

RACHEL LOWE

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PROFILE

Professor Rachel Lowe is an internationally recognised leader in the field of climate change and infectious disease modelling. Over the last 15 years, she has pioneered the development of robust analytical techniques to i) link climate and infectious disease data, ii) disentangle the impacts of environmental change on disease risk, iii) predict when and where disease outbreaks are likely to happen and iv) assess the changing suitability of climate-sensitive infectious diseases from the global to the local level. Rachel is currently an ICREA Research Professor and Global Health Resilience Group Leader at the Barcelona Supercomputing Center (BSC). Rachel's research group co-develops policy-relevant methodological solutions, to enhance surveillance, preparedness and response to global health challenges, with a focus on climate-sensitive infectious diseases. Rachel has published over 100 peer-review articles and book chapters on diverse climate and health topics and has raised over €7 million in competitive research funding. She has published key methodology papers on integrating climate information in early warning and response systems for infectious diseases in Latin America, the Caribbean and Southeast Asia, in prestigious journals including The Lancet Infectious Diseases, The Lancet Planetary Health and Nature Communications. In 2018, she won the International Society for Neglected Tropical Diseases Water Award for Research, in recognition of the quality of her research on the linkages between hydrometeorological extremes and dengue outbreaks and the multi-sectoral relevance for policy and practice.

Rachel obtained a PhD in Mathematics at the University of Exeter in 2010. Her thesis focused on spatiotemporal modelling of dengue epidemics in Brazil. She held postdoctoral positions at the UNESCO-IAEA International Centre for Theoretical Physics in Italy and the Catalan Institute for Climate Sciences in Spain, working at the interface of climate prediction science and public health decision-making. She joined the London School of Hygiene & Tropical Medicine in 2017 with a Royal Society Dorothy Hodgkin Fellowship, serving on the management committee for the Centre on Climate Change and Planetary Health and co-leading the vector-borne disease theme in the Centre for Mathematical Modelling of Infectious Diseases. She was promoted to Associate Professor in 2019 in recognition of her leadership of the Planetary Health & Infectious Disease lab, which attracted first-class PhD students and international research fellows. Rachel has served as a consultant and advisor for impact-based forecasting projects for the Red Cross Climate Centre and Médecins Sans Frontières. She was a member of the World Meteorological Organization (WMO) COVID-19 research task team and was a contributing author of the IPCC Sixth Assessment Report (WGII) chapter on risks across sectors and regions. Rachel was the founding director of The Lancet Countdown in Europe, a transdisciplinary collaboration tracking progress on health and climate change. She is a member of the WMO World Weather Research Programme (WWRP) and the Lancet Commission for Strengthening the Use of Epidemiological Modelling of Emerging and Pandemic Infectious Diseases. In 2024, The Rockefeller Foundation invited Rachel to be a Bellagio Center Resident Fellow. In 2025 she won the Barcelona City award for Environmental and Earth Sciences, in recognition of her research on the impacts of climate change on health.

Rachel is passionate about supporting early career researchers to excel and reach their full potential. She has supervised and mentored 12 postdoctoral scientists (including Marie Skłodowska-Curie Actions and Schmidt Science fellowships), 3 visiting research fellows, 4 research engineers, 8 PhD students and 6 Masters students. Alongside her research, Rachel has organised and taught on international and regional climate and health capacity building activities for postgraduate students and public health practitioners. Her outreach activities, research on dengue early warning systems and Lancet Countdown activities have been showcased in policy reports published by the World Meteorological Organization and the European Environment Agency and are frequently reported in the media, including the BBC, Nature News and The Guardian.

RESEARCH INTERESTS

- Climate variability and change
- Planetary health
- Impact-based forecasting
- Statistical and mathematical modelling
- Infectious disease epidemiology
- Public health policy

PROFESSIONAL APPOINTMENTS

Jan 2022 – present: ICREA Research Professor and Global Health Resilience Group Leader
Barcelona Supercomputing Center (BSC), Earth Sciences Department, Barcelona, Spain.

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Jan 2017 – present: Royal Society Dorothy Hodgkin Fellow and Associate Professor

London School of Hygiene & Tropical Medicine, Department of Infectious Disease Epidemiology, London, UK.

Mar 2012 – Dec 2016: Postdoctoral Scientist and Head of Climate Services for Health

(Maternity leave Mar – Oct 2016)

Catalan Institute for Climate Sciences (IC3), Climate Dynamics and Impacts Unit, Barcelona, Spain.

Oct 2010 – Feb 2012: Postdoctoral Scientist

UNESCO/IAEA Abdus Salam International Centre for Theoretical Physics, Earth System Physics, Trieste, Italy.

