Earth Syst. Sci. Data Discuss., 6, C269–C271, 2014
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Open Access Earth System Science Data Discussions

Interactive comment on "Soil, snow, weather, and sub-surface storage data from a mountain catchment in the rain–snow transition zone" *by* P. R. Kormos et al.

Anonymous Referee #1

Received and published: 13 January 2014

General comments: Kormos et al. article is related to a description of 2011 water year comprehensive hydroclimatic dataset in the rain-snow transition zone in mountain region to improve understanding of hydrological processes under these complicated conditions. Article presents important, rare and useful hydrological information for wide range of hydrologists and scientists in related fields. Moreover dataset provided in this article can be used for educational purposes depict the complex set of geophysical processes on the simple Treeline watershed. Now it is the fact that frequency of such extreme events like a rain-on-snow (ROS) is growing especially during last two years. Intensification of research activity in this field of hydroclimatic studies (by the publica-

tion activity on Copernicus Publications) began in early 2012 mainly on the US east coast watersheds, and thus this article expands geography of scientific search. Study area of this research is luckily well-located both in mountain region and rain-snow transition zone and thus a wide range of various interactions between (and within) layers in Atmosphere-Plants-Land Surface system we will try to investigate on different levels with the help of authors dataset. Article presents a well-organized useful dataset and data description, and may be published after correction of some minor suggestions.

Page and line speciïňĄc comments, suggestions: 1) p.812 line 5 – after "rain-on-snow" no abbreviation (ROS); 2) p.812 line 16 - using a single water year is insufficient for most tasks related to the hydrological modeling; 3) p.814 lines 16-18 - indicated the possibility of using a database for physically-based hydrological modeling. Basic principles are correct, but in the relevant studies the duration of observations should be at least 4-5 years (not only single year); 4) p.814 line 20 – indicated the possibility of using database for empirical hydrological models. Duration of observation is too short for build robust model. We can also test and validate our model, so 4-5 years required; 5) p.814 line 23 – incorrect indication on the possibility for hydrological classification. Techniques that are referenced by the authors does not work well at different scales and can be applied mainly to the set of medium-sized watersheds (not for classification within Treeline basin); 6) p.815 line 1 – basin area can be represented in square kilometers; 7) p.815 line 1 – no space between 21 and ° (degree sign); 8) p.816 lines 4-16 – (Incoming radiation) in the article included algorithm for filling gaps (amazing 48%), but in dataset file FOUR_COMPONENT_RAD.txt gaps are; 9) p.816 lines 17-30 – (Air temperature and humidity) no brief explanation of using Marks et al. (1999) formula and its advantages over standard Magnus formula; 10) p.818 lines 11-17 - lack of data of snow cover. Complete set of measurements is available only from January 21, thereby was missing a very important period for the hydrological system - snow cover formation period; 11) p.819 lines 4-9 – snow survey data represents a small area of the Treeline watershed (only a narrow band across the valley). Why were not snow surveys carried out over the entire basin (equally over the basin); 12) p.819 lines 11-21

(Stream discharge) - data are not available until December 16, and the relation with neighboring watershed to fill gaps is not justified in the clear way; 13) p.830 fig.1 – no contours labels, altitude scale is inverted (usually the lower areas are shown in green, and the highest – in dark brown). Finally, I (and somebody else, I think) would like to see the approximate location of the rain-snow transition zone.

Additional comments: GIS-layers included in the dataset are useful and informative, and helps to understand structure of the dataset and work with it. The dataset will be the more useful and complete after adding additional information of ROS events, like a current time, duration, intensity and coverage. Snow surveys were made by different instruments. Will obtained measurements have the same (equal) values? After reading I got the impression of lack of a clear line of research, lack of clear purpose of dataset creation, and chaotic, fragmentary and somewhere negligence nature of the study. Because of this, only a small part of the huge amount of data collected can be used for hydrological studies. Overall, the dataset itself is performed successfully - sections are well described, data formats are appropriate, easy dataset download and convenient work with it in freeware GIS. Based on the ESSD evaluation criteria, authors' dataset satisfies uniqueness and usefulness criteria, but not the completeness. To fully comply with the requirements of ESSD, authors must provide information about snow cover conditions from the time of its formation, and stream discharge measurements for the whole year.

Please also note the supplement to this comment:
http://www.earth-syst-sci-data-discuss.net/6/C269/2014/essdd-6-C269-2014-supplement.pdf

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Interactive comment on Earth Syst. Sci. Data Discuss., 6, 811, 2013.