

Curriculum Vitae: Dr. Stefan W. Kienzle

06.2017

Personal Data

Name Dr. Stefan Werner Kienzle
 Nationality German, Permanent Resident of Canada
 E-Mail stefan.kienzle@uleth.ca
 Languages English, German

Professional Education

1993 **Ph.D.** in Physical Geography (magna cum laude – high distinction)
 Ruprecht-Karls University of Heidelberg, Faculty of Natural Sciences and Mathematics
 Dissertation subject: “*Investigations on River Salinization in the Breede River Catchment, Western Cape Province, Republic of South Africa*”

1985 **M.Sc.** in Physical Geography (Water Resources, Cartography)
 University of Hanover, Institute for Geography
 Thesis subject: “*Irrigated Agriculture in the Southern Plains of Alberta, Canada*”

Employment History

07/14-present **Professor** for Hydrology and GIS, Department of Geography, University of Lethbridge.

07/05-06/14 **Associate Professor** for Hydrology and GIS, Department of Geography, University of Lethbridge.

07/00-06/05 **Assistant Professor** for Hydrology and GIS, Department of Geography, University of Lethbridge.

10/97 - 06/00 **Manager**, GIS & Spatial Analysis Division, AGRA (now AMEC) Earth & Environmental Limited.

04/96 - 06/97 **Research Project Coordinator** at the University of Jena, Germany.

07/95 - 06/97 **President** and Founder of *CumGeo Consultants in Environmental Research, Modelling and Geoinformatics GmbH*, Übach-Palenberg, Germany.

07/90 - 06/95 **Research Fellow**, since January 1992 **Senior Research Fellow**, at the Department of Agricultural Engineering, University of Natal, Pietermaritzburg, Republic of South Africa.

01/87 - 06/90 **Research Hydrologist** at the Hydrological Research Institute, Department of Water Affairs, Pretoria, Republic of South Africa.

02/86 – 04/86 **Consultant** for the German Agency for Technical Cooperation (GTZ) for a hydrological project in Piura, Peru, in conjunction with the University of Hanover, Germany and the University of Piura, Peru.

05/82 – 12/82 **Irrigation Technologist** (as intern) at the Planning Branch, Irrigation Research Institute, Alberta Agriculture, Lethbridge, Alberta.

Research/Working Experience in these Counties:

Argentina, Canada, Chile, Columbia, Egypt, Germany, Lesotho, Mozambique, New Zealand, Peru, South Africa, Swaziland, USA, Zimbabwe

Teaching

Department of Geography, University of Lethbridge (total enrolment: >2,800):

- Introduction to Physical Geography (Geog1000)
- Introduction to Geography (Geog1010)
- Introduction to Geographical Information Science (Geog2735)
- Introduction to Geographical Information Systems (Geog3740)
- Hydrology (Geog4012)
- Hydrology II (Geog4400)
- Applied Geographical Information Systems (Geog4740)
- Independent and Applied Studies Courses (40+ individual courses)
- Supervisor/Co-Supervisor of 18 MSc students and 2 PhD students
- Supervisory and Examination Committee: 40+ MSc students

Department of Agricultural Engineering, University of Natal, Republic of South Africa:

- Soil water - Soil loss - Water quality - Remote sensing - Digital terrain models – GIS

Student Evaluations (Fall 2000 to Spring 2013):

- 97 % of all responding students rate me as a good, very good or excellent instructor.
- The overall score of all student evaluations is 92.7 %.
- Over 95% of all responding students rate me to be well prepared, punctual, to explain concepts well, to provide a clear grading scheme, to be available outside the classroom, to treat students respectfully, and to provide an atmosphere that stimulates thinking and invites students' participation and questions.

Supervisor/Co-supervisor of the following graduate students:

1. Trevor Deering, MSc., Jan 2017 – present, Dept. of Geography, U. of Lethbridge, “**Development of a Soil Mapping Model for the Castle River Watershed**”
2. Marcus Dostie, PhD., Sep. 2014 to present, Dept. of Geography, U. of Lethbridge, “**Temperature regimes of vervet monkeys in Samara game reserve, South Africa**”, Co-supervisor: Dr. Louise Barrett, Dept. of Psychology, U of L.
3. Colin Langhorn, MSc., 2013 to 2016, Dept. of Geography, U. of Lethbridge, “**Application of the AquaCrop model to simulate impacts of climate change for selected crops in southern Alberta**”
4. Fabian Trentini, MSc., 2013 to 2014, Dept. of Environmental Systems and Sustainability, Ludwig-Maximilians-University Munich, Germany, “**Modelling future irrigation supplies in the Oldman River basin, Alberta, Canada, using the WaSim model**”, Co-supervisor: Prof. Dr. Ralf Ludwig, Munich, Germany.
5. Martin Ickeroth, MSc., 2013 to 2014, Dept. of Environmental Systems and Sustainability, Ludwig-Maximilians-University Munich, Germany, “**Modelling future crop yields in southern Alberta, Canada, using the AquaCrop model**”, Co-supervisor: Prof. Dr. Ralf Ludwig, Munich, Germany.
6. Charmaine Bonifacio, MSc., 2013 to 2017, Dept. of Geography, U. of Lethbridge, “**Developing ACRU utilities for modelling future water availability: A case study of the Oldman Reservoir Watershed, Alberta**”
7. Timothy Anderson, MSc., 2012 to 2015, Dept. of Geography, U. of Lethbridge, “**Simulating climate change impacts on southern Alberta watersheds**”.
8. Marcus Dostie, MSc., Sep. 2012 to 2014, Dept. of Geography, U. of Lethbridge, “**Spatial analysis of monkey habitat and movement in the South African Karoo**”, Co-supervisor: Dr. Louise Barrett, Dept. of Psychology, U of L.
9. Johanna Springer, MSc., 2012 to 2013, Dept. of Environmental Systems and Sustainability, Ludwig-Maximilians-University Munich, Germany, “**Impacts of Mountain Pine Beetle on the hydrology of the Castle River watershed**” Co-supervisor: Prof. Dr. Ralf Ludwig, Munich, Germany.
10. Juliana Braun, MSc., 2011 to 2012, Dept. of Environmental Systems and Sustainability, Ludwig-Maximilians-University Munich, Germany, “**Assessment of the impacts of land use change by oil sands operations on the hydrological quantities and regimes of two Athabasca River tributaries by the use of the WaSiM-ETH hydrological model.**” Co-supervisor: Prof. Dr. Ralf Ludwig, Munich, Germany.

11. Rebecca Doherty-Leppington, MSc., 2010 to 2011, Dept. of Geography, U. of Lethbridge, "**Risk Mapping of snow drifts in the Municipal District of Lethbridge**", Co-supervisor: Dr. Chris Hugenholtz, U of L.
12. Michael Nemeth, MSc., 2008 to 2010, Dept. of Geography, U. of Lethbridge, "**Simulating climate change impacts on the Upper North Saskatchewan watershed.**"
13. Veit Blauhut, MSc., 2008 to 2010, U. of Dresden, Germany, Institut für Geographie. "**Predictions of future snowfall in southern Alberta**"
14. Silvia Vittozzi, MSc., 2007 to 2008, Dept. of Geology, Universita' Degli Studi Roma Tre, Rome, Italy, "**Analysis of hydrological erosion risk in the upper St. Mary basin, Montana, USA**", Co-supervisor: Isabella Furieri, Dipartimento di Scienze Geologiche, Rome.
15. Katherine Forbes, MSc., 2005 to 2007, Dept. of Geography, U. of Lethbridge, "**Implementation of a precipitation-runoff model to estimate climate change and land use impacts in southern Alberta**"
16. Corey Halford, MSc., 2004 to 2005, Dept. of Geography, U. of Lethbridge, "**Modelling environmental change impacts on Rocky Mountains Runoff**"
17. Lisa Simpson, MSc., 2004 to 2008, Dept. of Geography, U. of Lethbridge, "**Balancing nutrients to maintain and enhance environmental and economic stability of agricultural operations**", Co-supervisor: Dr. Ross Mackenzie, Alberta Agriculture, Lethbridge, Dr. Craig Coburn, U. of Lethbridge
18. Roland Loewer, MSc., 2003 to 2005, Dept. of Geography, U. of Lethbridge, "**Spatial and temporal analysis of human infections with enteric pathogens in Alberta**"
19. Guy Duke, MSc., 2001 to 2003, Dept. of Geography, U. of Lethbridge, "**A GIS expert system for identifying probable water pollution source areas**"
20. Amy Jenson, MSc., 2001 to 2002, Dept. of Geography, U. of Calgary, "**Developing a Land Cover Map for Wildlife Habitat Suitability Mapping**", Co-supervisor: Dr. Myrka Hall-Beyer, U. of Calgary
21. Huapeng Chen, MSc., 2001 to 2002, Dept. of Geography, U. of Calgary, "**GIS based Wildlife Suitability Modelling**", Co-supervisor: Dr. Myrka Hall-Beyer, U. of Calgary
22. Rosemary Crosby, 2000 to 2001, Dept. of Environmental Studies, U. of Calgary, "**Delineation of Wildlife Habitat Areas in the M.D. Foothills using GIS and Remote Sensing**", Co-supervisor: Dr. Myrka Hall-Beyer, U. of Calgary

