CURRICULUM VITAE

FOR

IRESON, Andrew Mark

School for Environment and Sustainability

Global Institute for Water Security

University of Saskatchewan

**1. PERSONAL**

National Hydrology Research Centre

Room 1015

11 Innovation Boulevard

Saskatoon, SK

S7N 3H5

Canada

Tel: +1 306 966 8020

Email: andrew.ireson@usask.ca

Date of birth: 8th February 1977

**2. DEGREES**

Ph.D, Imperial College London, 2008, Department of Civil and Environmental Engineering, Hydrology

MSc, Imperial College London, 2003, Department of Civil and Environmental Engineering, Hydrology

MEng, Bath University, 2000, Department of Mechanical Engineering, Mechanical Engineering

**3. CREDENTIALS**

NA

**4. APPOINTMENTS (INCLUDING JOINT) AND PROMOTIONS AT THE U OF S**

 Assistant Professor, primary appointment, School for Environment and Sustainability, March 2011 to present, (70%)

Secondary appointment, Department of Civil, Geological and Environmental Engineering, March 2011 to present (renewed March 2016), (30%)

**5. MEMBERSHIPS AND AFFILIATIONS**

**5.1 Associate Memberships at the U of S**

 None

 **5.2 Adjunct Appointments at Other Institutions**

Honorary Research Associate, Department of Civil and Environmental Engineering, Imperial College London, 2011 to present (renewed January 2016)

 **5.3 Affiliations**

 Global Institute for Water Security (U of S)

 Centre for Hydrology (U of S)

**6. PREVIOUS POSITIONS RELEVANT TO U OF S EMPLOYMENT**

Postdoctoral Research Associate, Department of Civil and Environmental Engineering, Imperial College London, UK, 2008 – 2011

 Postdoctoral Research Assistant, Department of Civil and Environmental Engineering, Imperial College London, UK, 2006 – 2008

 Graduate Engineer on a management training scheme, FKI plc Engineering Group, Loughborough, UK, 2000 – 2002.

 Industrial Research Placement, ABB Alston, Leicester, UK, 1997 – 1998.

**7. LEAVES**

Parental leave was taken from 15th January 2014 to 25th April 2014. I opted to have my contributions during this period count towards tenure and promotion, though I did not teach during my period of leave.

 Sabbatical leave was taken from 1st August 2017 to 31st July 2018.

**8. RECOGNITIONS**

Honorarium to teach a short course in Groundwater hydrology in Ghana, the African Institute for Sanitation and Waste Management, $1000 US, January 2016 and January 2018.

Grant to present my work at the IAHS conference in Hyderabad, India, British Hydrological Society, £500, 2009.

First prize at the annual BHS postgraduate symposium presentation competition, British Hydrological Society, £200, 2005.

Grant to present my work at the Experus 2005 unsaturated soil mechanics conference in Trento, Italy, British Hydrological Society, £500, 2005.

Awarded a place to present my work in Slovakia at the Slovak – U.K. young scientist’s workshop, British Council, 2005.

Funding to carry out fieldwork in Bosnia, Imperial College Consultants, £750, 2003.

Scholarship to study for an PhD at Imperial College London, NERC and CEH Wallingford, £14,500 per annum for three years, 2003.

Scholarship to study for an MSc at Imperial College London, NERC, £9,000, 2002.

**9. TEACHING ACTIVITIES**

**9.1 Scheduled instructional activity**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| YEAR | COURSE, TITLE | INST. | ENRL. | YIH | YCSH |
| 2018-19 | ENVS806, Field skills in water security | Lec | 15 | 39 | 585 |
|  | ENVS813, Numerical modelling for Environmental Engineers and Scientists | Lec | 24 | 39 | 936 |
|  | ENVS992, Project in water security (role of director of the MWS program) | Lec | 14 | 0 | 0 |
| 2017-18 | None – sabbatical leave |  |  |  |  |
| 2016-17 | ENVS805, Environmental Data Analysis and Management | Lec | 24 | 39 | 936 |
|  | ENVS813, Numerical modelling for Environmental Engineers and Scientists | Lec | 21 | 39 | 504 |
| 2015-16 | CE318, Applied Engineering Mathematics | Lec | 124 | 39 | 4836 |
|  | ENVS805, Environmental Data Analysis and Management | Lec | 12 | 39 | 468 |
|  | ENVS813, Numerical modelling for Environmental Engineers and Scientists | Lec | 14 | 39 | 546 |
| 2014-15 | CE318, Applied Engineering Mathematics | Lec | 116 | 39 | 4524 |
| ENVS805, Environmental Data Analysis and Management | Lec | 16 | 39 | 624 |
| ENVS813, Numerical modelling for Environmental Engineers and Scientists | Lec | 6 | 39 | 234 |
| 2013-14 | CE898, Numerical modelling for Environmental Engineers and Scientists | Lec | 17 | 39 | 663 |
| 2012-13 | ENVS805, Environmental Data Analysis and Management | Lec | 17 | 39 | 663 |
| ENVS898.07, Introductory numerical modelling for Environmental Scientists | Lec | 17 | 39 | 663 |
| 2011-12 | ENVS805, Environmental Data Analysis and Management | Lec | 16 | 20 | 320 |
| ENVS898.07, Introductory numerical modelling for Environmental Scientists | Lec | 6 | 39 | 234 |

**9.2 Unscheduled instructional activity**

|  |  |
| --- | --- |
| YEAR | COURSE |
| 2018-19 | Coordinator of the 2 week, zero credit course “Water Security: A Primer” for MWS students |
|  | ENVS898-15, Modelling for Water Security: I gave one guest lecture in this course (3 hours) |
|  | Lead coordinator of the Term 1 project for the MWS students. |
|  | ENVS 832, Risk Assessment and Negotiation of Environmental Issues: I gave one guest lecture in this course (2 hours) |
| 2017-18 | ENVS806 – MWS – I took the students for a weekend field trip in Hannin Creek, SK. |
|  | Ecological modelling – I taught 50% of a course at BNU, China |
|  | Applied Groundwater Hydrology – I taught this course at the African Institute for Sanitation and Waste Management in Ghana |
| 2016-17 | Guest lecture at Sask Poly (Moosejaw) in the class “Meteorological instrumentation” in the Water Resources Engineering Technology course (3 hours) |
|  | GEOG 427 - Advanced HydrologyI gave one guest lecture/combined field trip to St Denis in this class (3 hours) |
|  | ENVS806 – Field skills in Water SecurityI assisted with the general delivery of this class to MSEM and MWS students, and in particular organized and lead the MWS student tours of the Saskatoon Water Treatment Plant, the MOST facility and Beardys and Okemasis First Nation. (5 days) |
|  | MWS – General skillsI led a field trip to Hannin Creek in March to undertake snow sampling (1 day) |
| 2015-16 | ENVS 898.3 - Risk Assessment and Negotiation of Environmental IssuesI gave one guest lecture in this class (1.5 hour) |
| 2013-14 | ENVS 898.3 - Risk Assessment and Negotiation of Environmental IssuesI gave one guest lecture in this class (1 hour) |
| 2012-13 | GEOE475.1 - Advanced Hydrogeology, Department of Civil and Geologic EngineeringI gave one guest lecture in this class (1 hour) |
| ENVS 898.3 - Risk Assessment and Negotiation of Environmental IssuesI gave one guest lecture in this class (1 hour) |
| 2011-12 | GEOE475.1 - Advanced Hydrogeology, Department of Civil and Geologic EngineeringI gave one guest lecture in this class (1 hour) |
| CE850.3 - Geoenviro Eng 1 Fundamentals, Department of Civil and Geologic EngineeringI gave one guest lecture to this graduate class (1 hour). |

**9.3 Course and Program Development**

|  |  |
| --- | --- |
| YEAR | COURSE |
| 2018-19 | As program director of the Masters in Water Security program, I worked closely with the Executive Director and others to revise the structure and content of this program which was completely redesigned for this academic year. I led the operationalization of this redesign, working with all course instructors to ensure they understood the new format of compressed courses, and tailored their material to work in that format. I assisted in finding instructors for the courses and facilitated meetings of all term 1 and term 2 instructors.  |
| 2016-17 | I developed ENVS806: Field skills in Water Security; and ENVS992: Project in Water Security for the Masters in Water Security program. Both of these programs were based on the existing courses for the MSEM students. |
| 2015-16 | I developed a new short course in Applied Groundwater Hydrology, which was delivered at the African Institute for Sanitation and Waste Management, KNUST, Ghana, in Jan 2016. |
|  | ENVS813 - Numerical modelling for Environmental Engineers and ScientistsSignificantly revised my flagship course to use updated computational tools. |
| 2014-15 | CE318 – Applied Engineering MathematicsWhen I took this course on I modified the structure and content to better suit the three undergraduate groups that now take the course, namely Civil, Environmental and Geological Engineers.  |
| 2012-13 | ENVS805 - Environmental Data Analysis and ManagementThis course was completely revised by myself and Graham Strickert who co-taught the course. |
| 2011-12 | ENVS898 - Numerical modelling for Environmental Engineers and ScientistsThis is my flagship course that I developed in my first year, and significantly revised in 2016. |

