

CraterTools - Update

Thomas Kneissl, Thomas Platz, Greg Michael, Nico Schmedemann

Planetary Sciences and Remote Sensing

Institute of Geological Sciences

Freie Universität Berlin

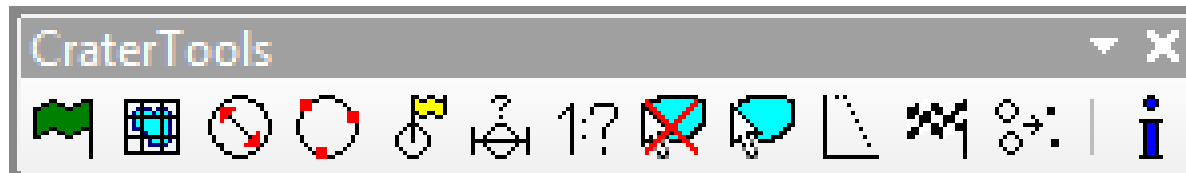
2009



2012



released



create area and
crater shapefiles

crater
mapping with
2 or 3 points

counting area
selectable/un-
selectable

export crater
counts as txt
file



generate
grid

flag
individual
craters

scale
bar

pre-set
scale

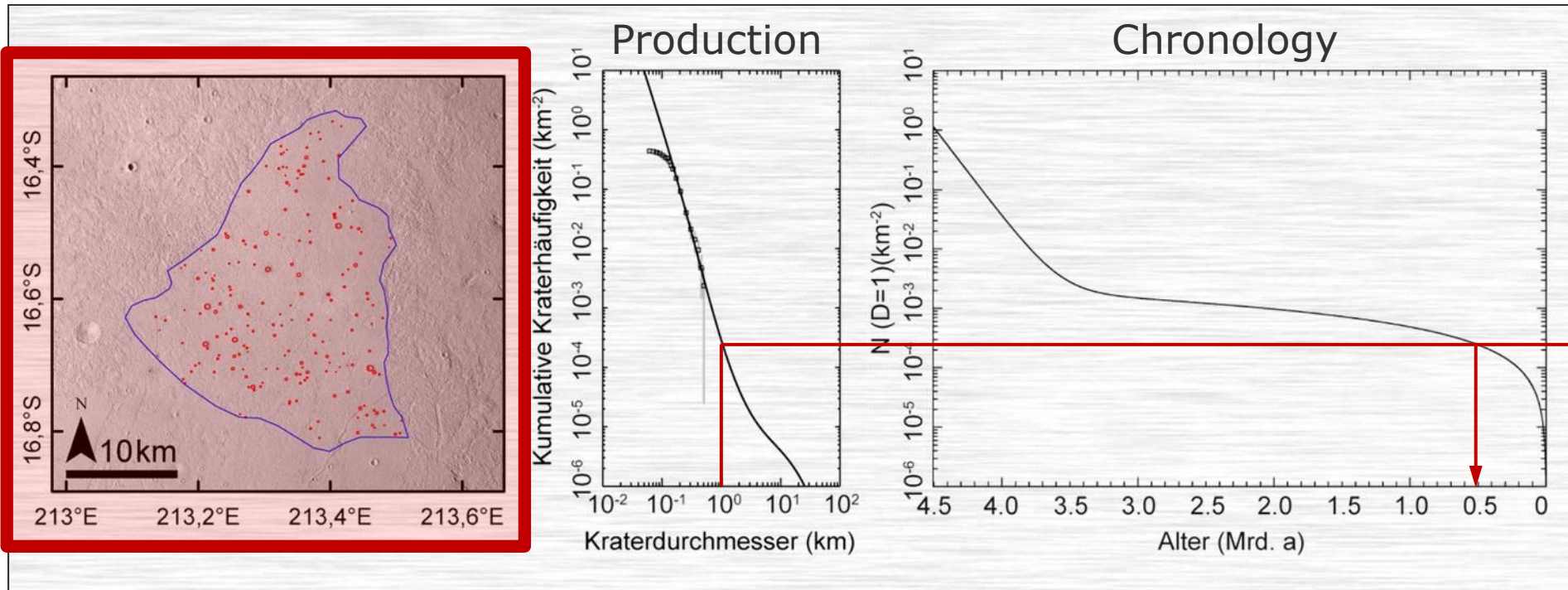
add crater
at given D
and lat/lon

import
craters/
areas from
.scc file

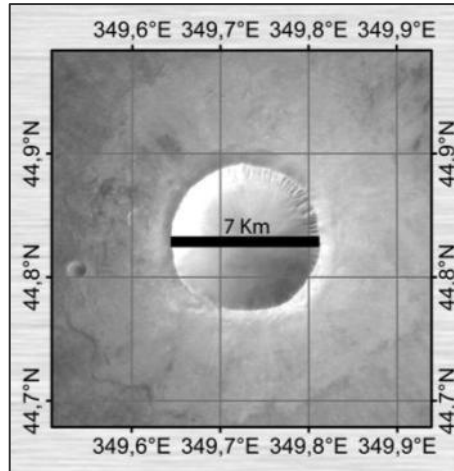
preview
plot

export
centre
