

Morning Fog on Mars

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Mars Express HRSC images show impressive morning fog features in Valles Marineris and other regions of the surface of Mars. Temperatures, which simultaneously have been measured by Mars Express PFS indicate that the fog observations in Valles Marineris are due to water-ice (and not frozen CO₂). Estimates of the water vapour pressure and the related atmospheric water content at the frost-point (temperature of freezing or “re-sublimation” of water vapour) indicate that the local atmospheric water vapour content is in the lower heights of this near equatorial valley locally of the order of 10 pr μm to 100 pr μm . Estimates of optical depths of the fog allow to quantitatively estimate the size of the icy fog particles. It is in the range between about 1 μm and 10 μm . It is shown, that the fog-particles can survive in the atmosphere over several hours and more before sinking down in the gravitational field of Mars. Systematic observation of fog phenomena may be a tool to get indications for locations of comparatively higher local water content of the surface soil on Mars. First results of the search for preferred regions of fog on Mars are presented.