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# The High Resolution Stereo Camera (HRSC) Experiment: Results after One Year in Orbit around Mars

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The HRSC experiment is a pushbroom scanning instrument with 9 CCD line detectors mounted in parallel on the focal plane. Its unique feature is the ability to nearly simultaneously obtain imaging data of a specific site at high resolution, with along-track triple stereo, with four colours, and at five different phase angles, thus avoiding any time-dependent variations of the observing conditions. An additional Super-Resolution Channel (HRSC-SRC) - a framing device - will yield nested-in images in the meter-range thus serving as the sharpening eye for detailed photogeologic studies. The spatial resolution from the nominal periapsis altitude of 250 km will be 10 m/pixel for the HRSC proper and 2.3 m/pixel for the HSRC. During the nominal operational lifetime of the mission of 1 Martian year, it will be possible to probably cover nearly 50% of the Martian surface at a spatial resolution of better than 20 m/pixel. The HRSC will make major contributions to the areas of geosciences, atmospheric sciences, photogrammetry/cartography, and spectrophotometry of Mars. The instrument will obtain images containing morphologic and topographic information at high spatial and vertical resolution of unique photogrammetric quality allowing the improvement of the Martian cartographic data base down to scales of 1:50,000. By the time of the conference we will show high-resolution color stereo products (3D and perspective views, digital terrain models, video animations) from imagery obtained during the first year in orbit around Mars and first results from the analyses of this imagery by the international Co-Investigator Team. By January 2005, nearly 20% of the martian surface were covered at a resolution of 10 m - 40 m per pixel in stereo and color. The major volcanoes and structures which show the signs of fluvial, hydrothermal, and glacial activity have been investigated in detail, the atmospheric properties over the areas imaged have been analysed, color properties of the surface materials have been assessed

and all data have been reduced to geometrically and radiometrically calibrated image swaths, which in most cases have been map - projected and processed to extract digital terrain information. All data obtained over the first six months of the orbital phase have been put in final archival form for distribution to the general community through the ESA and NASA science data archives.