

# [Getting] Big data from Planetary Science and Exploration and the EarthServer/PlanetServer approach

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Planetary data deriving from multiple missions and space agencies are approaching the order of magnitude of Earth Remote Sensing counterparts. By 2015 we estimate there will be over a petabyte of planetary data. Most, if not all of those data are freely available to the community, although the availability or access to processing routines required to prepare the data for scientific analyses varies per instrument team or mission.

Not only is the volume of data extremely challenging, also the complexity of the data continues to require more complex processing methods. And while the raw or low-level data sets are normally archived using defined standards [e.g. 1,2,3], the availability of web services and server-based processing through client-based analysis could ease current and future scientific use.

The Planetary Service (PlanetServer) [4] of EarthServer [5] aims at enabling and easing planetary science orbital data exploitation by using the Open Geospatial Consortium Web Coverage Processing Service [3]. Its content is Mars-centric, but a similar approach can be extended to other planetary bodies, in addition to platforms other than orbital ones.

Use cases are currently oriented towards surface imaging and remote compositional studies, but broader and more diverse use cases including surface, subsurface and atmospheric focus are being evaluated.

Recent, current and future non-orbital planetary exploration platforms, such as landers, rovers, unmanned aerial vehicles, balloons, are and will be delivering data even more complex to handle than satellite or airborne multi-dimensional imagery. While archives will evolve to match future challenges [e.g. 6], there will be the need for higher-level processed data, to be analyzed in large amounts and with limited time and human resources.

The planetary community and the larger scientific community can benefit from the wider availability of exploitation tools enabling (publishable) science through the use of public planetary mission data.

Figure 1: Logarithmic comparison of estimated total data volumes per mission for Mars (red) and The Moon (blue). Only a selected set of missions are shown.

## References

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