

HILARY KATHERINE McMILLAN

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HIGHER EDUCATION

- 2002-2006 **PhD** Department of Geography, Cambridge University, UK
Thesis '*End-to-End Flood Risk Assessment: A Coupled Model Cascade with Uncertainty Estimation*'
- 2001-2002 **MRes Science of the Environment, Distinction** Lancaster University, UK
Thesis '*Discharge Estimation in ungauged sub-catchments of the River Eden, UK*'
- 1996-1999 **MA Mathematics, 1st Class** Cambridge University, UK

WORK HISTORY

- 2022 to date **Professor of Water Resources.** Dept of Geography, San Diego State University, US.
- 2018-2022 **Associate Professor of Water Resources.** Dept of Geography, San Diego State University, US.
- 2016-2018 **Associate Professor of Water Resources (without Tenure).** Dept of Geography, San Diego State University, US.
- 2007-2016 **Hydrological Scientist.** Hydrological Processes group, National Institute of Water and Atmospheric Research (NIWA), Christchurch, New Zealand.
- 2006-2007 **Marsden Postdoctoral Fellow.** Massey University, Palmerston North, New Zealand.
'*Hyperconcentrated flow dynamics in volcanic lahars*'

RESEARCH GRANTS HELD

[All figures given in US\$ equivalents if awarded overseas]

- 2021–2025 \$294,998, PI. *A framework to predict hydrologic processes at continental scales*, NSF Hydrology Program.
- 2023–2024 \$103,154, PI. *Hydrology Learning Community*, Global HSI Equity Innovation Hub.
- 2023–2024 \$10,280, PI. *Apple Technology Grant*.
- 2022–2024 \$314,325, of which \$109,050 to SDSU, PI. *Developing a diverse hydrology workforce through an undergraduate hydrological research experience in a coastal California watershed*, NSF Geopaths Program,
- 2021–2024 \$293,846, PI. *Missing the main load? Quantifying marine debris loadings from storm drain and river margin sources in the San Diego River*, NOAA Marine Debris Program.
- 2021–2022 \$14,998, PI. *Predicting Hydrologic Vulnerability in San Diego County using Machine Learning*, Southern California Coastal Water Research Project.
- 2019-2021 \$499,810, of which \$31,006 to SDSU, AI. *Evaluation and Improvement of Snowmelt Processes in the National Water Model During Extreme Atmospheric River Events*. National Oceanic and Atmospheric Administration.
- 2019-2023 \$217,978, Subcontract PI. *Hydrologic Model Evaluation for Forecast Informed Reservoir Operations*, UC San Diego/U.S. Army Corps of Engineers.
- 2020-2021 \$18,709, of which \$6,237 to SDSU, PI. *Quantifying water storage and runoff processes in coastal California watersheds through a GEOPATHS hydrological field experience for CSU undergraduates*. CSU Council on Ocean Affairs, Science and Technology (COAST) Grant Development Program Award.
- 2019-2020 \$56,684. Subcontract PI. *Atmospheric Rivers Hydrology Research*, UC San Diego/U.S. Army Corps of Engineers.

- 2019-2020 \$9,919, PI. *Mapping how urban landscapes control flood magnitude in Southern California*. SDSU University Grants Program.
- 2017-2019 \$65,216, PI. *Surface Water Isotope Composition in Mission Valley*. City of San Diego.
- 2018-2019 \$9,988, PI. *Urban agriculture: Environmental resource or environmental pressure?*, SDSU University Grants Program.
- 2012-2016 \$2,800,000, PI. *Waterscape 2*, MBIE (Ministry for Business, Innovation and Employment) research grant (NZ)
- 2010-2016 \$2,600,000, AI. *Reducing the impacts of Weather Related Hazards*, MBIE research grant (NZ). [Dollar value quoted is the portion of the total grant for which I was project leader]
- 2015-2016 \$11,600, PI. *Accounting for the uncertainty of streamflow records in unstable rivers for water resource modelling*. Dumont D'Urville Fund, Royal Society of NZ, for NZ-France collaboration.
- 2010-2012 \$350,000, AI. *Catchment Hydrology*, AI, MBIE research grant (NZ).
- 2012-2013 \$23,000, PI. *Waterscape Hawkes Bay*. National Institute for Water and Atmospheric Research (NIWA, NZ).
- 2011-2012 \$46,000, PI. *Water tracking hydrological model for contaminant transfer*. NIWA, NZ
- 2010-2011 \$40,000, PI. *Water and Contaminant Tracking*. NIWA, NZ
- 2009-2010 \$112,000, PI. '*Flood Risk under Climate Change*'. Ministry for Agriculture and Forestry (NZ).
- 2009-2010 \$54,000, PI. '*Improvements in hydrological process modelling for applications in flow forecasting*', NIWA, NZ.
- 2008-2009 \$54,000, PI. '*Hydrological model calibration in catchments with heterogeneous geology*', NIWA, NZ
- 2009 \$4,000. International Science and Technology Linkages Fund, Royal Society of NZ.