Research

My research and creative activities are divided into three subjects, which belong to the greater themes of hydrology and geographical information systems (GIS). I am further developing the ACRU agro-hydrological modelling system, which is used extensively in southern Africa, and since 2007 in Canada and New Zealand. My research themes are integrated in the sense that most of my hydrological research has a strong spatial component, which requires the application of GIS and associated new terrain analysis methods. Research with a clear GIS focus, such as my work on scale issues with terrain modelling, or improving on the spatial modelling of air temperatures, are aimed at improving GIS analysis used for hydrological and environmental analyses. The demand for hydro-climatological databases required for hydrological models led to my establishing a hydro-climatological atlas of Alberta. An on-line atlas of climate indices for the period 1950 to 2010 is available at albertaclimaterecords.com. During annual visits to South Africa since 2010, where I worked predominantly in various private wildlife reserves, I recognized the need for GIS applications in conservation areas in South Africa. Thus, a new research focus is the GIS needs analysis and subsequent planning of data gathering, database management, spatial analyses, and specific needs by the respective conservation authority.

Hydrological Research:

- Hydrological simulations:
 - Impacts of climate change and land cover changes on hydrological behaviour of Alberta watersheds
- Hydrological processes
 - Separation of precipitation into snow and rain
 - Snow processes
 - Glacier processes
- Integrated water resources management
 - Impacts of groundwater on streamflow recovery after a multi-year drought
 - Water yields in Alberta
 - Streamflow trends in Alberta

- Spatial distribution of trends of climate indices
- Trend analyses of instrumental climate indexes in Alberta
- Mapping of 43 climate indices across Alberta (albertaclimaterecords.com)

GIS Research:

- Conservation GIS – data gathering, database design, mapping
- Terrain analyses (scale issues)
- Delineation of Hydrological Response Units
- Spatial distribution of snow
- Impacts of sloped area under-estimation on hydrology
- Simulation of air temperature on north- and south-facing slopes
- Creation of a digital hydro-climatological atlas

Collaborative Research:

- Mapping of invasive species
- Wildlife habitat modelling
- Cumulative effects on drought in the Battle River Basin
- Pathogen occurrence in the Oldman River Basin
- Low flow analysis in the Athabasca River
- Climate change and its impacts
- GIS in Epidemiology
- GIS in behavioural studies of vervet monkeys
- Adaptation to climate change

I am an active team member of:

- Research team funded by Alberta Innovates – Energy and Environmental Solutions (AI-EES)
- Canadian Water Network (CWN), Networks of Centres of Excellence (NCE)
- Water Institute for Sustainable Environments (WISE)
- Alberta – Bavaria Research Collaborative (ABBY-Net)
- Applied Behavioural Ecology And Ecosystem Research Unit (ABEERU), Department of Environmental Science, University of South Africa (UNISA)
- School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal, Pietermaritzburg, South Africa

Adjunct Professor/Research Fellow

- University of Regina - 2012 to present
- University of South Africa – 2013 to present
- University of KwaZulu-Natal – 2015 to present

Membership of Professional Organisations:

- Alberta Geomatics Group (AGG)
- American Geophysical Union (AGU)
- Canadian Association of Geographers (CAG)
- Canadian Water Resources Association (CWRA)
- European Geoscience Union (EGU)
- International Association of Hydrological Sciences (IAHS)
- International Union of Geographers (IUG)
- Society for Conservation GIS (SCGIS)

Publications

Summary:

- 40 Articles in refereed journals
- H-Index=18, > 1000 citations
- 10 Contributions to books

- >150 Presentations at symposia and workshops
- > 25 Unpublished reports
- > 30 Reviews of Environmental Impacts Assessments (not listed)

Refereed Publications:

1. **Kienzle SW** 2017: Has it become warmer in Alberta? Mapping temperature changes for the period 1950-2010 across Alberta, Canada. *The Canadian Geographer* (in press).
2. Dostie MJ, Lusseau D, Bonnell T, Clarke PMR, Chaplin G, Kienzle SW, Barrett L and Henzi SP 2016: Proof of principle: The adaptive geometry of social foragers. *Animal Behaviour* 119: 173-178.
3. Beck MA, Colwell DP, Goater CP and **Kienzle SW** 2015: Where's the risk? Landscape epidemiology of gastrointestinal parasitism in Alberta beef cattle. *Parasites & Vectors* doi: 10.1186/s13071-015-1040-x
4. Bonifacio C, Barchyn TE, Hugenholtz CH and **Kienzle SW** 2015: CCDST: A free Canadian climate data scraping tool. *Computers & Geosciences* 75, 13-16.
5. Springer J, Ludwig R and **Kienzle SW** 2015: Impacts of Forest Fires and Climate Variability on the Hydrology of an Alpine Medium Sized Catchment in the Canadian Rocky Mountains. *Hydrology* 2(1), 23-47.
6. **Kienzle SW** 2014: Parameterization of a physical hydrological model for a mountain region in Alberta. In: *Putting Prediction in Ungauged Basins into Practice*. eds. J.W. Pomeroy, P.H. Whitfield, and C. Spence. Canadian Water Resources Association. 205-212. Invited contribution.
7. **Kienzle SW** and Mueller M 2013: Mapping Alberta's Surface Water Resources for the period 1971-2000. *The Canadian Geographer* 57(4): 506-518.
8. Pasternak G, Brown LR, **Kienzle SW**, Fuller A, Barrett L and Henzi SP 2013: Population Ecology of Vervet Monkeys in A High Latitude, Semi-Arid Riparian Woodland. *Koedoe – African Protected Area Conservation and Science* Vol. 55 (1), 1-9.
9. **Kienzle SW**, Nemeth MW, Byrne JM and MacDonald RJ 2012: Simulating the hydrological impacts of climate change in the upper North Saskatchewan River basin, Alberta, Canada. *Journal of Hydrology* 412-413: 76-89.
10. Nemeth MW, **Kienzle SW** and Byrne JM 2012: Multi-variable verification of hydrological processes in the upper North Saskatchewan River basin, Alberta, Canada. *Hydrological Sciences Journal* 57(1): 84-102.
11. MacDonald RJ, Byrne JM, Boon S, and **Kienzle SW** 2012: Modelling the potential impacts of climate change on snowpack in the North Saskatchewan River watershed, Alberta. *Water Resources Management* 26: 3053-3076.
12. Larson RP, Byrne JM, Johnson DL, Letts MG and **Kienzle SW** 2011: Modelling Climate Change Impacts on Spring Runoff for the Rocky Mountains of Montana and Alberta I: Model Development, Calibration and Historical Analysis. *Canadian Water Resources Journal*, 2011, 36:(1) 17-34.
13. Larson RP, Byrne JM, Johnson DL, **Kienzle SW** and Letts MG 2011: Modelling climate change impacts on spring runoff for the rocky mountains of Montana and Alberta II: runoff change projections using future scenarios. *Canadian Water Resources Journal*, 2011, 36:(1) 35-52.
14. Forbes KA, **Kienzle SW**, Coburn CA, Byrne JM and Rasmussen J 2010: Modelling the impacts of selected GCM derived climate scenarios on the future hydrology of a hybrid watershed in the Oldman River watershed, Alberta, Canada. *Climatic Change* 105(3): 555-565.
15. MacDonald RJ, Byrne JM, **Kienzle SW**, Larson RP, 2011. Assessing the potential impacts of climate change on mountain snowpack in the St. Mary River watershed, Montana. *Journal of Hydrometeorology*, 12:262-273.
16. **Kienzle SW** 2010: Effects of area under-estimations of sloped mountain terrain on simulated hydrological behaviour. *Hydrological Processes* 25: 1212-1227 (DOI: 10.1002/hyp.7886)
17. Neilson D, Duke G, Taylor B, Byrne J, **Kienzle SW**, Van der Gulik T 2010: Development and Verification of Daily Gridded Climate Surfaces in the Okanagan Basin of British Columbia. *Canadian Water Resources Journal*, 35(2): 131-154.
18. Schmidt J, **Kienzle SW** and Srinivasan MS 2009: Estimating increased evapotranspiration losses caused by irrigated agriculture as part of the water balance of the Orari Catchment, Canterbury, New Zealand. *Journal of Hydrology (NZ)* 48 (2): 89-94.
19. MacDonald RJ, Byrne JM and **Kienzle SW** 2009: A physically based daily hydrometeorological model for complex mountain terrain. *J. of Hydrometeorology* (10): 1430-1446.
20. **Kienzle SW** 2008: A new temperature based method to separate rain and snow. *Hydrological Processes*, 22: 5067-5085.
21. **Kienzle SW** and Schmidt J 2008: Hydrological impacts of irrigated agriculture in the Manuherikia Catchment, Otago, New Zealand, *Journal of Hydrology (NZ)*, 47(2):67-83.
22. Xu S, Peddle DR, Coburn CA and **Kienzle SW** 2008: Sensitivity of a Carbon and Productivity Model to

