

CURRICULUM VITAE Patrick Willems

Family name: Willems

First name: Patrick

Born in Herentals, Belgium, 21 May 1970

Master in Civil Engineering (KU Leuven, 1993; grote onderscheiding: magna cum laude)

PhD in Engineering (KU Leuven, 2000; grootste onderscheiding: summa cum laude)

Coordinates

KU Leuven, Hydraulics and Geotechnics Section
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Present Appointments

- Full professor [Urban and River Hydrology and Hydraulics](#) KU Leuven
- Director of the [Arenberg Doctoral School for Science, Engineering and Technology](#) KU Leuven
- Head of the [Hydraulics and Geotechnics Section](#) – Department of Civil Engineering KU Leuven
- Advisor innovating water management company [Sumaqua](#)
- Chair board of directors urban water sector organisation [VLARIO](#)
- Member board of directors Flanders' land management authority [VLM - Vlaamse Landmaatschappij](#)

Expertise

- Statistical analysis and stochastic modelling of hydrological extremes, extreme value analysis, hydrological time series analysis, impact of climate change, climate adaptation planning
- River and urban drainage modelling: Spatial rainfall modelling, river catchment hydrological modelling, hydraulic river flood modelling, physico-chemical river water quality modelling, impact of sewer systems on receiving surface waters, bi-directional river-sewer interaction, real-time forecasting and control, uncertainty analysis

Publications:

[Web Of Science](#) (Researcher ID: A-9715-2010; h-index = 43; number of citations > 6800)

[Scopus](#) (h-index = 45; number of citations > 7000)

[Google Scholar profile](#) (h-index = 99; number of citations > 36000)

Research and teaching activities:

In brief:

- More than 200 peer-reviewed publications in international journals or books
- More than 200 full publications in proceedings of international conferences
- More than 300 presentations at international conferences and workshops
- More than 15 keynote or invited presentations at international conferences or events; more than 25 invited presentations at national workshops
- More than 30 PhD theses as promotor; 15 ongoing
- More than 170 Master theses as promotor since 2000; 15 this academic year
- Leading researcher or coordinator of more than 50 research projects since 1995 (5 on-going)
- Main author of more than 10 guidelines for regional authorities on river flood modelling, rainfall statistics and design storms, climate scenarios, climate change impact estimation on hydrological extremes, climate adaptation planning

- Editor-in-Chief for the Elsevier Journal of Hydrology: Regional Studies, since 2013
- Included in the Reuters list of the world's top climate scientists
- Membership of international working groups and ongoing projects:
 - IWA International Water Association & IAHR International Association for Hydro-Environment Engineering and Research – IGUR International Working Group on Urban Rainfall: Member since 2000, Chairman in 2008-2014
 - EWA European Water Association: Appointed member of the Technical and Scientific Committee, since 2015
 - EUA European University Association – Council for Doctoral Education: Member Thematic Peer Group "Career Development and Tracking in Doctoral Education", since 2019
 - WMO (World Meteorological Organization) - Commission for Hydrology (CHy) : member Open Panels of CHy Experts (OPACHE), since 2015
 - WMO (World Meteorological Organization) - Commission for Hydrology : member of the Advisory Working Group on Downscaling, since 2014
 - EGU Division on Hydrological Sciences (HS) – Subdivision Precipitation and Climate: member of the Scientific Committee since 2015
 - IPCC Assessment Reports & Special Reports (e.g. on Extreme events and disasters: SREX): Expert reviewer, since 2010
 - EU-JRC project Natural Catastrophes Contingent Liabilities and Protection Gap in time and space (NCGap-TS): Project expert, 2021-2022
 - EUMETSAT H-SAF (Support to Operational Hydrology and Water Management): Expert reviewer, since 2014
 - EU-H2020 project "PRECINCT - Preparedness and Resilience Enforcement for Critical Infrastructure Cascading Cyberphysical Threats and effects with focus on district or regional protection", EU-H2020 INFRA call - Protecting the infrastructure of Europe and the people in the European smart cities: project partner
 - EU-COST Action "Opportunistic precipitation sensing network (OPENSENSE)": Member of the Management Committee, since 2022
 - UNESCO project "Biosphere Reserves as Observatories for Climate Change Adaptation in Southern Africa (B-RESILIENT)", 2020-2022, project partner
 - UNESCO project "Climate-resilient water management approaches: Application towards Climate Action and 2030 Development Agenda", 2020-2021, project partner
 - Erasmus+ Knowledge Alliance "DIGIWATER - Digitalisation of water industry by innovative graduate water education", 2020-2023, project partner
 - ER-SMNR programme on "Sustainable management of natural resources", supported by VLIR-IUC (till 2018), and by Suriname Conservation Foundation and 13 green partners (since 2018): external programme coordinator, since 2012
 - VLIR-TEAM project with Vietnam, Province of Ha Tinh: co-promoter of "Water Management and urban DEvelopment in Ha Tinh in relation to climate change (WAMADE)", since 2016
 - VLIR-TEAM project with Bolivia, La Paz: promoter "Anthropogenic influence on a typical watershed in the Bolivian Andes", since 2018
 - VLIR-SI project with Vietnam, Hanoi: promoter "Assessment of urban flood hazard in Hanoi under current and future climate conditions", since 2019
 - VLIR-IUC project with Quy Nhon University, Vietnam: project leader "Developing an early flood warning system to improve the adaptive capability of the local authorities and communities in the context of climate change", since 2021
 - VLIR-IUC project with Ardhi University, Tanzania: project leader "Decent housing" – subproject "safe and clean water", since 2021
 - VLIR-TEAM project with University of Azuay & University of Cuenca, Ecuador: promoter "Sustainable water management under climate change in Southern Ecuador", since 2022
- Membership of regional or local working groups and ongoing projects (not exhaustive):