Oct 2007 – Dec 2010: Leverhulme Research Network Facilitator

EURO-Brazilian initiative for improving South American seasonal climate forecasts.

University of Exeter, College of Engineering, Mathematics and Physical Sciences, UK.

EDUCATION

Degree	Subject	University	Year
PhD	Mathematics (Statistical Modelling)	University of Exeter, UK	2011
MSc	Geophysical Hazards (UCL Graduate Master's Award). Distinction	University College London, UK	2007
BSc (Hons)	Meteorology & Oceanography with a year in Europe (Granada, Spain). First Class	University of East Anglia, UK	2004

PUBLICATIONS (SELECTED FROM MORE THAN 100 PEER REVIEW ARTICLES)

- Charnley GEC, Alcayna T, Almuedo-Riera A, Antoniou C, Badolo A, Bartumeus F, Boodram LL, Bueno-Marí R, Codeço C, Coelho FC, Costa F, Cox H, Haddad N, Ab Hamid N, Kittayapong P, Korukluoğlu G, Michaelakis A, Maciel-de-Freitas R, Montalvo T, Muñoz J, Sauelda Oliveras S, Palmer JRB, Barboza Pizard CJ, Ribeiro GS, **Lowe R.** (2025). Strengthening resilience to emerging vector-borne diseases in Europe: lessons learnt from countries facing endemic transmission. *The Lancet Regional Health–Europe* (<https://doi.org/10.1016/j.lanepe.2025.101271>).
- Moirano G, Fletcher C, Semenza JC, **Lowe R.** (2025). Short-term effect of temperature and precipitation on the incidence of West Nile Neuroinvasive Disease in Europe: a multi-country case-crossover analysis. *The Lancet Regional Health–Europe* (<https://doi.org/10.1016/j.lanepe.2024.101149>).
- **Lowe R** & Codeço CT. (2025). Harmonizing Multisource Data to Inform Vector-Borne Disease Risk Management Strategies. *Annual Review of Entomology* (<https://doi.org/10.1146/annurev-ento-040124-015101>).
- van Daalen KR, Jung L, Dada S, Othman R, Barrios-Ruiz A, Malolos GZ, Wu KT, Garza-Salas A, El-Gamal S, Ezzine T, Khorsand P, ..., **Lowe R.** (2024). Bridging the gender, climate, and health gap: the road to COP29. *The Lancet Planetary Health* ([https://doi.org/10.1016/S2542-5196\(24\)00270-5](https://doi.org/10.1016/S2542-5196(24)00270-5)).
- Díaz AR, Rollock L, Boodram LL, Mahon R, Best S, Trotman A, Van Meerbeeck CJ, Fletcher C, Dunbar W, Lippi CA, Lührsén D, Sorensen C, Muñoz AG, Ryan SJ, Stewart-Ibarra AM, **Lowe R.** (2024). A demand-driven climate services for health implementation framework: A case study for climate-sensitive diseases in Caribbean Small Island Developing States. *PLoS Climate* (<https://doi.org/10.1371/journal.pclm.0000282>).
- Carvalho BM, Maia C, Courtenay O, Llabrés-Brustenga A, Lotto Batista M, Moirano G, van Daalen KR, Semenza JC, **Lowe R.** (2024). A climatic suitability indicator to support *Leishmania infantum* surveillance in Europe: a modelling study. *The Lancet Regional Health–Europe* (<https://doi.org/10.1016/j.lanepe.2024.100971>).
- van Daalen KR, ..., **Lowe R.** (2024). The 2024 Europe report of the Lancet Countdown on health and climate change: unprecedented warming demands unprecedented action. *The Lancet Public Health* ([https://doi.org/10.1016/S2468-2667\(24\)00055-0](https://doi.org/10.1016/S2468-2667(24)00055-0)).
- Cai W, Fanzo J, Glaser J, **Lowe R**, Lusambili AM, Marks E. (2024). Views on climate change and health. *Nature Climate Change* (<https://doi.org/10.1038/s41558-024-01998-0>).
- Gibb R, Colón-González FJ, Lan PT, Huong PT, Nam VS, Duoc VT, Hung DT, Dong NT, Chien VC, Trang LTT, Quoc DK, Hoa TM, Tai NH, Hang TT, Tsarouchi G, Ainscoe E, Harpham Q, Hofmann B, Lumbroso D, Brady OJ, **Lowe R.** (2023). Interactions between climate change, urban infrastructure and mobility are driving dengue emergence in Vietnam. *Nature Communications* (<https://doi.org/10.1038/s41467-023-43954-0>).

