



## **Seasonal variations of CO and H<sub>2</sub>O over Hellas as observed by OMEGA/Mars Express**

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The OMEGA imaging spectrometer aboard Mars Express has been used to study the evolution of the CO and water vapor abundances over the Hellas basin over a seasonal year. The two minor species were monitored through the (2-1) CO band at 2.35 microns and the H<sub>2</sub>O band at 2.6 microns respectively. Because the 2.35 micron band of CO is very weak, its monitoring is only possible over a low altitude region such as the Hellas basin. A first analysis of CO (Encrenaz et al., AA 459, 265, 2006), using the 2200 first orbits of Mars Express (just covering a seasonal cycle), shows an enhancement of the CO abundance over Hellas at Ls = 130-150° (end of southern winter), by a factor of about 2 with regard to Ls = 330-350° (end of southern summer); this result is consistent with the predictions of the Global Climate Model (Forget et al., J. Geophys. Res. 104, 24155, 1999) which predict such an enrichment for non-condensable species over Hellas. An analysis of both the CO and H<sub>2</sub>O bands, using the same orbits over Hellas, shows that the CO and water vapor abundances, which are controlled by different mechanisms, have very different behaviors. To first order, the water vapor abundance is controlled by the atmospheric temperature, which depends upon the season and the dust content. The observed water vapor abundance shows a clear maximum for Ls = 250°, at the time of southern summer. This study will be extended to more recent OMEGA data and compared to GCM predictions and other observations.