Reviewer 1

General Comments:

This rich hydrologic dataset will be useful for future analyses of long-term changes in hydrologic functioning in the DMC catchment. The fact that it captured a significant drought period makes it especially unique. The data could also be used for inter-site comparisons to better understand how landscape characteristics influence hydrologic behaviour in response to disturbance (e.g., climatic extremes).

The hydrologic data are useable in the current format and size, although would require significant data wrangling to prepare for specific analyses. The GIS data are useable in the current format and size. I provide some specific comments below to improve the accessibility and useability of the hydrologic data.

The article is well structured and clear. The data collection and analyses methods are described in sufficient detail for the most part. All references to other data sets or papers seem appropriate. I have provided minor technical comments below that could help to clarify certain aspects of the data collection and analyses methods. The figures and tables are high quality and I only have a few minor suggestions for improving them.

Despite my suggestions for improvement, by reading the article and downloading the dataset I am confident that I could use the data.

** thank you for this positive assessment of our data set, its uniqueness and also the general manuscript. Please find our detailed responses below.

Specific Comments:

1. The majority of the digital object identifiers provided in the manuscript take the reader to the Demnitz_Isotope_Hydrological_Data page (number 623) on the IGP Freshwater Research and Environmental Database website. There a description of the available data is given; however, it is not possible to download the data here. In the 'Data files' section, it says that a user needs to make a request to the three contacts to access the file. However, in section 7 of the manuscript, the reader is directed to data package 622, where the data can be downloaded. I recommend that the 'Data files' – Actions column on package 623 be updated with a link to 622. Or to make the process even more streamlined, just eliminate 623 altogether. It's not clear why there are two data packages.
   ** we would like to clarify: the current data set that is applicable to this paper is FRED Package 622 (https://fred.igb-berlin.de/data/package/622). FRED Package 623, which corresponds to the DOI 10.18728/igb-fred-623.0, was an earlier version of this dataset. Of course, a new DOI will be assigned before publication of this paper; however, it cannot be assigned yet because there may still be improvements made to the dataset, while assigning a DOI will "freeze" the dataset. We apologize for the confusion and can assure you that it will be alleviated by the assignment of a new DOI and its use in the final manuscript once the dataset is finalized.

2. There are no apparent inconsistencies in the data and no unusual data formats, however, I think there could be some improvements in the way the data is organized that could reduce the pre-processing time for a user. My recommendations for improving the data organization are to:
   a. Make sure that all columns have a header (e.g., on a few sheets the year, date, or date_time header is missing, colP header on 'Forest_A_Isotopes' is missing, etc.).
   b. Make sure to standardize the column headers across sheets and I recommend using lower case with an underscore separator between words to keep the headers simple (e.g., don't use different types of brackets around the units).

     c.   Consider integrating different levels of column headers (e.g., instead of 'Average Moisture [m3/m3]' and '20cm', use 'avgsm_m3_m3_20cm'… or something like that). On the readme page the authors could create a data dictionary that translates these abbreviated headers for the user.

     d.   Move all the 'readme' textboxes off of the data sheets and onto a single readme sheet (use the 'General Readme' sheet).

     e.   Use ISO 8601 date format consistently on all sheets.

     f.   Make sure that blank cells in data columns are replaced with 'NaN'.

** we have adapted all these suggestions and improvements. We will upload a new data file in the revision. We will also consider the comment made below (on l.312).

Technical Comments:

38: Remove one of the 'long-term'.
** we will correct this in the revision

43: Consider '… to investigate links between…'.
** we will correct this in the revision

46: Consider '… importance of links between…'.
** we will correct this in the revision

50-1: I think the quotation marks should go around "blue water" and "green water", not just around the colours.
** we will correct this in the revision

53: What do the authors mean by robust data sets? I am familiar with the concept of robust statistics, but unsure what constitutes a robust data set.
** we mean "quality controlled" monitoring data. We would prefer to leave this text as it is.

81: NGP only used three times – consider just spelling it out.
** we will change this in the revision

93: Spell out northeast.
** we will correct this in the revision

93: Consider removing 'its integrative characteristics;'.
** We would prefer to leave this text as it is, as they are integrative data (integrating information content of very different environmental processes)

103: I recommend explaining here what the characteristics of a drought sensitive region are. The authors could also consider mentioning whether or not the data can potentially be used to understand the hydrologic functioning of other drought sensitive regions beyond northeast Germany.
** yes that's a good suggestion. We will explain this in the revision.

Fig. 1: Instead of one symbol for all measurements, I recommend using different symbols to represent meteorological, soil, sap flow, groundwater, and isotope measurements.
** we will correct this. Please find the revised / new figure 1 already copied below.

134: Consider replacing '… historic evolution…' with '… history…'.

** yes good point, we will correct this in the revision.

141: '… high (~90 %) proportions of evapotranspiration…' is a bit confusing – consider '… high water losses due to evapotranspiration (~ 90 % of total precipitation)…'.
** yes much better: we will correct this in the revision.

141-3: Here, the authors explain some of the characteristics of a drought sensitive region. I recommend these be mentioned earlier when the concept is first introduced.
** yes we will do this as suggested.

150: Was it net radiation that was measured?
** yes, we will correct this.

157: Were standard rain gauges used? If so, replace 'simple' with 'standard'.
** yes, we will correct this.

