

Interactive comment on “Long-term weather, hydrometric, and water chemistry datasets in high-temporal resolution at the La Salle River watershed in Manitoba, Canada” by Marcos R. C. Cordeiro et al.

Anonymous Referee #3

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GENERAL COMMENTS

The manuscript describes a data set containing three subsets of data, namely (1) gap-filled and disaggregated meteorological data, (2) stream discharge data, and (3) stream chemistry data for nitrogen and phosphorous. (1) and (2) have been produced from readily available on-line data sources published by the Government of Canada, and (3) appears to be an original data set that has not been published before. (1) and (2) cover a long period (1990-2013), and (3) covers a relatively short period (2009-2015). The title and the map (Fig. 1) seem to suggest that the data set covers the entire watershed

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of La Salle River, but this is misleading. Stream discharge and chemistry data were collected at a gauging station located in the upper most part of the watershed, and the meteorological data were collected from meteorological stations located outside the watershed. The objective of this work is to produce an hourly meteorological data set to drive a physically-based hydrological model for this particular watershed lacking a suitable data set. The authors completed this task by interpolating, gap-filling, transferring, and disaggregating daily data collected at an assortment of meteorological stations in the region, but outside the watershed. This type of labour-intensive and time-consuming exercise is necessary when a researcher is forced to run a hydrological model for a watershed that does not have required data. However, the data quality is compromised, which in turn introduces a large degree of uncertainty in model simulation results.

The journal website states that the aim of this journal is “publication of original research data, furthering the reuse of high-quality data of benefit to Earth system sciences”. The review criteria contain: “Is the data set complete? Are the accuracy, calibration, processing, etc. state of the art?” Based on these, I am afraid the data set presented in the manuscript does not warrant publication in this journal, even though it is a useful data set for the authors’ own research project. I will elaborate more in my specific comments below.

SPECIFIC COMMENTS

Title. The data set was generated for running a hydrological model for the upper most reach of the La Salle River. I would suggest “the upper La Salle River watershed” for the title.

Line 140-149. For high-resolution (i.e. hourly) hydrological modelling, the most important meteorological variable is precipitation. Unfortunately, that is the weakest component of this data set. Firstly, it is well known that precipitation data reported by the Government of Canada meteorological stations have system-

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atic bias, especially for solid precipitation influenced by wind-induced undercatch (Mekis and Vincent, 2011, *Atmosphere-Ocean* 49:163-177). Therefore, the standard practice for high-quality research in Canada is to use the adjusted and homogenized dataset published by the Government of Canada (<http://ec.gc.ca/dccha-ahccd/default.asp?lang=en&n=9AA530BE-1>). The meteorological stations used by the authors do not have the adjusted and homogenized data, and hence, the original data likely have a substantial bias in precipitation. Secondly, the “high-temporal resolution” (i.e. hourly) precipitation data were obtained by disaggregating daily data set, which compromises the data quality further. The resulting data set may provide required model inputs for this particular case study, but its value to a broader research community is limited.

Line 156. The original air temperature, humidity, wind speed, and solar radiation data sets were missing 27 to 37% of data, and the authors had to fill these data gaps using an assortment of gap-filling techniques. Again, this is a necessary procedure for hydrological modelling, but it compromises the data quality and increases the uncertainty in model results.

Line 194. Data gaps in hourly wind speed data were filled using the data from Winnipeg. This was the only option available, but using the data from a station located so far away can severely compromise the data quality as wind speed has large spatial and temporal variability.

Line 228. If I understood correctly, the authors took daily precipitation data from the Marquette station and disaggregated the data using hourly data from the Portage Southport Airport. However, the latter appears to have hourly data set for air temperature, humidity, and wind speed, but no precipitation. The precipitation data for this station are only reported as daily values. It is not clear how the authors disaggregated precipitation data, and most importantly, how they validated the accuracy of the procedure.

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Line 279-380. The Aims and Scope of the journal states that: “Articles in the data section may pertain to the planning, instrumentation, and execution of experiments or collection of data. Any interpretation of data is outside the scope of regular articles”. Therefore, I believe that this section is outside the scope of the journal.

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