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- Santos-Vega M, **Lowe R**, Anselin L, Desai V, Vaishnav KG, Naik A, Pascual M. (2023). Quantifying climatic and socioeconomic drivers of urban malaria in Surat, India: a statistical spatiotemporal modelling study. *The Lancet Planetary Health* ([https://doi.org/10.1016/S2542-5196\(23\)00249-8](https://doi.org/10.1016/S2542-5196(23)00249-8)).
- Lotto Batista M, Rees EM, Gomez A, Lopez A, Castell S, Kucharski AJ, Ghazzi S, Müller GV, **Lowe R**. (2023). Towards a leptospirosis early warning system in North-Eastern Argentina. *J. R. Soc. Interface* (<https://doi.org/10.1098/rsif.2023.0069>).
- van Daalen, ..., **Lowe R** (2022). The 2022 Europe report of the Lancet Countdown on health and climate change: towards a climate resilient future. *The Lancet Public Health* ([https://doi.org/10.1016/S2468-2667\(22\)00197-9](https://doi.org/10.1016/S2468-2667(22)00197-9)).
- Fletcher IK, Grillet ME, Moreno J, Drakeley C, Hernandez-Villena J, Jones K, **Lowe R**. (2022). Synergies between environmental degradation and climate variation on malaria reemergence in southern Venezuela. *The Lancet Planetary Health* ([https://doi.org/10.1016/S2542-5196\(22\)00192-9](https://doi.org/10.1016/S2542-5196(22)00192-9)).
- Sera F, O'Reilly KM, Armstrong B, Tobias A, Hashizume M, Schneider dos Santos R, von Borries R, Pascal M, Vicedo-Cabrera AM, Gasparrini A, **Lowe R**. (2021). A cross-sectional analysis of meteorological factors and SARS-CoV-2 transmission in 409 cities across 26 countries. *Nature Communications* (<https://doi.org/10.1038/s41467-021-25914-8>).
- Colón-González FJ, Sewe MO, Tompkins AM, Sjödin H, Casallas A, Rocklöv J, Caminade C, **Lowe R**. (2021). Projecting the risk of mosquito-borne diseases in a warmer and more urbanised world: a multi-model multi-scenario intercomparison modelling study. *The Lancet Planetary Health* ([https://doi.org/10.1016/S2542-5196\(21\)00132-7](https://doi.org/10.1016/S2542-5196(21)00132-7)).
- **Lowe R**, Lee S, O'Reilly KM, Brady OJ, Bastos L, Carrasco-Escobar G, De Castro Catão R, Colón-González FJ, Barcellos C, Sá Carvalho M, Blangiardo M, Rue H, Gasparrini A. (2021). Combined effects of hydrometeorological hazards and urbanisation on dengue risk in Brazil: a spatiotemporal modelling study. *The Lancet Planetary Health* ([https://doi.org/10.1016/S2542-5196\(20\)30292-8](https://doi.org/10.1016/S2542-5196(20)30292-8)).
- Colón-González FJ, Bastos L, Hofmann B, Hopkin A, Harpham Q, Crocker T, Amato R, Ferrario I, Moschini F, James S, Malde S, Ainscoe E, Nam VS, Tan DQ, Khoa ND, Harrison M, Tsarouchi G, Lumbroso D, Brady OJ, **Lowe R**. (2021). Probabilistic seasonal dengue forecasting in Vietnam: A modelling study using superensembles. *PLoS Medicine* (<https://doi.org/10.1371/journal.pmed.1003542>).
- **Lowe R**, Gasparrini A, Van Meerbeeck CJ, Lippi CA, Mahon R, Trotman AR, Rollock L, Hinds AQJ, Ryan SJ, Stewart Ibarra AM (2018). Nonlinear and delayed impacts of climate on dengue risk in Barbados: A modelling study. *PLOS Medicine* ([doi:10.1371/journal.pmed.1002613](https://doi.org/10.1371/journal.pmed.1002613)).
- **Lowe R**, Stewart-Ibarra AM, Petrova D, García-Díez M, Borbor-Cordova MJ, Mejía R, Regato M, Rodó X. (2017). Climate services for health: predicting the evolution of the 2016 dengue season in Machala, Ecuador. *The Lancet Planetary Health* ([doi:10.1016/S2542-5196\(17\)30064-5](https://doi.org/10.1016/S2542-5196(17)30064-5)).

