

Planetary surface dating from crater statistics

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Planetary Sciences and Remote Sensing

Institute of Geological Sciences

Freie Universität

- 9:00** Welcome and introduction of the CraterSchool at FU Berlin (*T.Platz*)
- 9:05** Measuring the age of planetary surfaces using crater statistics (*G.Michael, talk*)
- 9:40** Dating of planetary surface units: correct utilisation of crater-size frequency determinations (*T.Platz,talk*)
CraterTools – update (*T.Platz,talk*)
- 10:30** Determination of CSFDs of selected units (*T.Platz, excercise*)
- 11:30** Tutorial of Craterstats (*G.Michael, talk*)
- 12:00** Lunch break
- 13:00** Modelling absolute ages using craterstats (*G.Michael/T.Platz, exercise*)
- 14:00** Crater size-frequency distributions – spatial randomness and clustering (*G.Michael, talk*)
- 14.30** Verifcation of CSFDs for randomness (*G.Michael/T.Platz, exercise*)
- 15:30** Additional exercises, user interactions, user requests
- 17:00** Adjourn



Gerhard Neukum



Greg Michael



Thomas Platz



Nico Schmedemann



Thomas Kneissl



Piotr Jodlowski

- How to use HRSCview
- Frequently asked questions
- Data usage policy
- Mars Express and HRSC
- FUB Planetology and Remote Sensing
- DLR Institute for Planetary Research
- ESA Planetary Science Archive
- HRSC at the NASA PDS node

- HRSCview: old version
- Software tools
- Level 4 datasets
- SRC mosaics (VICAR)
- SRC mosaics (PDS)
- HRSC mosaics
- MSL candidate landing sites

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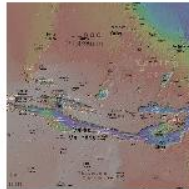
HRSC data explorer

HRSCview is a web interface to the Mars Express HRSC image archive at the Freie Universität Berlin. It carries out on-the-fly image subsetting, stretching, compositing through a footprint map, by coordinates or by image identifier. The site is provided jointly by the Freie Universität and the German Aerospace Center (DLR).

- 12.11.2008 New HRSC vicar2isis mapping group label conversion software
- 22.07.2009 New previews for archived level-4 image products
- 17.11.2009 HRSCview version 2. New SRC mosaics, improved user interface
- 17.12.2009 Added IAU place names for base map
- 13.01.2010 New MSL candidate landing sites added
- 24.09.2010 SRC mosaics in PDS format
- 24.09.2010 Four new HRSC DTM mosaics available for downloading (more to follow)
- 10.02.2011 New data release up to orbit 8312 (June 2010)

Archive status (highest released orbit): 8312 (levels 2 & 3, PSA), 5227 (level 4, PSA), 5289 (level 4 VICAR, HRSCview)

Select a coverage map or starting view:



Valles Marineris, labelled topographic map

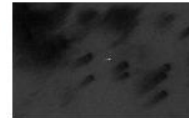
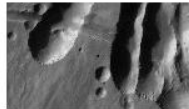


Image transmission defect "Bio Station Alpha", Acidal



Pit "Wendy", Arsia Mons



Crater near South Pole with internal deposit



Layered deposit, Terby crater (SRC overlay)



Niger Vallis

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Software tools

The following programs are available for working with HRSC data. Questions may be sent to the feedback address below. Additional resources may be found here:
[First Mars Express Data Workshop: Programme and Documentation](#)

Craterstats2

A revised program for plotting crater counts and determining surface ages using the techniques described in:

Neukum G., *Meteoritenbombardement und Datierung planetarer Oberflächen*. Habilitation Dissertation for Faculty Membership, Univ. of Munich, 186pp, 1983.

Michael G.G., Neukum G., *Planetary surface dating from crater size-frequency distribution measurements: Partial resurfacing events and statistical age uncertainty*, Earth and Planetary Science Letters, 294 (3-4), 223-229, 2010.

Michael G.G., Platz T., Kneissl T., Schmedemann N., *Planetary surface dating from crater size-frequency distribution measurements: spatial randomness and clustering*, Icarus, 2011.

Able to plot isochrons in cumulative, differential, R-plot and Hartmann presentations, and to make fits to differential data as well as cumulative. Hartmann-style piecewise production functions may also be used.

2012-06-07 Includes an additional program module to perform spatial randomness/clustering analysis.

The software requires installation of the free IDL virtual machine, and runs on all common platforms.

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Previous version: Craterstats

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[Manual](#)

CraterTools

An ArcGIS toolbar for map-projection-independent crater size-frequency determinations, described in:

Kneissl T., van Gasselt S., Neukum G., *Map-projection-independent crater size-frequency determination in GIS environments — New software tool for ArcGIS*, Planetary and Space Science, 59 (11-12), 1243-1254, 2011.

The software requires an ArcGIS 10.x installation on Windows7 or Vista. For support contact Thomas Kneissl.

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