**Introduction:** The imaging spectrometer OMEGA [1] operates in the VIS-NIR range, covering the (0.35 \(\mu\)m to 5.1 \(\mu\)m) range in 352 contiguous spectral channels. This spectral range has been chosen as it includes diagnostic signatures of most surface mafic and hydrated minerals, frosts and ices. With a 1.2 mrad IFOV, the footprint varies from 40 m when imaging from 40 kms, up to 4.8 km from an altitude of 4000 km: this allows a global spectral coverage of Phobos to be achieved, at various spatial resolution.

Along these 16 years of operations, OMEGA has imaged Phobos in about 65 sequences out of more than 19500 MEx orbits, with one from a distance of 50 km only, and with 3 observations of the crater Stickney.

The prime objective is to contribute deciphering the origin of Phobos, while answering the following questions:

- Is Phobos a undifferentiated body, or has this small body suffered some degree of internal differentiation, which would be reflected in surface compositional variations?
- Can one detect surface material containing either aqueous or organic compounds?
- Would Phobos (and Deimos) be captured asteroids, as initially suggested, or bodies re-accreted in a disk triggered by an impact on Mars, similarly to the Earth Moon [2]?

On board of MarsExpress Phobos has been also observed by all the other instruments (HRSC, Spicam, PFS, Aspera, Marsis and Radio Science), enabling cross-comparison and complementary reduction [3].

**Data:** Spectra of Phobos in the visible and mid-IR have been acquired by different instruments (KRFM+ISM (Phobos2) [4], CRISM (MRO) [5] and OMEGA (MEx)). At the first order associated spectra are identical. It is only by approaching Phobos (<100 kms) that we can find some spectral variations.

We will present these variations and their potential implications in particular in the area of Stickney crater (Fig 1.)

**Results:**

No evidence so far that Phobos is a differentiated small body. No evidence for hydration, possibly as a result of thermal dehydration. No evidence yet of carbonaceous material.

**Future Missions:** The JAXA mission MMX [6] will perform a global characterization of Phobos and Deimos, through remote sensing, in situ analyses and collection of samples to be returned to Earth. A NIR hyperspectral imager (MacrOmega) will perform a global coverage down 10 m footprint, reduced locally to a few millimeters [7]. It should greatly contribute deciphering the origin of both moons.