INVITED/KEYNOTE PRESENTATIONS

- 2022 Seminar Speaker at University of Bristol, University of Potsdam and IVL Sweden. "*Naming, sharing and predicting hydrological processes*"
- 2019 Invited speaker at American Geophysical Union conference (AGU), San Francisco. "*Process-based diagnostics for hydrologic models*"
- 2018 Invited speaker at American Geophysical Union conference (AGU), San Francisco. "*Using hydrologic signatures to extract information from data and evaluate models across scales*"
- 2017 Seminar Speaker at UC Santa Barbara and UC Irvine, '*Hydrological Signatures: Windows into a Watershed*'. [Many earlier seminar presentations omitted]
- 2017 Keynote speaker to workshop on Improving the theoretical underpinnings of hydrologic models, Sopron, Hungary "*Towards hydrologic models for a world of human impacts*"
- 2016 Invited speaker at European Geosciences Union conference (EGU), Vienna, Austria, "*Catchment water storage: Models vs Measurements*"
- 2015 Keynote speaker to Berkeley Catchment Symposium, San Francisco, "*Where do national hydrology models perform well or badly and why?*"
- 2015 Invited speaker at AGU, San Francisco, "*Hydrological Uncertainty: Reasons to Be Cheerful*"
- 2015 Keynote speaker to Gordon Research Conference on Catchment Science, Boston, '*Hydrological signatures: use and abuse*'.
- 2013 Invited speaker at AGU, San Francisco, '*Benchmarking Uncertainty for Hydrology*'
- 2013 Invited speaker at EGU, Vienna, Austria, '*Spatial organisation in hydrological model structures*'

2012 Keynote speaker ‘*Making the most of hydrological data*’ and invited speaker ‘*Using data from research basins to identify appropriate model structures*’ at IAHS Conference in Delft, Netherlands

SCHOLARLY AWARDS

2022 Presidential Research Award for outstanding research, scholarship and creative endeavours, San Diego State University, including prize of \$25,000.

2018 Excellence in Research Award for Tenure-Track Faculty, SDSU College of Arts and Letters

2012 American Geophysical Union 2012 Editor’s Citation for Excellence in Refereeing

2002 - 2003 Selwyn College Graduate Scholarship (for distinction in postgraduate study)

2002 - 2005 Natural Environment Research Council UK (NERC) PhD Scholarship with NERC PhD CASE Award (Co-operative Award in Science and Engineering).

2001 - 2002 Natural Environment Research Council UK (NERC) Masters Scholarship.

TEACHING EXPERIENCE

Instruction (at San Diego State University)

Practical Hydrologic Modeling Postgraduate/Undergraduate, Spring 2019/2020/2022.

CUAHSI Virtual University Postgraduate, Fall 2020.

Hydrology and Global Environmental Change Postgraduate/Undergraduate, Spring 2017/2018, Fall 2018/2020/2021.

Environmental Hydrology Undergraduate, Fall 2016/2017/2018.

Teaching Fellowships and Awards

2021 \$10,000 award. Theme Leader for CUAHSI National Water Center Innovators Program Summer Institute for graduate students in hydrology, ‘*Next-generation National Water Model*’

2020 \$3,000 award. Summer teaching fellowship with HydroLearn, an NSF-funded online hydrology education platform, developing learning resources on the topic of hydrologic drought.

2019 \$10,000 award. Theme Leader for CUAHSI National Water Center Innovators Program Summer Institute, ‘*Scaling hydrologic and hydraulic models from small basins to regional watersheds*’

Doctoral Advising

2021 to date PhD Committee Chair, R. Araki, San Diego State University. ‘*Quantifying surface and subsurface soil moisture dynamics from satellite and field observations*’.

