Review of Brilouet et al: "The EUREC^{4}A turbulence dataset derived from the SAFIRE ATR 42 aircraft"

Submitted to *Earth System Science Data (ESSD)*

Summary Comment-
This paper describes the derived/processed turbulence parameters computed from the high-rate (~25 Hz) dataset collected the SAFIRE ATR 42 aircraft during EUREC^{4}A. The manuscript is well-written and easy to follow. The data set are accessible as described. A perusal of the data files indicates the data appear to be complete and follow the description as laid out in the manuscript. The data set is suitable for publication with ESSD as I see potential for future use of the data set for a range of atmospheric scientists. For these reasons, I recommend publication once the authors address a few comments below.

Specific Comment-

1. I think the manuscript would benefit from a bit more additional information in the introduction or in section 2. Specifically, one to two paragraphs describing the data set would have helped me as I read through the manuscript. Little information about the data set itself was provided until Section 7—I think a bit more information upfront about a general description would be useful. The very specific information could still be retained later in the manuscript (Section 7).
2. The authors provide a very good, detailed description of the handling of the humidity data/measurements. In a revised version, the authors should include more information on the handling of the temperature measurements. I view this as the one major lacking component of the manuscript/data handling description. The Rosemount (Total temperature) housing is notoriously susceptible to wetting of the element—the authors point to this, but don't really discuss what impacts wetting has their measurements nor how they identify wetting in the data set. No information is provided about the fine-wire, not even a reference is provided for this sensor. Some description of the sensor itself should be provided—is it housed? Fully open to the free-stream? If the latter, how is the sensor protected against radiative effects? How is the recovery factor (of the element and the housing) determined and accounted for?

Technical/Minor Comments-

1. Line 7 (abstract) delete 'a fast rate' and simply replace with '25 Hz'
2. Line 45 'Section 2 describes…'
3. Figure 1 – in caption, note that R-pattern is shown in red and L-pattern is shown in blue. Remove reference to S-Pattern. The last sentence in the figure description does not make sense to me…I'm not sure what the authors are trying to convey.
4. Table 1 – The authors should provide some description about the shorthand being used—it took me a while to figure out that, for example, R_{strati}(1830 m) + 2R_{cb} (680m – 740 m) referred to "1 R pattern in stratiform clouds at 1830 m and 2 R patterns at cloud base, one at 680 m and the other at 740 m" --- I still don't know what L_{flower} is?

5. Line 87-88 – Inertial navigation unit (Xsea model)? Is this a manufacturer and model number? I've never heard of that and didn't find anything with a quick internet search.
6. Line 126 – Krypton
7. Line 142 – KH20 showed 'a very good behavior.' -- What do you mean by this? It tracked well with other measures? Authors need to be more descriptive here.
8. Line 268 – orthogonal? (not orthonormed…)