- Climatic, Water, Terrain and Biophysical Parameters in a Rocky Mountain Watershed. *Canadian Journal of Remote Sensing*, 34(3):1-14.
23. Byrne JM and **Kienzle SW** 2008: Water Resources. In Sauchyn, D and Kulshreshtha S 2008: . Alberta Vulnerability Assessment: Biophysical Vulnerability. For Government of Alberta, Department of Environment. P. 11-20. INVITED AND REFEREED INTERNATIONALLY.
 24. Duke G, **Kienzle SW**, Johnson D and Byrne J 2006: Incorporating ancillary data to refine anthropogenically modified overland flow paths. *Hydrological Processes*, 20(8), 1827-1843.
 25. **Kienzle SW** 2006: The Use of the Recession Index as an Indicator for Streamflow Recovery After a Multi-Year Drought. *Water Resources Management*, 20, 991-1006.
 26. Byrne J, **Kienzle S**, Johnson D, Duke G, Gannon V, Selinger B and Thomas J 2006: Current and future water issues in the Oldman River Basin of Alberta, Canada. *Water Science & Technology*, Vol 53, No 10: 327–334.
 27. Gannon VPJ, Duke GD, Thomas JE, VanLeeuwen, Byrne J, Johnson D, **Kienzle SW**, Little J, Graham T and Selinger B (2005) Use of in-stream reservoirs to reduce bacterial contamination of rural watersheds. *Science of the Total Environment* - 08717, 13pp.
 28. Lapp S, Byrne J, Townsend I, **Kienzle SW** (2005) Climate warming impacts on snowpack accumulation in an alpine watershed. *International Journal of Climatology*, Vol 25(4), 521-536.
 29. **Kienzle SW** 2004: The effect of DEM raster resolution on first order, second order and compound terrain derivatives. *Transactions in GIS*, 8(1):83-111.
 30. Duke G, **Kienzle SW**, Byrne J and Johnson D 2003 Improving overland flow routing by incorporating ancillary road data into Digital Elevation Models. *Journal of Spatial Hydrology*, Vol. 3, No. 2, Fall 2003, 27pp.
 31. Lapp S, Byrne J, **Kienzle SW** and Townshend I 2002 Linking GCM synoptics and precipitation for western North America. *International Journal of Climatology* 22: 1807-1817
 32. **Kienzle SW**, Lorentz SA and Schulze RE 1997: Hydrology and Water Quality of the Mgeni catchment. *Water Research Commission*, Pretoria, Report TT87/97, pp. 1 - 88, with 15 color maps, ISBN 1 86845 297 2
 33. Smithers J, Schulze RE and **Kienzle SW** 1997: Design flood estimation using a modelling approach: A case study using the ACRU model. In: *Rosbjerg D, Boutayeb N, Gustard A, Kundzewicz ZW and Rasmussen PF (eds.) Sustainability of Water Resources under Increasing Uncertainty*. IAHS Publication 240, 277-286
 34. **Kienzle SW** 1996: Using DTMs and GIS to define input variables for hydrological and geomorphological analysis. In: *HydroGIS 96: Application of Geographical Information Systems in Hydrology and Water Resources Management* (Proc. of the Vienna Conference, Austria, April 1996). IAHS Publ. no. 235, 183-190.
 35. **Kienzle SW** 1993: Application of a GIS for simulating hydrological responses in developing regions. - In: *HydroGIS 93: Application of Geographical Information Systems in Hydrology and Water Resources Management* (Proc. of the Vienna Conference, Austria, April 1993). IAHS Publ. no. 211, 309-318.
 36. DeWet DL, Smithers JC, **Kienzle SW** and Hudson N 1993: Impact of feedlots on water quality in the Mgeni catchment. - *Journal of Agricultural Engineering in South Africa*, 25, 1, 174-188.
 37. **Kienzle SW** and Tarboton KC 1992: Improvement of agro-hydrological modelling through a link with a Geographical Information System. - *Journal of Agricultural Engineering in South Africa*, 24, 1, 134-146.
 38. **Kienzle SW** 1991: Evaluation of the influence of the sampling frequency on the representation of water quality of streams and rivers in a semi-arid catchment. - *Journal of Agricultural Engineering in South Africa*, 23, 1, 198-206.
 39. **Kienzle SW** and Schulze RE 1991: The simulation of the effect of afforestation on shallow ground water in deep sandy soils. - *Water SA*, 18, 4, 265-272.
 40. Flügel W-A and **Kienzle SW** 1989: Hydrology and salinity dynamics of the Breede River, Western Cape Province, Republic of South Africa. - In: *Regional Characterization of Water Quality*. (Proc. of the Baltimore Conference, USA, May 1989), IAHS Publ. No. 182, 221-228.

Non-Refereed Publications:

1. **Kienzle SW** 2010 Interactive comment on “Confirmation of ACRU model results for applications in land use and climate change studies” by M.L. Warburton et al., Published comment, *Hydrol. Earth Syst. Sci. Discuss.*, 7, C1949-C1959 (www.hydro-earth-syst-sci-discuss.net/7/C1949/2010/)
2. **Kienzle SW** 2010: Diverse impacts of climate change on streamflow in Alberta, Canada. Conference paper: The Global Dimensions of Change in River Basins – Threats, Linkages and Adaptation. 6-8 December 2010, Bonn, Germany (Invited).

Publications Under Review:

1. Langhorn C, **Kienzle SW**, Doria R, Cheng H and Jiskoot H: Parameterization of the AquaCrop Model using a Grid Search Calibration Method to simulate Wheat and assess Climate Change Impacts of Yield in Southern Alberta, Canada. *Computers and Electronics in Agriculture*.

Books and Chapters in Books:

1. Sauchyn D, Bonsal B, **Kienzle SW**, St Jacques J, Vanstone J and Wheaton E: 2014: Adaptation According to Mode of Climate Variability: A Case Study from Canada's Western Interior. The International Climate Change Information Programme (ICCIP) – Springer, The Handbook of Climate Adaptation: 1-24 (DOI: 10.1007/978-3-642-40455-9_93-1; ISBN: 978-3-642-40455-9).
2. **Kienzle SW**, Nemeth M, Forbes K and Byrne JM 2012: Diverse impacts of climate change on streamflow in Alberta, Canada. In: Bogardi J, Leentvaar J and Nachtnebel H-P (eds.): *River Basins and Change*. Global Water System Project and the UNESCO-IHE Institute for Water Education, Delft, the Netherlands: 50-56.
3. Byrne JM, **Kienzle SW** and Sauchyn D 2009: Water Resources. Chapter 5. In: Sauchyn DJ, Diaz H and Kulshreshtha S (editors): *The New Normal: The Canadian Prairies in a Changing Climate*. CPRC Press, Regina, SK.
4. Byrne JM, **Kienzle SW** and Sauchyn D 2009: The St. Mary's River. Chapter 14. In: Sauchyn DJ, Diaz H and Kulshreshtha S (editors): *The New Normal: The Canadian Prairies in a Changing Climate*. CPRC Press, Regina, SK.
5. Byrne JM and **Kienzle SW** 2007: Conserving water resources in the Crown of the Continent ecosystem. Invited Chapter: Prato T and Fagre D Eds. *Sustaining Rocky Mountain Landscapes: Science, Policy and Management of the Crown of the Continent Ecosystem*. Resources for the Future Press Book, Washington, DC, USA, 135-150.
6. Schulze RE, Lorentz S, **Kienzle SW**, Perks L 2004: Modelling the impacts of land-use and climate change on hydrological responses in the mixed underdeveloped / developed Mgeni catchment, South Africa. In: *Kabat, P. et al (Eds.): Vegetation, Water, Humans and the Climate A New Perspective on an Interactive System*. BAHC-IGBP Publication, Springer, 17pp, with 14 Figures and 2 tables.
7. **Kienzle SW** 1995: Investigations on River Salinization in the Breede River Catchment, Western Cape Province, Republic of South Africa. PhD Dissertation (in German), Heidelberger Geographische Arbeiten, Selbstverlag des Geographischen Institutes der Universität Heidelberg, Germany, Vol. 99, pp. 118
8. **Kienzle SW** and Schulze RE 1992: Shallow groundwater modelling. In: R.E. Schulze (Ed.) *Hydrology and Agrohydrology. A Text to accompany the ACRU-300 agrohydrological modelling system*. Agricultural Catchments Research Unit, Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, Report 41, 12p.
9. Schulze RE, Dent MC, Schäfer NW, **Kienzle SW**, Seed AW and Lynch SD 1992: Rainfall. In: R.E. Schulze (Ed.) *Hydrology and Agrohydrology. A Text to accompany the ACRU-300 agrohydrological modelling system*. Agricultural Catchments Research Unit, Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, Report 41, 34p.
10. **Kienzle SW**, Lynch SD and Tarboton KC 1992: Using a GIS for ACRU. In: R.E. Schulze (Ed.) *Hydrology and Agrohydrology. A Text to accompany the ACRU-300 agrohydrological modelling system*. Agricultural Catchments Research Unit, Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, Report 41, 9p.

Presentations at Symposia and Workshops and Public Lectures:

1. **Kienzle SW** 2017: Mapping trends of 43 climate indices at high spatial resolution for Alberta, Canada, for the period 1950 – 2010. Canadian Association of Geographers, May 29-June 02, 2017, York University, Toronto.
2. Smilovic, M, Langhorn C, Gleeson, T, Adamowski J, and **Kienzle SW** 2016: Improving Alberta's water footprint for wheat production with supplemental irrigation. *Eos Trans. AGU Fall Meeting Supplement*.
3. **Kienzle SW** 2016: Did it really get warmer in Alberta between 1950 and 2010? Better Climate Information for a Better Future. Public presentation at the Galt Museum. Nov. 16, 2016. Invited presentation.
4. **Kienzle SW** 2016: How did the climate change between 1950 and 2010 and what does it mean? Public lecture at the Lethbridge Library. Invited presentation.
5. **Kienzle SW** 2016: High-resolution mapping of climate indices and their trends across Alberta, Canada, for the period 1950 to 2010. The 13th International Meeting on Statistical Climatology. June 6-10, 2016, Canmore,

- Alberta.
6. Mogashoa M, **Kienzle SW**, Brown L and Barrett A 2016: Wetland water level assessment and hydrophyte composition in Telperion Nature Reserve. Poster presentation. 7th Oppenheimer De Beers Group Research Conference, 18th & 19th October 2016, Johannesburg, South Africa.
 7. **Kienzle SW** 2016: Mapping bio-physical properties in Telperion Nature Reserve. Poster presentation. 7th Oppenheimer De Beers Group Research Conference, 18th & 19th October 2016, Johannesburg, South Africa.
 8. **Kienzle SW** 2016: How did the climate change between 1950 and 2010, and what does it mean? Lethbridge and District Horticultural Society, July 27, 2016 (Invited presentation)
 9. **Kienzle SW** 2016: Global change: Alberta's climate change mapping project. Invited three-hour seminar at the School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal. Pietermaritzburg, South Africa, May 11, 2016.
 10. **Kienzle SW** 2016: Trends of climate and weather extremes across Alberta for the period 1950 - 2010. Alberta Beef Producers AGM 2016. Calgary, Feb. 12, 2016 (invited presentation)
 11. **Kienzle SW** 2016: Mapping climate trends and weather extremes across Alberta for the period 1950 – 2010. Irrigated Crop Production Update Conference. Lethbridge, Jan. 19-20, 2016 (invited presentation)
 12. **Kienzle SW** 2015: Mapping climate trends across Alberta for the period 1950 – 2010. Alberta Irrigation Project Association Water Conference, Lethbridge, Nov. 24-25 (invited presentation)
 13. **Kienzle SW** 2015: Dealing with challenges of determining climate change impacts. Graduate Seminar Series at the Department of Geography, Ludwig-Maximilians-University, May 21, 2015. (Invited presentation)
 14. Faramarzi M, Adamovicz V, Sauchyn D, **Kienzle SW**, Marshall S, Fennell J, Abbaspour KC, Brisbois J and Goss GG 2015: Predicting Alberta's Water Future (PAWF). Canadian Water Network: Connecting Water Resources 2015 Conference. March 10-12, Ottawa.
 15. **Kienzle SW** 2015: Spatial downscaling and correction of precipitation and temperature time series to high resolution hydrological response units in the Canadian Rocky Mountains. European Geophysical Union Conference, Vienna, Apr. 12-17 (Invited presentation).
 16. **Kienzle SW** 2015: Building a basis for water resources planning in Alberta using hydrological and crop models and climate indices. Seminar Series at the Department of Geography, Ludwig-Maximilians-University, Munich, Apr. 29, 2015 (Invited presentation).
 17. **Kienzle SW** 2015: Calculation and mapping of climate indices trends for Alberta, Canada. Seminar Series of The African Centre for Global Change and Water Resources Research (UNESCO Water Centre), Pietermaritzburg, South Africa, Feb. 15, 2015 (Invited presentation).
 18. Bonifacio C, **Kienzle SW**, Xu W and Zhang J 2014: Improvements of Physically-Based Hydrological Modelling using the ACRU Agro-Hydrological Modelling System. Eos Trans. AGU Fall Meeting Supplement, Abstract H41A-0796.
 19. Langhorn C, **Kienzle SW**, Doria R, Jiskoot H and Cheng H 2014: Parameterization of FAO's AquaCrop Model by Integrating a Hydrological Model and Climate Indices. Eos Trans. AGU Fall Meeting Supplement, Abstract B33E-0223.
 20. Bladon K, Silins U, Emelko M, Flannigan M, Dupond D, Robinne F, Wang X, Parisien M-A, Stone M, Thompson D, Tymstra C, Schroeder D, **Kienzle S** and Anderson A 2014: Assessing the Impact of Active Land Management in Mitigating Wildfire Threat to Source Water Supply Quality. Eos Trans. AGU Fall Meeting Supplement, Abstract H54D-04.
 21. **Kienzle SW** 2014: Determining local water availability: food for thought, and thought for food. Water Talks at the University of Lethbridge. Public lecture, Oct. 09, 2014, Alberta Water and Environmental Science Building, University of Lethbridge, Alberta.
 22. **Kienzle SW** 2014: Environmental change. 2-Hour Oral presentation at the ABBY-Net Summer School, Kananaskis Field School, Alberta, Canada, Aug. 10-17, 2014. I am one of the organizers of this international event, with 30 students from six Universities, half from Germany, and half from Canada.
 23. **Kienzle SW** 2014: Is it really getting warmer in Alberta? Public lecture at the University of Lethbridge 2014 Exploration Expo, June 07, 2014.
 24. **Kienzle SW** and Wheaton E 2014: Modelling Climate Impacts on Agro-Ecosystems. Canadian Association of Geographers Congress / IRIACC Workshop, May 26-28, Brock University, St. Catherines. Invited presentation.
 25. **Kienzle SW** 2013 : Calculating climate indices, simulating water resources and crop modelling under climate change conditions in three watersheds in Alberta and Saskatchewan. International VACEA (Vulnerability and Adaptation to Climate Change in the Americas) workshop, Puerto Varas, Chile, Dec. 12-17. Invited presentation.