2018 to date PhD Committee Chair, D. Kim, San Diego State University. ‘*Hydrologic modeling of heterogeneous urban landscapes*’

2021 to date PhD Committee Member, J. Bissell, San Diego State University.. ‘*Stream network dynamics under climate change and anthropogenic disturbance*’

2020 PhD Internship Advisor, S. Gnann, Bristol University, UK. ‘*Linking baseflow generating processes to catchment attributes*’

2021 to date PhD Committee Member, R. King, San Diego State University. ‘*Multi-scale electromagnetic observations of geologic and anthropogenic phenomena*’.

2016 to date PhD Committee External Member, I. Horner, IRSTEA, France. ‘*Diagnostic-evaluation of distributed models using hydrological signatures*’.

2015 PhD Internship Advisor, T. Euser, TU Delft, Netherlands. ‘*Influence of soil and climate on root zone storage capacity*’.

Masters Advising (at San Diego State University/MS Watershed Science unless specified)

- 2022 to date MS Committee Chair, A. Holt. “*Continental-scale Controls on Baseflow Patterns*”
- 2022 to date MS Committee Chair, T. Palmer. “*A “trash balance” model of the San Diego River: Integrating riverine marine debris input, transport, storage, remobilization and export into a mass balance model*”.
- 2021 to date MS Committee Chair, L. Bolotin. “*Identifying and characterizing vulnerability to overland flow in continental U.S. catchments using hydrologic signatures*”
- 2020 - 2022 MS Committee Chair, J. Tang. “*To what extent do Narrow Cold Frontal Rainbands cause urban flooding in Southern California?*”
- 2019 - 2021 MS Committee Chair, R. Araki. ‘*Quantifying temporal surface-subsurface dynamics from in-situ soil moisture network observation under different land uses*’
- 2017 -2019 MS Committee Chair, S. Wallace. ‘*Isotopic separation of groundwater recharge sources, San Diego*’
- 2017 - 2019 MS Committee Chair, A. Scurlock. ‘*Hydrologic benefits and stressors of urban agriculture*’
- 2021 - 2022 MS Committee Member, V. O’Hara-Rhi “*Flood Extent Prediction in the Urban Transportation Environment*”, MS Civil Engineering.
- 2021 – 2021 MS Committee Member, B. Wilder, “*Runoff prediction and ecohydrological recovery for small catchments after fire in Southern California*”, MS Civil Engineering.
- 2018 to date MS Committee Member, S. Roberts. ‘*Hydrologic Change Along the All-American Canal*’
- 2017 - 2019 MS Committee Member, C. Monteverde. ‘*Climate Change Impacts on Winegrowing Regions in Southern California: From the Perspective of a Regional Climate Model.*’
- 2018 - 2019 MS Committee Member, F. Farhang. *Human Health Risk Assessment of Heavy Metals and Pathogens in the Olifants River, South Africa*. Master of Public Health.
- 2018 - 2019 MS Committee Member, G. McGurk. *Geochemical Sediment Source Identification in a Semi-Arid Urbanized Watershed: Implications for improved soil loss modelling.*
- 2018 - 2019 MS Committee Member, L. De La Torre. ‘*Characterizing hyporheic exchange and nutrient retention in restored urban streams*’
- 2016 - 2018 MS Committee Member, R. Feddema. ‘*Groundwater quality change in the Mexicali valley, Mexico*’
- 2016 - 2018 MS Committee Member, L. Barrett. ‘*Runoff Sensitivity to Climate Variability in California.*’
- 2018 to date MS Thesis Advisor, M. Ende, U. Amsterdam, ‘*Urban irrigation in the WRF-Hydro model*’
- 2011 MS Committee Co-Chair, D. Gawith, Otago University, NZ. ‘*Climate change effects on runoff in the Lindis and Matukituki catchments, Otago, NZ*’
- 2010 MS Thesis Advisor, M. Gaj, Freiburg University, Germany. ‘*Hydrological soil response in NZ*’

Bachelors Honors Advising (Overseas students undertaking theses at NIWA Research Institute, NZ)

- 2014 M. Douziech, ETH Zürich, Switzerland. ‘*Analysis of high and low resolution numerical weather prediction model inputs and their influence on hydrological model flow predictions*’.
- 2013 A. Gago, Montpellier University, France. ‘*Storm responses of soil moisture, groundwater and flow*’
- 2013 T. Finucane, Birmingham University, UK. *Groundwater and surface water interactions interpreted from piezometer, flow gauge and shallow well data*’
- 2012 M. Gueguen, Montpellier SupAgro, France. ‘*Controls on runoff ratio in Mahurangi Catchment, NZ*’.
- 2010 E. Grimon, Birmingham University, UK. ‘*Hydrologic recession behaviour in small catchments*’.