**9.4 Teaching Materials**

|  |  |
| --- | --- |
| YEAR | COURSE |
| 2015-16 | I developed a new set of notes, practical activities, assignments and exams for a short course in Applied Groundwater Hydrology, which was delivered at the African Institute for Sanitation and Waste Management, KNUST, Ghana, in Jan 2016. |
|  | ENVS813 - Numerical modelling for Environmental Engineers and ScientistsI produced a set of recorded lectures (screencasts) used to flip this class, allowing for more time in class to work on activities, demonstrations and discussion. |
| 2014-15 | CE318 – Applied Engineering MathematicsI produced a new set of notes comprising 500 slides. |
| 2012-13 | ENVS805 - Environmental Data Analysis and ManagementI produced a set of slides, course notes, assignments and examination material. |
| 2011-12 | ENVS898 - Numerical modelling for Environmental Engineers and ScientistsI produced a set of slides, course notes, computer activities and assignments. |

**9.5 Other Teaching-Related Activities**

|  |  |
| --- | --- |
| 2015-16 | MWS – The Masters in Water Security I am the director of the new Masters in Water Security that will run as a one-year professional program through SENS starting in September 2016. I have been involved in program design in consultation with units across campus and Jeff McDonnell who pioneered the program, promotion and recruitment of students, design and logistics of the field program (ENVS806) and the project (ENVS992). |

**10. SUPERVISION AND ADVISORY ACTIVITIES**

**10.1 Undergraduate student supervision**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Degree | Dept | Thesis Subject Area | Time frame |
| Jorge Franco | BSc, Earth Sciences | Physics | Mitacs summer student: Groundwater-surface water-atmosphere interactions | 05-2016 – 09-2016  |
| Nigel Leach | BEng, Env Eng | Civ&Geol Eng | URSA (SENS) Summer Student: A review of floods at Beardys and Okemasis First Nation | 05-2016 – 09-2016  |

**10.2 Graduate student supervision**

All students listed here have status “in progress”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Degree | Dept | Thesis Subject Area | Time frame |
| Ines Sanchez-Rodriguez | PhD | SENS | Modelling frozen soils | 09-2018-09-2022 |
| Seth Amankwah | MES | SENS | Characterizing the hydraulic properties of frozen soils | 09-2018-09-2020 |
| Menna Elrashidy | MSc | Civ&Geol. Eng | Modelling groundwater interactions in Land Surface Schemes | 01-2019-01-2021 |
| Shelby DeMars | MSc | Civ&Geol. Eng | Modelling salt dynamics in oilsands reclamation landscapes | 09-2015 – 09-2019  |
| Haley Brauner | MWS | SENS | Representation of spatial heterogeneity in the land-surface hydrologic model, MESH | 04-2019-08-2019 |
| Sadiq Ajani | MWS | SENS | Modelling hydrological processes in discontinuous permafrost | 04-2019-08-2019 |
| Sarth Sheth | MWS | SENS | Mapping of water sources and rural residential development | 04-2019-08-2019 |
| Amy Cook | MWS | SENS | Improving hydrological modelling for NWT catchments and communities | 04-2019-08-2019 |
| Pablo Rodriguez | MWS | SENS | Climate change impacts on water resources of the Hay and Slave River Basins | 04-2019-08-2019 |
| Tyrone Miranda | MWS | SENS | Refinement of the Zehner aquifer allocation limits | 04-2019-08-2019 |

**10.3 Graduate Theses Supervised**

All students listed here have completed their degrees.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Degree | Dept | Thesis Subject Area | Time frame |
| **Students at the University of Saskatchewan** |
| Mahtab Nazarbakhsh | MES | SENS | Coupled water-vegetation dynamics in the boreal forest | 09-2015 – 02-2019  |
| Edward Bam | Ph.D | SENS | Groundwater surface water interactions in the Canadian Prairies | 09-2012 – 03-2018 |
| Sujata Budhathoki | MES | SENS | Modelling infiltration in seasonally frozen soils | 09-2015 – 09-2017  |
| Amber Peterson | MSc | Civ&Geol. Eng | Assessing field scale soil moisture dynamics in the prairies | 09-2012 – 12-2015  |
| Moges Mamo | MSc | Civ&Geol. Eng | Using Land Surface Schemes to model hydrology in the boreal forest | 09-2012 – 06-2015  |
| Rosa Brannen | MES | SENS | Controls on connectivity and streamflow generation in a Canadian Prairie landscape | 09-2012 – 03-2015  |
| **MWS Students** |  |  |  |  |
| Herbert Mkandla | MWS | SENS | Investigating the representation of Spatial Variability in LSS | 09-2016 – 08-2017 |
| Alannah Grande | MWS | SENS | Quantifying groundwater recharge in a waste dump in Chalk River, Ontario | 09-2016 – 08-2017 |
| **Ph.D Students at Imperial College London** |
| Lindsay Todman | Ph.D | EWRE | The application of a novel desalination membrane technology to micro irrigation with saline water.  | 09-2009 – 04-2013  |
| **MSc Students at Imperial College London** (one-year program, I supervised the summer thesis project) |
| Raphael Nussbaumer | MSc | EWRE | 3D model of surface water groundwater interactions in the prairies | 06-2014-09-2014 |
| Alex Horton | MSc | EWRE | Land surface modelling of the boreal forest (distinction) | 06-2012-09-2012 |
| Ryan Davies | MSc | EWRE | Salt dynamics in the Canadian Prairies | 06-2012-09-2012 |
| Hisham Osman | MSc | EWRE | Sustainable saline irrigation in arid regions | 06-2011-09-2011 |
| Diogo André Pinho Da Cost | MSc | EWRE | Eutrophication of Lake Diefenbaker | 06-2011-09-2011 |
| **MSc Students at Imperial College London prior to my appointment at the U of S** |
| Ben Fitzsimmons | MSc | EWRE | Preferential fracture flow in the Chalk unsaturated zone  | 06-2010-09-2010 |
| Amy Gribble | MSc | EWRE | Pollution risk to groundwater from on-site sanitation  | 06-2010-09-2010 |
| Lucia Ortega | MSc | EWRE | Saline intrusion study of south west Bangladesh | 06-2009-09-2009 |
| John Cody | MSc | EWRE | A review of the Subsurface and Meteorological Data Sets Collected at Grimsbury Wood as part of the LOCAR Programme | 06-2011-09-2011 |
| **Visiting students** |  |  |  |  |
| Pedro Felipe Arboleda Obando | MSc | – | ELAP Trainee, working on a MESH model of the Magadelna Watershed, Colombia. | 01-2017 – 06-2017 |

**10.4 Post-Doctoral Supervision**

**Current postdoctoral fellows:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Dept | Project | Time frame |
| None |  |  |  |

**Previous postdoctoral fellows:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Dept | Project | Time frame | Current position |
| Mingbin Huang | Civ&Geol Eng | Quantifying salt release from oil sands reclamation covers | 04-2016 – 04-2017 | Faculty member in Northwest A&F University, China |
| Melkamu Ali | SENS | Modelling flow and transport processes in the prairies | 03-2014 – 09-2016  | Looking for a position |
| Omer Yetemen | SENS | Hydro-ecological processes in the Boreal Forest | 09-201412-2015 | Lecturer at Newcastle University, Australia |
| Willemijn Appels | Civ&Geol Eng | Quantifying salt release from oil sands reclamation | 09-2014 – 12-2015  | Mueller Applied Research Chair in Irrigation Science, Lethbridge College |
| Dawn Keim | SENS | Monitoring transport processes in the prairies and Chalk River | 03-2014 – 12-2015  | Manager, Western Arctic Research Centre, Inuvik |
| Xicai Pan | Civ&Geol Eng | Cold regions processes in the prairies | 03-2012 – 09-2015  | Research Associate, University of Heidelberg |
| Uri Nachshon | SENS | Modelling flow and transport processes in the prairies | 09-2012 – 09-2014  | Research Scientist, Volcani Research Center, Israel |
| Muluneh Mekonnen | SENS | Large scale modelling of prairie watersheds | 09-2012 – 09-2013  | Water Modelling Engineer, Government of Alberta |
| Daryl Janzen | SENS | Groundwater flow processes in Rocky Mountain headwater basins | 03-2014 – 09-2016  | Sessional lecturer in Physics at the U of S |

