



Interactive comment on “A web service based tool to plan atmospheric research flights” by M. Rautenhaus et al.

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First, we would like to thank the referee very much for his/her positive and constructive comments and interest in our paper. In the following, we reply to the referee's comments.

RC: *The GUI of the application seems to be a good approach. Not all GUI elements / widgets are explained. E.g. can the interaction and definition of waypoints be done in a graphical interactive way?*

We have intentionally not explained all GUI elements in the paper, as we thought that many usage and implementation details are better placed in the Supplement. Users who wish to work with the system can find further information in the user tutorial and im-

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plementation guide provided as Supplement. For instance, how to interactively define and modify waypoints in the different views is described in Sect. 2.2 of this document (however, it is also mentioned in the paper on p. 2138 l. 7 that waypoints can be interactively modified in the top view).

RC: *A time series view example is not included in the case study. For such a view, there is also no OGC standard yet. It is principally interesting, what solution was found for this case and whether the solution could be generalized.*

It is true that no example of the time series view is included in the paper. The time series view we have implemented is very specific to the LAGRANTO trajectory model and the NASA Ames file format. The reason we have mentioned the view (and the corresponding tool) in Fig. 8 and in Sect. 3.3 was to indicate that the system can be extended with additional modules. As Fig. 8 indicates, the time series view is currently not connected with the Web Map Service. Only local NASA Ames or trajectory data files can be loaded. For instance, the flight track shown in Fig. 14 (upper left panel) was loaded by the module. However, we very much agree that providing trajectory computations through a web service would be a very valuable extension to our tool. We will consider this in our future work.

RC: *Page 2126, line 15: 2008 was, as correctly mentioned, a workshop on the topic. It could be mentioned there were 2 more workshops in this series since then, 2009 (UK Met Office) and 2010 (Meteo France, Toulouse). Reading further, I note this is mentioned later in section 2.3.*

Page 2131, line 18: The mentioned problems are correct. Perhaps it would be appropriate to go into a bit more detail, since the dimensions time and a vertical coordinate exist in the standard, but not in a sufficient way. As the authors know, forecasts have more than one time dimension, and the vertical coordinate needs not to be metric. I note this is explained in more detail later.

Section 2.3, page 2131, line 3: - this remark is for clarification only, no proposal to

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change the text: It is mentioned that the NinJo application is extended to support OGC standards. This is correct, NinJo meanwhile has a layer which is able to visualize data from a WMS (no server functionality) .

Thank you, we very much appreciate these three remarks.

RC: *Section 3, page 2132, 1st chapter: for IT personnell and developers, it would be of interest, why the authors have chosen Python and developed the SW (as it seems) from scratch. Why didn't they use existing SW, as mentioned a few lines above, or other (open source) SW as MapServer or GeoServer? The same holds for the graphical libraries.*

A more detailed motivation for using Python is contained in Sect. 3.1 of the Supplement. We have added the words "(further details are given in Sect. 3.1 of the Supplement)" to the first sentence of Sect. 3. With Matplotlib, we do make use of a rather extensive graphics library. Furthermore, the availability of a number of further libraries for Python that we made use of motivated our choice of the programming language (thus, large parts of the functionality did not have to be developed from scratch). We also considered the option of using other software including MapServer or GeoServer for parts of our system. However, we found that, in order to accommodate our needs, every existing software would have had to be modified to some extent. In such a scenario, it is a difficult decision to judge which approach will be the most productive and efficient.

RC: *Section 3, page 2134, line 3: The description of the OGC standards deficit w.r. to time is OK and the reaction of the client justified. Wouldn't it be possible to make a guess and assume a kind of nearest time, if the particular parameter "INIT_TIME" is not set correctly, rather than throw an exception? E.g. use the specified "TIME" and take the latest model-run?*

The reason we have decided against using the latest available initialisation time when the `INIT_TIME` parameter is missing is that for our work, it is crucial to know exactly

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from which forecast run the returned map has been created. If a map layer has been configured to not include any legend (as should be the case with most WMS layers), there is no way for the client to be sure that the returned map actually visualises the requested field. Hence, we chose the option to force the client to request a specific forecast run (which, for instance, works fine with the Metview 4 client, as Fig. 1 illustrates). However, changing this behaviour would involve only small changes in the code.

RC: *Page 2134, line 25: what happens, if only 2 coordinates (4 values) are defined? Is also a line along a great circle calculated? One might wish to define a straight line. It is clear that a specific interpretation is required here. One might have a situation where no interpolation is desired.*

Following the software that the pilots use for designing the official flight route, all points are currently connected along great circles (when flight planning with the MSS is finished, we pass the list of created waypoints on to the pilots). This also applies to the case when only two coordinates are specified. However, we agree that defining a straight line in lat/lon space could be a useful option. We will consider this in our future work.

RC: *Section 3.4, page 2139, line 10: the interoperability is not really fully given, as the arrows may indicate, in both directions. The text explains this correctly, it is true for the top view only. The side view can probably not extracted by a third party service, since it is non-standard.*

This is true, thank you for pointing out that this issue is not mentioned in an obvious way in the text. To make this point clearer, we have added "With regard to horizontal maps, " to the beginning of line 6 on p. 2139 and changed the last brackets in the caption of Fig. 5 to "(WMS of horizontal maps)".

RC: *Section 5, page 2143 (outlook): it would be interesting to know whether grid data of the VACC (Volcanic Ash Advisory Center, London), can be dealt with, and if, what*

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are the procedures or boundary conditions (e.g. grib format or csv?).

We have not used VACC data in our system so far. In general, data in CF-NetCDF format can very easily be ingested into the system. We have not implemented a data driver for GRIB or CSV files so far, however, we will keep this in mind for future development.

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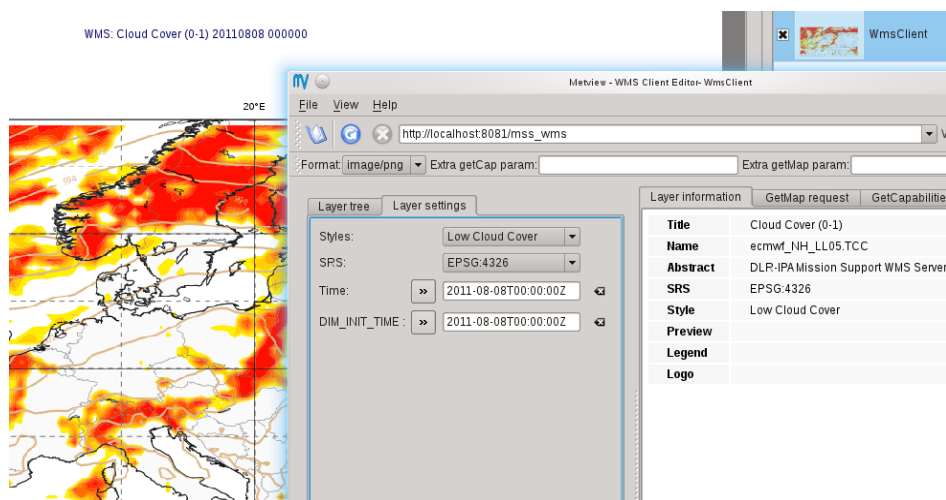


Fig. 1. Illustration of that the Metview 4 client is capable of correctly handling the INIT_TIME parameters required by our WMS server.

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