



John Pomeroy

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www.usask.ca

who am I?

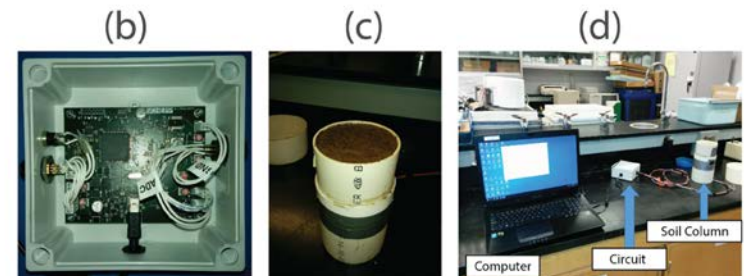
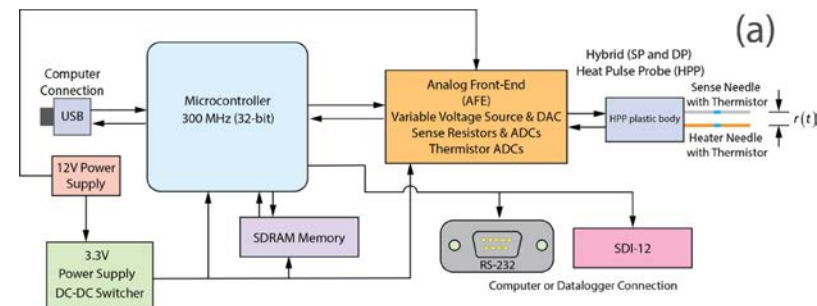


- USask BSc Geography 1983, PhD Agricultural Engineering 1988
- Prairie hydrologist since 1981
- Division of Hydrology, USask => USDA Forest Service, Wyoming; Univ. of East Anglia, England, Environment Canada - NHRI; Univ. of Wales, Aberystwyth and back to USask in 2003. Centre for Hydrology, 2004.
- Interests in
 - a) Hydrological/hydrochemical processes and modelling
 - b) Ecohydrology – interactions between vegetation and hydrology, including agricultural systems
 - c) Instrumentation and observation

what tools/methods am I using?

- Research sites: Bad Lake, Kerrobert, Rosetown, Elrose, Donovan, Bradwell, Kernan Farm, Smith Creek, St Denis, South Tobacco Creek, Vermilion River, Camrose Creek, Rosthern, Clavet Farm
- Smart Water Systems Laboratory: new sensors: SWE, frozen θ

Nicholas Kinar
Self calibrating heat pulse probe



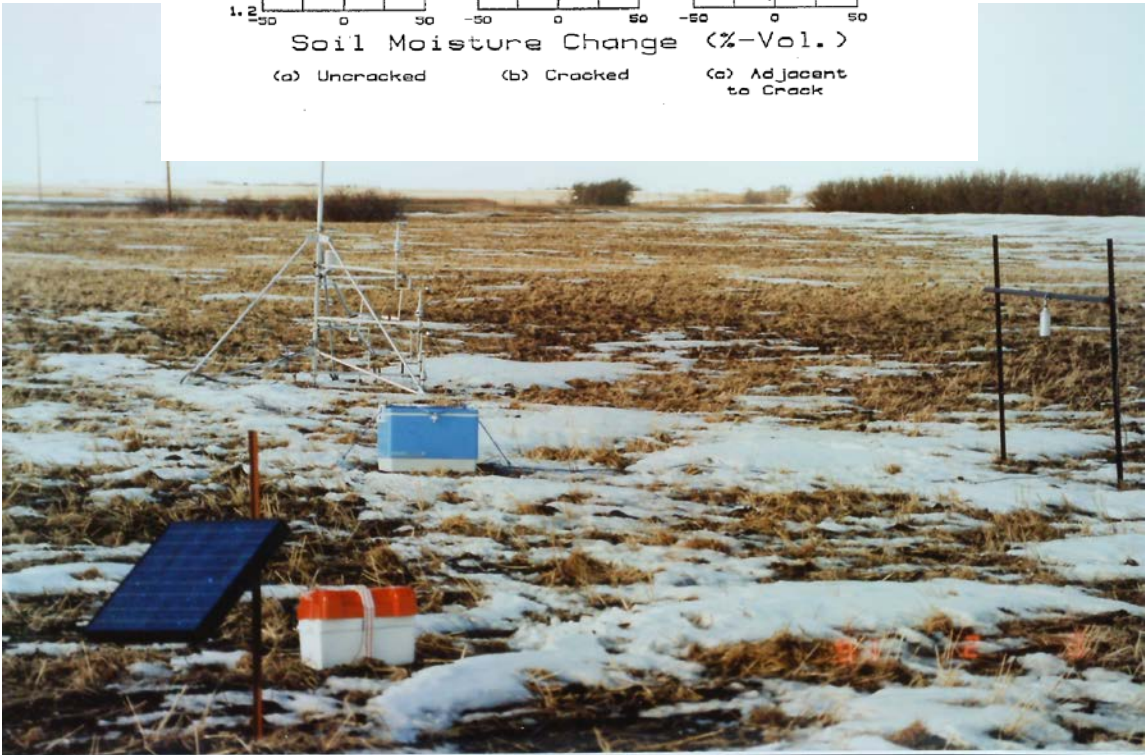
- Cold Regions Hydrological Model (CRHM) + WDPM, PCM, MESH



