

Interactive comment on “ObsPack: a framework for the preparation, delivery, and attribution of atmospheric greenhouse gas data” by K. A. Masarie et al.

Anonymous Referee #1

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The authors present ObsPack, a data framework containing world-wide atmospheric greenhouse gas observations from variety of sampling platforms including surface sites, tower sites, ships and aircrafts. Extensive metadata is included in each data set. Special effort has been put to build products from the data in such a way that they are easy to assimilate by different users. Thus, the data products are extremely useful for e.g. climate and ecosystem modellers. However, the consistent, well documented way of maintaining the framework and preparing the products makes them useful to variety of other user communities, as shown e.g. by the large number of product downloads. The predecessors of ObsPack belong to pioneers in providing free-access harmonized

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view of the global CO₂ levels, building on NOAA/ESRL expertise as global observation network coordinator and central calibration laboratory of CO₂, and maintaining high product quality and consistency from year to year. Within ObsPack development the products have been considerably extended to meet the changing needs of the user community. The need for such well-maintained framework is evident in the current short term project-oriented research environment. Furthermore, the ObsPack framework and products have been carefully designed and well presented in the current paper. Thus, publication of the paper in Earth System Science Data can be warmly recommended.

Selection of representative data is still a demanding task for both data providers and data users (modellers), and it is a good solution to trust the local experts, i.e. PI's of the stations, to make the original flagging. However, criteria applied by the PI's may differ, due to different site conditions, and simply due to many persons engaged in the work. The flagging instructions simply can't cover every situation. In the future, it might be useful to add a new entry (flags) based on model results, revealing e.g. which measurement points were rejected during assimilation procedure or what was the effective footprint/influence region of the measurement. Even if only results from a single model were presented, it would be helpful for both data providers and other modellers in building their evaluation criteria and model experiments. This may seem out of scope, because ObsPack is a collection of observations, but in fact station PI's may use e.g. back-trajectories in finding out the origins of sampled air and its representability, to perform the selection procedure. Here they are already taking advantage of model results.

DOI, Compliance to ISO standards, and Fair data use policy are examples of the advanced ObsPack data management. ObsPack supports active discussion between data providers, product developers and data users, and provides clear and transparent policy for data use, which is of great value. Considering DOI, since there are needs of frequent update of ObsPack, could ObsPack be updated and made available at internet

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immediately when new data sets appear, and then frozen once a year for publication with a new DOI?

In the future, ObsPack releases for other species are very much welcomed, as interest is growing towards various GHGs and related tracers. More detailed uncertainty analysis is also important, though the methodology is still under development, and it has to be made clear what is meant by the different component uncertainties and how are they best utilized by the end user.

As there are a variety of new sources of greenhouse gas related information available, including those which are directly relevant to ObsPack product users but based on different approach, like column data from TCCON network, GOSAT satellite products and upcoming OCO-2 satellite products, it would be important to make links to the relevant data portals and encourage data centers to adhere to ISO metadata standards, as already noted by authors.

The value of data that is available almost immediately after measurement but has not been fully calibrated or validated (NRT data) can be discussed, but as there is interest towards very recent events and also new instruments are more stable, it might be a good option to maintain (or make a link to existing) web interface, where such data is available. It just has to be confirmed that NRT data is replaced by validated data as soon as it becomes available, so that non-validated data will not start to live its own life parallel to the validated data.

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