points

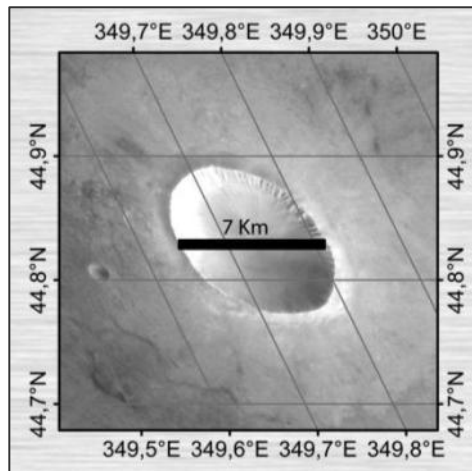
buffered
crater
counts



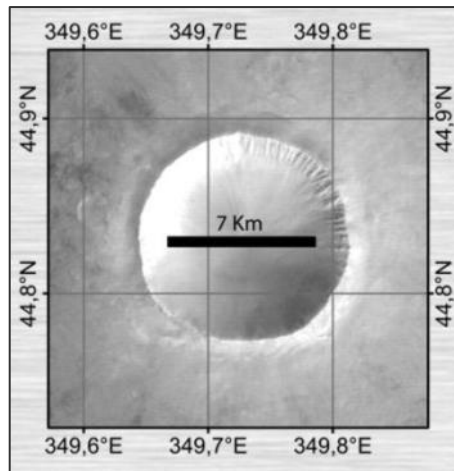
Sinusoidal centred
at crater centre



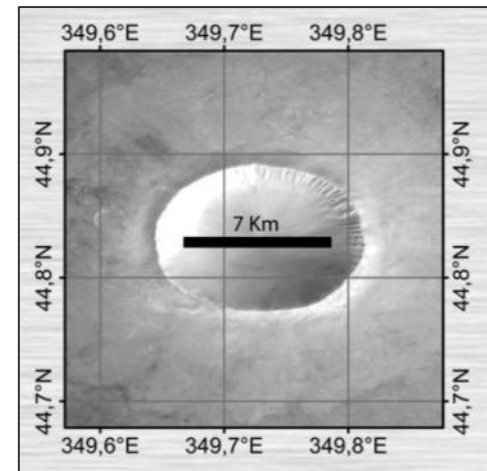
Sinusoidal

