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A study of local turbulence and anisotropy during the afternoon and evening transition with an unmanned aerial system and mesoscale simulation

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1 Comments on technical changes

The authors would like to thank the referee for the helpful remarks. The comments from the reviewer are given in italic, the answers are provided in normal letters. Changes to the text are indicated in quotation marks.

I had read the authors' response to my comments a few weeks ago on the website, and everything looked acceptable to me. They have put significant effort into improving both the text and figures. Plus I have re-read the manuscript today. I noticed that there are three new co-authors who have done the numerical simulations, which is also great. The new title also bears this out. So, all in all, the authors have risen to the challenged and produced a worthy paper. However, a few "easy" items would seem to need attention.

We are happy to hear that the reviewer is now satisfied with the improved version of the manuscript.

In section 2.2, the inner and outer model domain sizes need to be stated i.e. in km x km.

We included the domain sizes, and changed the text to: "The outer one, at 2 km x 2 km resolution (domain size of 50 km x 480 km), covered the Garonne river and the inner one, at 400 m x 400 m resolution (domain size of 80 km x 120 km), was centered in Lannemezan."

Also, do they mean "lateral boundary conditions" when referring to "lateral conditions" ?

We changed the sentence to " The initial and lateral boundary conditions are taken from the European Centre for Medium-Range Weather Forecasts (ECMWF) every 6 hours."

The conclusions do not finish with a statement of future work e.g. how could use of UAVs be enhanced in a new field campaign in conjunction with other in-situ and remote-sensing equipment ? The use of UAVs is still new, so there must be plenty of potential for measuring turbulence alone.

We added a new paragraph:

"The use of unmanned aerial vehicles for measuring turbulence properties has experienced a large increase since the first reports of measuring the 3D wind at high resolution on such systems (van den Kroonenberg et al., 2008). Information on turbulence properties is essential for many fields investigating atmospheric processes, e.g. the formation of new small particles (Platis et al., 2015), the dynamics of the morning transition (Wildmann et al., 2015), and applications in wind energy (Wildmann et al., 2014). The unmanned systems contribute valuable complementary information to other remote sensing and in situ measurement systems. Their limitations in horizontal and vertical operation range are balanced by the large flexibility of using the systems (no need for a runway, only small crew necessary for the operation). As was shown in this case study, the high resolution measurements provide additional information at variable altitude, which enables a large portfolio of applications in atmopheric research."

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