



## **Water vapor retrieval on the atmosphere of Mars using OMEGA imaging spectrometer onboard Mars Express**

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OMEGA (Observatoire pour la Minéralogie, l'Eau, les Glaces, et l'Activité) is a mapping spectrometer onboard Mars Express, whose aim is to acquire spectral maps of Mars in the visible and near-infrared at high spatial resolution ( $\sim 300$  m at periapsis) and with a high signal-to-noise ratio. We analyze OMEGA data to monitor the abundance of water vapor in the atmosphere of Mars, using the 2.6 micron water band. This line is the most favorable because it's more sensitive and 3 – 5 times stronger than the other water bands in the OMEGA spectral range, and it's expected to be free of mineralogical features.

We focus in particular on the northern spring equinox ( $L_s \sim 330^\circ - 50^\circ$ ) and summer ( $L_s \sim 90^\circ - 140^\circ$ ). The results show a dramatic increase of water during the summer and especially after  $L_s \sim 110^\circ$ , exceeding 80 pr.  $\mu\text{m}$  at high latitudes in the northern hemisphere, due to the sublimation from the residual polar cap. On the contrary, the water vapor is more uniform with latitude on the equinox, with an average of 10 pr.  $\mu\text{m}$ .

We see a correlation between water abundance and surface morphological features, especially in some regions, as in Hellas basin where a decrease of water column density is evident. Olympus Mons deserves a more detailed study: our retrievals show an almost constant column density throughout the volcano and its surroundings, as found in the ISM/Phobos 2 observations and in contrast with the current picture of the behavior of water vapor in the volcanoes.