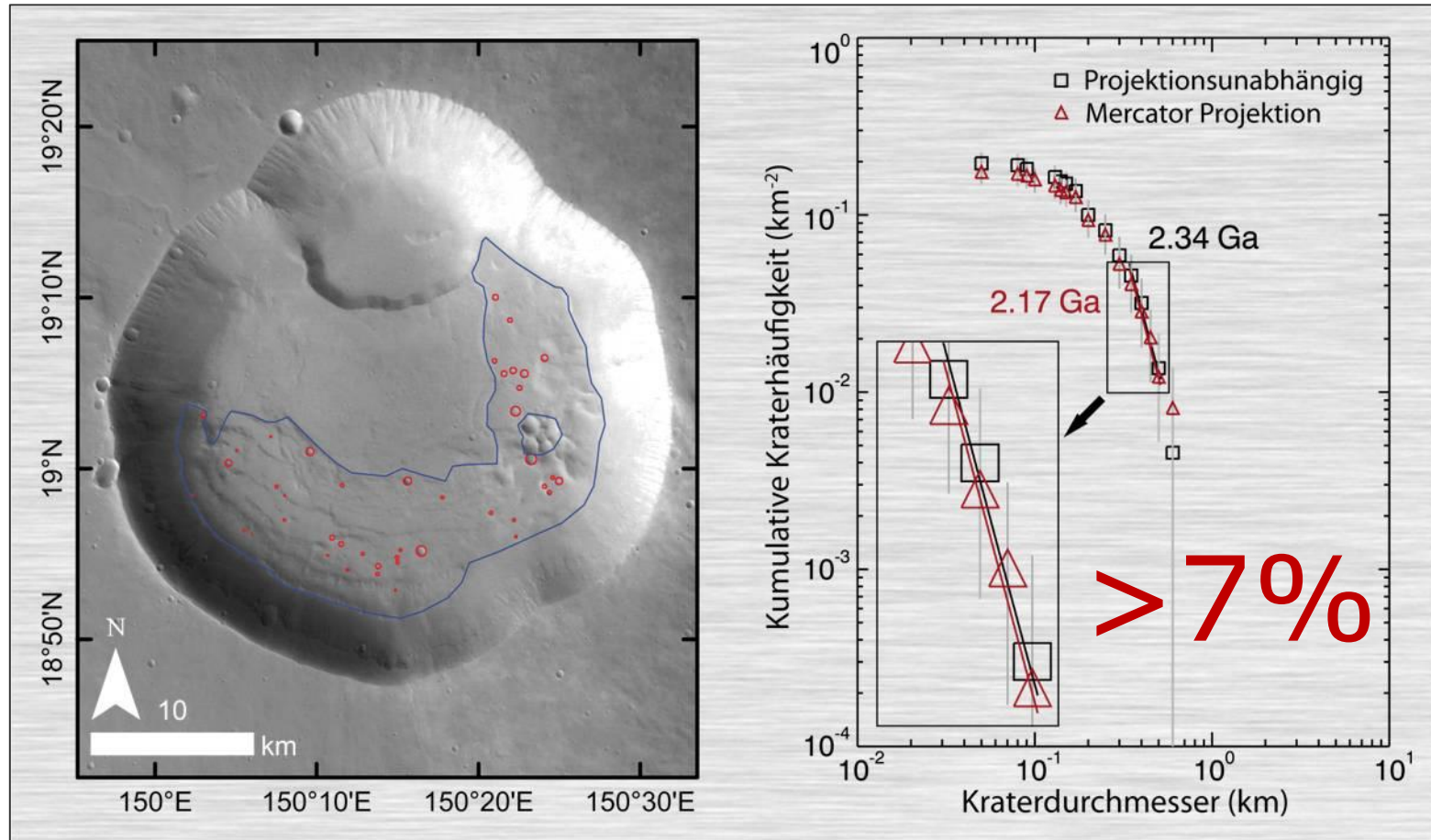


Mercator

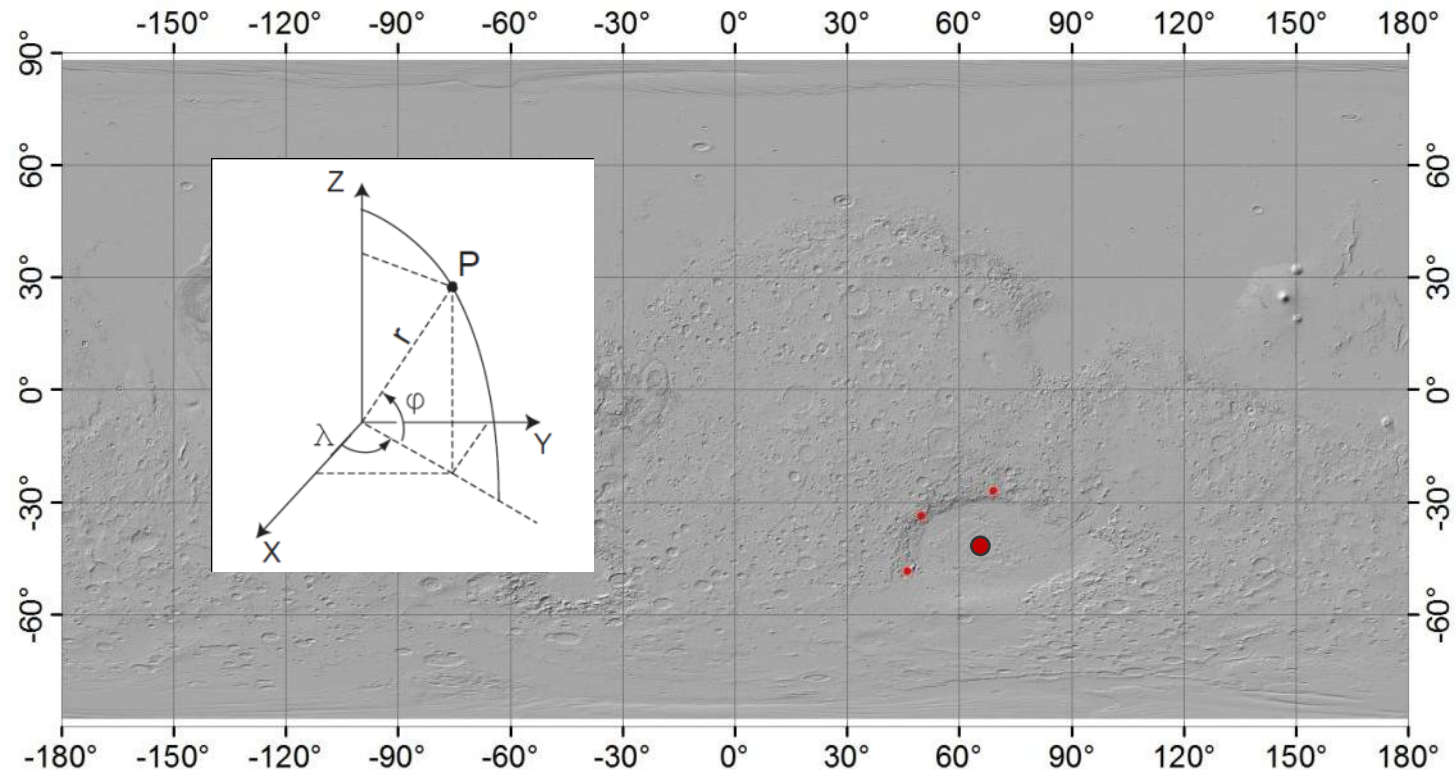


Simple Cylindrical

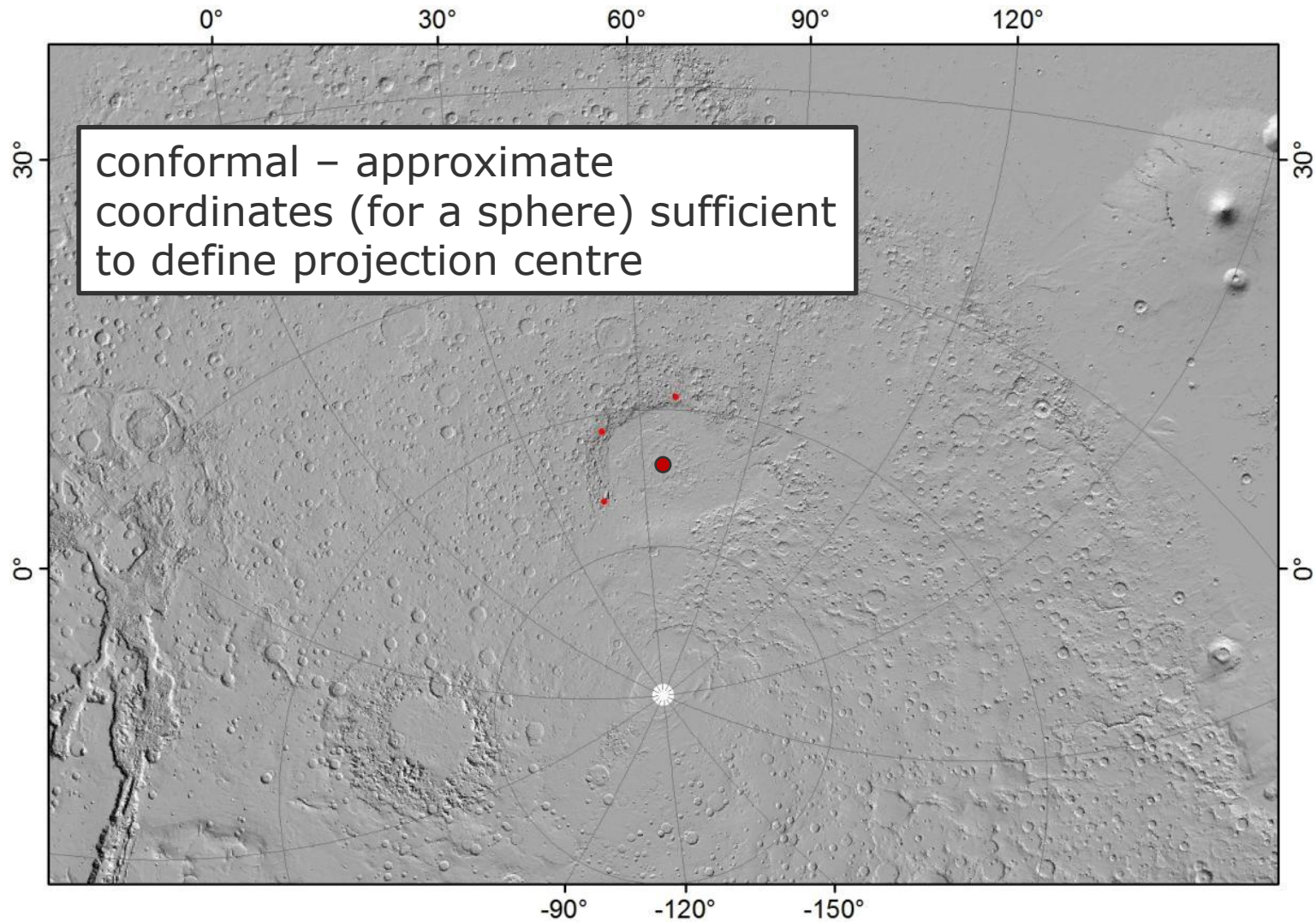




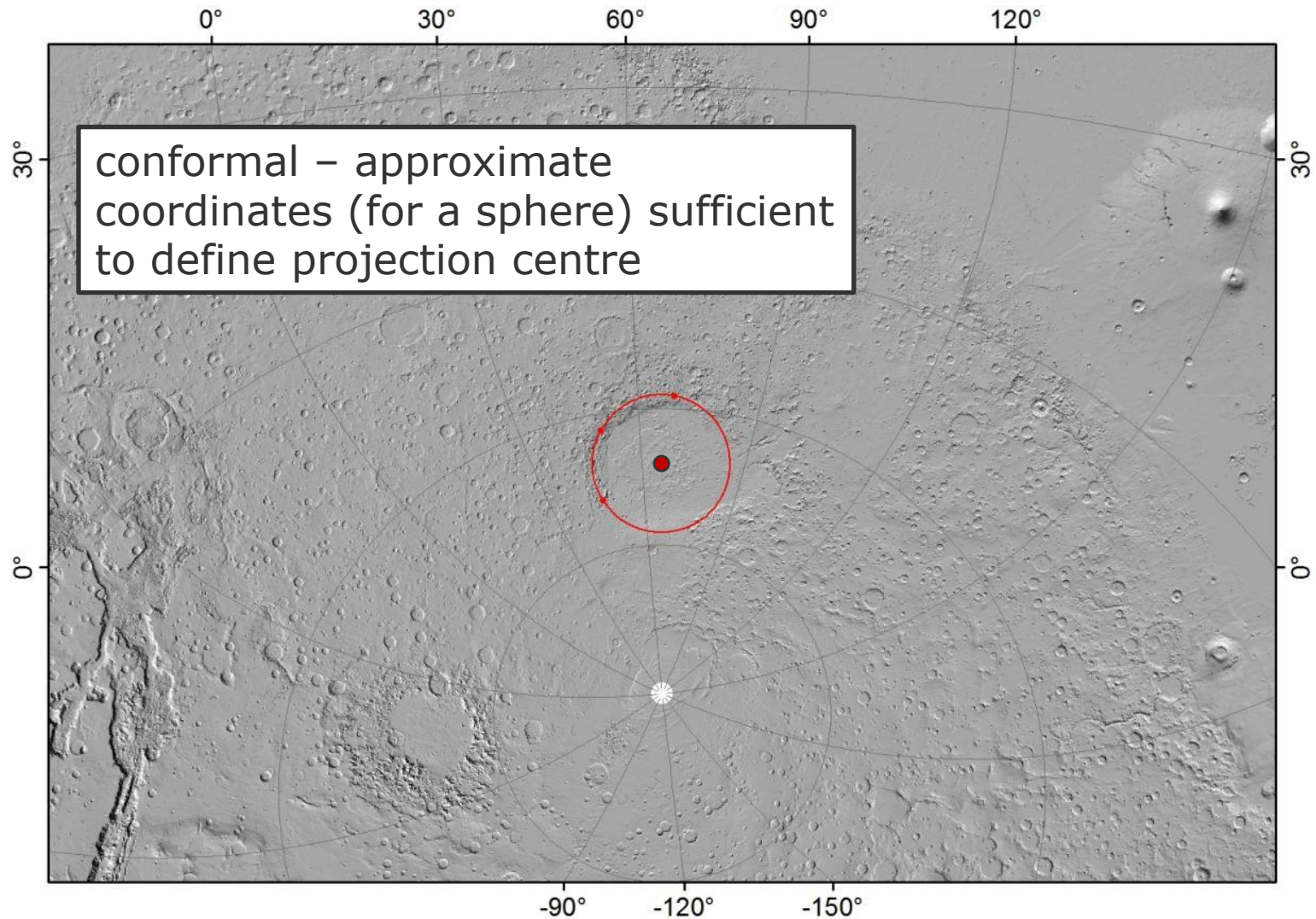
HRSC h0032_0000



