

LOOKING BACK TO 17 SUCCESSFUL YEARS OF HIGH RESOLUTION STEREO CAMERA IMAGE RELEASE OF ESA'S MARS EXPRESS MISSION. C. Gross¹, H. Balthasar¹, A. Dumke¹, D. Neu¹, B. Schreiner¹, S. Walter¹, R. Jaumann¹ and the HRSC/Mars Express Teams at DLR and ESA. ¹Freie Universität Berlin, Institute of Geological Sciences, Planetary Sciences and Remote Sensing, Malteserstr. 74-100, 12249 Berlin, Germany (christoph.gross@fu-berlin.de).

Introduction: Since 2003 the High Resolution Stereo Camera (HRSC) experiment on Mars Express is in orbit around Mars. Besides the obligatory “Earth Farewell” and “Mars Approach” releases, created during transit of the spacecraft, the first surface-images were sent to Earth on January 14th 2004. On January 19th these images were released featuring Hydraotes Chaos at the Martian equator. Today, after 17 years of continuous PR activity, the main motivation in contributing to the public perception and to the success of the mission is to make the work and results accessible for scientists as well as for the public by dissemination of the HRSC data. During the past 17 years, the experiment has collected image data from more than 21.000 orbits, resulting in a steadily increasing set of image, mosaic, and movie releases.

Data Processing: Decompression, calibration and projection of raw image data is performed at the Institute of Planetary Research of the German Aerospace Center in Berlin-Adlershof. This level 2-4 data is then processed to higher -level products by the Planetary Sciences and Remote Sensing Team at Freie Universität Berlin (FUB). Here, the camera data from the different channels (stereo, color, nadir) is combined to produce color images, anaglyphs, digital terrain models, 3D perspectives and movies of the Martian surface and the Martian moons.

PR Releases: On a monthly basis press releases are provided by the Planetary Sciences and Remote Sensing Group at FUB in close collaboration with the European Space Agency (ESA) and the German Aerospace Center (DLR). Moreover, FUB also releases own products on the basis of HRSC science outcome and also improved higher-level data products. Close collaborations with exhibitors as well as print and digital media representatives allow regular and directed dissemination of HRSC products.

A typical press release comprises different views of a scene taken from an HRSC image of the Martian surface: Plan view color scenes from the four color channels refined with the higher-resolution nadir channel, a color-coded terrain model also pan-sharpened with the nadir-image, anaglyphs derived from the stereo channels, and perspective color views. The views are provided at the best possible resolution. In addition, a context map is produced to show the footprints of the processed HRSC observation and its position on the surface of Mars. Descriptive texts in

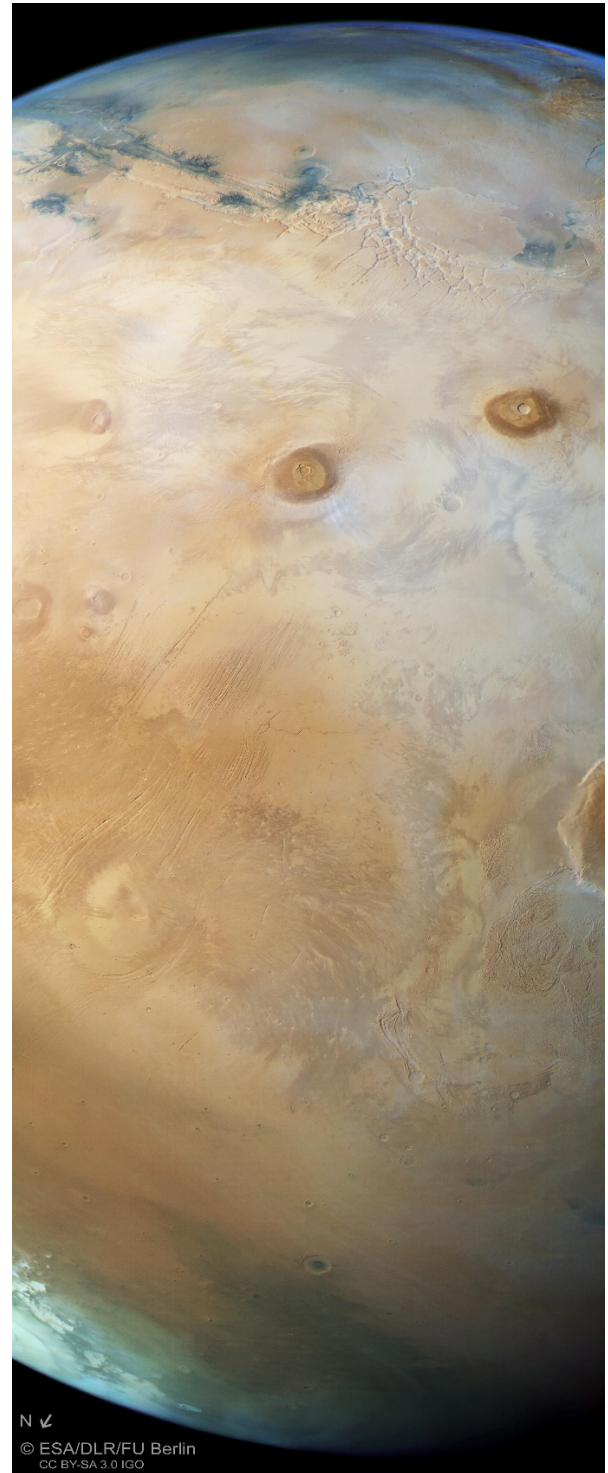


Figure 1: Global view of Mars as seen in orbit 17444, Ascræus Mons in the middle, to its right Pavonis Mons.

