

General comments

This is an interesting dataset, in particular since standardised observations protocols have been used across a large geographical and multidisciplinary measurement network.

More general questions that arise when reading the document include:

1. Given the time series approach of the dataset, has it been considered to homogenise the time series? That would increase the time series approach of the dataset. A comment on this would make sense since part of the justification for the combined dataset is to analyse the temporal evolution of features.
2. Documenting data using discipline specific standards (e.g. NetCDF Climate and Forecast convention or Global Biodiversity Information Facility standards) simplifies reuse since data are documented using controlled vocabularies to describe variables, their units, cell methods etc. Has application of standardised documentation been considered for the dataset and if not why?

Specific comments

Page 4, section 2.1: The text refers to full operating procedures in a separate document. Given the nature of some of the meteorological parameters that require more maintenance than standard meteorological observations (e.g. surface irradiance) it would be beneficial to have some more explanation of how these parameters are handled in this document.

Page 4, section 2.1: It would also be natural to describe the sampling frequency in this document for consistency with other sections below although it is acknowledged that meteorological observations are slightly more complex to describe in a simple manner than the other observations due to the number of parameters.

Page 4, section 2.1: The AWS are located according to the handbook of 1982, but how are stations constructed, at which levels are sensors located etc and how are sensors maintained. Is that following any larger scale framework observation protocol like WMO?

Page 5, section 2.5: It would be beneficial to include frequency of dip samples similar to how this is indicated in section 2.4.

Page 8, section 2.16: It is commented that the methodology for bird observations changed during the time series, but it is not commented on how these two approaches compare and how that affects potential analysis of the time series.

Page 8, section 2.18: Reference for the Bats and Habitats survey methodology of the Joint Nature Conservation Committee is missing.

Page 11, section 3.1: The text refers to the AWSNO field but doesn't explain it in more detail (which type of information is provided, binary change – no change or id numbers, or something else). More information would be beneficial since this field is commented in the document, although it is acknowledged that full details are in the reference (which probably should be repeated here). The

presence of the AWSNO and the text provided caused the general question on homogenisation of the time series. There is also a comment that the dataset is so large, but what does that mean in this context? Numbers would be good.

Page 11, section 3.3: Again a comment on size of the dataset, but no explanation or justification is provided.

Page 11, sections 3.9 and 3.5 (wrong numbers): Did you consider using GBIF standards for these datasets?

Page 12, section 4.2: It would be beneficial with some more information on the templates developed. It is not clear whether the templates were developed for simplifying the data entry process, quality assure the data or the entry process? How many templates were developed etc? This is an interesting element for reuse of the data and in particular if human errors are captured.

Page 12, section 4.3: The relation between sections 4.2 and 4.3 could be further explained. Is data verification done in the templates mentioned in section 4.2 as well as in a separate step?

Page 12, section 4.3: Where are ranges for the ECN variables defined and where is the process leading up to these ranges documented? It is also commented that data out of range were treated in 3 different ways. On the second bullet point, what was the consequence for the data? Were data corrected and versioned?

Page 12, section 4.3: Please consider referring to section 4.4 for explanation of quality flags.

Page 13, section 4.5: Again some further description of the processes around the meteorological data would be good, in particular irradiance which has issues concerning ventilation etc. And where sensors or AWS were run in parallel for periods, did they compare well?

Page 13, section 5: Some more discussion on the temporal scales the dataset can be used for concerning non homogenised data would be beneficial. This would of course also depend on the types of analysis done and e.g. how sensitive the biosphere is to climate parameters.

Technical corrections

Page 11, section 3.9: Numbering must be wrong.