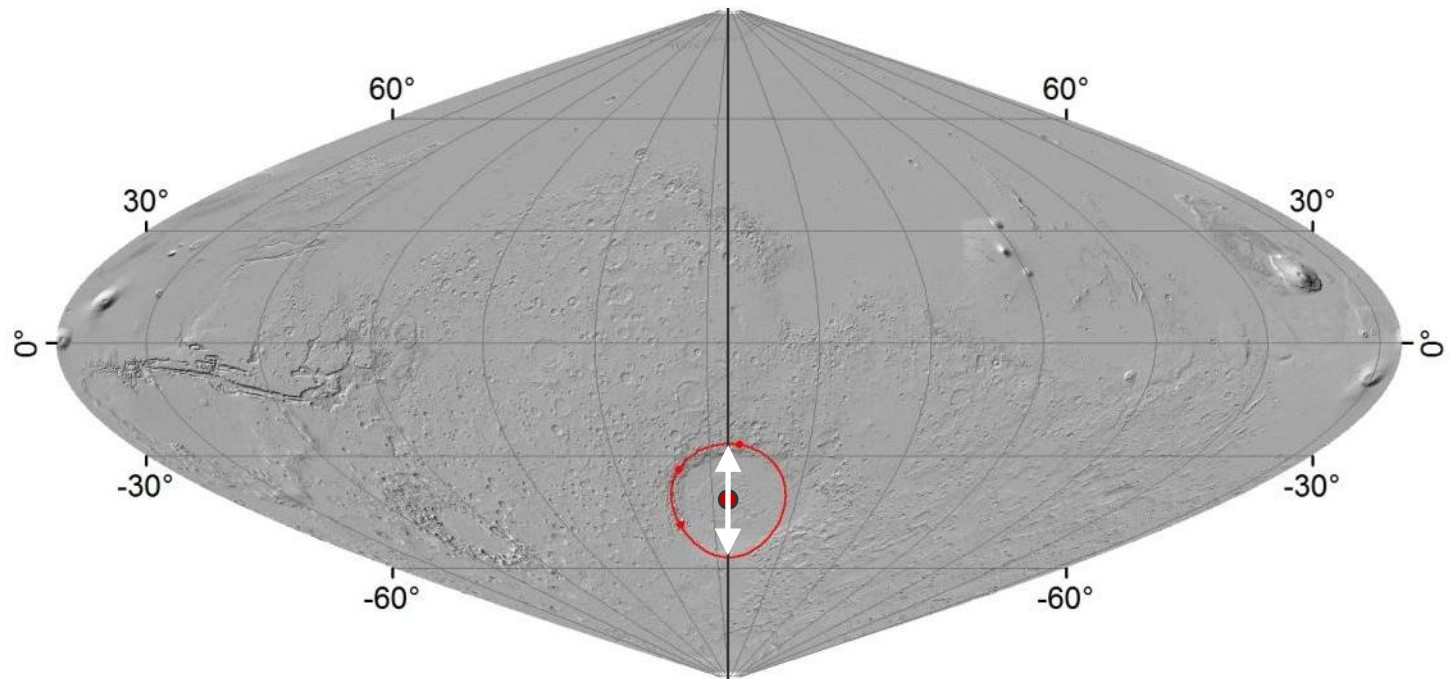
Stereographic Projection – Conformal

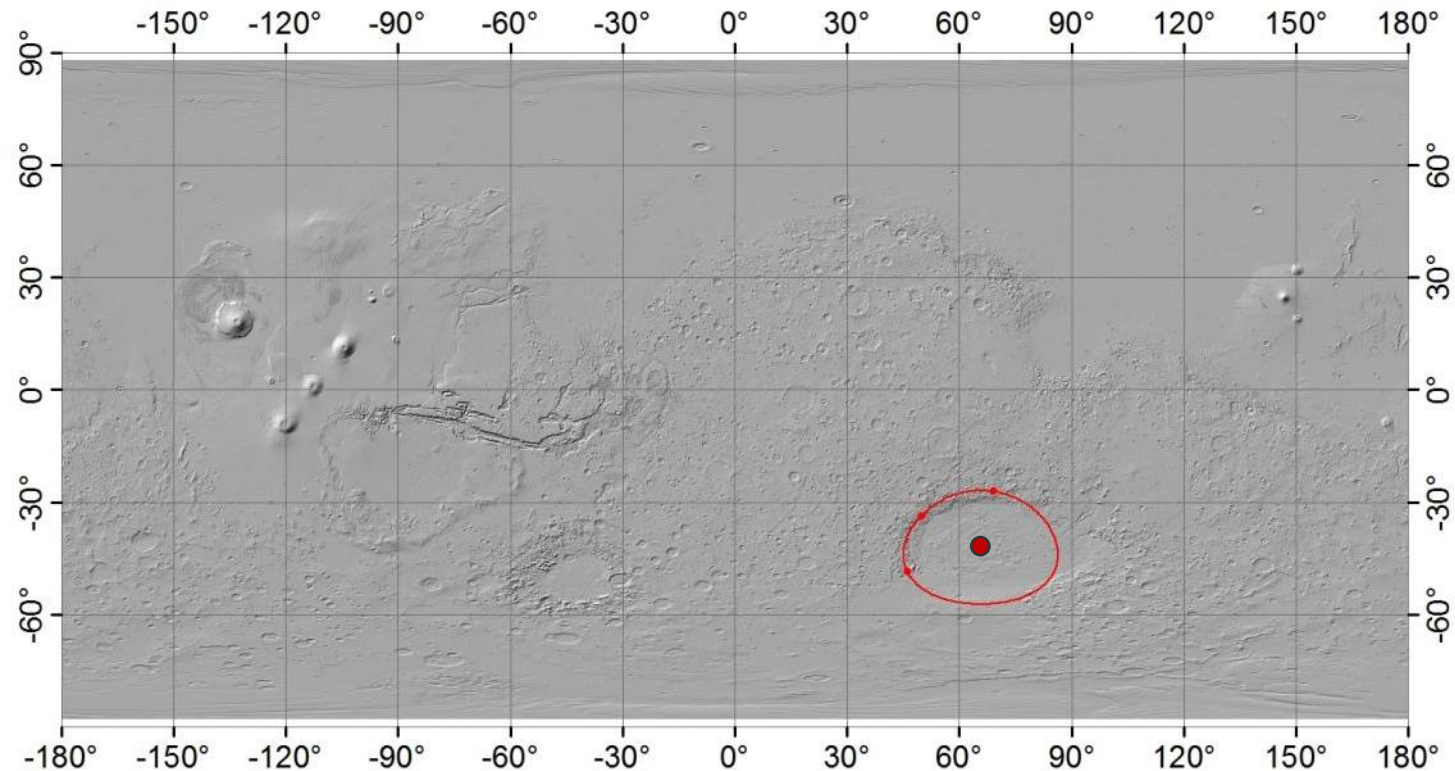


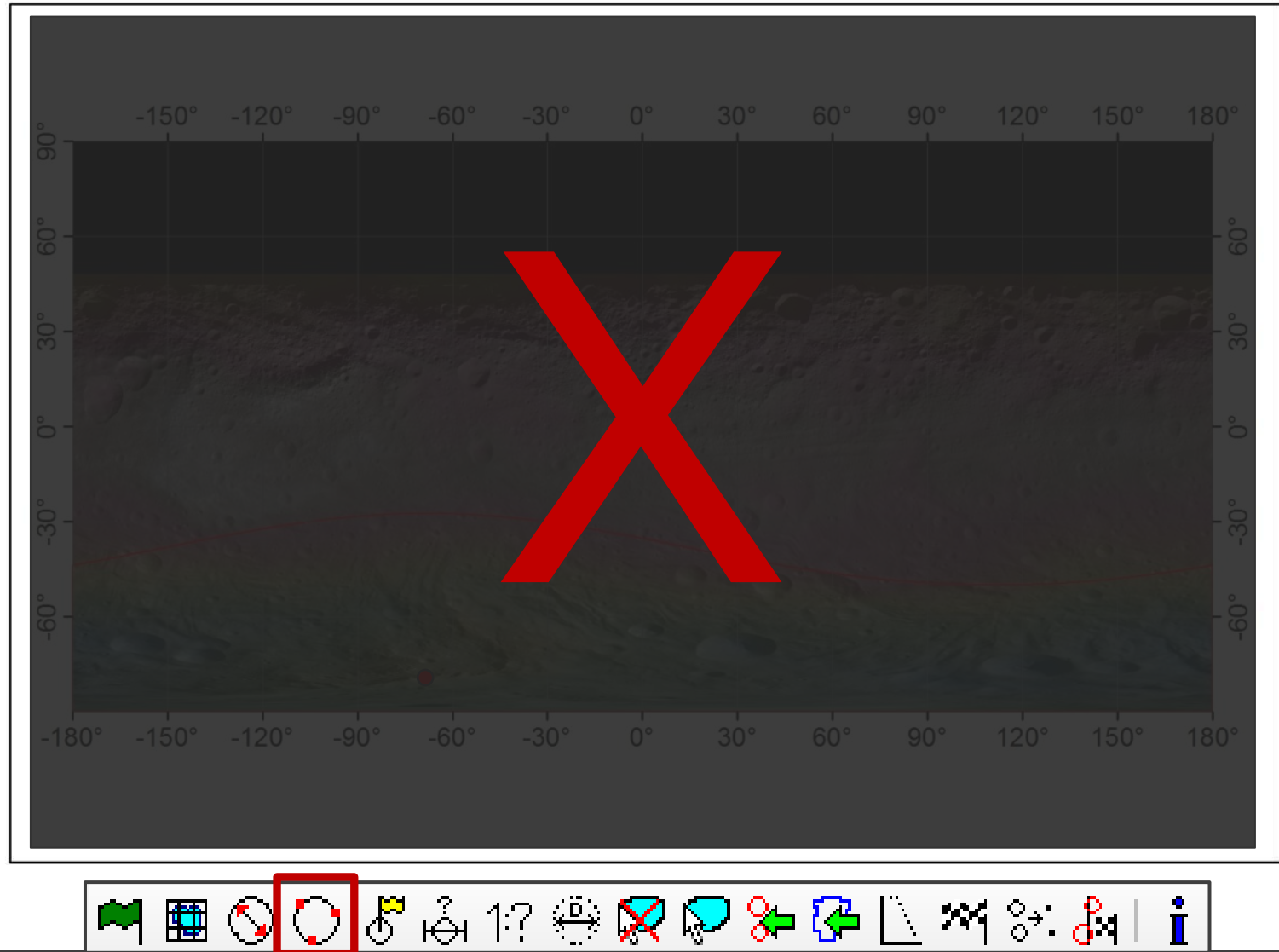
Stereographic Projection – True Angles



True distant along central