RESEARCH FUNDING (SELECTED, MORE THAN €7 MILLION OBTAINED SINCE 2017)

- TACTIC HealTh ImpAct ToolIt for Climate change attribution. Funder: Wellcome Trust. Lead institution: University of Bern. Role: co-Principal Investigator, Jan 2025 – Dec 2027, €3,500,000 (BSC: €752,978).
- Global Development Assistance (GDA) Agile EO Information Development (GDA AID): Public Health. Funder: European Space Agency. Lead institution: Brockmann Consult GmbH. Role: BSC Principal Investigator, Sep 2024 – Mar 2026, €1,500,000 (BSC: €231,540).
- Eco-Epidemiological Intelligence for early Warning and response to mosquito-borne disease risk in Endemic and Emergence settings (E4Warning), Funder: Horizon Europe, Lead institution: Consejo Superior de Investigaciones Científicas (CSIC), Role: WP leader, Jan 2023 – Dec 2026, € 4,942,323 (BSC: € 519,750.00).
- Engagement and dissemination to enhance uptake of digital tools for public health resilience to climate change. HARMONIZE public engagement enrichment award, Funder: Wellcome Trust. Lead institution: Barcelona Supercomputing Center, Role: Principal Investigator, Nov 2022 – Oct 2026, € 624,007 (BSC: € 248,195).
- Infectious Disease decision-support tools and Alert systems to build climate Resilience to emerging health Threats (IDAlert), Funder: Horizon Europe, Lead institution: Umea University, Role: Co-Coordinator and WP leader, Jun 2022 – May 2027, €9,188,294 (BSC: €1,405,063).
- Harmonizing multi-scale spatiotemporal data for health in climate change hotspots (HARMONIZE), Funder: Wellcome Trust, Lead institution: Barcelona Supercomputing Center, Role: Principal Investigator, May 2022 – April 2026, € 3,115,229 (BSC: € 947,437)

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AWARDS, DISTINCTIONS AND RECOGNITION (SELECTED)

- 2025 City of Barcelona Award in Environmental and Earth Sciences.
- 2024 Rockefeller Foundation Bellagio Center Climate Solutions Residency.
- 2024 5000 most outstanding women scientists in Spain (ranked in top quartile).
- 2024 Stanford University list of "World's Top 2%" scientists.
- 2022 BSC Distinction for ICREA appointment and creation of the BSC Global Health Resilience team.
- 2022 ICREA Research Professorship.
- 2019 Royal Society Public Engagement Masterclass Bursary.
- 2018 International Society for Neglected Tropical Diseases (ISNTD) Water Award for Research.
- 2018 Royal Society Research Grant for Research Fellows.
- 2017 Royal Society Dorothy Hodgkin Fellowship.

EXTERNAL CITIZENSHIP, VISIBILITY AND OUTREACH (SELECTED)

- WMO WWRP SAGE-Health Task Team chair (Apr 2025 – present).
- The Rockefeller Foundation Health Expert Advisors Group (Mar 2025 – present).
- WHO-WMO Joint Programme on Climate and Health - Global Goods Guidebook for Climate and Health Peer Review Group (Feb 2025 – present).
- Grand Challenges Canada Climate and Health Expert Panel (Nov 2024 – present).
- Interview with Professor Rachel Lowe, Health Emergency Preparedness and Response (HERA) Newsroom, European Commission (Oct 2024).
- BBC Earth short film “The Hidden Danger Being Fuelled by Floods” (Feb 2024).
- Early Warning Systems Consultant. Caribbean Agency for Public Health (Jun 2023 – present).
- Lancet Commission for Strengthening the Use of Epidemiological Modelling of Emerging and Pandemic Infectious Diseases (Jun 2023 – present).
- World Meteorological Organization (WMO) Steering Group for Sub-seasonal Applications for Agriculture and Environment (SAGE) project of the World Weather Research Programme (WWRP) (Sep 2023 – present).
- Advisory Board member Copernicus Thematic Hub on Health (Nov 2022 – present).
- Director Lancet Countdown in Europe (Sep 2021 – Aug 2024).
- Contributing author IPCC WGII Sixth Assessment Report. Chapter 16: Key Risks Across Sectors and Regions.
- Short documentary ‘Can supercomputers help stop mosquito diseases?’, Royal Society (Nov 2021).
- Guest Editor special collection on climate change and communicable diseases, British Medical Journal (2020).
- World Meteorological Organization COVID-19 Research Task Team (Jun 2020 – May 2022).
- Member of Dengue Advisory Group, International Society for Neglected Tropical Diseases (2019 – present).
- World Health Organization expert working group: Using climate and weather information for predicting and preparing for cholera and vector-borne diseases (Jun 2019 – May 2021).
- Presenter at Royal Society ‘The Next Big Things’ platform, Hay Festival (May 2018).