We thank Referee #2 for his or her thoughtful critique. Two of the main criticisms were also brought up by Referee #1, therefore we will refer Referee #2 to our response to Referee #1 in several places. We will respond to each of the comments below in-line.

The authors present a dataset of snowfall mass and energy balance compiled from two neighboring stations located in a snow-dominated mountainous environment in the eastern Sierra Nevada, California. The study site is described as one of only five energy balance monitoring stations in the Western U.S. The authors describe the dataset as useful to run a variety of snow models.
The dataset includes: 1) hourly air temperature, relative humidity, wind speed and direction, and air pressure, 2) hourly incoming shortwave and longwave radiation including shortwave direct and diffuse components, 3) hourly snow depth, 4) daily surface albedo, and 5) daily wintertime snowfall (hand measured snow water equivalent).

The quality of the seven-year (2011-2017) dataset is high. The paper is fairly well written and the methods and data are well-described. In my opinion, the strength of the dataset is in the availability of hourly shortwave radiation (the availability of both direct and diffuse components is rare), which provides substantial information on cloud cover, longwave radiation (required by energy balance snowmelt models), and albedo (useful to either force a snowmelt model or verify empirical algorithms within such models). These observations could benefit an array of Earth system sciences, including snow hydrology, remote sensing and land-atmosphere interactions. For that reason, I support the ultimate publication of the paper and dataset.

I have a few concerns that prevent me from recommending publication in the present form. The product lacks hourly precipitation necessary to run most snow energy balance models, and lacks snow water equivalent data necessary to validate a snow model.

This is an excellent point, and one was also brought up by Referee #1. We will include the hourly SWE measurements from CUES as well as hourly precipitation and SWE from MHP. See our response to Referee #1. Concerning the hourly precipitation measurements, we note that there are many insurmountable problems with using gauges to record precipitation in snowy areas. Inclusion of the hourly gauge precipitation from MHP will demonstrate these problems further, although we agree that they should still be included.

The title does not appropriately describe the dataset.

With the inclusion of the hourly SWE and tipping bucket measurements, the title will be appropriate.

Finally, the paper would benefit from 1) an expanded description of how these variables are used in Earth Sciences,

Ok, we will further discuss the use of these measurements in Earth Sciences in the Introduction.

2) evidence of data quality (figures), and enhanced examples of its application.

We will provide figures and examples of its application by using a snow model (SNOWPACK) forced with our radiative measurements from CUES + different precipitation forcings and verified with snow pillow measurements at CUES. See our responses to Referee #1.

Such additions would greatly improve the paper and extend its utility across a range of Earth sciences. Please see my associated comments, below.

Hourly precipitation data have become a standard requirement of snow energy balance models. The title 'hourly mass . . . balance' is misleading – only daily snowfall is provided and accurate snow mass balance typically requires all-phase precipitation including rainfall. Could regional (hourly) precipitation measurements (e.g., SNOTEL) be used to inform a temporal interpolation of daily hand-measured SWE to an hourly product? Providing an hourly precipitation product may support more diverse application and user interest.

Excellent points. Please see our response to the main critique and to Referee #1.

Addressing the second point (mass balance) may be more difficult. Because hand-weighed SWE measurements are rare, and in the absence of local total precipitation measurements, the authors must better and more carefully explain what information these data contain and what information they may lack. What are the potential pitfalls of using such measurements to constrain the snow mass balance in general and at this location (blowing snow, melting, rainfall)?

Further, how does a plot of cumulative hand-measured snowfall compare to a time-series of seasonal SWE measured on the ground? The authors do not offer enough data to promote an understanding of hand-measured snowfall.

Good points. We suggest these concerns will be addressed with the inclusion of the SWE and tipping bucket measurements, which will also allow the daily manual measurements to be better scaled to hourly measurements. We want to emphasize that hand weighed snowfall is the gold standard for measuring solid precipitation. Gauges, especially in the presence of wind, perform poorly (e.g. Rasmussen et al., 2012). We will more thoroughly discuss the advantages and disadvantages of gauges, pillows, and manual snow measurements.

(ii) A more detailed description of common (potential) uses of this dataset would be helpful. It may be worth mentioning the utility of the dataset for validating distributed products such as NLDAS-2 or remote sensing products.

We will discuss potential uses further. Validation of remote sensing products such as NLDAS-2 at 1/8º with point data present serious point to area extrapolation problems. Point snow model validation and possibly validation of higher resolution remotely-sensed products such as snow albedo from LandSat (Painter et al., 2009; Rittger et al., 2013) are more appropriate.

(ii) Even if the snow pillow SWE data are limited, they could still be a substantial resource for users looking to verify a snowmelt model. I strongly suggest that these data be included. The SWE is more directly relevant to the mass and energy balance theme strummed in the title than snow depth.

Agree and will be done, as previously noted several times.

(iii) "A variety of snow models" on Line 15 is vague ... I expected more discussion and examples in the paper. Along the lines of a paper by Landry et al. (2014) that highlight similar measurements from a site in Colorado, it would be helpful to include an example of snow model results forced and verified by the data. This would also serve as evidence of data quality and utility.

Agree and will be done, as previously noted.

Landry, C. C., Buck, K. A., Raleigh, M. S., & Clark, M. P. (2014). Mountain system monitoring at Senator Beck Basin, San Juan Mountains, Colorado: A new integrative data source to develop and evaluate models of snow and hydrologic processes. Water Resources Research, 50(2), 1773-1788.

(iv) Please provide some discussion about the possibility of snow on the radiometer sensors, how these times might be flagged, and some words of caution.

At CUES, the SPN-1 radiometer is heated, thus we have not observed it being snow covered. For the missing uplooking radiation filled in from DAN, snow cover over the radiometer is possible. This condition can be diagnosed when the downlooking DAN radiation is greater than the uplooking radiation. Theoretically, the “net solar” radiation measurement from DAN would be negative during these times, however this measurement is clearly erroneous, with large negative values most days of the year during the study period, so it cannot be used.

Thus, we will mention that the DAN radiometer could have been snow covered, but that this is a minor issue. To put the problem in context, DAN measurements during snowfall (which is when the radiometer would most likely be covered) only comprise 0.26% of the hourly uplooking solar measurements.

Painter, T.H., Rittger, K., McKenzie, C., Slaughter, P., Davis, R.E. and Dozier, J., 2009. Retrieval of subpixel snow-covered area, grain size, and albedo from MODIS. Remote Sensing of Environment, 113: 868-879.

Rasmussen, R., Baker, B., Kochendorfer, J., Meyers, T., Landolt, S., Fischer, A.P., Black, J., Thériault, J.M., Kucera, P., Gochis, D., Smith, C., Nitu, R., Hall, M., Ikeda, K. and Gutmann, E., 2012. How Well Are We Measuring Snow: The NOAA/FAA/NCAR Winter Precipitation Test Bed. Bulletin of the American Meteorological Society, 93(6): 811-829.

Rittger, K., Painter, T.H. and Dozier, J., 2013. Assessment of methods for mapping snow cover from MODIS. Advances in Water Resources, 51(1): 367-380.