179-80: Consider reorganizing the sentence, e.g., Water samples were also collected at Bruchmill using an autosampler (ISCO…) and analyzed for stable water isotopes.
** we will reformulate this sentence.

197-8: Are these nested sites marked on the map? If so, it needs to be clear which sites they are.
** we will correct Fig 1 and make this clearer. We will also change the symbols for the different sites. We will also add a reference to fig 1 here.

200-1: I recommend putting this information on groundwater levels in the previous section.
** yes this was misleading. Thanks for pointing this out. We will remove the info on groundwater level measurements here (as its already stated in the previous section).

202: Were any twigs sampled or did they have to have certain characteristics?
** we are not sure what the reviewer means here as we do state ".. by taking twig samples from different vegetation in Forest A and samples of the non-green stem of the grass.."?

207-8: What was the average and max storage time?
** usually the samples are analysed within one week in our isotope lab. We will add this information.

209: Either introduce these abbreviations when the water source is first mentioned in the isotope section or add the water source in front of each abbreviation in the brackets.
** good point. We will correct this (and add water source in front of each abbreviation in the brackets).

211: Replace 'CDRS' with 'CRDS'.
** we will correct this. Well spotted.

212: Consider revising '… to direct liquid water equilibrium method for soil water' to '… soil water extracted via the direct liquid water equilibrium method'.
** we will change this.

Table 2: Instead of repeating the abbreviations in brackets after dates, consider creating sub-rows from the data type column to the far-right column of the table, i.e., a sub-row for each data type.
** good idea. We will implement this.

Table 2: I think for some of the spatial resolution entries the direction (vertical or horizontal) should be given.
** We will implement this.

Figure 2: In the caption consider replacing 'Spatial data availability…' with 'Measurement period for each parameter at each site…'.
** we will correct this.

228: Consider 'data' instead of 'amount'.
** we will correct this.

241: Consider 'hydrologic' instead of 'response'.
** we will change this.

243-4: Consider replacing 'Variability was also more sensitive under forested land cover…' with 'There was higher variability in volumetric soil moisture under forested land cover…'.
** we will change this.

Figure 4: It looks like the winter 2020 peak groundwater level at both sites is slightly higher than 2019. Could this suggest recovery?
** yes but in a tiny way. In 2022 groundwater levels were down already again. However, we will add and mention this slight recovery in 2020.

Figure 4: I'm not sure if this really matters, but the panels are introduced out of order in the caption.
** we will correct this.

Figure 5: The panels could be stretched out a bit more vertically. This would especially help with seeing some of the detail in panel (c). The titles above each panel could be repositioned beside the a), b), c), etc. to achieve this.
** we will correct this.

312: There was not a lot of information given in the methods on data quality control. I recommend including the accuracy of all the measurements in the dataset.
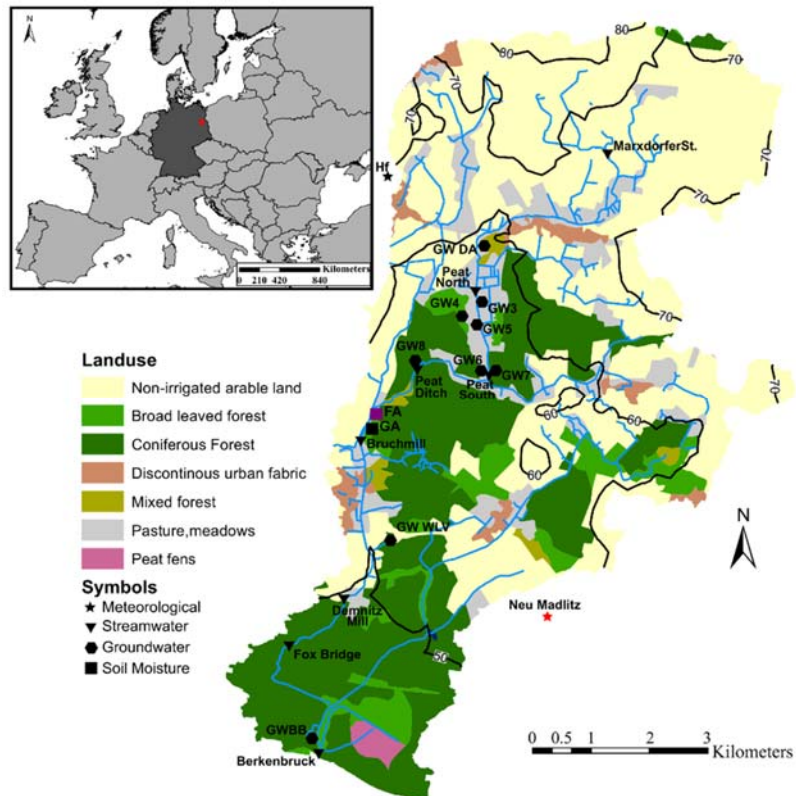** we will include this into the data file.

Figure 1: The Demnitzer Mill Creek catchment and its location within Europe and Germany. Measurement types are indicated in the legend, with red indicating no isotope measurements, black and purple indicating isotope measurements, and purple additionally indicating sap flow and sap isotope measurements. Meteorological measurements at Neu Madlitz were conducted by the German Weather service (DWD Deutscher Wetterdienst).)