**10.5 Staff Supervision**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Position | Project | Time frame |
| Amber Ross | Field technician | Boreal Forest observatories (BERMs) | 05/2019-09/2021 |
| Rosa Brannen | Field technician | St Denis National Wildlife Area hydrological observatory | 09/2018-09/2021 |
| Joel Steeves | Research Assistant  | Benchmarking models for frozen soil infiltration: Geoslope | 07/2016-09/2017 |
| Matt Buchynski | Research Assistant | Modelling salt release in reclamation landscapes | 05/2017-09/2017 |
| Jorge Franco | Research Assistant | An intercomparison of Land Surface Schemes | 10/2016 – 06/2017 |

**10.6 Other Advisory Activities**

I am currently on the advisory committee of 9 graduate students at the U of S. Current and past student committee members are listed below. Where I serve/served as chair, I indicate **C:**.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Degree | Department/supervisor | Time frame/status |
| **Current student committees** |
| Sopan Kurkute | PhD | SENS, Li | 09/2017 - present |
| Anuja Thapa  | MES | SENS, Strickert | 01/2018 - present |
| **C:** Zhe Zhang | MES | SENS, Li | 09/2016 - present |
| Toomas Parratt  | PhD | Civ Eng, Putz | 09/2013 – present  |
| Alam Md Shahabul  | Ph.D | Civ Eng Barbour | 01/2015 - present |
| Kelsey Hewitt | MSc | Civ Eng Ferguson | 09/2015 – present |
| **C:** Lucia Scaff | PhD | SENS, Li | 09/2014 – present  |
| **C:** Jay Maillet | Ph.D | SENS, Laroque | 09/2015 – present  |
| **Previous student committees** |
| Spencer Chuhaniuk | MSc | Civ Eng Barbour | 09/2015 – present  |
| Philip Harder | Ph.D | Civ Eng, Helgason | 09/2013 – present |
| Chris Gabrielli | PhD | SENS, McDonnell | 04/2013 – present  |
| Kabir Rasouli | Ph.D | Geog, Pomeroy | Completed 2017 |
| Anna Coles | Ph.D | SENS, McDonnell | Completed 2016 |
| Katherine Dompiere  | Ph.D | Civ Eng Barbour | Completed 2016 |
| Min Li | Ph.D | Soil Science, Si | Completed 04/2016 |
| Tomasz Korbas  | Ph.D | Civ Eng, Flemming | Completed 09/2013 |
| Amy Goodbrand  | M.Sc. | Geography, Westbrook | Completed 03/2013 |
| Danny Beveridge | Ph.D | Geography, Westbrook | Quit 04/2014 |
| Joel Steeves  | MSc | Civ Eng, Barbour | Completed 05/2016 |
| Mike Amos  | MSc | Civ Eng, Barbour | Completed, 10/2015 |
| Mark Sigouin | MSc | Soil Science, Si | Completed, 12/2015 |
| Hamideh Safa | Ph.D | Civ Eng, Elshorbagy | Failed qualifying exam |
| **C:** Hamideh Safa | MSc | Civ Eng, Elshorbagy | Completed, 12/2015 |
| **C:** Alam Md Shahabul  | MSc | Civ Eng Elshorbagy | Completed, 12/2014 |
| Elvis Asong | Ph.D | SENS, Khaliq/Wheater | Completed, 12/2015 |
| **External examiner**  |
| Chris Marsh | MSc | Geog, Pomeroy | 07/2012 |
| Irina Riben | MEng | Civ&Geol Eng, Putz | 03/2013 |
| Jessica Meyer | Ph.D | U of Guelph, Engineering, Parker | 08/2013 |
| Tapuwa Marapara | Ph.D | U of Wellington, New Zealand, Jackson | 12/2015 |
| Igor Pavlovskii | PhD | U of Calgary, Hayashi | 1/2019 |
| **Other activities** |  |  |  |
| **C:** Noel Galuschik | MES | SENS, Baulch | 04/2015 (one off) |
| **C:** Meghan Carr | Ph.D | SENS, Lindenschmitt | 01/2015 (one off) |

**11. BOOKS AND CHAPTERS IN BOOKS**

None

**12. PAPERS IN REFEREED JOURNALS**

[*Contributions by HQP trained by Dr Ireson are underlined. Annotations are included in square brackets. I indicate papers developed during my position at the U of S with \**]*.*