Workshop Organisation

- 2010 *Hydrologic Impacts of Climate Change*. New Zealand Hydrological Society, Dunedin, NZ.
2009 *Managing with Uncertainty*. New Zealand Hydrological Society, Whangerei, NZ.

PROFESSIONAL SERVICE

- 2023 External PhD examiner for Hoseung Jung, Humboldt-Universität zu Berlin, Germany
2020 – date Director of the SDSU Geography Department Masters Program
2020 – 2021 Editor for Special Issue of *Hydrological Processes* journal, on “*Impacts of observational uncertainty on analysis and modelling of hydrological processes*”.
2021 – date Leadership Team member for International Association of Hydrological Sciences (IAHS) Flagship project ‘Panta Rhei: Hydrology, Society and Change’
2021 NSF Hydrologic Sciences Program, External Reviewer
2021 External Reviewer for Tenure Case, University of Cincinnati
2020 External PhD examiner for D. Khadka, University of Canterbury - Te Whare Wānanga o Waitaha, Christchurch, New Zealand
2019 – date Co-Chair (for 2023)/Chair (for 2025) of the Gordon Research Conference (GRC) in Catchment Science: Interactions of Hydrology, Biology and Geochemistry
2019 –date Editor for Special Issue of Hydrology and Earth System Sciences Journal, on “*Linking landscape organisation and hydrological functioning: from hypotheses and observations to concepts, models and understanding*”
2019, 2020 NSF Hydrologic Sciences Program, Panel Member.
2019 External Reviewer for Tenure Case, Ohio State University
2018 to date Member of American Geophysical Union Technical Committee on *Catchment Hydrology*
2018 External expert advisor on search committee for Associate Senior Lecturer in Surface Water Hydrology (Tenure-track) at Uppsala University, Sweden
2017 External PhD examiner for Dr. T. de Boer-Euser, TU Delft, Netherlands
2016 to date Associate Editor for *Hydrological Processes* and *Hydrology and Earth System Sciences*
2015 - 2017 Chair of International Association of Hydrological Sciences (IAHS) Flagship project ‘Panta Rhei: Hydrology, Society and Change’
2014 - 2017 Hydrology Editor for EGU/Copernicus journal *Geoscientific Model Development*
2013 - 2016 Invited member of USGS Powell Center international working group on ‘*Water Availability for Ungauged Rivers*’
2013 - 2015 Objective Leader ‘Science Understanding’ IAHS *Panta Rhei* Biennium 2013-2015
2010 to date Grant proposal reviewer for NSF, Swiss National Science Foundation, Luxembourg National Research Fund, and Netherlands Organisation for Scientific Research.
2007 to date Regular reviewer for *Water Resources Research*, *Journal of Hydrology*, *Hydrological Processes*, and *Hydrology and Earth System Sciences*

PUBLICATIONS (H-index = 32)

Note: Where the first author is a graduate student under my supervision, the paper is marked with **, and for a visiting graduate student under my supervision, the paper is marked with *.

Journal articles

1. McMillan, H., Araki, R., Gnann, S., Woods, R., and Wagener, T., *in press*. How do hydrologists perceive watersheds? A survey and analysis of perceptual model figures for experimental watersheds. *Hydrological Processes*.

