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Remote Sensing Data Analytics for Planetary Science with PlanetServer/EarthServer

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Planetary Science datasets, beyond the change in the last two decades from physical volumes to internet-accessible archives, still face the problem of large-scale processing and analytics (e.g. Rossi et al., 2014, Gaddis and Hare, 2015).

PlanetServer, the Planetary Science Data Service of the EC-funded EarthServer-2 project (#654367) tackles the planetary Big Data analytics problem with an array database approach (Baumann et al., 2014). It is developed to serve a large amount of calibrated, map-projected planetary data online, mainly through Open Geospatial Consortium (OGC) Web Coverage Processing Service (WCPS) (e.g. Rossi et al., 2014; Oosthoek et al., 2013; Cantini et al., 2014).

The focus of the H2020 evolution of PlanetServer is still on complex multidimensional data, particularly hyperspectral imaging and topographic cubes and imagery. In addition to hyperspectral and topographic from Mars (Rossi et al., 2014), the use of WCPS is applied to diverse datasets on the Moon, as well as Mercury. Other Solar System Bodies are going to be progressively available. Derived parameters such as summary products and indices can be produced through WCPS queries, as well as derived imagery colour combination products, dynamically generated and accessed also through OGC Web Coverage Service (WCS). Scientific questions translated into queries can be posed to a large number of individual coverages (data products), locally, regionally or globally.

The new PlanetServer system uses the the Open Source Nasa WorldWind (e.g. Hogan, 2011) virtual globe as visualisation engine, and the array database Rasdaman Community Edition as core server component. Analytical tools and client components of relevance for multiple communities and disciplines are shared across service such as the Earth Observation and Marine Data Services of EarthServer.

The Planetary Science Data Service of EarthServer is accessible on http://planetserver.eu. All its code base is going to be available on GitHub, on https://github.com/planetserver

References:

Baumann, P., et al. (2015) Big Data Analytics for Earth Sciences: the EarthServer approach, International Journal of Digital Earth, doi: 10.1080/17538947.2014.1003106.
Cantini, F. et al. (2014) Geophys. Res. Abs., Vol. 16, #EGU2014-3784.
Gaddis, L., and T. Hare (2015), Status of tools and data for planetary research, Eos, 96, dos: 10.1029/2015EO041125.
Hogan, P., 2011. NASA World Wind: Infrastructure for Spatial Data. Technical report. Proceedings of the 2nd International Conference on Computing for Geospatial Research & Applications ACM.
Oosthoek, J.H.P, et al. (2013) Advances in Space Research. doi: 10.1016/j.asr.2013.07.002.
Rossi, A. P., et al. (2014) PlanetServer/EarthServer: Big Data analytics in Planetary Science. Geophysical Research Abstracts, Vol. 16, #EGU2014-5149.