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Interactive
comment

Interactive comment on "The Niwot Ridge Subalpine Forest US-NR1 AmeriFlux site – Part I: Data acquisition and site record-keeping" *by* Sean P. Burns et al.

Anonymous Referee #2

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General comments: This is one of the few papers (if not the only one) that document instrument setup, data acquisition and bookkeeping of metadata at such a detailed level among AmeriFlux sites. I am impressed by the thoughtful design of the data system at Niwot Ridge site and believe that their high quality data are to a large degree attributed to the well maintenance and continuous improvement of this data system. I have found that issue-resolving and data interpretation can sometimes become difficult at some flux sites because of the insufficient documents and poor or even missing metadata. In this sense, this manuscript set a good example on creating a history book of site operations (mainly on instrument setup and changes, hardware and software in data acquisition system, data archive, metadata and field logs, etc.). It is my opinion that a

manuscript like this one should be encouraged among other sites.

Specific comments: (1) Niwot Ridge site has done a terrific job in building their data acquisition system, handling the clock drift of data loggers, archiving their data and bookkeeping metadata. From my experience of working with flux data, data-logger clock drift has been a common problem at flux sites and often be ignored or at least not given enough attention. At some sites, the percent of missing high frequency data (10 Hz) can be very high due to their inability to real-time transfer the records from instruments to data-loggers and to a much large storage (a PC or a work station). For these reasons I would like to see a paragraph in this manuscript discussing the possibility of whether and how the best practice and site experience at Niwot Ridge site can become applicable at other sites from the perspectives of resource, technique and cost requirements, and if a standard data system can be established within the AmeriFlux network (considering the huge variation of measurement environment from one site to another) using the Niwot Ridge as a benchmark. (2) Section 4.1, page 10 — the time when the LI-6262 IRGA samples the nitrogen is recorded based on the data system clock. This is the time when nitrogen enters the sampling chamber of IRGA. MET logger (CR23X) records the time when valves open. There should be a delay (very tiny though) between the valve opening and calibration gas entering into the IRGA. Should this delay be included in considering the CR23X clock drift? (3) Lines 18-20 on page 12: it is hard to understand why "powering the CR23X data loggers with deep-cycle batteries provides some degree of lightning protection". More explanation might be necessary.

Technical comments: (1) Table 1, footnote b — spelling error, "Atmospher-Surface". (2) Table 1, footnote — there are two of them with the same label 'c' but none is labelled with 'd'. (3) Table 2 — MARK datalogger shown here does not appear in Figs 1 or 2. (4) Table 2 — does NCARTC logger shown here correspond to "NCTC' in Figs 1 and 2? If so, a consistent name should be used. (5) Line 3 on page 5: ADAMS. But you used ADAM in the following lines. (6) Figure 3 — "outlined in red in the upper right-

hand corner of the cockpit window". Did you mean 'upper left-hand corner'? (7) Line 23 on page 10 — "Lost 1-Hz data from the MET CR23X". Unsure what 'Lost 1-Hz data' means? (8) Line 23 on page 10 — "based on when the the LI-6262 IRGA sampled the nitrogen". Two 'the's are next to each other. Please remove one. (9) Line 7 on page 11 — "the differences shown in Fig. 9 are all smaller than $\pm 1\mu$mol mol-1". Did you mean Fig 8 here?