|  |  |  |
| --- | --- | --- |
| 29. | **\*** | **Peterson, A. M.**, Helgason, W. H., Ireson, A. M. 2019. How spatial patterns of soil moisture dynamics can explain field-scale soil moisture variability: Observations from a sodic landscape. Water Resources Research. doi:10.1029/2018WR023329 |
| 28. | **\*** | **Bam, E. K. P**., **Brannen, R.**, **Budhathoki, S.**, Ireson, A. M., Spence, C., & Kamp, G. van der. (2019). Meteorological, soil moisture, surface water, and groundwater data from the St. Denis National Wildlife Area, Saskatchewan, Canada. Earth System Science Data, 11(2), 553–563. doi:10.5194/essd-11-553-2019 |
| 27. | **\*** | **Bam, E.K.P**., and Ireson, A.M., 2018. Quantifying the wetland water balance: A new isotope-based approach that includes precipitation and infiltration. Journal of Hydrology. doi:10.1016/j.jhydrol.2018.12.032 |
| 26. | **\*** | **Huang, M.,** **Ireson, A.M.,** Barbour, S.L., **DeMars, S. Appels, W.M**. 2018. Fully coupled heat and water dynamics modelling of a reclamation cover for oil sands shale overburden. J. Hydrology 566, 250-263. doi:10.1016/j.jhydrol.2018.09.026 |
| 25. | **\*** | **Appels, W.M.**, **Ireson, A.M.,** Barbour, S.L. 2017. Impact of bimodal textural heterogeneity and connectivity on flow and transport through unsaturated mine waste rock. Adv. Wat. Res. 112, 254-265. doi:10.1016/j.advwatres.2017.12.008 |
| 24. | **\*** | **Pan, X**., Helgason, W., **Ireson, A.M.**, Wheater, H.S., 2017. Field-scale water balance closure in seasonally frozen conditions. Hydrol. Earth Syst. Sci., 21, 5401-5413 doi:10.5194/hess-21-5401-2017 [*30% contribution: I significantly rewrote the text of this manuscript first authored by my PDF*] |
| 23. | **\*** | **Peterson, A.M.**, Helgason, W.D., **Ireson, A.M.**, 2016. Estimating field-scale root zone soil moisture using the cosmic-ray neutron probe. Hydrol. Earth Syst. Sci. 20, 1373–1385. doi:10.5194/hess-20-1373-2016. *[25% contribution: I supervised this work by my Master’s student, and moderately edited the manuscript]* |
| 22. | **\*** | **Ireson, A.M.**, Barr, A.G., Johnstone, J.F., Mamet, S.D., van der Kamp, G., Whitfield, C., Michel, N.L., North, R.L., Westbrook, C.J., DeBeer, C., Chun, K.P., Nazemi, A. and Sagin, J. 2015. The Changing Water Cycle: the Boreal Plains Ecozone of Western Canada. WIRES Water, 2(5), 505–521, doi:10.1002/wat2.1098. [*60% contribution: I led this multi-author, interdisciplinary paper, drafting 30% of the text myself, and editing substantially the remaining text*] |
| 21. | **\*** | **Brannen, R**, Spence, C. and **Ireson, A.M.** 2015. Influence of shallow groundwater-surface water interactions on the hydrological connectivity and water budget of a wetland complex. Hydrological Processes. doi:10.1002/hyp.10563 [*25% contribution: I supervised this work by my Master’s student, and moderately edited the manuscript*] |
| 20.  | **\*** | **Pan, X**., **Ireson, A.M**., Helgason, W., and Chun, K.P. 2015. An Efficient Calibration Technique for Heat Dissipation Matric Water Potential Sensors. Soil Science Society of America. doi:10.2136/sssaj14.10.0413. [*50 % contribution: I supervised this work led by my PDF, and significantly edited the manuscript*] |
| 19. | **\*** | **Nachshon, U**., **Ireson, A.M**., van der Kamp, G., **Davies, S.R**. and Wheater, H.S. 2014. Impacts of climate variability on wetland salinization in the North American Prairies, Hydrol. Earth Syst. Sci., doi:10.5194/hess-18-1251-2014 [*30% contribution: I supervised this work led by my PDF, contributed ideas, and significantly edited the manuscript*] |
| 18. | **\*** | **Mekonnen, M.A**., Wheater, H.S. , **Ireson, A.M**., Spence, C. Davison, B. and Pietroniro, A. 2014. Towards an Improved Land Surface Scheme for Prairie Landscapes, Journal of Hydrology, 511, 105–116. doi:10.1016/j.jhydrol.2014.01.020 [*25% contribution: I supervised this work led by my PDF, contributed ideas and significantly edited the manuscript*] |
| 17. | **\*** | **Todman, L.C.**, **Ireson, A.M.**, Butler, A.P., and Templeton, M.R. Modelling vapor flow from a pervaporative irrigation system, Vadose Zone Journal, 12, doi:10.2136/vzj2013.05.0079 [*20% contribution: I developed the model used, helped the student apply the model to this problem, and reviewed the manuscript*] |
| 16. | **\*** | **Nachshon, U.**, **Ireson, A.M.**, van der Kamp, G. and Wheater, H.S, 2013. Sulfate salt dynamics in the glaciated plains of North America, Journal of Hydrology, doi: 10.1016/j.jhydrol.2013.07.001. [*30% contribution: I supervised this work led by my PDF, contributed ideas, and significantly edited the manuscript*] |
| 15. | **\*** | **Ireson, A. M.**, and Butler, A. P., 2013. A critical assessment of simple recharge models: application to the UK Chalk. Hydrol. Earth Syst. Sci., doi:10.5194/hessd-9-12061-2012. [*90% contribution: I led this work in collaboration with my colleague from Imperial College*]. |
| 14. | **\*** | Sorensen, J. P. R., Finch, J. W., **Ireson, A. M.** and Jackson, C. R. 2013. Comparison of varied complexity models simulating recharge at the field scale. Hydrological Processes, 28, 2091–2102, doi: 10.1002/hyp.9752. [*15% contribution: I provided some analysis for this paper and edited the manuscript*] |
| 13. | **\*** | **Todman, L. C.**, **Ireson, A. M.**, Butler, A. P., and Templeton, M. R., 2013. Water vapor transport in soils from a pervaporative irrigation system. Journal of Environmental Engineering, 139, 1062–1069, doi:10.1061/(ASCE)EE.1943-7870.0000715. [*20% contribution: I supervised this work led by my student, contributed ideas, and significantly edited the manuscript*] |
| 12. | **\*** | **Ireson, A. M.,** van der Kamp, G., Ferguson, G., **Nachshon, U.**, and Wheater, H.S. 2012. A review of hydrogeological processes in seasonally frozen northern latitudes: Understanding, gaps and challenges. Hydrogeological Journal, 21(1), p 53-66, doi:10.1007/s10040-012-0916-5. [*60% contribution: I led this work, doing most of the writing, editing and coordination of this review paper*] |
| 11. |  | **Ireson, A. M.**, Butler, A. P. and Wheater, H.S. 2012. Evidence for the onset and persistence with depth of preferential flow in unsaturated fractured porous media. Hydrology Research, 43 (5) p 707–719., doi:10.2166/nh.2012.030. [*90% contribution: I led this work as a PDF at Imperial College*] |
| 10. |  | Butler, A.P., Hughes, A.G., Jackson, C.R., **Ireson, A.M.**, Vounaki, T., Parker, S., Wheater, H.S. and Peach, D.W. Advances in modelling groundwater behaviour in Chalk catchments. Geological Society, London, Special Publications 2012, v. 364, p 113-127, doi:10.1144/SP364.9. [*15% contribution: I contributed ideas and edited the manuscript*] |
| 9. |  | Khan, A.E., **Ireson, A.M.**, Kovats, S., Mojumder, S.K., Khusru, A., Rahman, A. and Vineis, P. (2011). Drinking Water Salinity and Maternal Health in Coastal Bangladesh: Potential Implications of Climate Change. Environment Health Perspectives, 119:1328-1332, doi:10.1289/ehp.1002804. [*25% contribution: I contributed analysis and text, and edited the manuscript*] |
| 8. |  | Hughes, A.G., Vounaki, T., Peach, D.W., **Ireson, A.M.**, Jackson, C.R., Butler, A.P., Finch, J., and Wheater, H.S. (2011). Flood risk from groundwater in a Chalk catchment in southern England. Journal of Flood Risk Management. 4(3) 143–155, doi:10.1007/s10040-012-0916-5. [*20% contribution: I contributed analysis and text, and edited the manuscript*] |
| 7. |  | **Ireson, A.M.** and Butler, A.P (2011). Controls on preferential recharge to Chalk aquifers. Journal of Hydrology. 398. 109-123, doi:10.1016/j.jhydrol.2010.12.015. [*90% contribution: I led this work as a PDF at Imperial College*] |
| 6. |  | Maraun, D., Wetterhall, F, **Ireson, A.M.**, et al (2010). Precipitation downscaling under climate change. Recent developments to bridge the gap between dynamical models and the end user. Reviews of Geophysics. 48(3), doi:10.1029/2009RG000314. [*20% contribution: This was a large, multi-authored review paper in a high impact journal, which was conceived of and coordinated by myself, Maraun and Wetterhall. My main role was editorial and coordination, and I also contributed text*] |
| 5. |  | **Ireson, A. M.**, Mathias, S. A., Wheater, H. S., Butler, A. P. and Finch, J. (2009) A model for flow in the Chalk unsaturated zone incorporating progressive weathering. Journal of Hydrology. 365. 244-260. doi:10.1016/j.jhydrol.2008.11.043 [*80% contribution: I led this work as a PhD student at Imperial College*] |
| 4. |  | Jackson, B. M., Wheater, H. S., Wade, A. J., Butterfield, D., Mathias, S. A., **Ireson, A. M.**, Butler, A. P., McIntyre, N. R. and Whitehead P.G. (2007). Catchment-scale modelling of flow and nutrient transport in the Chalk unsaturated zone. Ecological Modelling. 209(1). 41-52. doi:10.1016/j.ecolmodel.2007.07.005. [*15% contribution: I contributed ideas and edited the manuscript*] |
| 3. |  | Mathias, S. A., Butler, A.P., **Ireson, A. M.**, Jackson, B. M., McIntyre, N, Wheater, H.S. (2007) Recent advances in modelling nitrate transport in the Chalk. Quarterly Journal of Engineering Geology and Hydrogeolgy. 40. 353-359. doi:10.1144/1470-9236/07-022. [*25% contribution: I contributed ideas and edited the manuscript*] |
| 2. |  | **Ireson, A. M.,** Wheater, H. S., Butler, A. P., Mathias, S. A., Finch, J., and Cooper, J. D. (2006). Hydrological processes in the Chalk unsaturated zone – Insights from an intensive field monitoring programme. Journal of Hydrology. 330, 29-43, doi:10.1016/j.jhydrol.2006.04.021 [*80% contribution: I led this work as a PhD student at Imperial College*] |
| 1. |  | **Ireson, A. M.,** Makropoulos, C. and Maksimovic, C. (2006). Water Resources Modelling under Data Scarcity: Coupling MIKE BASIN and ASM Groundwater Model. Water Resources Management, 20, 567-590. doi:10.1007/s11269-006-3085-2 [*80% contribution: I led this work as an MSc student at Imperial College*] |

