



Source regions of Martian valley networks

R. Jaumann (1), D. Reiss (1), F. Scholten (1), K. Gwinner (1), T. Roatsch (1), K.-D. Matz (1), E. Hauber (1), V. Mertens (1), H. Hoffmann (1), G. Neukum (2), and The HRSC Co-Investigator Team

(1) Institute of Planetary Research, German Aerospace Center (DLR), Berlin, Germany; (2) Remote Sensing of the Earth and Planets, Freie Universitaet Berlin, Germany
(ralf.jaumann@dlr.de)

Martian valley networks have been cited as the best evidence that Mars maintained flow of liquid water across the surface. Although internal structures associated with a fluvial origin within valleys like inner channels, terraces, slip-off and undercut slopes are extremely rare on Mars (Carr and Malin, 2000) such features can be identified in high-resolution imagery (e.g. Malin and Edgett, 2001; Jaumann et al., 2005). However, besides internal features the source regions are an important indicator for the flow processes in Martian valleys because they define the drainage area and thus constrain the amount of available water for eroding the valley network. Furthermore, the morphology of the source regions and their topographic characteristics provide information about the origin of the water. On Mars valley networks are thought to be formed by retreating erosion where the water is supplied from the sub-surface. However, in some cases there is evidence for surface water supply indicating precipitation. The three dimensional highly resolved data of the High Resolution Stereo Camera (HRSC) on the Mars Express Mission (Neukum et al., 2004) allow the detailed examination of valley network source regions.

Carr, M. H., and M. C. Malin, *Icarus*, 146, 366-386, 2000; Jaumann, R., et al., *GRL* 32, L16203, 2005; Malin, M.C., and Edgett, K.S., *JGR* 106, E10, 23429-23570, 200; Neukum, G. et al, *ESA Special Publications SP-1240*, 2004.