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KADMOS PDGS-AS-SERVICE FOR THE PRISMA MISSION

Abstract

Since 2019, the Italian Space Agency launched the Prisma hyperspectral mission, which features medium-resolution electro-optical instrumentation in the VNIR frequency range (66 bands between 400-1000 nm) and SWIR (173 bands between 1000-2500 nm), as well as a medium-resolution panchromatic camera. Geolocation accuracy is a necessary pre-condition to ensure measurements' quality exploitation, allowing for co-registration of time series and synergistic use with data from other missions. Planetek has provided the Level 2 processor to PRISMA PDGS and is now supporting the geo-location workflow and the estimation and improvement of residual geometric errors in level 2 products by the provision of GCPs auxiliary data. A dedicated service provides a Ground Control Points database with the global coverage needed on the mission's access area. The service exploits time series of optical data (from different possible sources), assesses their geolocation precision and extracts ground truths and allows for the refinement of the geo-location information (the Rational Polynomial Coefficients model) include in Level 2 mission products. The model evaluated on the knowledge of satellite attitude, navigation information and the sensor model, can then be enhanced and the initial geolocation accuracy improved. The service is established in a cloud infrastructure and can provide ground truths with different levels of quality and accuracy also for any medium-high resolution optical missions. This GCP provisioning service is an instance of Kadmos services portfolio, exclusive and customized for PRISMA mission needs. Kadmos is Planetek's offering for a complete PDGS as a Service, able to manage the full chain of EO mission data, from the acquired raw stream from sensors' front-end electronics, to analysis ready data, to be directly ingested in user applications. The EO sesor and/or satellite mission operator doesn't have to worry about the implementation, configuration and operational management of the infrastructure. Kadmos is in charge of storing, processing and delivering data to end users by a mission catalogue and is able to handle both recurring and custom functionalities.