what have I done?



Loreburn, SK 1984



Shelterbelt snow trapping study,
Bradwell, Sask. 1989

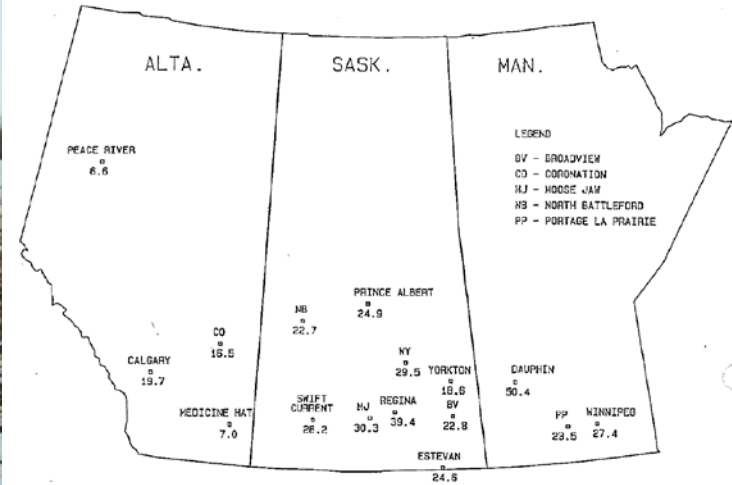


Figure 12. Mean annual quantity of blowing snow sublimated on a 1000-m fetch of stubble at different locations in the Prairie Provinces. Units are Mg/m.

Meltwater enhancement study, 1990

what have I done?



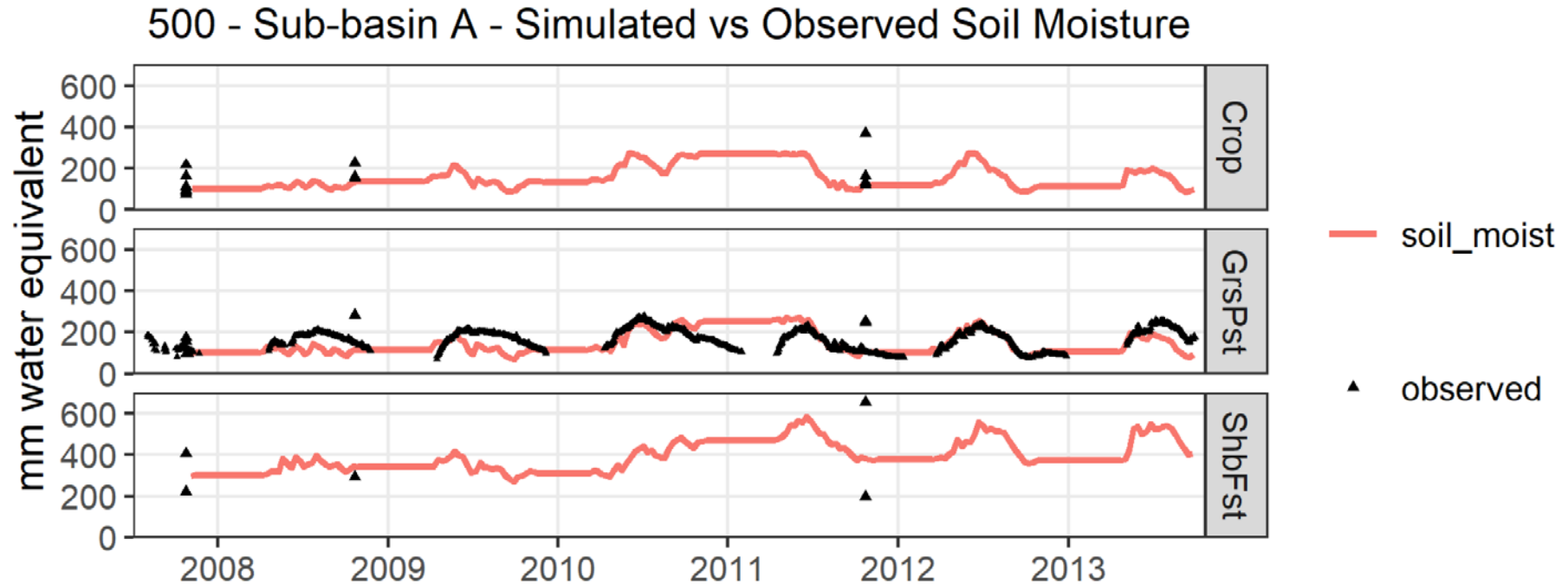
Drainage research: Smith Creek Research Basin, Langenburg, Sask