2. Botterill, T. and **McMillan, H.**, *in press*. Using machine learning to identify hydrologic signatures with an encoder-decoder framework. *Water Resources Research*.
3. **McMillan, H.**, Gnann, S.J. and Araki, R., (2022). Large scale evaluation of relationships between hydrologic signatures and processes. *Water Resources Research*, 58(6), p.e2021WR031751.
4. **McMillan, H.**, (2022). A taxonomy of hydrological processes and watershed function. *Hydrological Processes*, 36(3), e14537.
5. **Araki, R., Branger, F., Wiekenkamp, I. and **McMillan, H.**, (2022). A signature-based approach to quantify soil moisture dynamics under contrasting land-uses. *Hydrological Processes*, 36(4), p.e14553.
6. **McMillan, H.**, Coxon, G., Sikorska-Senoner, A.E. and Westerberg, I.K., 2022. Impacts of observational uncertainty on analysis and modelling of hydrological processes: Preface. *Hydrological Processes*, 36(2), e14481.
7. **Kim, D., Naliaka, A., Zhipeng, Z., Ogden, F., **McMillan, H.**, (2021). Experimental Coupling of TOPMODEL with the National Water Model: Effects of coupling interface complexity on model performance. *Journal of the American Water Resources Association*, 1– 25. <https://doi.org/10.1111/1752-1688.12953>.
8. **Wallace, S., Biggs, T., Lai, C.T. and **McMillan, H.**, (2021). Tracing sources of stormflow and groundwater recharge in an urban, semi-arid watershed using stable isotopes. *Journal of Hydrology: Regional Studies*, 34, p.100806.
9. *Gnann, S.J., Coxon, G., Woods, R.A., Howden, N.J. and **McMillan, H.**, (2021). TOSSH: A Toolbox for Streamflow Signatures in Hydrology. *Environmental Modelling & Software*, 138, p.104983.
10. *Gnann, S.J., **McMillan, H.**, Woods, R.A., Howden, N.J.K., (2021). Including Regional Knowledge Improves Baseflow Signature Predictions in Large Sample Hydrology. *Water Resources Research*, 57 (2), e2020WR028354.
11. **McMillan, H.**, (2021). A review of hydrologic signatures and their applications. *WIREs Water*. 8(1): e1499.
12. Sumargo, E, **McMillan, H.**, Weihs, R., Ellis, C., Wilson, A., Ralph, F. M., (2021). A Soil Moisture Monitoring Network to Assess Controls on Runoff Generation During Atmospheric River Events. *Hydrological Processes* 35(1): e13998.
13. Jackisch, C., Hassler, S.K., Hohenbrink, T.L., Blume, T., Laudon, H., **McMillan, H.**, Saco, P. and Van Schaik, L., (2021). Preface: Linking landscape organisation and hydrological functioning: from hypotheses and observations to concepts, models and understanding. *Hydrology and Earth System Sciences*, 25(9), pp.5277-5285.
14. *Horner, I., Branger, F., **McMillan, H.**, Vannier, O., Braud, I., (2020). Information content of snow hydrological signatures based on streamflow, precipitation and air temperature. *Hydrol. Process.* 34 (12), 2763-2779
15. **McMillan, H.**, (2020). Linking hydrologic signatures to hydrologic processes: A review. *Hydrological Processes*. 34: 1393– 1409.
16. Branger, F, **McMillan, H.**, (2020). Deriving hydrological signatures from soil moisture data. *Hydrological Processes*. 34: 1410– 1427.
17. Adusumilli, S., Borsa, A. A., Fish, M. A., **McMillan, H.**, & Silverii, F. (2019). A decade of water storage changes across the contiguous United States from GPS and satellite gravity. *Geophysical Research Letters*, 46, 13006– 13015.
18. Kiang, J., Gazoorian, C., **McMillan, H.**, et al. (2018). A Comparison of Methods for Streamflow Uncertainty Estimation. *Water Resources Research*, 54, 7149–7176. [Article selected by the journal for a feature write-up in *EOS* science news magazine].
19. **McMillan, H.**, Westerberg, I., Krueger, T. (2018). Hydrological data uncertainty and its implications. *WIREs Water*, 2018(5) doi: 10.1002/wat2.1319
20. Horner, I., Renard, B., Le Coz, J., Branger, F., **McMillan, H.**, Pierrefeu, G. (2018). Impact of stage measurement errors on streamflow uncertainty. *Water Resources Research*, 54 (3): 1952-1976.
21. **McMillan, H.**, Westerberg, I., & Branger, F. (2017). Five Guidelines for Selecting Hydrological Signatures. *Hydrological Processes* 2017, 1-5.

