

Current and future data and services at ESA's Planetary Science Archive: from a peanut to the spherical duck

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ESA's Planetary Science Archive
psa.esa.int

The PSA hosts science data from ESA's planetary missions (and from some European instruments flown on non-ESA missions), 75 TB from 8 missions and more than 80 instruments.

The Planetary Science Archive

cassini
huygens

chandrayaan-1

exoMars 2016

giotto

mars express

rosetta

smart-1

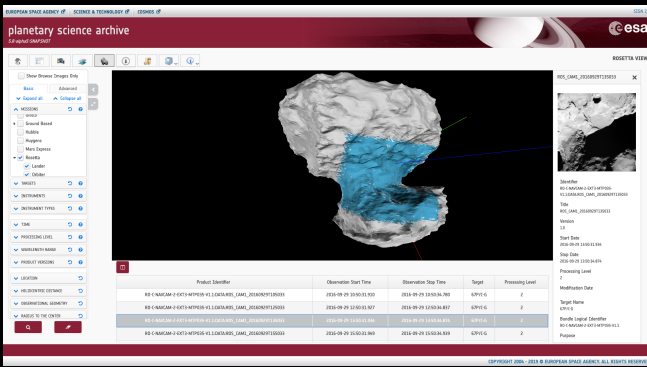
venus express

Future Archives

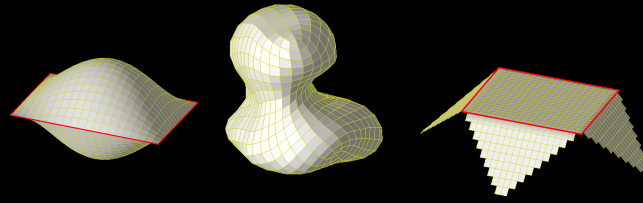
bepicolombo

exoMars RSP

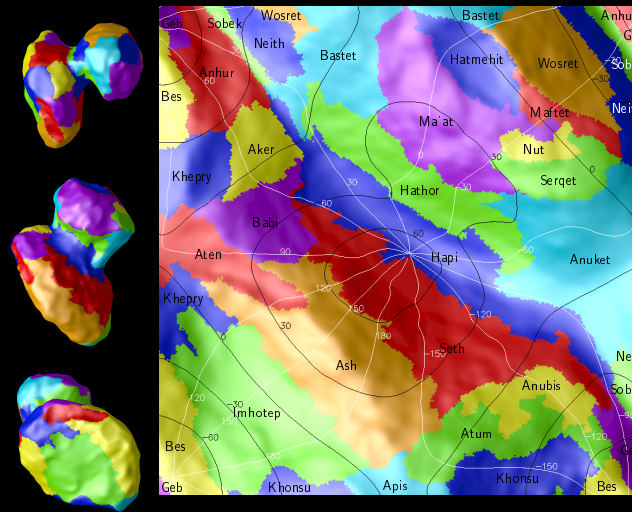
A 3D view for Rosetta facilitating data product search is under development.



The Quincuncial Adaptive Closed Kohonen (QuACK) map

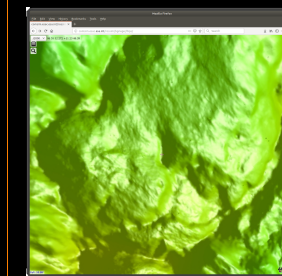
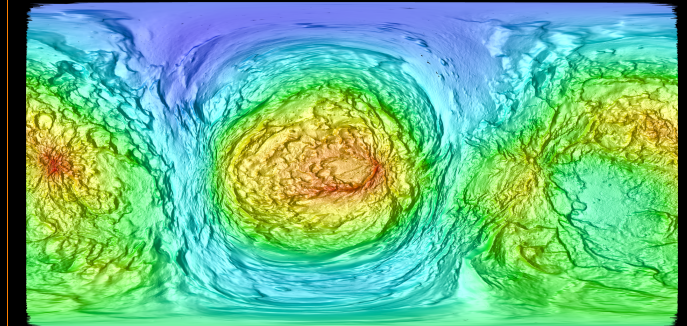
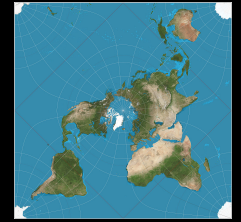


Standard global map projections cannot display the complete surface of comet 67P/Churyumov-Gerasimenko because of the overhung areas, where latitudinal coordinates become ambiguous. Here, we create the Quincuncial Adaptive Closed Kohonen (QuACK) map by combining two square grids into an inherently closed structure. The QuACK map is fitted to the shape like a common rectangular Kohonen map. The adaptive map “learns” the shape from randomly presented sample points.



The Spherical Duck

The QuACK map is topologically equivalent to the Peirce quincuncial projection of the world. Therefore, we can define unambiguous generalized latitudinal coordinates by associating the two maps. We project the high resolution SHAP7 shape model onto the QuACK map and display it in generalized equidistant cylindrical projection.



This enables us to apply multi-resolution methods designed for spherical bodies — like the Hierarchical Progressive Survey — to the irregular shaped comet 67P.

Aladin HiPS demo of the spherical duck