26. Dostie M, Henzi P, Barrett L, **Kienzle SW**, Coburn C, Thomas B, and Phelps 2013: Determining the optimal revisit time for primate spatial data collection, Mobile Gent '13, Gent, Belgium.
27. Beck MA, **Kienzle SW**, Goater CP, Colwell, DD. 2013. Assessing risk: Spatial trends and environmental risk factors for an emerging liver fluke of sympatric host species in Alberta, Canada. 24th International Conference of the World Association for the Advancement of Veterinary Parasitology. Perth, Australia.
28. Bladon KD, Silins U, Emelko MB, Dupont DP, Flannigan MD, **Kienzle SW**, Parisien M-A, Robinne F, Schroeder D, Thompson DK, Tymstra C, Waddington JM, Wang X, Woolford DG, and Wotton BM 2013. Minimizing wildfire risk to municipal water works by active source water protection. AWWA Water Quality Technology Conference. Long Beach, CA.
29. Bladon KD, Silins U, Flannigan MD, Emelko MB, Dupont DP, **Kienzle SW**, Parisien M-A, Schroeder D, Stone M, Thompson DK, Tymstra C, Waddington JM, Wang X, Woolford DG, Wotton BM 2013: Management of wildfire risk in forested regions of Alberta to downstream municipal drinking water Treatment. American Water Resources Association (AWRA) Conference: Healthy Forests = Healthy Waters, Hartford, CT, USA, June 27-28, 2013.
30. Bladon KD, Silins U, Flannigan MD, Emelko MB, Dupont DP, **Kienzle SW**, Parisien M-A, Schroeder D, Thompson DK, Tymstra C, Waddington JM, Wang X, Woolford DG and Wotton BM 2013. Integrated watershed management to identify and mitigate wildfire risk in forested regions of Alberta to downstream drinking water treatment. CMOS-CGU-CWRA Congress. Saskatoon, SK.
31. **Kienzle SW** 2013: Mapping water yield, streamflow trends, and climate change in the Bow River Basin. Bow River Basin Council Quarterly Educational Forum, June 12, 2013, Calgary, Alberta. Invited Presentation.
32. Beck MA, **Kienzle SW**, Goater CP, Colwell, DD. 2013. Where's the risk? Spatial epidemiology of gastrointestinal parasitism in Alberta beef cattle. American Association of Veterinary Parasitologists 58th Annual Meeting. Chicago, IL.
33. **Kienzle SW** 2013: Climate change – an overarching issue for the Oldman Watershed. Oldman Headwaters Indicators Forum, Oldman Watershed Council, Feb. 5, 2013. Invited Presentation.
34. **Kienzle SW** 2013: Simulating hydrological behaviour under environmental change in Alberta. Environmental Modelling Workshop 2013. Alberta Environment and Sustainable Development, Edmonton, Alberta, March 13 – 14, 2013.
35. **Kienzle SW** 2013: Finding answers using GIS in hydrological modelling, habitat analysis, and mapping of climate change. University of Lethbridge, Department of Geography Seminar Series. Invited Lecture.
36. **Kienzle SW** 2013: Environmental change. Oral presentation at the ABBY-Net Summer School, Kloster Banz, Germany, May 20-26, 2013.
37. **Kienzle SW** 2012: Impacts of climate change. Oral presentation at the ABBY-Net Summer School, Kananaskis Field Station, Aug. 5-13, 2012.
38. Beck MA, **Kienzle SW**, Goater CP, Colwell, DD. 2012. Identification of environmental risk factors for an emerging liver fluke in sympatric host species in Cypress Hills Interprovincial Park, Canada. Oral presentation at the American Association of Veterinary Parasitologists. 57th Annual Meeting. San Diego, CA, 4-7 August, 2012.
39. **Kienzle SW** 2012: What water resources changes must we expect in the future? Oldman Watershed Council meeting: "Holding the Reins", February 8, 2012. Invited oral presentation.
40. Thomson MA, **Kienzle SW**, Goater CP. 2012. Mapping risk of infection: Spatial analysis of an emerging liver fluke in Cypress Hills Park, Alberta. 1st Annual Biology Graduate Research Symposium. Lethbridge, AB.
41. Parshakov I, Staenz K, Coburn C, **Kienzle SW**, Predoi-Cross A 2012: Automatic class labeling of classified imagery using a hyperspectral library. Oral presentation. 33rd Canadian Symposium on Remote Sensing, June 11-14, Ottawa, Canada.
42. Mueller, M. and **Kienzle SW** 2011: Mapping mean annual water yield and other hydrological variables for Alberta, Canada, 1971-2000. Eos Trans. AGU Fall Meeting Supplement, Abstract H43G-1299.
43. **Kienzle SW** and Nemeth, MW 2011: Climate change impacts on water resources in the Cline River watershed, Alberta, Canada. Eos Trans. AGU Fall Meeting Supplement, Abstract H43I-1359.
44. Pasternak G, **Kienzle SW**, Brown LR, Clark P, Barrett L and Henzi SP 2011: Population structure, habitat use and diet in a southern semi-desert vervet monkey (*Chlorocebus aethiops*) population. Poster presentation. 34th Meeting of the American Society of Primatologists, Austin, Texas, September 16–19, 2011.
45. **Kienzle SW** 2011: Applications of the ACRU agro-hydrological modelling system in mountain terrain. Oral presentation. First Workshop on Vulnerability and Adaptation to Climate Change in the Americas, Oct. 31–Nov. 04, Manizales, Colombia.
46. **Kienzle SW** 2011: Applying the ACRU agro-hydrological modelling system to determine impacts of climate change on watershed hydrology. Oral presentation. ABBY-NET Workshop, November Ludwig-Maximilians-

- Universität (Munich, Germany), Nov. 10-12, 2011.
47. Thomson MA, **Kienzle SW**, Goater CP, Colwell, DD. 2011. Landscape epidemiology of an emerging parasite: The lancet liver fluke (*Dicrocoelium dendriticum*) in Cypress Hills Park, Alberta. American Society of Parasitologists 86th Annual Meeting. Anchorage, AK.
 48. **Kienzle SW** 2011: Model setup, verification, and the assessment of the effects of climate change on streamflow in the upper South Saskatchewan River Basin, Alberta, Canada. Workshop presentation at "Prediction in Ungauged Basins (PUB)", International Association of Hydrological Sciences, Canmore, Alberta, from 10th to 14th May 2011
 49. **Kienzle SW** and Mueller M 2011: Mean annual water yield map of Alberta (1971-2000). Workshop presentation at "Prediction in Ungauged Basins (PUB)", International Association of Hydrological Sciences, Canmore, Alberta, from 10th to 14th May 2011
 50. **Kienzle SW** 2011: Coding issues of snow, glaciers and mountain hydrology in the ACRU agro-hydrological modelling system. ACRU Workshop, hosted by the School of Bioresources Engineering and Environmental Hydrology, Pietermaritzburg, March 11, 2011, South Africa.
 51. **Kienzle SW** 2011: Impacts of climate change on mountains, snow, and glaciers. Invited presentation to the Royal Society of South Africa. Pietermaritzburg, South Africa.
 52. **Kienzle SW**, Nemeth M, Forbes K and Byrne JM 2010: Diverse impacts of climate change on streamflow in Alberta, Canada. Conference presentation: The Global Dimensions of Change in River Basins – Threats, Linkages and Adaptation. 6-8 December 2010, Bonn, Germany (Invited).
 53. **Kienzle SW** 2010: Model setup, verification, and the assessment of the effects of climate change on streamflow in the upper South Saskatchewan River Basin, Alberta, Canada. In: The changing physical and social Environment: Hydrologic impacts and feedbacks. Hydrology Conference 2010, 11-13 October, 2010, San Diego.
 54. **Kienzle SW** 2010: Simulating streamflow under climate change in the upper North Saskatchewan River Basin. Invited presentation at EPCOR Water Workshop, Sept. 13, 2010.
 55. **Kienzle SW** 2010: Creation of a digital hydro-climatological atlas for Alberta. Presentation at the Water and Environment Hub Meeting, Aug. 31, 2010, Univ. of Lethbridge.
 56. MacDonald RJ, Byrne JM and **Kienzle SW** 2010: Climate Change and Mountain Hydrology NSASK Basin. Canadian Water Resources Association Annual Conference: Innovation ... Adding Science to Water!, March 28-30, 2010, Edmonton, Alberta.
 57. Booth E, Byrne JM and **Kienzle SW** 2010: Historical and future environmental change indices. Canadian Water Resources Association Annual Conference: Innovation ... Adding Science to Water!, March 28-30, 2010, Edmonton, Alberta.
 58. **Kienzle SW**, Nemeth MW and Byrne JM 2010: Verification of simulated hydrological processes in the upper North Saskatchewan River Basin. Canadian Water Resources Association Annual Conference: Innovation ... Adding Science to Water!, March 28-30, 2010, Edmonton, Alberta.
 59. **Kienzle SW** 2010: Oil Sands and their Environmental Impacts. University of Lethbridge, Public lecture.
 60. **Kienzle SW** 2010: Improvements of the ACRU agro-hydrological modeling system. Annual ACRU workshop, University of Kwa-Zulu Natal, Pietermaritzburg, May 07, 2010.
 61. Byrne JM, **Kienzle SW** and Sauchyn DJ 2009: Linking GCM driven hydrology simulations to paleo-hydrology in mountain watersheds. Geophysical Research Abstracts, Vol. 11, EGU2009-13098.
 62. Byrne JM, MacDonald RJ and **Kienzle SW** 2009: Simulating hydrometeorological processes in large diverse watersheds. Eos Trans. AGU Fall Meeting Supplement, Abstract GC21A-0711.
 63. Booth E, Byrne JM, MacDonald RJ, **Kienzle SW** 2009: Analysis of Historical Changes in Extreme Temperature and Precipitation on the Great Plains of North America. Eos Trans. AGU Fall Meeting Supplement, Abstract GC21A-0727.
 64. MacDonald RJ, Byrne JM, **Kienzle SW** and Sauchyn D 2009: Testing the sensitivity of snowpack to climatic change in a large physiographically diverse watershed. Eos Trans. AGU Fall Meeting Supplement, Abstract GC21A-0733.
 65. Nemeth MW, **Kienzle SW** and Byrne JM 2009: Verification of hydrological processes using the ACRU agro-hydrological modelling system for simulating potential climate change impacts in an alpine watershed in Alberta, Canada. Eos Trans. AGU Fall Meeting Supplement, Abstract GC21A-0739.
 66. **Kienzle SW** and Byrne JM 2009: Advances in spatial snow modelling in mountain terrain. Oral presentation, Western Snow Conference, Canmore, AB, Canada, Apr. 20-23, 2009.
 67. **Kienzle SW** and Byrne JM 2008: The Non-Impact of Scientific Reviews of Oil Sands Environmental Impact Assessments. Eos Trans. AGU Fall Meeting Supplement, Abstract ED33B-07.
 68. **Kienzle SW** and Byrne JM 2008: Estimating terrain adjusted daily temperatures for snow modelling. Eos

