MULTILINGUAL VIRTUAL GLOBES OF VENUS AND MARS

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A series of multilingual virtual globes has been made as the extension and continuation of the series "Multilingual Maps of Terrestrial Planets and the Moon" coordinated by the Commission on Planetary Cartography of the International Cartographic Association (ICA) (Shingareva et al. 2005).

Introduction

Virtual globes of a terrestrial planet - in our case Venus and Mars (Fig. 1.) - have several advantages over printed maps. To name a few of these: 1. They can give distortion-free view of the entire surface, 2. They can give more "realistic" views from planetary - spacecraft-based - perspective, and are best suitable for a "whole-planet" perspective 3.They can be used for better determining antipodal effects, 4. Craters: the most abundant circular object can be better visualized, 5. much studied polar areas are better visualized. This is an extension to our previous series of paper based, hand drawn planetary maps.

Objectives

The goal of this series is to provide an easily accessible multilingual planetary globe to university students with special focus to Central Europe, and the general public anywhere. The biggest problem of our printed series was the difficulties in distribution. This problem is not present in the online edition.

Methodology

Topographic Globe of Mars was made from MOLA topographic data. It was color-coded to yellowish-brownish colors, unlike NASA/USGS maps, to better resemble the natural colors of Mars and avoid colors of blue (with association to water) and green (with association to vegetation) (Hargitai, 2006). Photomosaic Globe of Mars has been made from MGS panchromatic images. Topographic map of Venus has been made using Magellan data.

All globes have an international (Latin) nomenclature and a local (in the first round, Hungarian) nomenclature. Explanations are added in the appropriate language.

The maps have been made using VRML language. The VRML code used for visualizing the globes was originally developed for the Virtual Globes Museum (Gede, 2009). The sphere is represented by six sub-surfaces: two for the polar regions stretching to the 50° latitude, and four segments for the remaining equatorial areas. Each surface has its own texture in the appropriate projection, which is Azimuthal Equidistant Projection for the polar caps and Equirectangular Projection for the equatorial areas. Several locations of interest are pre-set (as "viewpoints").

Results
The globes are made available through the internet in 2009, at http://planetologia.elte.hu.

Conclusions

The surface of Mars and Venus are best visualized in a 3D virtual reality which, in global scale, can be realized as virtual globes. One of the main goals of the Commission on Planetary Cartography of the International Cartographic Association is to create planetary maps to the general public, including but not limited to, students. Virtual globes are not only practical from both cartographic and planetary scientist's point of view but also attractive for the students and the not professionals with its special visualization and interactivity. Together with a detailed nomenclature and specially selected comments "printed" on the globes, they provide a good way of discovering these planetary surfaces.

References
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