

**ESA's PLANETARY SCIENCE ARCHIVE IN 2019 AND 2020.**

S. Besse<sup>1</sup>, C. Arviset<sup>1</sup>, I. Barbarisi<sup>1</sup>, B. Merín<sup>1</sup>, J. Arenas<sup>1</sup>, M. Bentley<sup>1</sup>, S. de Castro<sup>1</sup>, G. de Marchi<sup>2</sup>, R. Docasal<sup>1</sup>, D. Fraga<sup>1</sup>, E. Grotheer<sup>1</sup>, D. Heather<sup>1</sup>, C. Laantee<sup>1</sup>, T. Lim<sup>1</sup>, A. Montero<sup>1</sup>, J. Osinde<sup>1</sup>, C. Rios<sup>1</sup>, J. Ruano<sup>1</sup> and J. Saiz<sup>1</sup>.

<sup>1</sup>ESA-ESAC, Camino Bajo del Castillo s/n, Urb. Villafranca del Castillo, 28692 Villanueva de la Cañada, Madrid, Spain ([Sebastien.Besse@esa.int](mailto:Sebastien.Besse@esa.int)), <sup>2</sup>ESA-ESTEC

**Introduction:** With new missions being selected, missions moving to post-operations, and missions starting their journey to various targets in the Solar System, the ESA's Planetary Science Archive [1] (<http://psa.esa.int>) is in constant evolution to support the needs of the projects, and the science community.

**2019 UPDATES:** The year 2019 is mostly marked by the successful launch of the BepiColombo mission to Mercury, and the start of the science phase for ExoMars 2016.

Those two missions are supported by the PSA with a totally new approach with respect to past planetary missions. Scientific observations from BepiColombo and ExoMars 2016 are stored in the archive few days after reception on the ground. The PSA provides an almost real time access to the scientists from the instrument teams. As common for missions of the European Space Agency (ESA), access to the data is protected and reserved to the science teams members during the first months of the mission. The development of such archives is a new concept that requires a very strong support from the missions Science Ground Segment (SGS) and the instrument teams. Particularly challenging is the development of this concept in the framework of the new Planetary Data System standard V4 (PDS4) used by these two missions.

Alongside the development of archives for new missions in operations, and in PDS4, the PSA is supporting missions in operations and post operations in PDS3, such as Rosetta, and MarsExpress. Those two missions are providing an incredible amount of new data that are ready to be used by scientists. Rosetta is wrapping up its archive with a significant increase in the delivery of derived products (i.e., products benefiting from numerous extra processing rarely possible during the timeline of the mission). Derived products can use shape models for instance, or inputs from other instruments (e.g., temperature, etc.), and certainly all the knowledge of the science teams. MarsExpress is continuing its routine deliveries of products to the PSA, with a particular highlight on the MARSIS instrument. Those products provide a view of the subsurface of Mars, which is offering numerous new discoveries.

While the missions are delivering new exciting products, the PSA adapts and evolves to improve the

search capabilities of those products. New functionalities have been developed in the user interface to allow better, faster, and easier search for products. With the wish of serving all scientists styles, the PSA has also developed an EPN-TAP service that improves machine access retrieval of products.

**2020 CHALLENGES:** 2020 will offer continuous challenges such as the expected start of the ExoMars 2020 rover, and the flybys of planets by Bepicolombo. Rosetta will close its journey by completing its archive. The content of the archive will still be curated, similarly as it is for other missions in legacy such as Venus Express or SMART-1. The PSA will continue its effort in curating data from past missions that still offer important scientific discoveries [2].

By 2020, the users of the Planetary Science Archive are expected to be familiar with the PSA services based on Geographical Information System. An important effort by the PSA actors is done to provide new services based on geometrical searches.

During the workshop, the global pictures of the PSA activities during the past 2 years and the upcoming 2 years will be presented.

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**References:** [1] Besse, S. et al. (2017) *Planetary and Space Science*, [10.1016/j.pss.2017.07.013](https://doi.org/10.1016/j.pss.2017.07.013), ESA's Planetary Science Archive: Preserve and present reliable scientific data sets. [2] Rubin, M. et al. (2015), *The Astrophysical Journal Letters*, [10.1088/2041-8205/815/1/L11](https://doi.org/10.1088/2041-8205/815/1/L11), Molecular Oxygen in Oort Cloud Comet 1P/Halley.