisłoka and upper Wieprz part 1: Seasonality. *Woda-Środowisko-Obszary Wiejskie*, 16, 4/56, 17-31
- Baran-Gurgul K., **Raczyński K.**, 2016, Low flows in mountain and upland catchments on the example of Wisłoka and Wieprz Rivers. *Przegląd Naukowy Inżynieria i Kształtowanie Środowiska*, 25/4, 397-409
- Raczyński K.**, 2015, Methods of separating low flows into independent events on the example of rivers of Eastern Poland. *Woda-Środowisko-Obszary Wiejskie*, 15, 4/52, 39-56
- Raczyński K.**, 2015, Thresholds of low flows in the rivers of the Lublin region. *Annales Universitatis Mariae Curie-Skłodowska, sectio B – Geographia, Geologia, Mineralogia et Petrographia*, 70/1, 117-129
- Raczyński K.**, 2015, Low flows in the upper Raba catchment in 1971–1981. *Monitoring Środowiska Przyrodniczego* 17, 73-81
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REVIEWS



Journal of Hydroinformatics	2024
Land	2024
Journal of Hydrology: Regional Studies	2022 – 2024
Journal of Hydrology	2019 – 2023
Sustainability	2023
Hydrology	2023
Acta Scientiarum Polonorum	2023
Geoinformatica Polonica	2023
Acta Geographica	2020

AWARDS AND HONORS



Doctoral Dissertation Honors

2018, Maria Curie-Skłodowska University

Prof. Włodzimierz Roniewicz distinction award

2014, Chief Technical Organization: Association of Water and Land Reclamation Engineers and Technicians

CONFERENCES



- 38th Conference on Hydrology, American Meteorological Society, 2024, Baltimore, Maryland, USA
Detection of Extreme Streamflow Reoccurrence Patterns over the Southeast United States
- GRI Research Seminar Series, 2024, Starkville, MS, USA
Floods, droughts, and harmonics: discovering the patterns of hydrologic extremes in the Southeast
- American Geophysics Union Fall Meeting, Hydrology Section, 2023, San Francisco, California, USA
Simulating Parameters of Extreme Hydrologic Events Using a Modified Harmonic Model Applied to National Water Model (NWM) Retrospective Data
- Alabama Water Resources Conference, 2023, Orange Beach, Alabama, USA
Assessment of Improved HOST Model for Analysis of Hydrologic Drought
- Mississippi Water Resources Conference, 2023, Starkville, Mississippi, USA
HOST model framework for analysis of hydrologic drought patterns over the Southeast US
- ArcticScience SummitWeek, 2023, Vienna, Austria
Spatial variation of major and trace elements in the water of the Reindeer Creek small permafrost catchment (Bellsund, Svalbard)
- 37th Conference on Hydrology, American Meteorological Society, 2023, Denver, Colorado, USA
Development of a Harmonic Model for Temporal Assessment of Hydrologic Drought
- Polar Night Week, 2023, Longyearbyen, Svalbard, Norway
Spatial differentiation of major and trace elements composition in subsurface water of small permafrost catchment (Bellsund, Svalbard)
- Mississippi Water Resources Conference, 2022, Starkville, Mississippi, USA
Multiannual variability of low flow events over the Southeastern United States
- XLVII Contemporary Problems of Hydrology, 2019, Jabłonna k. Warszawy, Poland
(not)Data, the thing about hydrometeorological public data in Poland
- XLVI Contemporary Problems of Hydrology, 2018, Jabłonna k. Warszawy, Poland
Low flow of Lublin Region rivers
- XLV Contemporary Problems of Hydrology, 2017, Jabłonna k. Warszawy, Poland
Influence of selected elements of the geographical environment on the occurrence of low flows in Lublin Region rivers
- 1D and 2D flood modeling using MIKE FLOOD and MIKE HydroRiver software, 2017, Cracow, Poland
- XLIV Contemporary Problems of Hydrology, 2016, Jabłonna k. Warszawy, Poland
Characteristics of low flows in the rivers of the Lublin Region
- Hydrology Section of the Water Management Committee of the Polish Academy of Sciences, 2016, Warsaw, Poland
Low flows of rivers in the Lublin region
- Scientific achievements of doctoral students, 2016, Cracow, Poland
Low flow thresholds in the rivers of the Lublin region
- Scientific achievements of doctoral students, 2016, Cracow, Poland
Methods of separating low flows into independent events on the example of rivers of Eastern Poland
- Congress of Polish Geographers, 2015, Lublin, Poland
Low Flows in the upper Raba catchment
- XLIII Contemporary Problems of Hydrology, 2015, Małdralin, Poland
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COMMERCIAL PROJECTS AND EXPERTISE



Assessment of channel capacity for river Sanna to Wierzchowiska Pierwsze gauge with identification of retention areas

2022, Lublin: expertise; Chabudziński L., Raczyński K.

Second level evaluation of the applications for co-financing in the calls for "Implementation of investments in the field of green and blue infrastructure in cities" and "The awareness-raising activities carried out by schools on mitigating climate change and adapting to its effects" financed by the Financial Mechanism of the European Economic Area 2014-2021 for the National Fund for Environmental Protection and Water Management

2020-2021, Lublin: expert; Raczyński K.

Assessment of the capacity of the Czechówka and Czerniejówka river channels in the conditions of urban anthropopressure in the Lublin area

2020, Lublin: expertise; Raczyński K., Chabudziński L.

