

New Hyperspectral Satellite!

The latest Earth Observation (EO) satellite to go into orbit is the Italian PRISMA satellite that was launched from the Guiana Space Centre in Kourou, French Guiana at 0150 GMT on 22nd March 2019.

PRISMA stands for 'PRecursores Iperspettrale della Missione Applicativa' in Italian, which translates to Hyperspectral Precursor of the Application Mission. It is in a sun-synchronous orbit at an altitude of 615 km, and was funded, and will be operated, by Italy's national space agency.

[PRISMA combines](#) hyperspectral spectrometers with a medium-resolution panchromatic camera on pushbroom approach. The hyperspectral sensors have 237 spectral bands, of which 66 are in the visible and near infrared (VNIR) and 171 are in the shortwave infrared range (SWIR); these all operate at a spatial resolution of 30 m with a swath width of 30 km. Whilst, the panchromatic camera has a spatial resolution of 5 m, again with a swath width of 30 km. The data from both sensors is co-registered to permit cross-referencing, comparison and integration. The satellite has the capacity to process up to two hundred hyperspectral scenes each day and has an expected mission life of five years. PRISMA was also notable as it was the [600th satellite to be launched by ArianeSpace](#).

The data from PRISMA is expected to have a [number of applications](#), including:

- **Forestry:** For classification, biomass analysis and forest fires, etc.
- **Agriculture:** For crop health and mapping, stress analysis, etc.
- **Inland and coastal waters:** Looking at water quality, chlorophyll monitoring and alga blooms.
- **Climate change and environmental research** such as desertification, deforestation, vegetation stress and environmental degradation
- **Mining and exploration**

At Pixalytics we've got a lot of experience with hyperspectral data with our lead consultant, Dr Samantha Lavender, has worked with the hyperspectral CHRIS-Proba data for fifteen years. Compact High-Resolution Imaging Spectrometer (CHRIS) is a hyperspectral sensor that acquires a set of up to five images of a target, with different modes allowing the collection of up to 62 spectral wavebands at a spatial resolution of 17m. Despite the proposed mission life of PRISMA, it is worth noting that Proba-1 was launched in 2001 on a two-year mission and it's still sending data back today. Samantha will be presenting '*Proba-1: Current Status and Time Series Analysis*' at the [ESA Living Planets Conference](#) in Milan, Italy on the 13th – 17th May 2019.

The final piece of EO hyperspectral news this week is that [China announced](#) that the EO satellites

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Gaofen-5 and Gaofen-6, were officially put into service after completing their commissioning and testing phase. These also both have hyperspectral and panchromatic instruments and are part of the China High-resolution Earth Observation System (CHEOS) which is being established to reduce China's dependency on foreign satellite data. They also announced Gaofen-7 would be launched later this year.

It's fantastic that more hyperspectral data is becoming available which will allow for different and innovative approaches to monitoring the planet and who knows what the multiple of bands might uncover!