22. **McMillan, H.**, Seibert, J., Petersen-Overleir, A., et al. (2017). How uncertainty analysis of streamflow data can reduce costs and promote robust decisions in water management applications. *Water Resources Research* 53, 5220–5228.
23. **McMillan, H.**, Booker, D.J., Cattoën, C., (2016). Validation of a national hydrological model. *Journal of Hydrology*. 51 (b): 800:815.
24. *de Boer-Euser, T., **McMillan, H.**, Hrachowitz, M., Winsemius, H. C., Savenije, H. H. (2016). Influence of soil and climate on root zone storage capacity. *Water Resources Research* 52, 2009–2024.
25. Yang, J., **McMillan, H.**, Zammit, C. (2016) Modeling surface water–groundwater interaction in New Zealand: Model development and application. *Hydrological Processes*, doi: 10.1002/hyp.11075.
26. Kreibich, H., Krueger, T., Van Loon, A., Mejia, A., Liu, J., **McMillan, H.**, & Castellarin, A. (2016). Scientific debate of Panta Rhei research—how to advance our knowledge of changes in hydrology and society? *Hydrological Sciences Journal* 0, 0:1-3.
27. Singh, S.K., **McMillan, H.**, Bárdossy, A., Chebana, F., (2016). Non-parametric catchment clustering using the data depth function. *Hydrological Sciences Journal* 61, 15: 2649-2667.
28. **McMillan, H.**, Montanari, A., Cudennec, C., et al. (2016). Panta Rhei 2013–2015: global perspectives on hydrology, society and change. *Hydrological Sciences Journal*, 61(7), pp.1174-1191.
29. Cattoen, C., **McMillan, H.**, Moore, S. (2016) Coupling a high-resolution weather model with a hydrological model for flood forecasting in New Zealand, *Journal of Hydrology (NZ)* 55 (1), 1
30. Archfield, S., Clark, M., [...] **McMillan, H.** et al. (2016) *Water Resources Research*. Accelerating advances in continental domain hydrologic modeling. 51(12): 10078-10091
31. Westerberg, I., Wagener, T., Coxon, G., **McMillan, H.**, et al. (2016) Uncertainty in hydrological signatures for gauged and ungauged catchments. *Water Resources Research*. 52, 1847–1865
32. Srinivasan, MS., Duncan, M., **McMillan, H.**, (2016) Field measurement of recharge under irrigation in Canterbury, New Zealand, using drainage lysimeters. *Agricultural Water Management* 166, 17 – 32.
33. Mizukami, N., Clark, M. [...] **McMillan, H.** (2016) mizuRoute (version 1) - river network routing tool for continental domain water resources applications. *Geoscientific Model Development* 9 (6), 2223-2238.
34. Pechlivanidis, I., Jackson, B., **McMillan, H.**, Gupta, H. (2016). Robust informational entropy-based descriptors of flow in catchment hydrology. *Hydrological Sciences Journal*. 61 (1), 1 – 18
35. Westerberg, I., **McMillan, H.** (2015) Uncertainty in hydrological signatures, *Hydrol. Earth Syst. Sci.*, 12, 4233-4270, doi:10.5194/hessd-12-4233-2015, 2015.
36. **McMillan, H.**, Srinivasan MS. (2015) Characteristics and controls of variability in surface and groundwaters in a headwater catchment. *Hydrology and Earth System Sciences* 19, p 1767-1786.
37. **McMillan, H.**, Westerberg, I. (2015) Rating curve estimation under epistemic uncertainty. *Hydrological Processes* 29: 1873–1882.
38. Pechlivanidis, I., Jackson, B., **McMillan, H.**, Gupta, H. (2014). Use of an entropy-based metric in multi-objective calibration to improve model performance. *Water Resources Research* 50(10): 8066–8083.
39. **McMillan H**, Guegen M, Grimon E, Woods R, Clark M, Rupp D, (2014). Spatial variability of processes and model structure diagnostics in a 50 km² catchment. *Hydrological Processes* 28(18): 4896–4913.
40. Ackerley D, Bell RG, Mullan AB, **McMillan H.** (2013) Estimation of regional departures from global-average sea-level rise around New Zealand from AOGCM simulations. *Weather and Climate*. 33(1):2-22.
41. Montanari, A., [...] **McMillan, H.** et al. (2013) “Panta Rhei – Everything Flows”: Change in hydrology and society – The IAHS Scientific Decade 2013-2022. *Hydrological Sciences Journal* 58(6): 1256–1275.
42. **McMillan H.**, Hreinsson E, Clark M., Singh S., Zammit C., Uddstrom M. (2013) Operational hydrological data assimilation with the Recursive Ensemble Kalman Filter. *Hydrology & Earth System Sciences* 17:21-38
43. Singh SK, **McMillan H**, Bárdossy A. (2013) Use of the data depth function to differentiate between cases of interpolation and extrapolation in hydrological model prediction. *Journal of Hydrology*, 477: 213–228
44. **McMillan H.**, M. Duncan, G. Smart, et al. (2013) The Urban Impacts Toolbox: An example of modelling the effect of climate change and sea level rise on future flooding. *Weather and Climate (NZ)*. 32(2), 21-39

