"General comments This is a interesting dataset, in particular since standardised observations protocols have been used across a large geographical and multidisciplinary measurement network. More general questions that arises 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?"

1. ECN's policy has been to provide data as they are collected – which we have quality checked - and allow users to analyse the data in the way that suits them. The ECN protocols cover a number of domains (meteorology, biogeochemistry, biodiversity etc) and we do not have the resources to fine-tune the datasets in a way that a domain-specific data centre could do. We will however seek opportunities in the future to work with domain experts to ensure our data are useful to as many users as possible.

2. We provided information on where to find information about the standard terms used in the supporting documentation in section 3.5. We primarily use the EnvThes controlled vocabulary – which was developed as part of our involvement in the LTER-Europe community - as the basis for the semantic harmonisation of data with our European and International partners.   We have now expanded this section in the text to include this information.
   Since our data cover a number of domains, and our users tend to use several datasets together (e.g. to explore the effects of weather on species abundance), we made the choice to provide CSV files to users so they can use them together easily - rather than use a variety of discipline-specific documentation standards.

"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."

The ECN AWS' had regular, professional maintenance by external contractors on an annual or bi-annual basis. We've added this information to the manuscript.

"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."

The frequency of data collection for all the ECN protocols is provided in table 2 but we have also now made this clearer in the manuscript.

"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?"

We have added a diagram to the manuscript to show the layout of the meteorological enclosure and also added text which describes the height that the sensors are installed at and maintenance information. As noted in the manuscript the AWS was sited in accordance with British Meteorological Office requirements.

"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."

The frequency of data collection for all the ECN protocols is provided in table 2 but we have also now made this clearer in the manuscript.

"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."

The methodologies of the two surveys are different so it is unfortunately not possible to create a single time series from both datasets. We have made this clearer in the manuscript.

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

Thank you. We've added this reference to the text.

"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."

We have added some information on how AWSNO are assigned to the manuscript.

We have provided information in section 3 to cover usage issues that our users have encountered in the past. Occasionally our users have been unable to open the data file – if they use a software package like Excel - because of the file size. We have therefore provided our normal advice in the manuscript to help users overcome this issue. This has been made clearer in the manuscript.

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

See comment above re file size.

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

We provided information on where to find information about the standard terms used in the supporting documentation in section 3.5. As mentioned above, we primarily use the EnvThes controlled vocabulary for the semantic harmonisation of our data with our partners. We have now expanded this section in the text.

"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."

We have included a reference which provides more detailed information about the templates.

"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?"

This verification is in addition to the checks made in the templates, this has been made clearer in the text.

"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?"

The ranges are held in the database, this has been added to the manuscript.

As the second bullet says the data were corrected and the changes flagged in the database.

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

Thank you. This has been added to the manuscript.

"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?"

Further information on this has been added to the manuscript.

"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 os analysis done and e.g. how sensitive the biosphere is to climate parameters."

A number of references have been provided to demonstrate the breadth of research which uses ECN data. The Data Centre does not have the resources to do these type of analyses itself so users are recommended to review the highlighted literature to explore how the data can be used.

"Technical corrections Page 11, section 3.9: Numbering must be wrong."

Thank you – we've corrected the numbering.