

Mars Weather and Ozone Column Mapping with MRO/MARCI.

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The Mars Color Imager (MARCI) is a Mars Climate Orbiter (MCO) re-flight science payload element of the NASA 2005 Mars Reconnaissance Orbiter (MRO) mission. MARCI is a 7-color UV/Visible framing camera, with two UV filter channels within (260 ± 20 nm) and outside (320 ± 20 nm) the Hartley ozone band, and five visible channels from blue to red wavelengths (425, 550, 600, 650, 725 ± 25 nm). MARCI is designed for daily synoptic, low-resolution imaging of Mars to study the evolution of weather systems in the atmosphere and observe changes in surface features due to interactions with atmospheric processes. The camera's wide-angle (180°) field of view permits observations of the limbs, as well as providing full global daily image maps. The UV imaging capability is unique, and comparison of images in the two UV filters will allow determination of high resolution spatial (~ 10 km) and seasonal (daily) changes in the concentration of ozone. The scientific goals of the MARCI investigation include:

- Observing martian atmospheric processes synoptically at global scale
- Studying details of the interaction of the atmosphere with the surface at a variety of scales in both space and time
- Examining surface features characteristic of the evolution of the martian climate over time
- Obtaining repetitious, global coverage at scales between 1 and 10 km/pixel.
- Using the multispectral capability to distinguish between aerosol compositions (water ice and dust)
- mid-UV observations to spatially map ozone as a surrogate for spatial and temporal water vapor variations, and as a diagnostic of atmospheric photochemistry.

