

# An Overview of Data Visualizations With PyVista and RAPIDS

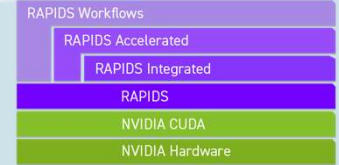
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## PyVista

PyVista is a Python package that provides a concise, well-documented interface to the Visualization Toolkit (VTK). It enables researchers to rapidly explore large datasets, communicate their spatial findings, and facilitate reproducibility. PyVista is also an easier framework for interactive visualizations than Matplotlib.

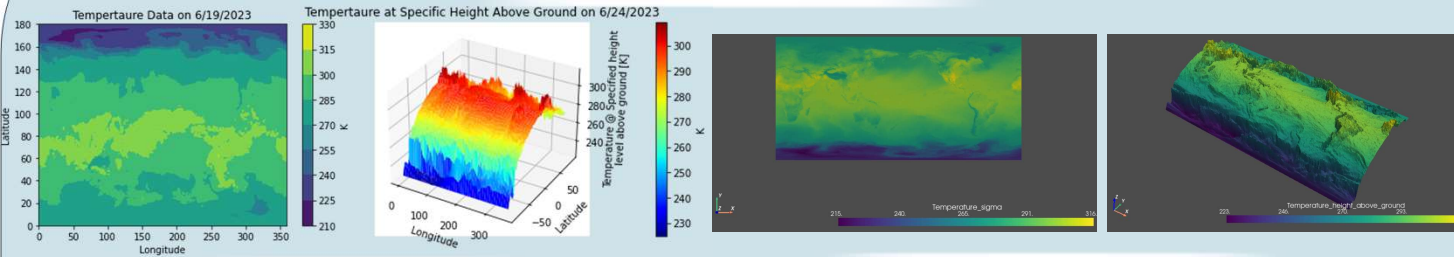
## RAPIDS

RAPIDS is a collection of open-source software libraries and APIs that give you the ability to execute end-to-end data science and analytics pipelines entirely on NVIDIA GPUs

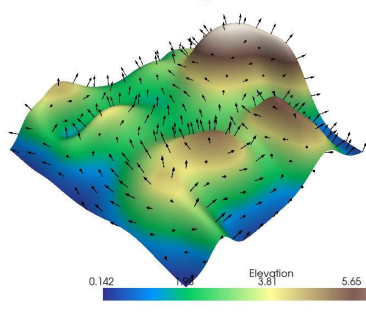
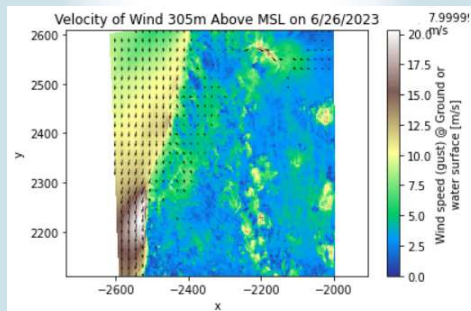


## Matplotlib vs. PyVista

### Temperature

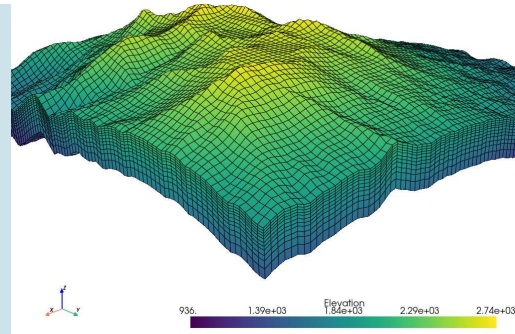
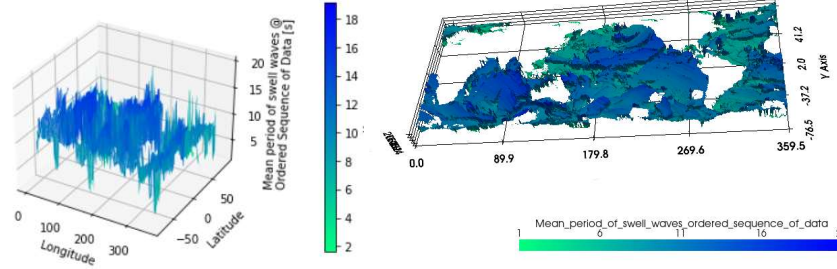


### Wind

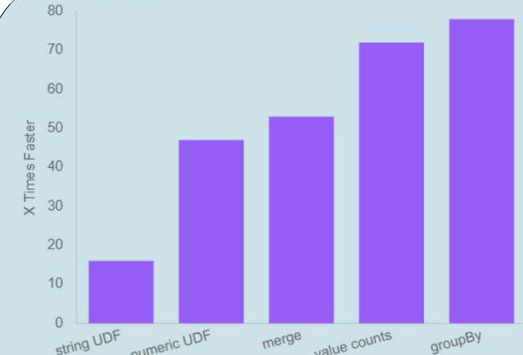


### Ocean/Terrain

#### Mean Period of Swell Waves

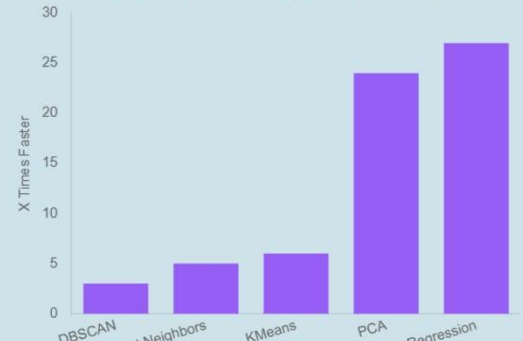


Performance on 300,000,000 row x 2 col dataframe



Faster Pandas with CuDF

Performance on 100,000 samples and 256 features



Faster Scikit-Learn with CuML

## References

- [1] GPU accelerated data science. RAPIDS. (n.d.). <https://rapids.ai/>
- [2] Sullivan, B., & Scott, R. (n.d.). *Pyvista/pyvista-xarray: Xarray DataArray accessors for pyvista*. GitHub. <https://github.com/pyvista/pyvista-xarray>
- [3] Sullivan, C., & Kaszynski, A. (2019). PyVista: 3D plotting and mesh analysis through a streamlined interface for the Visualization Toolkit (VTK). *Journal of Open Source Software*, 4(37), 1450. <https://doi.org/10.21105/joss.01450>