meridian
=> diameter in Y-direction

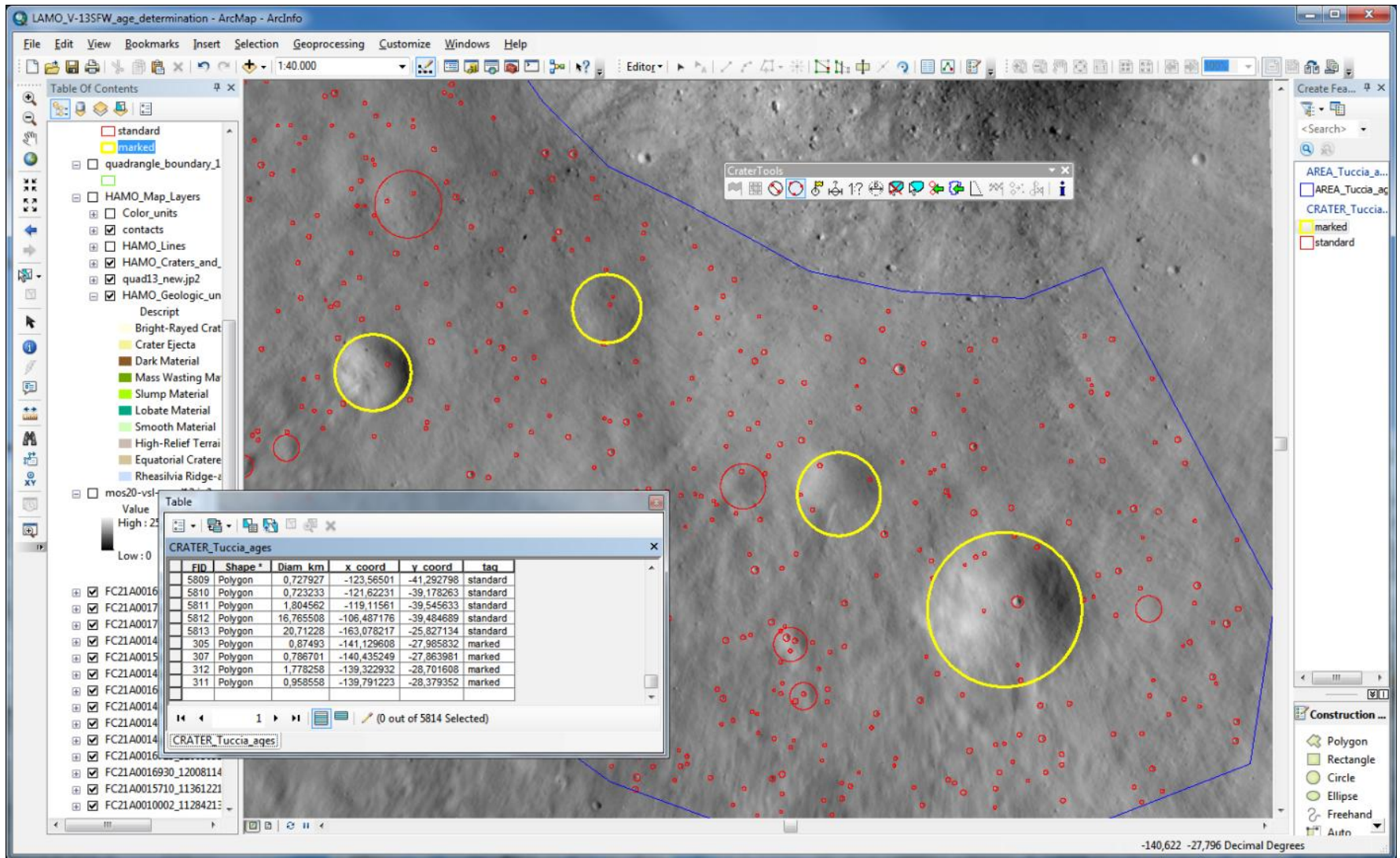


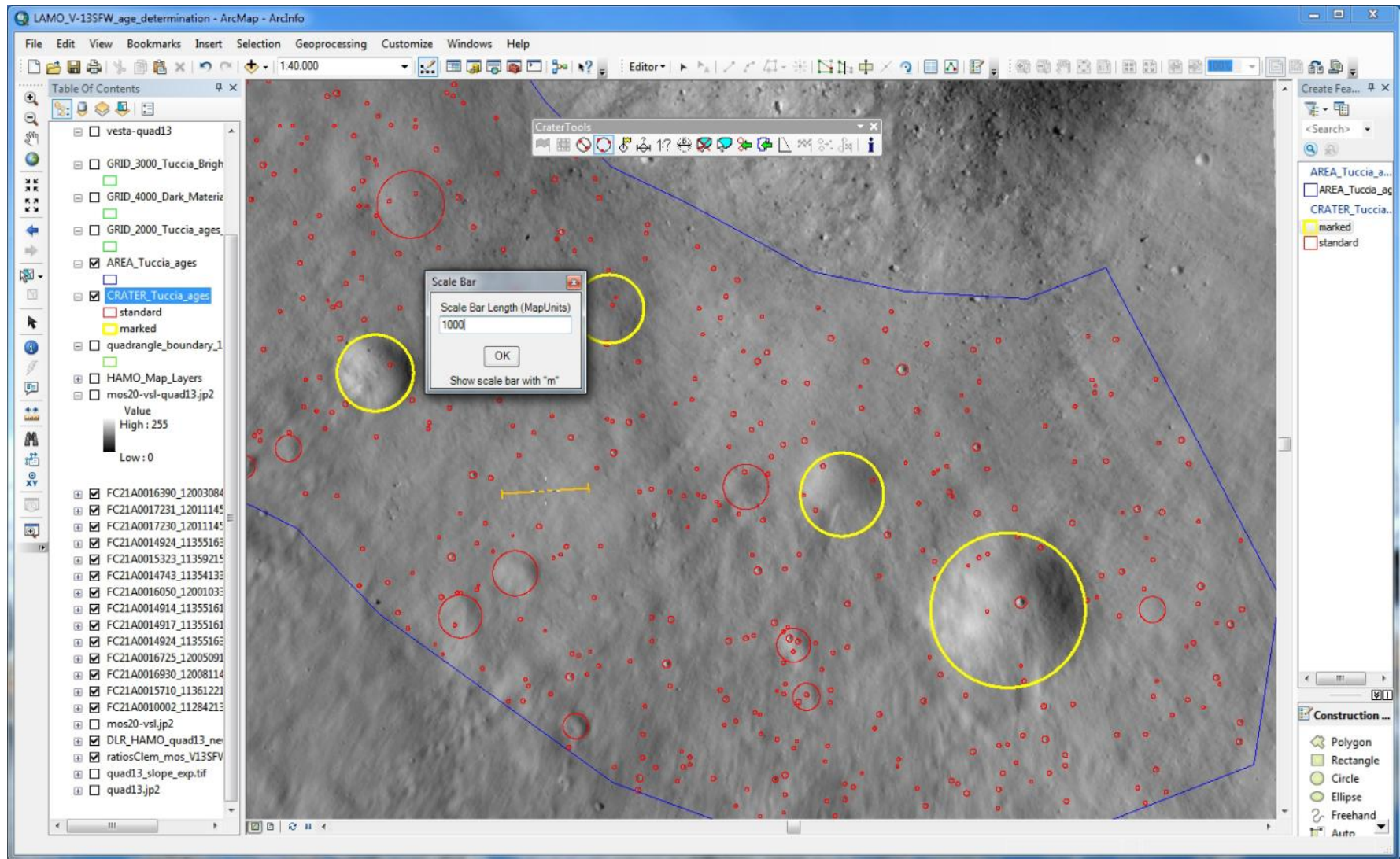


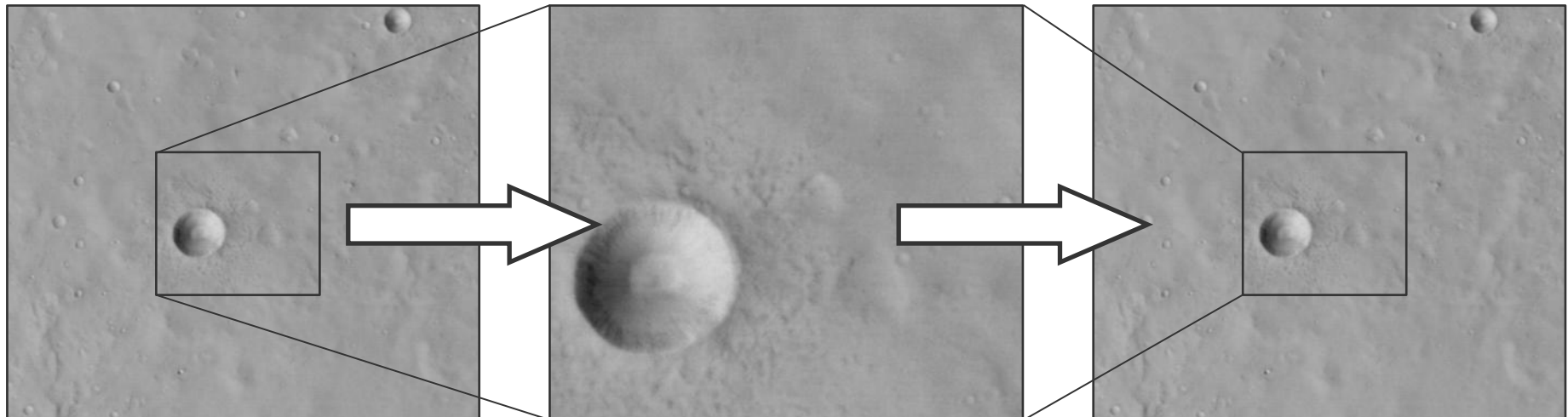
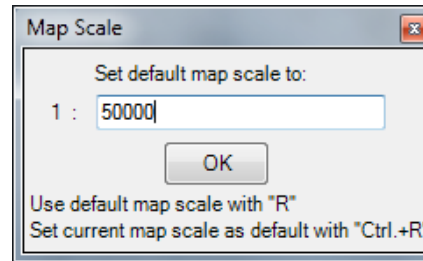


