



## Questions & Answers Part 3

Please type your questions in the Question Box. We will try our best to get to all your questions. If we don't, feel free to email Amita Mehta ([amita.v.mehta@nasa.gov](mailto:amita.v.mehta@nasa.gov)) or Sean McCartney ([sean.mccartney@nasa.gov](mailto:sean.mccartney@nasa.gov)).

**Question 1: What validation measures are made to check the remotely-sensed AET against ground-based observations? What approximate percentage of the covered area in Open ET is validated? What were the main instrumentation networks used to validate the ET?**

Answer 1: There is a report that covers this in some detail: <https://openetdata.org/wp-content/uploads/2021/10/Intercomparison-and-Accuracy-Assessment-Report.pdf>

Also see: <https://openetdata.org/faq/>

**Question 2: If the latitude and longitude coordinates of four points are provided, shouldn't the selection geometry be a quadrangle instead of a point?**

Answer 2: Yes, this exercise was mostly for learning to use the website. If you select an area, you will get raster data in GeoTIFF format and can use QGIS/Python/R to work with the data. Refer to the previous session to learn about this in detail.

**Question 3: Is it possible to download multiple files at once from AppEARS?**

Answer 3: Yes, once the data extraction is complete and if there are multiple files, you can download them all as zip files or individually.

**Question 4: What does PT-JPL stand for?**

Answer 4: This is an acronym for the ET ECOSTRESS algorithm. It stands for the Priestley-Taylor Jet Propulsion Laboratory (PT-JPL) algorithm.

<https://doi.org/10.1016/j.rse.2007.06.025>

**Question 5: What areas/countries/continents is the data available for?**



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Answer 5: ECOSTRESS ET is available on all continents – it is global. OpenET is available for the Western US.

**Question 6: Why can I not select products under AppEEARS Point ET data after I have chosen the date in 2021 in June as the presenter showed? I am stuck at that step.**

Answer 6: If you are getting any errors, feel free to contact the trainers.

**Question 7: Can you please let me know where lat/long is shown in the field map?**

Answer 7: In the URL – it shows the lat-lon.

**Question 8: In Exercise I, Part V: Which year had maximum cumulative ET in 2021? Is that correct? Or do you mean the largest month value in 2021?**

Answer 8: The largest cumulative in 2021 happened around December.

**Question 9: Can you please remind me where the crop type can be found in the OpenET browser?**

Answer 9: If you click on the field, you can see the graph where crop type is shown.

**Question 10: Why does AppEEARS bring in an image when you select Area after submission when you download data?**

Answer 10: We would need further clarification on this question. You get a table for point queries and rasters for area queries.

**Question 11: Can we validate our modeled ET with ECOSTRESS data?**

Answer 11: ECOSTRESS data is validated using FLUXNET data compared against ground-based measurements.

**Question 12: Question, how can I get the coordinates out from the clipboard? Using a Mac, don't know where the clipboard is, but the image says the coordinates were saved!**

Answer 12: Press Command + V and then you will see the coordinates.

**Question 13: Is the (AverageET \* 86400 Joules)/ 2.45 x 10<sup>6</sup> the desired equation?**

Answer 13: That is correct.



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**Question 14: Do you know about these kinds of initiatives in other places around the world, or is it just for the U.S?**

Answer 14: In reference to Part 1, OpenET is limited to the Western United States, but there are plans to cover the rest of the United States and then internationally to countries such as Brazil and Australia.

**Question 15: If there is less availability of flux tower derived ET data, then how can modeled ET be validated? Is there any other solution rather than flux data?**

Answer 15: For validation you do need flux data and surface-based observation data.

**Question 16: For OpenET, when we are looking for locations in Nebraska, is it possible to search them directly?**

Answer 16: You can directly search for an area using coordinates and also by direct search.

**Question 17: Where can we find information on how the crop types in OpenET data were identified?**

Answer 17: That information comes from the United States Department of Agriculture (USDA) and we will provide more information.