**13. ARTISTIC WORKS**

None

**14. REFEREED CONFERENCE PUBLICATIONS**

[*Contributions by HQP trained by Dr Ireson are underlined. Annotations are included in square brackets. I indicate papers developed during my position at the U of S with \**]*.*

|  |  |  |
| --- | --- | --- |
| 7. | **\*** | **Ireson, A.M.**, van der Kamp, G., **Nachshon, U**. and Butler, A.P., 2013. Modeling Groundwater-Soil-Plant-Atmosphere Exchanges in Fractured Porous Media, Procedia Environmental Sciences, 19:321-330, doi:10.1016/j.proenv.2013.06.037 [*75% contribution: I led the analysis and writing*] |
| 6. |  | **Ireson, A.M.**, Butler, A.P. and Wheater, H.S (2010). Preferential flow and apparent hysteresis in the chalk unsaturated zone. BHS Third International Symposium, Newcastle, UK, July 2010. [*85% contribution: I led the analysis and writing*] |
| 5. |  | Wheater, H.S., **Ireson, A.M.**, Butler, A.P., Parker, S., Peach, D.W. Jackson, C.R., Hughes, A.G., Vounaki, T. and Finch, J (2010). Extremes in groundwater-dominated catchments: Insights from the Chalk of SE England. BHS Third International Symposium, Newcastle, UK, July 2010. [*25% contribution: I contributed a figure and edited the text*] |
| 4. |  | **Ireson, A. M.,** Butler, A. P. and Gallagher, A. (2009). Groundwater flooding in fractured permeable aquifers. IAHS Publ. 330: Improving integrated surface and groundwater resource management in a vulnerable and changing world*.* Proceedings of symposium JS3 held in Hyderabad, India, September 2009 [*80% contribution: I led the analysis and writing*] |
| 3. |  | Mathias, S. A., **Ireson, A.M.,** Butler, A.P., Jackson, B.M, Wheater, H.S. (2007) Characterisation of radionuclide migration and plant uptake for performance assessment. In Scientific Basis for Nuclear Waste Management (Mater. Res. Soc. Symp. Proc. Volume 1107, Sheffield, UK, 2007), 681-688, doi:10.1557/PROC-1107-681. [*25% contribution: I supported the analysis and edited the text*] |
| 2. |  | **Ireson, A. M.,** H. S. Wheater, A. P. Butler, S. A. Mathias, J. Finch (2006) Movement of Water through the Chalk Unsaturated Zone: Development of a Depth-Dependent Model Parameterisation, In Soil Physics and Rural Water Management - Progress, Needs and Challenges: G Kammerer and F Kastanek, editor, Vienna, BOKU, 93-96. [*60% contribution: I led the analysis and writing*] |
| 1. |  | **Ireson, A. M.,** Wheater, H. S., Butler, A. P., Finch, J., Cooper, J. D., Wyatt, R. G., and Hewitt, E. J. (2005). Field monitoring of matric potential and soil water content in the Chalk unsaturated zone. In Advanced experimental unsaturated soil mechanics. Experus 2005, London. A. A. Balkema. [*60% contribution: I led the analysis and writing*] |

**15. PRESENTATIONS**

[*I indicate presentations given during my position at the U of S with \**. *Where appropriate, I have split the listing into presentations I gave myself, and those given by my HQP that I co-authored.*]

**15.1 Invited presentations**

|  |  |  |
| --- | --- | --- |
| 17. | **\*** | **Ireson, A.M.** (2018). The hydrology of the Canadian Prairies. Presentation to faculty and students at the School of Geography, University of Leeds, June 2018. |
| 16. | **\*** | **Ireson, A.M.** (2018). The hydrology of the Canadian Prairies. Presentation to faculty and students at the Luxembourg Institute of Science and Technology, June 2018. |
| 15. | **\*** | **Ireson, A.M.** (2018). The hydrology of the Canadian Prairies. Presentation to faculty and students at the Freiberg University, Germany, June 2018. |
| 14.  | **\*** | **Ireson, A.M.** (2018). The hydrology of the Canadian Prairies. Presentation to faculty and students at the Imperial College London, UK, May 2018. |
| 13. | **\*** | **Ireson, A.M.** (2018). The hydrology of the Canadian Prairies. Presentation to faculty and students at the Agricultural Research Organization, Volcani Center, Israel, March 2018. |
| 12. | **\*** | **Ireson, A.M.** (2017). The hydrology of the Canadian Prairies – a research seminar to faculty at the Beijing Normal University, China, November 2017. |
| 11. | **\*** | **Ireson, A.M.**, and Butler, AP. (2014). Learning from models: Insights into the behavior of water in unsaturated fractured porous media. American Geophysical Union Meeting in San Francisco, December 2014. |
| 10. | **\*** | **Ireson, A. M.,** (2014). Quantifying groundwater recharge in diverse, complex settings. University of Queensland, Brisbane, Australia, 17th March 2014. |
| 9. | **\*** | **Ireson, A.M.,** (2013). Groundwater and salinization of prairie wetlands. Invited talk at the Below your watershed conference, Medicine Hat Alberta, October 2013, organized by Partners for the Saskatchewan River Basin. |
| 8. | **\*** | **Ireson, A.M.,** (2013). Quantifying shallow subsurface flow and salt transport in the Canadian Prairies. University of Guelph Seminar, 7th August 2013. |
| 7. | **\*** | **Ireson, A.M.,** (2013). Subsurface hydrology of the prairies of central Canada. Imperial College “Civil Lunch” Seminar, 19th July 2013. |
| 6. | **\*** | **Ireson, A.M.,** (2011). Groundwater flooding in the UK: when groundwater becomes surface water. Environment Canada Seminar, National Hydrology Research Centre, 27th April 2011. |
| 5. |  | **Ireson. A.M.** and Butler, A.P. (2010) Modelling subsurface flow processes in fractured porous Chalk. Invited talk at the Universita degli Studi di Modena e Reggio Emilia, Modena Italy, September 2010. |
| 4. |  | **Ireson, A.M.,** (2009). Water management for a changing climate. Indo-U.K. Workshop, Roorkee, India, September 2009. |
| 3. |  | **Ireson, A.M.,** (2009). Groundwater flooding in Chalk catchments. Flood Risk from Extreme Events Downscaling Workshop, University of East Anglia, February, 2009. |
| 2. |  | **Ireson, A.M**., Butler, A.P. and Wheater, H.S (2009) Characteristics of Rainfall Governing Recharge and Flooding in the Chalk. Geological Society of London special meeting Groundwater recharge assessment: Are we any closer to an answer? University of East Anglia, May 20-21, 2009.  |
| 1. |  | **Ireson, A.M**., Butler, A.P. and Wheater, H.S (2008) Groundwater Flooding In The Chalk: The Role Of The Unsaturated Zone. Geological Society of London special meeting Groundwater and Extreme Events. Burlington House, December 2nd. 2008. |

**15.2 Contributed presentations**

|  |
| --- |
| **Presentations given by me** (all of these talks were delivered by me) |
| 13. | **\*** | **Ireson, A.M.,** **Bam, E.K.P**., van der Kamp, G. 2016. Tracing groundwater recharge to a confined aquifer in the Canadian prairies. American Geophysical Union Meeting in San Francisco, December 2016. |
| 12. | **\*** | **Peterson, A.M.**, **Ireson, A.M.**, Helgason, W. and **Pan, X.** 2016. Quantifying field scale, root zone soil moisture. EGU meeting in Vienna, April 2016. |
| 11. | **\*** | **Ireson, AM.** 2014. Modelling infiltration processes in frozen soils. American Geophysical Union Meeting in San Francisco, December 2014. |
| 10. | **\*** | **Ireson, A.M.**, 2014. A capillary bundle model for soil freeze-thaw. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 9. | **\*** | **Ireson, A.M.**, van der Kamp, G., **Nachshon, U**. and Butler, A.P., 2013. Modeling Groundwater-Soil-Plant-Atmosphere Exchanges in Fractured Porous Media. Four decades of progress in modelling and monitoring of processes in the soil-plant-atmosphere system, Naples, Italy, 19-21 June 2013. |
| 8. | **\*** | **Ireson, A.M.** and van der Kamp, G., 2013. Identifiability of the lateral groundwater flow regime from point scale observations of recharge and water table level at a dry sandy upland in the Boreal Forest. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 7. | **\*** | **Ireson, A.M.,** Wheater, H.S., Butler, A.P. 2012. A critical assessment of groundwater recharge models for fractured porous media. IAH 2012 Congress, Niagara Falls. |
| 6. | **\*** | **Ireson, A.M.** and Wheater, H.S (2011). Groundwater flooding in the UK. Canadian Geophysical Union Joint Meeting with CSAFM in Banff, Alberta, May 15-18. |
| 5. |  | **Ireson, A.M**, Butler, A P and Wheater, H S (2010), An Improved “Low-Dimensional” State-Space Model for Unsaturated Flow in Fractured Porous Catchments. Abstract H44B-05 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec |
| 4. |  | **Ireson, A.M.,** Wheater, H.S., Butler, A.P., Parker, S., Peach, D.W. Jackson, C.R., Hughes, A.G. and Vounaki, T. (2010). Understanding and simulation of the impact of climatic extremes on groundwater systems using coupled models: An example from the Chalk of south east England. Valencia International Groundwater Symposium 2010. |
| 3. |  | **Ireson, A.M.** and Butler, A.P. (2010). A model for recharge response to different types of rainfall in the Chalk, Third British Hydrological Society International Conference, 19-23 July 2010 - Newcastle University |
| 2. |  | **Ireson. A.M**., Wheater, H.S, Butler, A.P., Mathias, S.A., Finch, J. 2006. Movement of water through the Chalk Unsaturated zone. Soil Physics and Rural Water Management – Progress, Needs and Challenges September 28–29, 2006, Vienna / Austria. |
| 1. |  | **Ireson, A.M.**, Wheater, H.S., Butler, A.P., Finch, J., Cooper, R.G., Wyatt, R.G and Hewitt, E.J. 2005. Field monitoring of matric potential and soil water content in the Chalk. Advanced Experimental Unsaturated Soil Mechanics, Trento, Italy, 27-29 June 2005 |

