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Overview of Outreach Activities of the Planetary Sciences and Remote Sensing Group at Freie Universität Berlin

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1. Introduction and Motivation

Planetary Sciences teach us how special our home-planet is in the solar system. Incorporating a broad variety of natural science topics they count to the most fundamental branches of scientific research with a strong interdisciplinary character. However, since planetary sciences are not a school subject, children as well as adults are often lacking an overall awareness and understanding of that field. The mission of planetary education has to be fulfilled by research institutions. With several platforms and activities our group is engaged to address this topic.

The Planetary Sciences and Remote Sensing Group at Freie Universität Berlin (FUB) is involved in space missions such as Mars Express with the High Resolution Stereo Camera (HRSC), Cassini to Saturn, and Dawn to the asteroids Vesta and Ceres. Moreover, we participate in developing a planetary X-ray fluorescence spectrometer. Information of our planetary research activities can be found on our institutes website [1]. Our outreach activities include press releases, an image download hub, permanent and special exhibition support, 3D-HD-animation production, science fairs, workshops, hands-on courses, public talks at observatories and schools, as well as media appearances in radio, press and TV.

2. Higher-level data dissemination

In 2013 we adapted our institute websites to include dynamic elements, and to promote data and product dissemination. The English and German websites feature mission information, space news, image galleries, interactive pan-and-zoom features, and easy-to-download space imagery.

Since 2007 HRSC data can be viewed and accessed via the online interface HRSCview [2]. In addition, since 2013 the HRSC products are made available by an open-source-driven dynamic mapserver optimized for orbit search and direct file download [3]. In cooperation with several European and international institutions efforts are being focused on providing access to high-level planetary data in context of the EU-FP7-funded iMars project [4].

On a monthly basis we prepare HRSC press releases comprising color perspective views, nadir color images, color-coded digital terrain models, anaglyphs, context maps, and explanatory texts. Products are released in collaboration with the European Space Agency (ESA) and the German Aerospace Center (DLR) [5]. More sophisticated products include corrected high-resolution seamless color mosaics, HD and 3D animations, simulated flights over the Martian surface, and perspective views of stereo data combined with color and high resolution. Some of the released images were selected as Space Science Image of the week by ESA.

For several national and international exhibitions as well as for the US Geological Survey and ESA, products such as large-scale panoramas (up to 12 m), 3D digital terrain models, lenticular images, and 3D stereo animations were prepared by our group. Currently our HRSC camera model is on loan to the technical museum of Vienna for the exhibition Space (Oct 2013 – Jun 2014). We are working on providing further material for interested exhibitors in the near future.

3. Exhibitions and Hands-on events

Our group supports educational outreach events and exhibitions to establish a regular communication with the public. High-quality print products as brochures, flyers and calendars complement our outreach efforts. Mars Express data workshops for students and post-

Figure 1: Examples for educational and public outreach activities a) anaglyph showroom at science fair "Lange Nacht der Wissenschaften", b) 3D terrain models and full-HD animations at Mars Vision and Mission exhibition, c/d) girls studying planets at the "Girls' Day"

docs as well as presentations of PR/EO activity at conferences and team meetings are regularly given.

The Mars exhibition "New views of our Neighbor Mars" was presented at the United Nations Headquarters in New York in 2007, and afterwards at FUB in 2008 with guided tours for kindergarten and schools classes. At the moment the exhibition "Mars Mission and Vision" which is on tour until 2015 through 20 German towns shows 3D movies and images of the HRSC camera experiment. It was especially created for families and kids, who can take part in an "astronaut camp". We provided digital terrain models and full-HD animations of the regions Nicholson crater, Hebes Chasma, Olympus Mons, Dao/Niger Valles, and Valles Marineris on Mars.

The "Girls' Day" taking place each year aims at motivating young girls aged 11-12 to study scientific disciplines. In 2014 the topic was entitled "Craters, Volcanoes and Co. – become a geologist on Mars". In a subsequent survey this popular event was highly evaluated, and many of the girls expressed their strong interest in that field.

Each year we prepare for the science fair "Lange Nacht der Wissenschaften" an extensive program including an anaglyph exhibition, a movie show of 3D animations, activities for families with children, and a planetary path showing the relative sizes and distances in our solar system. This path is the basis for a high-quality print we offer this year for the first time, comprising descriptions of the planets in our solar system, of the Moon and asteroids. For the coming years, a number of new activities and events to promote planetary sciences are planned.

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