**Question 18: For agricultural yield prediction, could ET be estimated on GEE with Sentinel-2?**

Answer 18: You can get short wave infrared from Sentinel-2 and you will have to train the algorithm to use Sentinel-2. GEE for now does not have that capacity.

**Question 19: This might be more of a science/research based question rather than based on the session today. Can ET from the Water Cycle be correlated to Carbon Cycle in any way? Any research articles would be much appreciated in this context.**

Answer 19: ET correlation with carbon cycle would be expected because they both depend on vegetation cover. This is an area of research. Some information can be found in these papers and there are many more relevant, regional studies (can be found via web search):

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016WR020175>

<https://onlinelibrary.wiley.com/doi/abs/10.1002/hyp.6329>



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<https://www.sciencedirect.com/science/article/pii/S0034425713003040>

<https://www.sciencedirect.com/science/article/pii/S0034425705003810>

[https://journals.ametsoc.org/view/journals/hydr/8/3/jhm587\\_1.xml?tab\\_body=fulltext-display](https://journals.ametsoc.org/view/journals/hydr/8/3/jhm587_1.xml?tab_body=fulltext-display)

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**Question 1: How do we get the lat/long center of the region in OpenET data?**

Answer 1: The coordinates are located in the URL depending on the location you are analyzing.

**Question 2: Do the mean values from OpenET only use data with a good quality flag?**

Answer 2: Details of calculating ensemble means are given on <https://openetdata.org/methodologies/>. The methodology used is Median Absolute Deviation detects most outlier ET values and excludes them. Also see the FAQ section (<https://openetdata.org/faq/>) about conditions used for ensemble means, and how to decide whether ensemble means are good for a region or any individual ET product.

<https://openetdata.org/faq/>

**Question 3: Download data on OpenET does not work for .csv format. When I selected Download Data → csv nothing happened. All other formats work - the dialog to save the file is open. What may be the reason?**

Answer 3: That is surprising. See if you have automatic downloading enabled in your web browser and check your downloads folder.

**Question 4: Question 1av seems a bit confusing, the year is already specified. I assume we are asked to find the month with the maximum ET?**



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Answer 4: The question should not have that year – apologies for this mistake. This question (v) in Exercise 1a is modified.

**Question 5: In browser console log I found the following:**

```
(index):4636 Uncaught TypeError: val.toFixed is not a function  
at (index):4636:51  
at Array.forEach (<anonymous>)  
at a.<anonymous> ((index):4570:30)  
at b.<computed> [as getCSV] (highcharts.src.js:834:27)  
at b.downloadCSV (export-data.src.js:1071:23)  
at a.onclick (export-data.src.js:1175:25)  
at HTMLLIElement.onclick (exporting.src.js:2065:45)
```

**Seems there is problem on OpenET portal**

Answer 5: We will look into this further. If the portal is experiencing issues, try again later.

**Question 6: Will you talk about getting large area data with lat/lon information for each pixel? Or did I miss it?**

Answer 6: For OpenET, you have to request the data for a particular area. For ECOSTRESS, you have to provide the area and you will get a GeoTIFF with lat/long information. Refer to the previous sessions of this training for more information.

**Question 7: Are any methods used to directly measure ET?**

Answer 7: I don't believe it can be directly measured.

**Question 8: What is the spatial resolution of the ECOSTRESS ET coverage in the OpenET portal?**

Answer 8: The spatial resolution for ECOSTRESS ET is 70m and for OpenET is 30m. ECOSTRESS is global and OpenET is limited to the Western United States.

**Question 9: Which satellites are used for data for ECOSTRESS ET?**



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Answer 9: ECOSTRESS is a sensor that is flying on the International Space Station (ISS) and uses ancillary data from MODIS. ECOSTRESS collection 1 is also getting high resolution ancillary from Landsat.

**Question 10: What units does the PT-JPL output in?**

Answer 10: It is in watts per meter squared.