|  |
| --- |
| **Presentations given by my HQP or collaborators, where I am co-author** |
| 16. | **\*** | L Wang, PA Bartlett, C Derksen, **AM Ireson**, R Essery. 2017. Simulating Snow in Canadian Boreal Environments with CLASS for ESM-SnowMIP, American Geophysical Union Meeting in New Orleans, December 2017. |
| 15. | **\*** | Hartmann, A.J., **Ireson, A.M**. 2017. Conceptual modelling to predict unobserved system states-the case of groundwater flooding in the UK Chalk. American Geophysical Union Meeting in New Orleans, December 2017. |
| 14. | **\*** | **Keim, D. M.,** Marsh, P., Wilcox, E., **Ireson, A.M**., 2015. Field observations of active layer thaw depth in the continuous permafrost zone of the Canadian Arctic. ArcticNet Annual Scientific Meeting 2015, Vancouver, BC, 7-11 December 2015. |
| 13. | **\*** | **Pan, X.**, Helgason, W. and **Ireson, A.M.**, 2015. Characterization of field-scale water balance components at a heterogeneous prairie field site. Joint AGU/CGU meeting in Montreal, May 2015. |
| 12. | **\*** | **Appels, WM**, **Ireson, AM**, Barbour, SL, McDonnell, JJ, 2015. Evolution of hydrological pathways in engineered hillslopes due to soil and vegetation development. European Geophysical Union Meeting in Vienna, April 2015. |
| 11. | **\*** | Bartlett, P., Mackay, M., Davison, B., and **Ireson, A.M.**, 2014. Changing Cold Regions Network Baseline Simulations Project. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 10. | **\*** | **Bam, E.**, **Ireson, A.M.**, and van der Kamp, G., 2014. Stable isotopic composition of precipitation, evaporated pond water, surficial and inter-till aquifer units in southeastern Saskatchewan, Canada. Canadian Geophysical Union Meeting in Banff, May 2014 |
| 9. | **\*** | **Brannen, R.**, Spence, C., and **Ireson, A.M.**, 2014. Influence of surface-groundwater connectivity on wetland storage and its control on streamflow response. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 8. | **\*** | **Peterson, A.**, Helgason, W., and **Ireson, A.M.**, 2014. An evaluation of a cosmic-ray neutron probe and point upscaling methods to provide accurate field average soil moisture estimations. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 7. | **\*** | **Mekonnen, M.**, Wheater, H.S., **Ireson, A.M.**, Spence, C., Davison, B., and Pietroniro, A., 2014. A Variable Contributing Area Surface Runoff Generation Scheme for Prairie Landscapes. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 6. | **\*** | **Pan, X.**, **Peterson, A.**, Merriam, J., Helgason, W., and **Ireson, A.M.**, 2014. Characterization of sub-field-scale hydrological processes in the non-drainage area of the Brightwater Creek sub-basin. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 5. | **\*** | **Nachshon, U.**, **Ireson, A.M.,** van der Kamp, G., Wheater, H.S., and **Davies, S.**, 2013. Salt Dynamics in prairie wetlands under changing climate. IAH Geo-Montreal meeting, October 2013. |
| 4. | **\*** | van der Kamp, G., **Ireson, A.M**, Barr, A., 2013. Is groundwater “recharge” a useful concept? Extended abstract (paper # 394) in the Proceedings of IAH Geo-Montreal meeting, October 2013. |
| 3. | **\*** | **Nachshon, U.**, **Ireson, A.M.**, van der Kamp, G., **Davies, S.** and Wheater, H.S., 2013. Climate change impact on salt dynamics in a prairie wetland. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 2. | **\*** | **Mekonnen, M.**, Wheater, H.S., Chun, K.P., Nazemi, A. and **Ireson, A.M.**, 2013. Hydrologic-Land Surface modelling of future streamflows in Rocky Mountain Headwater Basins, Western Canada. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 1. | **\*** | **Pan, X.**, **Ireson, A.M.**, and Helgason, W., 2013. Observations and Modeling of Soil Hydraulic and Thermal Dynamics on the Canadian Prairies. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |

**15.3 Poster presentations**

|  |
| --- |
| **Posters given by me** (For all of these posters, I was the lead presenter) |
| 7. | **\*** | **Ireson, A.M.**, **Ali, M.A.**, van der Kamp, G. 2016. Modelling unsaturated/saturated flow in weathered profiles. American Geophysical Union Meeting in San Francisco, December 2016. |
| 6. | **\*** | **Yetemen, O**, **Ireson, A.M**, Johnstone, J., Barr, A., and Black, A. 2015. Comparing Observed and Simulated Interannual Variability in the Carbon and Water Balances of the Southern Boreal Forest. Joint AGU/CGU meeting in Montreal, May 2015. |
| 5. | **\*** | **Ireson, A.M.**, **Peterson, A.M.**, Helgason, W. and **Pan, X**. 2016. Quantifying field scale, root zone soil moisture. Kirkham Soils conference in Sede Boqer, Israel, April 2016.  |
| 4. | **\*** | **Ireson, A.M.** and Butler, A.P. 2012. A rigorous method for quantifying recharge using simple and complex models. Geophysical Research Abstracts, Vol. 14, EGU2012-6542, 2012 EGU General Assembly 2012 |
| 3. |  | **Ireson, A.M.**, Finch, J. Butler, A.P, and Wheater, H.S. 2010. Simulating recharge to Chalk aquifers using JULES. JULES summer science meeting, Leeds, UK, 9-10 June 2010. |
| 2. |  | **Ireson, A.M** and Butler, A P (2009), Extreme Rainfall Impacts in Fractured Permeable Catchments. Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract H21D-0888 |
| 1. |  | **Ireson, A. M.,** Butler, A. P. and Gallagher, A. (2009). Groundwater flooding in fractured permeable aquifers. IAHS JS3 held in Hyderabad, India, September 2009 |

