

Interactive comment on “Fifty years of recorded hillslope runoff on seasonally-frozen ground: The Swift Current, Saskatchewan, Canada dataset” by Anna E. Coles et al.

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GENERAL COMMENTS This manuscript presents data for three agricultural fields that were monitored for snowpack characteristics (depth, SWE), pre- freezeup and post-melt soil moisture, daily runoff flows and nutrients, and climate from 1962 to 2011. The fields represent dryland farming in the semi-arid portion of the Canadian Prairies. The data set is unique in that it provides longterm continuous and fairly comprehensive climate, soil, and snowpack data that control snowmelt runoff. This dataset will prove very useful to researchers within snow hydrology and water quality, especially as it represents 50 years of documented data and management methods. With the exception

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of minor errors the manuscript is well written and structured. The data sets are also well organized and easily accessible.

SPECIFIC COMMENTS Should indicate whether or not the plots are still active after 2011. If data is still being collected should be a sentence about updating the data files. 2,25: is any of the sediment data available? The plots were set up to investigate soil erodibility and reported upon by McConkey et al (1997) and Nicholaichuk and Read (1978) (4,1).

TECHNICAL CORRECTIONS 1,12: specify what is meant by ‘snowpack’? 1,17: a period is needed between ‘2011’ and ‘Gravimetric’. 1,18: are the data sets ‘summaries’ or the complete data sets? 4,10: as the runoff data set reports values as small as 0.01 mm/d with flag indicators of ‘good observations’, what minimum value is considered measurable flow? 4,11: does the “on at least one of the hillslopes” apply to the spring snowmelt as well? 3,9-11: reference for the two sentences covering these lines. 4,18: “No runoff was measured during 1970” could be read as no measurable runoff occurred. From the data set it appears that ‘The H flumes were not operational (or not measured?) from March 1969 through to end of November 1970 thus no data is reported.’ Is this the only instance that the flume was not operational/not measured? 4,19: should clarify in the text that the value is reported as NA in the dataset and estimated values can be found in McConkey et al (1997). 4,22: to maintain consistency with data units should use the terms ‘nitrate-N’, ‘ammoniacal-N’, and ‘phosphate-P’. 4,23: Cessna et al (2013) refers to a herbicide paper that has no analysis description of nutrients. 5,6: as fall sample dates also occur in September and November perhaps just state samples taken in fall prior to freezeup and ‘in spring following snowmelt’ (as samples were also taken in May). 5,18: as hourly data does not include precipitation or snow depth perhaps reword this sentence so it is clear. 6,7: ‘snowpack’ characteristics? Table 1: hourly meteorology data? To what set of data does the ‘1994-2011+ (ongoing)’ refer to? Figure 2: some of the light (less than 10 mm) daily runoff values are very difficult to discern. Although it is realized that the figure is for example purposes

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only it is important to note some of the occurrences of runoff, especially during the warm season. Suggest that the color shading start at a higher value of blue or that two colors are used, not white and/or a note about what value is considered 'measurable' on this figure.

DATA REVIEW only refers to the English web links, except where noted. 1962-2011 DATA ON SOILS, RUNOFF, AND SNOW. All data was checked for outliers. Phosphate-P: Data: Watershed 1 1991 has values an order of magnitude higher than all other values. Runoff: should mention in the manuscript that daily peak flow values are also available as this information can be very useful. Runoff data: 'NA' occurs in the Runoff and Peak columns not the Flag Indicator column. The flag for the 'NA' values is 'm'. Snow Water Equivalent: snow Density units are listed as 'Mg/cm³'. Should be 'g/cm³' according to the format given in the data file. French version 'mg/cm³' should also be 'g/cm³'. Soil Moisture Content: depths are wrong for d60_d90 and d90_d120. Ok for French version. Within dataset some values for the deeper intervals are very low (for soils with clay contents greater than 20%) and must be due to sand pockets. Soil Nitrate Phosphorus: Dictionary: Depth intervals, some errors in both English and French versions. Soil Nutrients: English Dictionary: French version comes up. Soil Nutrients Dataset: years and depth should be in same format of other soil files (eg Soil_Nitrate_Phosphorous). Watershed Management: Dictionary: System, n is missing from word 'rotation'. Watershed Management Data: under 'System' Column there is 'wheat-GM fallow'. This should be 'wheat-green manure fallow' according to the Dictionary and to the 'Management Systems Details' data set. Some cells are lacking information where it is expected; for example: Column D (Previous Crop) rows 33, 127-133; Column E rows 51, 99, 151. METEOROLOGICAL DATA. Dates of start and finish and parameters were noted for daily and hourly data. Data was only spot reviewed. No issues were noted. DIGITAL ELEVATION DATA. The description and README.txt file was read. Data was not reviewed. Description file ; 2nd last sentence; "(random toughness)"?

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