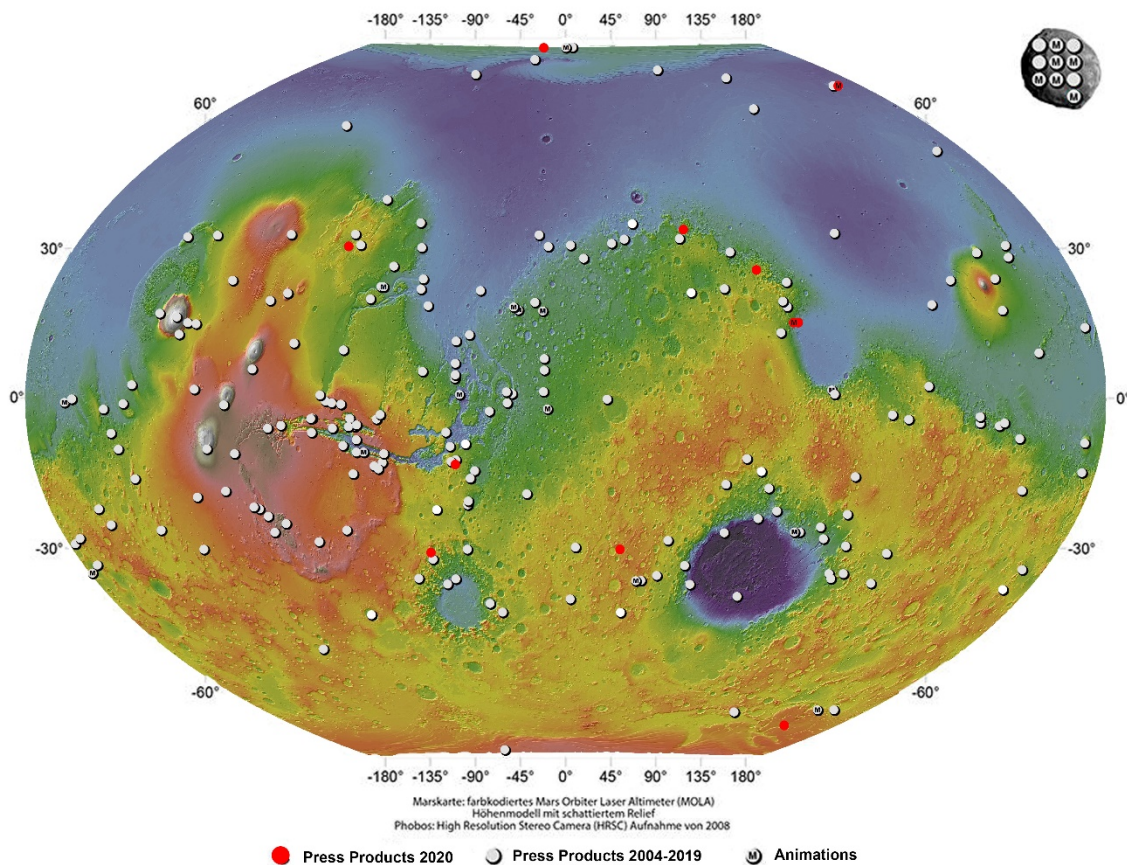


Figure 2: Overview MOLA Map of Mars and map of Phobos showing all HRSC PR-releases starting 2004 until 2020. All images can be found at: www.fu-berlin.de/planets - see images and animations.

English and German come with the press products and fulfill scientific correctness and popular science requirements. Also, explanatory cartoons are provided, to illustrate geological processes. More sophisticated press products include animations and simulated flights over the Martian surface, perspective views of stereo data combined with color and high resolution, multi-orbit mosaics, and perspective views of mosaics as well as broom observations (Fig. 1). Due to the high effort, these products are published at irregular intervals. Altogether more than 1.273 high quality image PR products, 46 multi-orbit mosaics, 29 movies and 27 explanatory cartoons were created at FUB until December 2020.

Data Dissemination: The Planetary Sciences and Remote Sensing Group at FUB also offers a web-based data access using an interactive map server setup (available at: maps.planet.fu-berlin.de). The HRSC Map Server offers easy data access with direct preview and download functions of panchromatic Level-3 single strip images and panchromatic and pan-sharpened color

level-4 single strip images. In addition, quadrangle-based mosaic products can be downloaded directly from the HRSC Map Server. It is automatically updated on a daily basis. An implementation of the PR-products with direct links is also planned for the future.

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Image credit:

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