- Trans. AGU Fall Meeting Supplement, Abstract H23B-0970.
69. Byrne JM, MacDonald R and **Kienzle SW** 2008: The Development of the GENESY hydrometeorological model for mountain environments. Eos Trans. AGU Fall Meeting Supplement, Abstract C21C-0567.
 70. Campbell K, Nesbitt K, MacDonald RJ, Byrne JM and **Kienzle SW** 2008: Sensitivity analysis of GENESYS Model simulations in an alpine environment. Eos Trans. AGU Fall Meeting Supplement, Abstract C21C-0570.
 71. MacDonald RJ, Byrne JM and **Kienzle SW** 2008: Assessing potential environmental change impacts in the St. Mary River watershed, Montana. Eos Trans. AGU Fall Meeting Supplement, Abstract C21C-0569.
 72. Nemeth MW, **Kienzle SW** and Byrne JM 2008: Simulating hydrological impacts of climate and land use changes in the North Saskatchewan River Watershed, Alberta, using the ACRU agro-hydrological modelling system. Eos Trans. AGU Fall Meeting Supplement, Abstract H23C-0978.
 73. Byrne JM, **Kienzle SW** and MacDonald R 2008: Modelling detailed hydro-climatic surfaces and runoff response in large diverse watersheds. Presentation at the Water Management Conference on Climate Change Impacts on Hydroelectric Water Resource Management, CEATI International Inc. Workshop , Montreal, Oct. 8 -9, 2008.
 74. **Kienzle SW** and Byrne JM 2008: Simulating environmental impacts on water resources in southern Alberta. Oldman Watershed Council Science Forum, Lethbridge, Oct. 28, 2008. Presentation available at http://www.oldmanbasin.org/whats_new.html
 75. Byrne JM, MacDonald R and **Kienzle SW** 2008: Regional Climate Downscaling: When, How, How Much, What Assumptions? MTNCLIM 2008 Conference, 9-12 June 2008, Silverton, Colorado, USA.
 76. MacDonald R, Byrne JM, **Kienzle SW** and Blair D 2008: Developing detailed hydro-climate surfaces for the upper St. Mary watershed, Montana-Alberta. Presentation at MNTCLIM 2008 Conference, June 9-12, 2008, Silverton, CO.
 77. **Kienzle SW** and Schmidt J 2007: Hydrological impacts of irrigated agriculture in the Manuherikia Catchment, Otago, New Zealand. New Zealand Hydrological Society Conference, Rotorua, New Zealand, Nov. 20 – 23, 2007.
 78. **Kienzle SW** 2007: A new method to separate rain and snow. EOS,Transactions, American Geophysical Union, 85(52), Fall Meeting Supplement, Abstract H21A-0182.
 79. MacDonald RJ, Byrne JM and **Kienzle SW** 2007: Deriving high resolution historical and future climate databases for mountainous environments. EOS,Transactions, American Geophysical Union, 85(52), Fall Meeting Supplement, Abstract GC31C-04.
 80. **Kienzle SW** 2007: Simulating hydrological impacts of environmental change. Invited presentation at the Selwyn Science Symposium, Environment Canterbury, Christchurch, New Zealand, March 29-30.
 81. Byrne JM, **Kienzle SW** and Schindler DW 2006: Global change and rampant land and water resource development – a case study in western Canada. Eos Trans. AGU, 87(52), Fall Meet. Suppl., Abstract GC51A-0460 and Poster.
 82. Larson RP, Byrne JM, **Kienzle SW**, Letts M and Johnson D 2006: Modeling Climate Change impacts on Snow Water Equivalent (SWE) in Alpine Headwaters, Glacier National Park, MT. Eos Trans. AGU, 87(52), Fall Meet. Suppl., Abstract C33C-1283 and Poster.
 83. Forbes K, **Kienzle SW**, Coburn C, Byrne JM 2006: Parameterization of the ACRU model for estimating biophysical and climatological change impacts, Beaver Creek, Alberta. Eos Trans. AGU, 87(52), Fall Meet. Suppl., Abstract H21D-1411 and Poster.
 84. **Kienzle SW**, Byrne J, Schindler D and Komers P 2005: Do massive oil sands developments in a northern watershed lead to an impending crisis? Poster, EOS,Transactions, American Geophysical Union, 2005 Fall Meeting, Dec. 05-09, 2005 Vol. 85, 2005/Supplement
 85. Lapp S, Sauchyn D, Byrne JM and **Kienzle SW** 2005: Precipitation scenarios using dendroclimatic, historical and GCM based precipitation records. Poster, EOS,Transactions, American Geophysical Union, 2005 Fall Meeting, Dec. 05-09, 2005 Vol. 85, 2005/Supplement and Poster
 86. Byrne J, **Kienzle SW**, Duke G, Lapp S, Taylor B, Neilson, D 2005: High resolution modelling of snow accumulation and ablation in alpine regions. Poster, EOS,Transactions, American Geophysical Union, 2005 Fall Meeting, Dec. 05-09, 2005 Vol. 85, 2005/Supplement
 87. Byrne J, **Kienzle SW**, Johnson D, Duke G, Gannon V, Van Leeuwen J, Townshend I, Selinger B and Thomas J 2005: Current and future water issues in the Oldman River Basin of Alberta, Canada. Presented at the Canadian Water Network Researcher Retreat. Nov. 23-25, Kananaskis, AB.
 88. **Kienzle SW** 2005: The effect of grid cell size on major terrain derivatives in southern Alberta. Western Division of Canadian Association of Geographers (WDCAG) Annual Meeting, Lethbridge, Alberta, March 12 - 13, 2005.
 89. Mrazek R, **Kienzle S** and Mountain J 2004: Getting a REAL Picture of Science with GIS. A workshop