45. **McMillan, H.**, T. Krueger, J. Freer (2012) Benchmarking observational uncertainties for hydrology: Rainfall, river discharge and water quality. *Hydrological Processes*, 26 (26): 4078 -4111
46. *Gawith, D., Kingston, D.G., **McMillan, H.** (2012) The effects of climate change on runoff in the Lindis and Matukituki catchments, Central Otago, New Zealand. *Journal of Hydrology (NZ)* 51(2): 121-136
47. **McMillan, H.**, D. Tetzlaff, M. Clark, C. Soulsby (2012) Do time variable tracers aid the evaluation of hydrological model structure? A multi-model approach. *Water Resources Research*. 48, W05501
48. **McMillan, H.** (2012) Effect of spatial variability and seasonality in soil moisture on drainage thresholds and fluxes in a conceptual hydrological model. *Hydrological Processes* 26(18): 2838–2844
49. Pechlivanidis, I.G., Jackson, B., **McMillan, H.** Gupta, H. (2012). Using an informational entropy-based metric as a diagnostic of flow duration to drive model parameter identification. *GNEST* 14(3): 325-334
50. Poyck, S., Hendrikx, J., **McMillan, H.**, Hreinsson, E., Woods, R. (2011) Combined snow- and streamflow modelling to estimate impacts of climate change on water resources in the Clutha, New Zealand. *Journal of Hydrology (NZ)* 50: 293-312
51. **McMillan, H.**, Clark M., Bowden W., Duncan M., Woods R. (2011). Hydrological field data from a modeller's perspective: Part 1. Diagnostic tests for model structure. *Hydrological Processes*. 25: 511-522
52. Clark M., **McMillan, H.**, Collins D., Kavetski D., Woods R. (2011). Hydrological field data from a modeller's perspective: Part 2. Process-based evaluation of model hypotheses. *Hydrol. Proc.* 25: 523-543
53. **McMillan, H.**, Jackson B., Clark M., Kavetski D., Woods R. (2011) Rainfall Uncertainty in Hydrological Modelling: An Evaluation of Multiplicative Error Models. *Journal of Hydrology*. 400(1-2): 83-94
54. **McMillan, H.**, Freer, J., Pappenberger, F., Krueger, T., Clark, M. (2010). Impacts of Uncertain River Flow Data on Rainfall-Runoff Model Calibration and Discharge Predictions. *Hydrol Processes* 24(10):1270-1284.
55. **McMillan, H.**, Clark, M. (2009), Rainfall-runoff model calibration using informal likelihood measures within a Markov Chain Monte Carlo sampling scheme, *Water Resources Research*, 45, W04418.
56. **McMillan, H.**, Brasington, J. (2008). End-to-End Flood Risk Assessment: A Coupled Model Cascade with Uncertainty Estimation. *Water Resources Research* 44, W03419, doi:10.1029/2007WR005995.
57. **McMillan, H.**, Brasington J. (2006). Reduced Complexity Strategies for Modelling Urban Floodplain Inundation. *Geomorphology*, 90: 3-4, p 226-243.
58. Freer, J., **McMillan, H.**, McDonnell, J.J., Beven, K.J. (2004). Constraining dynamic TOPMODEL responses for imprecise water table information using fuzzy rule based performance measures. *Journal of Hydrology* 291, p 254-277.

Book Chapters

1. **McMillan, H.**, Caruso, B., Srinivasan, M.S. (2016). *Lateral hydrological processes*. In: Advances in New Zealand Freshwater Science, Eds: Jellyman, P., et al. NZ Hydrologic & Freshwater Sciences Societies.
2. Srinivasan, M.S., Wohling, T., Campbell, D. **McMillan, H.** (2016). *Vertical hydrology*. In: Advances in New Zealand Freshwater Science, Eds: Jellyman, P., et al. NZ Hydrologic & Freshwater Sciences Societies.