CRHM



what am I doing?

- Prairie-wide hydrological modelling of agricultural systems and improvements to water quality modelling



what am I doing?

- Prairie-wide hydrological modelling of agricultural systems, climate sensitivity and improvements to water quality modelling

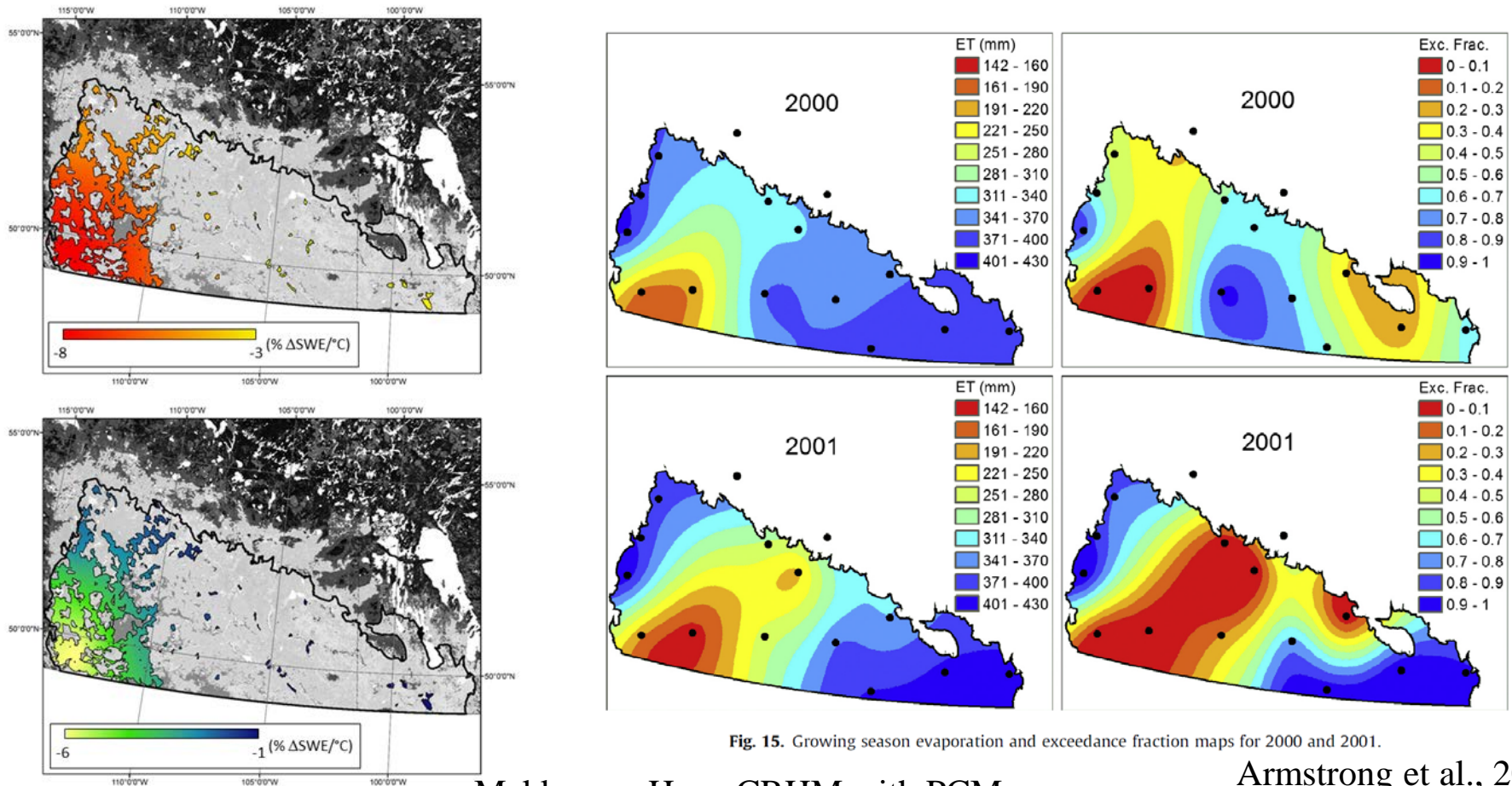
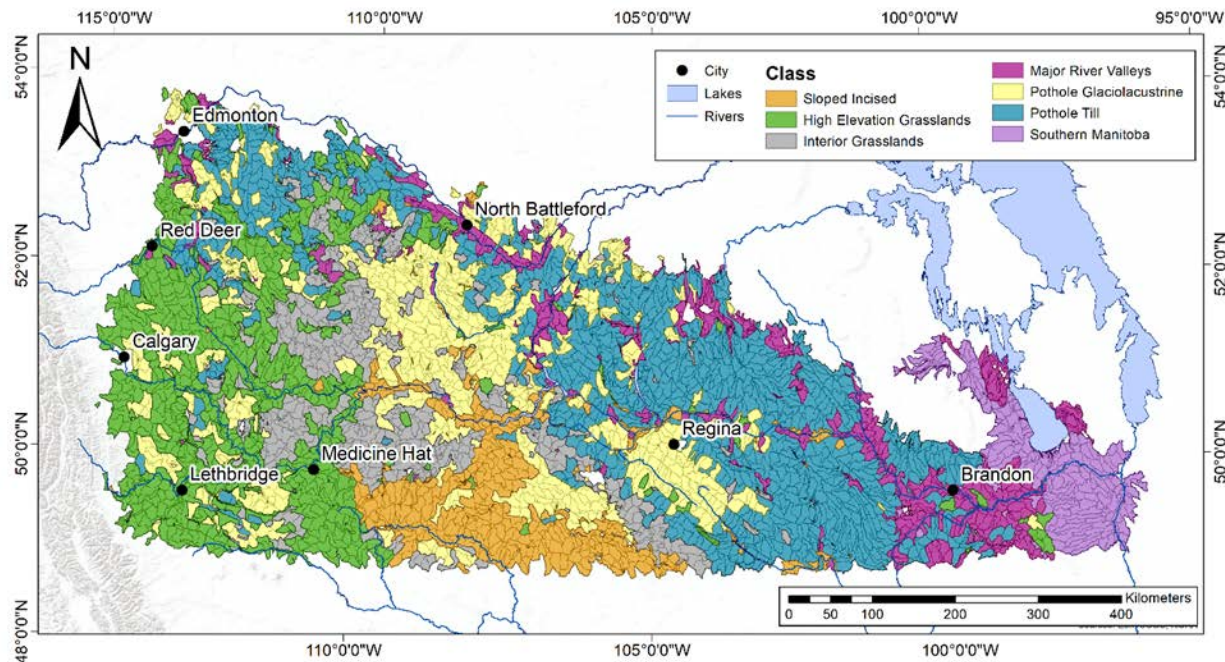


Fig. 15. Growing season evaporation and exceedance fraction maps for 2000 and 2001.

what would I like to do/see in food-water?

- Coupled observational – model development program based around a network of research basins/farms and new observational technology
- Development of agrohydrological models driven by climate and crop futures to develop and predict the effectiveness of future agricultural practices



One big question for the group to think

- **EXTREMES!** 2019 had close to average temperature and precipitation, but was extremely dry in the first half and extremely wet in the second half of the growing season. Worst crop since 1980 in Sask. *Why?*
- Will drought, flood and hydrometeorological extremes devastate Prairie agriculture through the 21st C under climate change or will crops flourish?
- USask water-crop research:
Atmosphere to Soil to Stream.