- prepared for the ATA Science Council Conference 2004. "The Canadian Scientist Beyond the Classroom." Banff, Alberta.
90. **Kienzle SW** 2004: The Battle River: A Prairie River under stress. Poster, EOS, Transactions, American Geophysical Union, 2004 Fall Meeting, Dec. 13-17, 2004 Vol. 84, 2004/Supplement
 91. **Kienzle SW** 2004: A new method to evaluate the hydrological status of a watershed recovering from a drought. Poster, EOS, Transactions, American Geophysical Union, 2004 Fall Meeting, Dec. 13-17, 2004 Vol. 84, 2004/Supplement
 92. McKechnie N, Byrne JM, Townshend I, Rabe N, **Kienzle SW** and Shepherd A 2004: Downscaling spatial and temporal variation in precipitation for western North America. American Geophysical Union Fall Meeting, San Francisco, Dec 13-17, abstract and poster.
 93. Byrne J, **Kienzle SW** and Sauchyn D 2004: Global change and drought severity in the Battle River Basin, Alberta. . Poster, EOS, Transactions, American Geophysical Union, 2004 Fall Meeting, Dec. 13-17, 2004 Vol. 84, 2004/Supplement.
 94. Duke G, **Kienzle SW**, Pietroniro A and Byrne J 2004: Snow pack and stream flow simulation of an eastern slopes watershed using WATFLOOD, MTCLIM, and GLUE. Poster, EOS, Transactions, American Geophysical Union, 2004 Fall Meeting, Dec. 13-17, 2004 Vol. 84, 2004/Supplement
 95. **Kienzle SW** 2004: The Effect of Grid Cell Size on Major Terrain Derivative. Proceedings: ESRI User Conference, San Diego, CA, August 09-13, 2004, 14pp plus 19 Figures.
 96. **Kienzle SW** and Duke G 2004: Water Availability in the South Saskatchewan River Basin under Climate Change. Workshop of the South Saskatchewan River Basin Council, Saskatoon, June 21, 2004.
 97. **Kienzle SW** 2004: How GIS can be used in the classroom. Lethbridge School District Council Teacher's Conference, 2004. GIS workshop. Lethbridge.
 98. **Kienzle SW** 2003: GIS – Making spatial analysis easy. Public Presentation and Demonstration. GIS Day, Lethbridge City Hall, Lethbridge, Alberta.
 99. **Kienzle SW** and Duke G 2003: The effects of roads on watersheds in the Prairies. GeoTech 2003 Conference, March 16-19, Vancouver, BC. Conference presentation.
 100. **Kienzle SW** 2003: Limitations of Alberta DEMs for Terrain Analyses. GeoAlberta 2003 Conference, May 7-9, 2003, Calgary, Alberta. Conference presentation.
 101. Gannon V, Graham T, Read S, Ziebell K, Muckle A, Thomas J, Selinger B, **Kienzle SW**, Lapp S, Townshend I, Byrne J 2002: Spatial and temporal occurrence of bacterial pathogens in rural water supplies, Southern Alberta, Canada. Poster, EOS, Transactions, American Geophysical Union, 2002 Fall Meeting, Dec. 6-12, 2002 Vol. 82, 2002/Supplement.
 102. Duke G, **Kienzle SW**, Byrne J, Johnson D 2002: Application of ancillary road, ditch, and culvert data into DEM derived flow direction matrices. Poster, EOS, Transactions, American Geophysical Union, 2002 Fall Meeting, Dec. 6-12, 2002 Vol. 82, 2002/Supplement.
 103. **Kienzle SW** 2002: Comparison of a Range of Terrain Variables Derived From DEMs Based on Different Resolutions and Input Data. Poster, EOS, Transactions, American Geophysical Union, 2002 Fall Meeting, Dec. 6-12, 2002 Vol. 82, 2002/Supplement.
 104. **Kienzle SW** 2002: The effect of DEM raster resolution on terrain derivatives in landscapes of southern Alberta. GeoAlberta 2002 conference, June 14-16, 2002, Edmonton, Alberta. Conference presentation.
 105. Duke G and **Kienzle SW** 2002: What effect do roads and ditches have on Prairie catchments? GeoAlberta 2002 Conference, June 14-16, 2002, Edmonton, Alberta. Conference presentation.
 106. Byrne JM, Townshend IJ, Lapp SL and **Kienzle SW** 2001: Linking the CICS CGCM1 Upper Air winter synoptics to winter precipitation in the western U.S. Poster. EOS, Transactions, American Geophysical Union, 2001 Fall Meeting, Dec. 10-14, 2001, 82(47), 2001/Supplement.
 107. Lapp SL, Byrne JM, Townshend IJ and **Kienzle SW** 2001: Modelling future snow accumulation for a small alpine watershed in the southern Canadian Rockies using the CCC CGCM1. Poster. EOS, Transactions, American Geophysical Union, 2001 Fall Meeting, Dec. 10-14, 2001, 82(47), 2001/Supplement.
 108. **Kienzle SW**, Duke G and Byrne J 2001: Verification of watershed delineation algorithms in southern Alberta. Poster. EOS, Transactions, American Geophysical Union, 2001 Fall Meeting, Dec. 10-14, 2001, 82(47), No. 2001/Supplement.
 109. Lapp SL, Byrne JM, **Kienzle SW** and Sheppard DL 2000: Historical and future winter precipitation scenarios for western North America using the CCC CGCM1. Invited Poster. EOS, Transactions, American Geophysical Union, 2000 Fall Meeting, Dec. 15-19, 2000, Vol. 81, No. 48, 2000/Supplement, page 397-398.
 110. Smithers J, Schulze RE and **Kienzle SW** 1997: Design flood estimation using a modelling approach: A case study using the ACRU model. In: *Rosbjerg D, Boutayeb N, Gustard A, Kundzewicz ZW and Rasmussen PF (eds.) Sustainability of Water Resources under Increasing Uncertainty. IAHS Publication 240, 277-286*

111. **Kienzle SW** and Fluegel W-A 1997: Development of an integrated water resources management system (IWRMS) in semi-arid catchments for prognostic scenario planning. Poster presentation in: AFRICAGIS'97, 23-27 June 1997, Gaborone, Botswana.
112. **Kienzle SW** 1996: The Use of GIS in Hydrological and Water Quality Modeling in KwaZulu-Natal, South Africa. 1996 ESRI Map Book, Environmental Systems Research Institute Inc., p. 38.
113. **Kienzle SW** 1996: Applying the ACRU agro-hydrological modelling system for water resources planning. In: Irrigation Research & Development Into the Next Century, A Joint Working Conference of the Alberta Irrigation Projects Association and The University of Lethbridge, November 24-28, 1996, Lethbridge, Alberta, Canada.
114. **Kienzle SW** and Fluegel W-A 1996: Hydrology related dynamics of river salinisation of irrigated land in the Breede River, Western Cape Province, South Africa. In: Irrigation Research & Development Into the Next Century, A Joint Working Conference of the Alberta Irrigation Projects Association and The University of Lethbridge, November 24-28, 1996, Lethbridge, Alberta, Canada.
115. **Kienzle SW** and Schulze RE 1995: Modelling the impacts of afforestation and other land uses on streamflow in the Mgeni catchment. Proceedings of the Sixth Annual Congress of the South African Institution of Civil Engineers, April 11-13, Port Elizabeth, RSA, 25 p.
116. **Kienzle SW** 1995: Using DTMs and GIS to define input variables for hydrological and geomorphological analysis. Poster presentation. Proceedings of the 1995 ESRI User Conference, May 22-26, Palm Springs, CA, USA.
117. **Kienzle SW** 1994: Grid-based production of sediment source area maps and basin parameterization for sediment transport simulation. Poster presentation. Proceedings of the 1994 ESRI User Conference, May 23-27, Palm Springs, CA, USA.
118. **Kienzle SW** 1994: The application of a GIS-Grid system for hydrological and geomorphological analysis. 4th Symposium on Terrain Evaluation and Data Storage, August 3 - 5, 1994, Midrand, RSA, 35 pp.
119. Lorentz SA and **Kienzle SW** 1994: The merits and limitations of GIS linked transfer function modelling of basin scale sediment yield. GIS Workshop at the 50 Years of Water Engineering in South Africa Symposium. Johannesburg, RSA. July, 1994.
120. **Kienzle SW** 1993: The role of atmospheric salt input and evapoconcentration on river salinisation in the Breede River catchment, Western Cape Province, South Africa. - Proc. 6th S. Afr. Nat. Hydrol. Symp., Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 7-8 September 1993, 637-646.
121. **Kienzle SW** and Lorentz SA 1993: Production of a soil erodibility map and simulation of sediment yield in the Henley Dam catchment, Natal. - Proc. 6th S. Afr. Nat. Hydrol. Symp., Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 7-8 September 1993, 565-574.
122. Lorentz SA, **Kienzle SW** and Dent MC (Eds.) 1993: Proceedings of the Sixth South African National Hydrological Symposium, Pietermaritzburg, September 8-10, 1993, Dept. Agricultural Engineering, University of Natal, Pietermaritzburg, RSA.
123. **Kienzle SW**, Weston DR and Moolman J 1992: Image processing of land cover information from a SPOT image for application in a deterministic agrohydrological model. - PICS International Conference, CSIR, Pretoria, RSA, October 1-2, CSIR, Microelectronics and Communication Technology, 9 p.
124. **Kienzle SW** 1991: Hydro-geo-chemical characterization of surface water as a means of identifying irrigation induced hydro-chemical changes of surface water. - Report presented at the *Workshop on Irrigation Induced Physical and Chemical Changes in Soil, Groundwater and Surface Water*, convened by N.E.Driver and S.J.Deverel, XX General Assembly IUGG, IAHS Scientific Program, Vienna, Austria, 11-24 August, 1991, (in press).
125. **Kienzle SW** and Schulze RE 1991: A simulation model to assess the effect of afforestation on ground water resources in deep sandy soils. - In: Proc. 5th S. Afr. Nat. Hydrol. Symp., Stellenbosch, RSA, November 1991, 5B-2-1.
126. **Kienzle SW** 1989: Water and salt balance and hydrochemistry of the Breede River. -Report presented at the workshop of the Co-ordinating Committee for Salinity Research, Water Research Commission, Elsenburg, RSA, April 24, 1989, 6 pp.
127. **Kienzle SW** 1989: Salinity Dynamics in the middle reaches of the Breede River catchment, Western Cape Province, R.S.A. - Proc. 4th S. Afr. Nat. Hydrol. Symp., Pretoria, RSA, November 1989, 390-399.
128. **Kienzle SW**, Lourens U and Brown B 1989: Estimating changes in the extent of irrigated agriculture with the aid of satellite imagery. - Poster presented at the International Geosphere Biosphere Program Conference, Cape Town, RSA, December 1989.
129. **Kienzle SW** and Maaren H (Eds.) 1989: Proceedings of the Fourth South African National Hydrological Symposium, Pretoria, RSA, November 22-24, 1989, Water Research Commission, Pretoria, RSA.