Preparation of a rainfall model for areas at risk of flooding in the Świdnik city

2018, Lublin: expertise; Głowacki S., Raczyński K., Furtak T.

ORGANIZATIONS, ASSOCIATIONS AND COMMITTEES



American Geophysical Union

member, 2023 – present

American Meteorological Society

member, 2023 – present

International Association of Hydrological Sciences

member, 2016 – present

Polish Hydrologists Association

member, 2017 – 2021

Polish Geographers Association

member, 2015 – 2021

Program Development Commission for new studies in Military Geography

Maria Curie-Skłodowska University, member, 2019 – 2021

Electoral Commission of Faculty of Earth Sciences and Spatial Management

Maria Curie-Skłodowska University, member, 2016 – 2020

International Association of Hydrogeologists

member, 2016 – 2018

Hydrogeomatics Student Scientific Association

Cracow University of Technology, president, 2011 – 2013

Student Settlement Association

board member, 2008 – 2013

ORGANIZATIONAL, PROMOTIONAL AND SOCIAL ACTIVITIES



Climate change – true of myth?

newspaper article in Działkowiec, 2021, Warszawa, Poland

10 year of Floods, 10 years of Droughts

newspaper article in Dziennik Wschodni, 2020, Lublin, Poland

International Water Day

Radio Broadcast Panelist, Radio Lublin, 2019, Lublin, Poland

International Earth Day and the Polish Geographer Day

science fair, workshops for elementary schools, 2017, Lublin, Poland

International Earth Day and the Polish Geographer Day

science fair, workshops for elementary schools, 2016, Lublin, Poland

Congress of Polish Geographers

conference, organizing committee, 2015, Lublin, Poland

National GIS Day

science fair, workshops for high schools, 2013, Cracow, Poland

Pogórzeńskie Scientific Attractions

science fair, open workshops, 2013, Łużna, Poland

Cracow University of Technology Open Science Day

science fair, open workshops, 2013, Cracow, Poland

National GIS Day

science fair, workshops for middle schools, 2012, Cracow, Poland

Cracow Science Picnic

science fair, open workshops, 2012, Cracow, Poland

Pogórzeńskie Scientific Attractions

science fair, open workshops, 2012, Łużna, Poland

Cracow University of Technology Open Science Day

science fair, workshops for high schools, 2012, Cracow, Poland

National GIS Day

science fair, organization and open workshops, 2011, Cracow, Poland

Cracow University of Technology Open Science Day

science fair, open workshops, 2011, Cracow, Poland

TEACHING EXPERIENCE



^{PL} denotes classes taught in Polish; ^{EN} denotes classes taught in English

<i>GIS in QGIS3 for beginners</i> ^{PL, EN}	10h
online course, M31 Edu and Udemy	2019 – present
<i>Intermediate GIS in QGIS3</i> ^{PL, EN}	10h
online course, M31 Edu and Udemy	2021 – present
<i>Spatial attributes in QGIS3</i> ^P	10h
online course, M31 Edu and Udemy	2021 – present
<i>MySQL creating and managing relational databases</i> ^{PL, EN}	10h
online course, M31 Edu and Udemy	2020 – present
<i>Python introduction to programming</i> ^{PL, EN}	10h
online course, M31 Edu and Udemy	2020 – present
<i>Statistics in hydrological studies</i> ^{PL}	10+20h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2014 – 2021
<i>Environmental processes modelling</i> ^{PL}	7+30h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2016 – 2021
<i>Hydrology</i> ^{PL}	7+20h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2017 – 2021
<i>Potamology</i> ^{PL}	5+20h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2017 – 2021
<i>GIS</i> ^{PL}	15+45h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2017 – 2021
<i>Global environmental problems</i> ^{PL}	15h
discussion classes, Maria Curie-Sklodowska University (Geography)	2017 – 2021
<i>Basics of environment modelling</i> ^{PL}	5+25h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geoinformatics)	2018 – 2021
<i>Modeling and forecasting environmental change</i> ^{PL}	20h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2020 – 2021
<i>Georeference Databases</i> ^{PL}	20h
laboratory classes, Maria Curie-Sklodowska University (Geoinformatics)	2018 – 2020
<i>Hydrogeology</i> ^{PL}	5+20h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2017 – 2019
<i>Catchment processes</i> ^{PL}	30h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2015 – 2018
<i>Hydrology of urban areas</i> ^{PL}	30h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2016 – 2018
<i>Hydrometry</i> ^{PL}	15h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2016 – 2018
<i>Managing and protecting water resources</i> ^{PL}	30h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2017 – 2018
<i>Basics of meliorations</i> ^{PL}	20h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2015 – 2017
<i>Ecohydrology</i> ^{PL}	5+25h
lecture and laboratory classes, Maria Curie-Sklodowska University (Geography)	2015 – 2017
<i>Hydrometeorology</i> ^{PL}	15h
laboratory classes, Maria Curie-Sklodowska University (Geography)	2016 – 2017

SKILLS



Languages:	Polish	English						
OS:	Windows	Linux (Debian)	Slurm					
Programming and web:	Python 3	MySQL	R	Wordpress				
Modeling software:	WRF-Hydro	HEC-RAS	WRF	UFS				
Other software:	QGIS	ArcGIS	MS Office	Statistica	AutoCAD 2D	Blender	DV Resolve	