|  |
| --- |
| **Posters given by my HQP or collaborators, where I am co-author** |
| 14. | **\*** | **Budhathoki, S**. and **Ireson, A.M.** 2017. Modeling snowmelt infiltration in seasonally frozen ground. American Geophysical Union Meeting in New Orleans, December 2017. |
| 13. | **\*** | **Ali, M.A.**, **Ireson, A.M.**, **Keim, D.** 2015. Simulating groundwater-surface water interactions in the Canadian Prairies using a coupled land-atmosphere model (ParFlow-CLM). American Geophysical Union Meeting in San Francisco, December 2015. |
| 12. | **\*** | **Appels, WM,** **Ireson, AM**, Barbour, SL, McDonnell, JJ, 2015. Evolution of hydrological pathways in engineered hillslopes due to soil and vegetation development. Joint AGU/CGU meeting in Montreal, May 2015. |
| 11. | **\*** | **Ali, M., Nussbaumer, R., Ireson, A.M, Keim, D**., 2015. Modelling of Seasonal Dynamics of Wetland-Groundwater Interaction in the Canadian Prairies. European Geophysical Union Meeting in Vienna, April 2015. |
| 10. | **\*** | **Keim, D. M.**, **Ireson, A. M.**, **Ali, M.**, Ferguson, G. A., **Steele, C.**, Lindsay, M. B. J., Penrod, D., 2014. Insights into the fate of radioactive contaminants through improved soil zone characterization techniques. 2014 AGU Fall Meeting, San Francisco, California, 15-19 December 2014. |
| 9. | **\*** | **Janzen, D**, **Ireson AM.**, 2014. Exploring groundwater processes in Rocky Mountain headwaters. American Geophysical Union Meeting in San Francisco, December 2014 |
| 8. | **\*** | **Peterson, A**., Helgason, W. and **Ireson, AM.**, 2014. Examining soil moisture variability and field mean estimation methods using nested observations. American Geophysical Union Meeting in San Francisco, December 2014. |
| 7. | **\*** | **Pan, X.**, Helgason, W., and **Ireson, A.M.**, 2014. An efficient calibration technique for heat dissipation matric water potential sensors. Canadian Geophysical Union Meeting in Banff, May 2014. |
| 6. | **\*** | **Brannen, R.**, **Ireson, A.M.** and Spence, C., 2013. Controls on connectivity and streamflow generation in a Canadian Prairie landscape. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 5. | **\*** | **Mamo, M.**, Davison, B., **Ireson, A.M.**, Mekonnen, M., Barr, A., van der Kamp, G. and Toth, B., 2013. Basin-scale evapotranspiration estimation based on physically-based Hydrologic-Land Surface Schemes. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 4. | **\*** | **Bam, E**. and **Ireson, A.M.**, 2013. Chemical and isotopic considerations on the aquifers of the Densu River Basin, Ghana. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 3. | **\*** | **Peterson, A.**, Helgason, W. and **Ireson, A.M.,** 2013. Monitoring Field Scale Soil Moisture: Results from a Cosmic-ray Neutron Probe and a Neutron Probe Array. Canadian Geophysical Union Joint Meeting with CMOS in Saskatoon, May 2013. |
| 2. |  | Clark, J M, Ballard, C E, **Ireson, A M**, Buytaert, W, Wheater, H S and Rose, R (2010), Uncertainty in Estimates of the Apparent Temperature Sensitivity of Peatland Dissolved Organic Carbon Fluxes under Changing Hydrologic Conditions. Abstract B11D-0389 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec |
| 1. |  | Butler, A P, **Ireson, A M**, Wheater, H S, Mathias, S A and Finch, J (2006), Movement of Water Through the Chalk Unsaturated zone. Abstract H51A-0471 presented at 2006 Fall Meeting, AGU, San Francisco, Calif. |

**16. REPORTS AND OTHER OUTPUTS**

[*All of these listed reports were peer reviewed, and published before I started at the U of S*]

|  |  |  |
| --- | --- | --- |
| 5.  |  | **Ireson, A.M.**, Butler, A.P. and Mathias, S.A. (2009) Coupled flow, radionuclide transport and root growth in a soil column with a dynamic water table. Imperial College Report for the UK Nuclear Decommissioning Authority (NDA), Imperial/NRP 022, September 2009. |
| 4.  |  | **Ireson, A.M.** and Butler, A.P. (2009) The effect of sorption on radionuclide uptake for different soil textures. Imperial College Report for the UK Nuclear Decommissioning Authority (NDA), Imperial/NRP 021, September 2009. |
| 3.  |  | **Ireson, A.M.**, Mathias, S.A. and Butler, A.P. (2009) A Preliminary Investigation into Upscaling Radionuclide Migration and Uptake in Vegetated Soils. Imperial College Report for United Kingdom Nirex Limited, Imperial/NRP 020, August 2009. |
| 2.  |  | **Ireson, A.M.** and Butler, A.P. (2009) A Review of Soil Bioturbation and Soil Development. Imperial College Report for United Kingdom Nirex Limited, Imperial/NRP 018, August 2009. |
| 1.  |  | **Ireson, A.M.** and Butler, A.P. (2009) Modelling plant root system development in response to soil water status: A review. Imperial College Report for United Kingdom Nirex Limited, Imperial/NRP 017, August 2009. |

**OPEN SOURCE SOFTWARE CONTRIBUTIONS**

|  |  |
| --- | --- |
| 3. | Ireson, A.M. *Richards’ equation solver*. This is a simple numerical solution to Richards’ Equation, written in python 3.6, along with an instructional video, for the purposes of teaching. <https://github.com/amireson/RichardsEquation>  |
| 2. | Ireson, A.M. and Mathias, S.A. *Hydrology of World Cities*. This is a script written in python that provides monthly estimates of precipitation and potential evaporation for any major city in the world. The script obtains data from the WMO, and applies the FAO56 procedure to estimate PE. <https://github.com/amireson/HydrologyOfWorldCities>  |
| 1. | Ireson, A.M., and Bam, E. *Prairie pond model*. This is a coupled flow and stable isotope mass balance model that can be used to partition pond loses between evaporation and infiltration, using observations of oxygen-18 and deuterium. The model is coded in python v3.6. Under review in J. of Hydrol. <https://github.com/amireson/PrairiePondModel> |

**17. BOOK REVIEWS**

None

**18. INTELLECTUAL PROPERTY**

None

**19. RESEARCH FUNDING HISTORY**

**Ongoing grants/contracts**

Ireson, A.M. (PI) (2019). Two contracts with the Government of the NWT to fund MWS summer projects. $18,000 (CAD).

Ireson, A.M. (PI) (2018-2023). Improved concepts and models for simulating infiltration and runoff in frozen soils. $155,000 (CAD). NSERC Discovery Grant.

Ireson, A.M. (PI) 2017-2019). Global Water Futures: Hydrological processes in frozen soils. $85,000 (CAD).

Ireson, A.M. (PI) 2017-2019). Global Water Futures: The impact of frozen soils on the water-carbon-energy balance in forests. $85,000 (CAD).

Ireson, A.M. (PI) (2017-2020). Global Institute for Water Security internal funding. $60,000 (CAD).

**Completed grants/contracts**

Ireson, A.M. (PI) (2018-2019). MESH Modelling for Simonette River Basin and Upper Portion of the Red Deer River Basin. $120,000 (CAD). Short contract to apply and test hydrological models developed by Environment Canada for forecasting streamflow in two Alberta watersheds.

McDonnell, J. (PI), Barbour, L., Hendry, J., **Ireson, A.M**. (2017-2018) Quantifying the Effects of Freeze-Thaw Cycles on Mine Cover System Design and Performance. $150,000 (CAD). NSERC CRD with O’Kane Consultants Inc as an industry partner.

**Ireson, A.M.** (PI) (2017). Improving and benchmarking models for snowmelt infiltration in seasonally frozen soils. $25,000 (CAD). NSERC Engage Plus Grant with Geo-slope International Ltd as an industry partner, providing 50% of funding. All funding is for A.M. Ireson.

**Westbrook, C. et al** (Ireson, A.M. has three students in this program). (2015). NSERC CREATE in Water Security. $30,000 (CAD). NSERC/GIWS. I receive funding for my students Nazarbakhsh, M., Budhathoki, S., and DeMars, S., which I can use to support any HQP training, e.g. conference/workshop travel.

McDonnell, J. (PI), Barbour, L., Hendry, J., **Ireson, A.M**. and O’Kane, M. MOST: A new facility for development and commercialization of the innovative mine cover designs. $1,846,000 (CAD). Western Economic Diversification Canada. Funding was used to build and equip the MOST facility built off Preston Avenue.

**Ireson, A.M.**, (PI), Barbour, L. and McDonnell, J. (2015-2017). Quantifying salt release from oil sands reclamation covers. $208,000 (CAD). NSERC CRD with Syncrude Canada Ltd as an industry partner. All funding is for A.M. Ireson.

Wheater, H.S. et al. (**Ireson, A.M.** is a funded “collaborator”). (2013-2017). Changing Cold Regions Network Grant. $5,000,000 (CAD). NSERC CCAR program. $357,255 (CAD) to A.M. Ireson.

**Ireson, A.M**. (PI). (2012-2017). Groundwater surface water interactions in the prairies. $132,000 (CAD). NSERC Discovery Grant. All funding is for A.M. Ireson (Note, I was granted a one-year extension to 2018).

**Ireson, A.M** (collaborator) (2011-2017). Global Institute for Water Security BERMS project. $465,476 (CAD). Funded by H.S. Wheater’s Canada Excellent Research Chair. A.M. Ireson co-manages this project, and received $100,000 (CAD).

**Ireson, A.M** (collaborator) (2011-2017). Global Institute for Water Security St Denis project. $872,596 (CAD). Funded by H.S. Wheater’s Canada Excellent Research Chair. A.M. Ireson co-manages this project, and received $350,000.

