Mohammed et al. response for egusphere-2023-328

The authors developed an open-source package to ease the access, reformat, and visualization of remote sensing earth observation data from NASA, to facilitate data dissemination, assist hydrological modeling, and support decision making. The package currently supports multiple NASA climate datasets, and the reformatted data could be seamlessly ingested into several mainstream hydrological models. The manuscript has clearly described the functionalities and methodology of the package, and given detailed instructions on installation requirements and steps, as well as how to use it with a case study. All the technical instructions are easy to follow. Also, the package has already been demonstrated in two published articles. Below are comments that suggest the authors to address.

Dear Referee,

We would like to extend our thanks to you for your valuable and constructive comments on our paper. In the revised manuscript, we have addressed all the comments raised. Specifically, we have revised Table 1 by adding more information to help the readers in comparing NASAaccess with existing tools. We have also added some information related to NASAaccess framework retrieval time. We think that our revised manuscript has been adjusted to add strength and support to our tool. Finally, we have addressed all the minor edits as requested to enhance reading the paper easily. Please find below our detailed response to the comments listed.

1. What are the benefits of NASAaccess comparing with existing tools listed in Table 1? In Table 1, it would help if you could list more information of existing tools to illustrate the necessity and benefits of NASAaccess, such as open source or not, supported datasets, programming language, operation system, and other pros and cons related to the purpose of this work.

The main benefits for NASAaccess framework can be summarized as: 1) an-open source tool, 2) modular - which means the framework could be replicated, customized, and implemented anywhere, 3) seamless earth-observation remote sensing and climate data ingestion into other modeling frameworks – *NASAaccess gives ready formatted ascii data required to drive various hydrological models,* and 4) lowering the technical barrier for leveraging and visualizing a wide array of satellite-based earth observations. The above-mentioned points have been discussed in section 4 of the manuscript. In the revised manuscript we modified Table 1 by adding three columns (Visualization Capability; Data Retrieval Format; Source Code Availability) to illustrate the differences between NASAaccess and some of the current NASA GES DISC tools and services for accessing and visualizing earth observation remote sensing data as requested.

2. For some abbreviations, please only give full name when one item is first time mentioned in the manuscript, for examples, NASA on Page 3 and 16, GeoGloWS on Page 17, GLDAS on Page 15, GES on Page 28, 29, and 30, DISC on Page 28, 29, and 30, CMIP on Page 18, 24, and 26 (twice), OSSI on Page 16, SWAT on Page 6, etc.

Addressed. Thanks!

3. In Section 3.1, these three functions in NASAaccess are mentioned here for the first time. Please explain them here for readers to better understand or give a note to inform readers to find "further explanation in XXXX of the Appendix"?

We added the following sentence to the revised manuscript in response to this comment as requested.

'Further explanation of `GPM_NRT`, `GPMpolyCentroid` and `GPMswat` functions are listed in NASAaccess Documentation part of the Appendix.'

4. In Section 3.1, please give full name and explain the "data of IMERG". It would be better to give the website of IMERG data https://gpm.nasa.gov/data/imerg

Web site address being changed as mentioned.

5. Where can readers find the shapefile and DEM for the case study?

The shapefile and DEM for the case study are packaged with NASAaccess R software version. This is mentioned in the scripts. In addition, we have added the following sentence to the revised manuscript as requested.

'The readers can also find these data files at the NASAaccess OSF home page (https://osf.io/ctj2k/) 'extdata' section.'

6. Is there any limitation on how long the data could be retrieved? For years of data, how long it would take with different functions?

Thanks for raising this point in the discussion. The limitation on record retrieval using NASAaccess relies on data availability at NASA servers. The test results paragraph shown below have been added to the revised manuscript.

There are multiple factors such as internet bandwidth (i.e., volume of information that can be sent over a connection in a measured amount of time), internet speed, and study site size that interact in figuring out the time duration of any NASAaccess function execution. To illustrate this further, here is an example for one month data record retrieval using the GPM_NRT function over the same study site shown above.

```
> system.time({ GPM_NRT(Dir = "./GPM_NRT_2/",
+                 watershed = shape_path,
+                 DEM = dem_path,
+                 start = "2023-04-01",
+                 end = "2023-04-30") })
#Results
#user  system elapsed
#30.023  21.869 130.313
```

The results give "user", "system", and "elapsed" times. The “user” gives the CPU time spent by the current process (i.e., the current R session) in seconds and “system” gives the CPU time spent by the kernel (the operating system) on behalf of the current process. The "elapsed" is the wall clock time taken to execute the GPM_NRT function (i.e., 130.313 seconds). Upon checking the internet speed utilized on (Intel(R) Core(TM) i9-9880H CPU @ 2.30GHz) machine, it reveals:

==== SUMMARY ====

Upload capacity: 17.543 Mbps
Download capacity: 107.578 Mbps
Upload flows: 12
Download flows: 12
Responsiveness: Medium (714 RPM)