I30. Reports:

131. Lapp, S and **Kienzle SW** 2010: Impacts of long-term climate cycles on Alberta. AWRI on-line publication. (<http://albertawater.com/dynamics-of-alberta-s-water-supply/impacts-of-long-term-climate-cycles-on-alberta>)
132. **Kienzle SW** 2010: [Water yield and streamflow trend analysis for Alberta watersheds](#). AWRI on-line publication. (http://www.albertawater.com/index.php?option=com_content&view=article&id=600&Itemid=98)
133. **Kienzle SW**, Byrne J 2005: Modelling Snow and Spring Runoff Processes in the Upper Battle River Basin, Alberta. Technical Report to ATCO Power, 15p
134. **Kienzle SW**, Byrne J and Sauchyn D 2004: Evidence of changes in the hydrological regime of the Upper Battle River Watershed, Alberta, Technical Report to ATCO Power, 33p.
135. Komers PE, **Kienzle SW**, Byrne J, Schindler D, Dickson E 2003: Gap Analysis of the CNRL Horizon Mine EIA. Technical Report prepared for the Mikisew Cree First Nation, Fort McMurray, Alberta, 91 pp.
136. **Kienzle SW** and Landry J 2002: Bird habitat modelling in the Municipal District of Foothills No. 31. Technical Report to the Environmental Committee of the M.D. 31 Foothills, Alberta, pp 1 - 56, with 7 wall sized maps.
137. **Kienzle SW** and Tenaktociv N 1999: Flood Frequency Determination for TCPL (East). Consultancy Report submitted to: TransCanada PipeLines Ltd., AGRA Earth & Environmental Limited, Report No. CWI651, 10 p., 1 Appendix.
138. **Kienzle SW** and Robertson T 1998: 4 Wing Cold Lake GIS Needs Analysis. Consultancy Report submitted to the Director, Environmental Stewardship/DGE, Department of National Defense, AGRA Earth & Environmental Limited, Report No. CE01710/TK04, 34 p., 6 Appendices.
139. **Kienzle SW** and Schulze RE 1995: An evaluation of the impacts of commercial afforestation of eucalypt species on water table depression for six selected sites in Southern Mocambique. Report to Wates, Meiring & Barnard Inc and the Institute for Natural Resources, University of Natal, Pietermaritzburg, RSA, 21 p.
140. Smithers JC, **Kienzle SW** and Schulze RE 1995: Design flood estimation in the Mgeni catchment upstream of Midmar dam. Report to Keeve Steyn Inc., 23 p.
141. **Kienzle SW** and Schulze RE 1995: Low flow analysis for the Management Subcatchments upstream of Inanda dam. Report to Umgeni Water, Pietermaritzburg, RSA, 21 p.
142. **Kienzle SW** and Schulze RE 1994: An evaluation of the impact of commercial afforestation and other land uses on streamflow for three quaternary catchments. Report to Sappi Forests (Pty) Limited, Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA. 20 pp.
143. **Kienzle SW** and Nicoll A 1993: Water yield analysis on the Ntwasahlobo River on the Netherby Farm in the Mpendle district, Natal. Report for the Rural Advice Centre Inc., Durban. Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 11 pp.
144. Jewitt GPW and **Kienzle SW** 1993: Estimation of optimal dam capacities on the Little Tugela river. Report for Bradford, Conning and Partners, Ltd., Pietermaritzburg, RSA, 12 pp.
145. **Kienzle SW** and Schulze RE 1992: Simulation of the effect of afforestation on ground water resources at Nyalazi. Report for the Human Science Research Council, University of Natal, Durban. Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 5 pp.
146. **Kienzle SW** and Schulze RE 1991: Assessment of the impact of afforestation on the water resources in the Mbazwana area, northern Zululand. - Report for the Institute of Natural Resources on the environmental evaluation of the proposed commercial afforestation in the Mbazwana area, Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 35 pp.
147. **Kienzle SW** and Schulze RE 1991: The effect of cashew nut plantations on the water resources in the Mbazwana area. Report to INR, Pietermaritzburg, RSA, 4 pp.
148. **Kienzle SW** 1991: Salinity and water level data of boreholes in the Robertson area and daily salinity data in the Berg River catchment. Report for Ninham Shand Inc., Dept. of Agricultural Engineering, University of Natal, Pietermaritzburg, RSA, 4 pp.
149. **Kienzle SW** 1990: The salinity of the Breede River and its tributaries between Brandvlei Dam and weir H5M04: Summary of daily data for the hydrological year 1988/89. - Fifth Internal Report on the Breede River Salination Research Program, Hydrological Research Institute, Dept. of Water Affairs, Pretoria, RSA, Report No. NH000//RIQ0390, 47 pp.
150. **Kienzle SW** 1990: Hydro-chemistry of Surface Waters in the Upper and Middle Part of the Breede River Catchment. Part I: Representation and evaluation of hydro-chemical data. - Seventh Internal Report on the Breede River Salination Research Program, Hydrological Research Institute, Dept. of Water Affairs, Pretoria, RSA, Report No. NH000//RIQ0590, 102 pp.

151. **Kienzle SW** 1990: The salinity of the Breede River and its tributaries between Brandvlei Dam and weir H5M04: Summary of daily data for the hydrological year 1989/90. - Eighth Internal Report on the Breede River Salination Research Program, Hydrological Research Institute, Dept. of Water Affairs, Pretoria, RSA, Report No. NH000//RIQ1390, 54 pp.
152. **Kienzle SW** 1989: The salinity of the Breede River and its tributaries between Brandvlei Dam and weir H5M04: Summary of daily data for the hydrological year 1987/88. - Third Internal Report on the Breede River Salination Research Program, Hydrological Research Institute, Dept. of Water Affairs, Pretoria, RSA, Report No. NH000//RIQ0589, 30 pp.
153. **Kienzle SW** and Flügel W-A 1988: The salinity of the Breede River and its tributaries between Brandvlei Dam and weir H5M04: Summary of daily data up to September 1987. - First Internal Report on the Breede River Salination Research Program, Hydrological Research Institute, Dept. of Water Affairs, Pretoria, RSA, Report No. NH000//RIQ1390, 152 pp.
154. **Kienzle SW** 1985: A case study of fundamentals, planning and implementation of irrigated agriculture in the semiarid/semihumid plains of Canada (in German). MSc Thesis, Institute for Geography, University of Hanover, Germany, 188 pp.
155. Iqbal Z, **Kienzle SW**, Wankel WJ and Purnell JC 1983: General Rehabilitation Plan for the Leavitt Irrigation District. - Report compiled by the Irrigation Division, Project Planning Branch, Alberta Agriculture, Lethbridge, Alberta, Canada, 28 pp.