- Member of the “High Level Taskforce Drought” of the Flemish Government, chaired by the Minister for Environment, and with presence of the Ministers for Economy, Agriculture, Mobility, Public Works, and Internal Affairs, since 2020
- Member of the multidisciplinary expert panel “Flood protection Flanders” of the Flemish Government, chaired by the Minister for Mobility and Public Works and the Minister for Environment, since 2021
- Member of the scientific advisory board of the “Management panel flooding” (Beleidsstafel wateroverlast en hoogwater) in The Netherlands, since 2021
- Member of the Programme Bureau Flemish R&D Agenda Water (Vlaamse O&I agenda Water), for Flemish Government, since 2022
- VLARIO - Knowledge platform of the urban water sector in Flanders: Chair of the Board of Directors, since 2020
- VLM – Vlaamse Landmaatschappij (Flanders’ land management authority): Member of the Board of Directors, since 2020
- Advisory board “Blue Deal” plan on drought management by the Flemish Government, since 2022
- Scientific-technical committee of the Flanders project Kustvisie (Coastal Vision): Member since 2019
- Advisory board “See level rise” for Flanders’ water authorities: Member since 2021
- Scientific advisory board of Knowledge programme Sea level rise in The Netherlands: Member since 2021
- Royal Belgian Academy for Overseas Sciences (Koninklijke Academie voor Overzeese Wetenschappen / Académie Royale des Sciences d’Outre-Mer): Member since 2010
- Structural collaboration Flanders – Netherlands on water knowledge development, for KWR The Netherlands & water company De Watergroep: Project promoter, 2017-2022
- Reactive assessment framework for priority water use during water scarcity, for Authorities of Flanders (joint initiative of Vlaamse Milieumaatschappij, De Vlaamse Waterweg, Departement Mobiliteit en Openbare Werken, Departement Landbouw en Visserij, Departement Omgeving, Agentschap voor Natuur en Bos, Departement Economie, Wetenschap en Innovatie): overall coordinator, 2019-2021
- Water balance model for navigable rivers and canals in Flanders, for water authority De Vlaamse Waterweg: project promoter, 2019-2024
- Evaluation of the Sigmaplan in view of the climate change trends, for water authority De Vlaamse Waterweg: project promoter, 2021-2022
- Spatial levers in the fight against water scarcity: expert for Authorities of Flanders - Departement Omgeving – Labo Ruimte, 2020-2022
- International visiting lectureships:
 - Universidad da Cuenca, Ecuador: course “Advanced surface water hydrology”, Master in Water and Soil Management Programme - Programa para el Manejo del Agua y del Suelo, 2003, 2005, 2009 (PROMAS)
 - University of West Indies (UWI), Faculty of Science and Agriculture, Port of Spain Trinidad: course “Hydrological modeling”, 2007 (IHP/UNESCO/Flanders in Trust Fund)
 - Moi University, Faculty of Engineering, Kenya: course “Hydroinformatics”, Master in Water Engineering, 2008, 2009, 2011, 2012, 2016 (VLIR-UOS)
 - Anton de Kom Universiteit, Suriname: course “Water Resources Management”, Master in Sustainable Management of Natural Resources, 2010, 2011, 2012 (VLIR-UOS)
 - Universidad San Andres, La Paz, Bolivia: course “Statistical Hydrology”, Master in Irrigation engineering, 2012, 2015 (VLIR Own Initiative)
 - Imperial College London, UK: guest lectures, Master in Civil Engineering, 2015 (Belgian Chair at London University)
 - Indian Institute of Engineering Science and Technology, India: Training course on “Climate change impact analysis”, 2016 (Global Initiative on Academic Networks)

- Vietnam National University, Hanoi, Vietnam: Training courses on “Decision support tools for integrated water management in the context of climate change” and “Sustainable urban drainage systems (SUDS)”, 2018 (Enabel & MOET-Vietnam)