

## No Paraskevidekatriaphobia For Sentinel-5P!

On Friday the latest of the Sentinel satellites, Sentinel-5P, is due to be launched at 09.27 GMT from Plesetsk Cosmodrome in Russia.

Friday is the 13th October, and within parts of the western world this is considered to be an unlucky date – although in Italy its Friday 17th which is unlucky and in some Spanish speaking countries it is Tuesday the 13th. Fear of Friday 13th is known as paraskevidekatriaphobia, although evidently it isn't something Sentinel-5P worries about!

[Sentinel-5 Precursor](#), to give the full title, is dedicated to monitoring our atmosphere. It will create maps of the various trace gases such as nitrogen dioxide, ozone, formaldehyde, sulphur dioxide, methane and carbon monoxide alongside aerosols in our atmosphere. The mission will also support the monitoring of air pollution over cities, volcanic ash, stratospheric ozone and surface UV radiation.

The satellite itself is a hexagonal structure as can be seen in the image to the right. It has three solar wings which will be deployed once the polar sun-synchronous 824 km low earth orbit has been achieved. Sentinel-5P will be orbiting three and half minutes behind NOAA's Suomi-NPP satellite which carries the Visible/Infrared Imager and Radiometer Suite (VIIRS). This synergy will allow the high resolution cloud mask from VIIRS to be used within the calculations for methane from Sentinel-5P.

Within the hexagonal body the main scientific instrument is the Tropospheric Monitoring Instrument (Tropomi). This is a push-broom imaging spectrometer covering a spectral range from ultraviolet and visible (270–495 nm), near infrared (675–775 nm) and shortwave infrared (2305–2385 nm). The spatial resolution of the instrument will be 7 km x 3.5 km. However, one of the exciting elements of this instrument is that it will have a swath width of 2600 km meaning it can map almost the entire planet every day. It will have full daily surface coverage of radiance and reflectance measurements for latitudes > 7° and

The key role of Sentinel-5P is to reduce the data gap between the end of the Envisat mission in May 2012 and the launch of Sentinel-5 in 2020. Sentinel-5, and Sentinel-4, will be instruments onboard meteorological satellites operated by Eumetsat and both will be used to monitor the atmosphere.

The timing of Sentinel-5 is interesting for those of within the UK given that almost three quarters of the funding from Copernicus comes from the European Union. By this time Brexit will have occurred and it is currently unclear how that will impact on our future involvement in this programme. This also applies to the work announced at the end of last month to look at an

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expansion of the Sentinel missions. Invitations to tender (ITT) are due to be issued in the near future, and given our [previous blogs](#) on potential limitations and issues, it will be interesting to see which UK companies bid, and whether they will be successful.

Sentinel-5P will help improve our understanding of the processes within the atmosphere which affect our climate, the air we breathe and ultimately the health of everyone on the planet.