**Ireson, A.M** (collaborator) (2011-2017). Global Institute for Water Security Brightwater Creek project. $615,000 (CAD). Funded by H.S. Wheater’s Canada Excellent Research Chair. A.M. Ireson received $110,000.

**Ireson, A.M**. (2016). An assessment of flooding at Beardys and Okemasis First Nation. $2,250 (CAD). U of S Undergraduate Summer Research Assistantship funding.

**Ireson, A.M.** (PI) (2016). Improving and benchmarking models for snowmelt infiltration in seasonally frozen soils. $25,000 (CAD). NSERC Engage Grant with Geo-slope International Ltd as an industry partner. All funding is for A.M. Ireson.

**Ireson, A.M.** (2016). Modelling groundwater-surface water-atmosphere interactions. MITACS GlobalLinks Research Intern. MITACS funds an undergraduate summer student directly.

**Ireson, A.M** (collaborator) (2011-2017). Global Institute for Water Security Rocky Mountain project. $490,000 (CAD). Funded by H.S. Wheater’s Canada Excellent Research Chair. A.M. Ireson received $80,000.

Ferguson, G, (PI) **Ireson, A.M.** (Co-I) and Lindsay, M. (2014-2016). Probabilistic risk assessment of groundwater flow and contaminant transport. $460,000 (CAD) plus $405,000 (CAD) in-kind from AECL. Fedoruk Centre. $150,000 (CAD) to A.M. Ireson.

Black, T.A. (PI), Barr, A., van der Kamp. G, **Ireson, A.M**. (Co-I), Helgason, W., and Johnstone, J. (2012). Understanding and modelling the Hydrology of the Southern Boreal Forest. $100,000 (CAD). Canadian Foundation for Climate and Atmospheric Sciences. $12,000 (CAD) to A.M. Ireson.

Vineis, P. (**Ireson, A.M.** is a collaborator) (2012-2015). Causes, health impacts and mitigation of saline intrusion in Bangladesh. £250,000 (GBP). Leverhulme Trust. No funding was for Ireson, A.M., who wrote this funding application whilst a postdoc at Imperial College.

**20. PRACTICE OF PROFESSIONAL SKILLS**

I am currently an associate Editor for Hydrological Processes, dealing with the 2018/19 Special Issue for the Canadian Geophysical Union.

I previously served as an editor for the Geological Society of London’s Quarterly Journal of Engineering Geology and Hydrogeology, QJEGH (2010-2018)

Journal articles reviewed (6 in 2018/19, 48 in total):

|  |  |
| --- | --- |
| Date | Journal |
| 2019-05 | Hydrological Processes |
| 2019-04 | Canadian Journal of Soil Science |
| 2019-02 | Hydrological Processes |
| 2018-11 | Water Resources Research |
| 2018-11 | Frontiers |
| 2018-06 | Journal of Hydrology |
| 2018-04 | QJEGH |
| 2018-03 | Geophysical Research Letters |
| 2018-01 | Water Resources Research |
| 2018-01 | Journal of Hydrology |
| 2017-12 | Canadian Water Resources Journal |
| 2017-11 | Journal of Hydrology |
| 2017-08 | Hydrological Processes |
| 2017-01 | Book review for Cambridge University Press |
| 2017-01 | Transport in Porous Media |
| 2016-11 | Hydrology and Earth Systems Sciences |
| 2016-10 | Water Resources Research |
| 2016-07 | Hydrology and Earth Systems Sciences |
| 2016-04 | Journal of Hydrology |
| 2016-02 | Groundwater |
| 2016-01 | Journal of Hydrology |
| 2015-12 | Journal of Hydrology |
| 2015-08 | Hydrological Processes |
| 2015-07 | Journal of Hydrology |
| 2015-05 | Journal of Hydrology |
| 2015-03 | Hydrogeology Journal |
| 2014-08 | Vadose Zone Journal |
| 2014-06 | Hydrogeology Journal |
| 2014-05 | Hydrogeology Journal |
| 2014-03 | Journal of Hydrology |
| 2014-01 | QJEGH |
| 2014-01 | Journal of Hydrology |
| 2013-06 | QJEGH |
| 2013-05 | Hydrological Processes |
| 2013-04 | Hydrological Processes |
| 2012-12 | Hydrological Processes |
| 2012-10 | USGS - informal review |
| 2012-09 | Canadian Geotechnical Journal |
| 2012-08 | Journal of Hydrology |
| 2012-07 | Hydrogeology Journal |
| 2012-06 | Hydrological Sciences Journal |
| 2012-05 | Hydrology and Earth Systems Sciences |
| 2012-03 | QJEGH |
| 2012-03 | Vadose Zone Journal |
| 2011-11 | Canadian Journal of Soil Science |
| 2011-11 | Vadose Zone Journal |
| 2011-09 | Water Resources Research |
| 2011-08 | QJEGH |

Grants reviewed:

|  |  |
| --- | --- |
| Date | Details |
| 2019-01 | One NSERC CRD proposal |
| 2018-12 | Reviewed a project proposal for internal funding by the University of Wisconsin Aquatic Sciences Centre |
| 2018-02 | Reviewed a proposal for the Royal Academy of Engineering, Engineering for Development Research Fellowship |
| 2017-01 | One NSERC Discovery Grant proposal |
| 2016-07 | I served on a peer review panel in Washington DC, July 2016, for proposals submitted to the Understanding Changes in High Mountain Asia solicitation. |
| 2016-01 | One NSERC Discovery Grant proposal |
| 2011-11 | One NSERC Discovery Grant proposal |

**21. ADMINISTRATIVE SERVICE**

I am the program director for the Masters in Water Security program (2016 – present)

I am the Chair of the Admissions and Awards Committee for the School for Environment and Sustainability (2018 – present), and I’ve served as a member of this committee since 2012.

I am the Chair of the Masters in Water Security Program governance committee

I sit on the Executive Committee of the School for Environment and Sustainability (2018 – present).

In 2019 I have been involved in informal committees to review tenure and promotion standards and to reimagine the SENS the professional programs. I have also informally supported the discussions regarding the MWS program at Neijing Normal University

In fall 2015 I served on the SENS merit review committee

I am the chair of the program committee of the Masters in Water Security.

In fall 2015 I served on the Human Dimensions of Environmental Change faculty recruitment committee

In 2014/15 I served on the SENS Admissions and Awards Committee.

In 2013/14 I served on the SENS Admissions and Awards Committee

In 2012/13 I served on the SENS Admissions and Awards Committee.

In 2011/12 I served on the SENS Interdisciplinary research committee.

In 2011/12 I was involved in an informal committee to address the design of the MSEM program for the 2013-14 academic year

**22. PROFESSIONAL OR ASSOCIATION OFFICES AND COMMITTEE ACTIVITY OUTSIDE U OF S**

I am the vice-president of the Hydrology Section of the Canadian Geophysical Union, 2018-2020. Before this I served as secretary (2014-2018),

**23. PUBLIC AND COMMUNITY CONTRIBUTIONS**

**23.1 University Related:**

2016 I am developing connections with Alfred Gamble, an Elder in the Beardies and Okemasis first nation, with a goal to develop long term hydrological monitoring on the reserve, and better understand the causes of recent flooding. In summer 2016 I have an URSA funded student conducting a review of the floods.

2015 I made a promotional video for the Global Institute for Water Security, which describes my research program at St Denis, SK: https://www.youtube.com/watch?v=1sfTyNj4ZJM

2012 I spoke at the Canadian Geophysical Union-HS Student conference in Saskatoon in February of 2012 on the transition between graduate school and academia

2011 I participated in the organization of an Invitational Drought Tournament, principally run by Agriculture and Agri-foods Canada, and involving students from University of Manitoba, Saskatchewan, Alberta and Calgary. This was hosted in Saskatoon at the Saskatoon Inn, and the U of S Team, for whom I was a “consultant” won the competition.

**23.2 Non University Related:**

None

**24. OTHER ACTIVITIES**

2016 NASA: I served on a peer review panel in Washington DC, July 2016, for proposals submitted to the Understanding Changes in High Mountain Asia solicitation.

2015 State of Nevada: I conducted a review of the Yucca Mountain Nuclear Waste Repository, looking at how they assess the risk of waste leaching from the repository into the surrounding environment.

2012 Independent Consultant to the US EPA, October 2012. External peer review of an environmental impact assessment.

2008 Independent Consultant to the Environment Agency, London, UK: I produced a report on the leakage of radionuclides for the EA in the Bradwell decontamination bay case.