Utilisation of an Azimuthal Equidistant projection
to derive shape and diameter

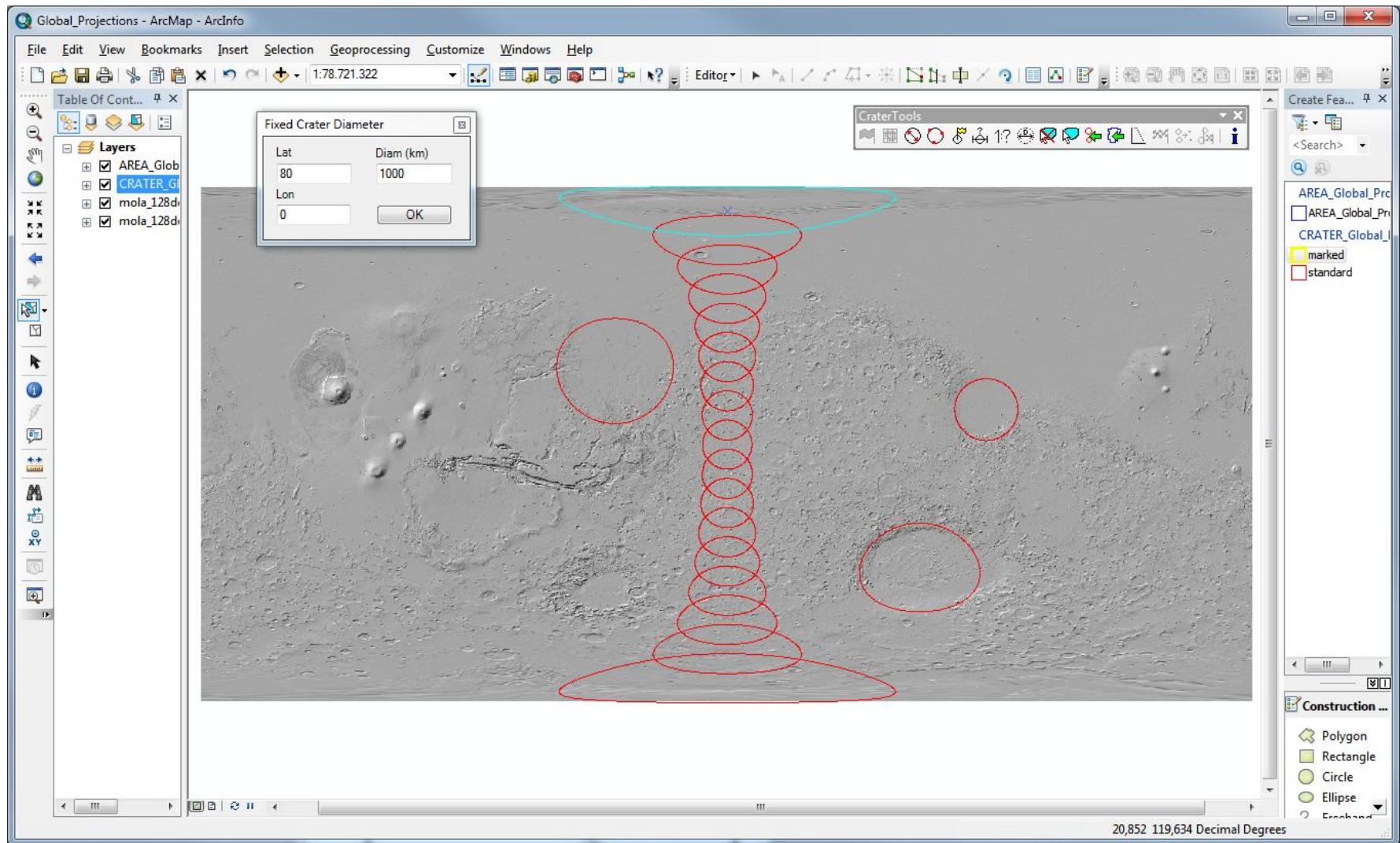
Marking Questionable Craters

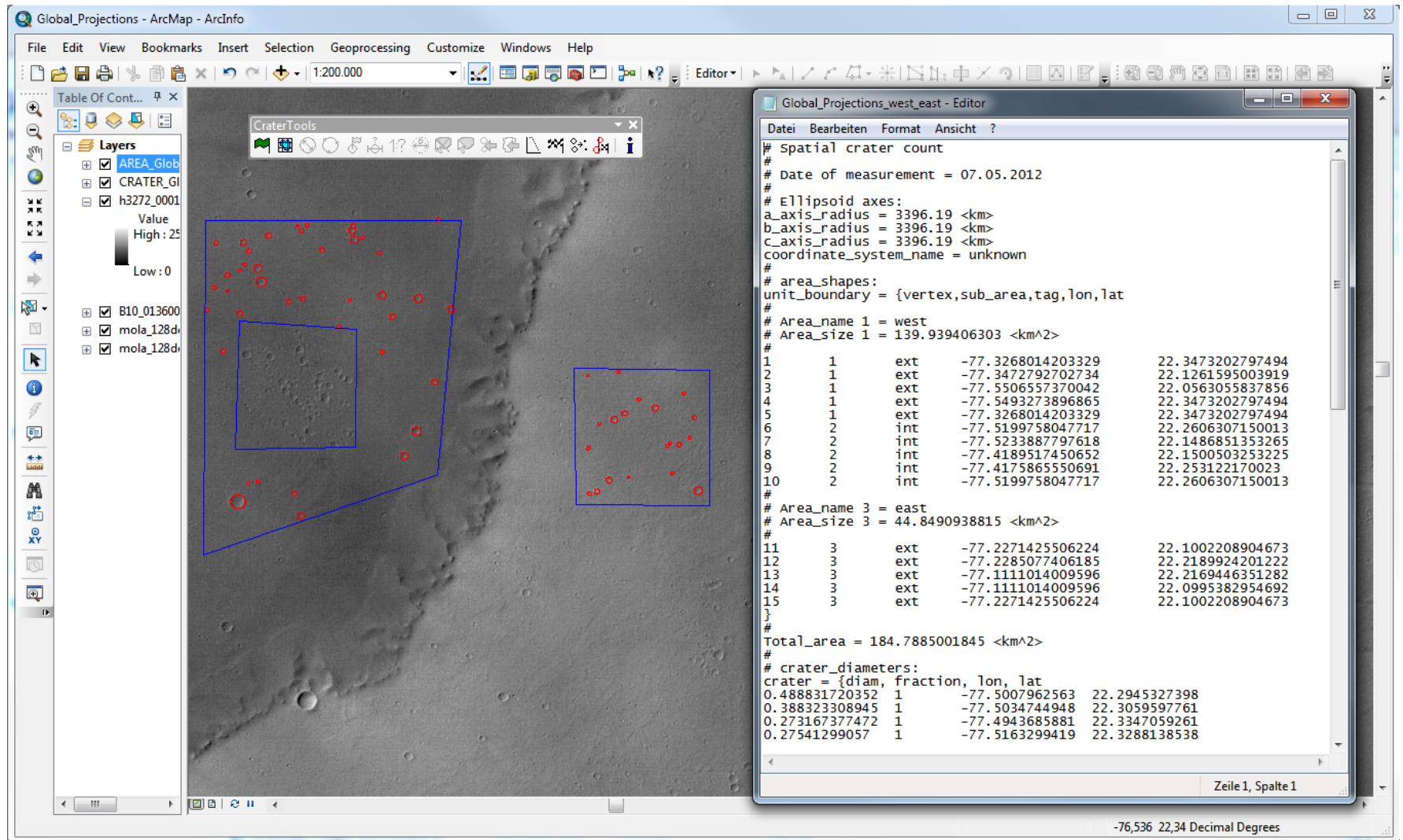


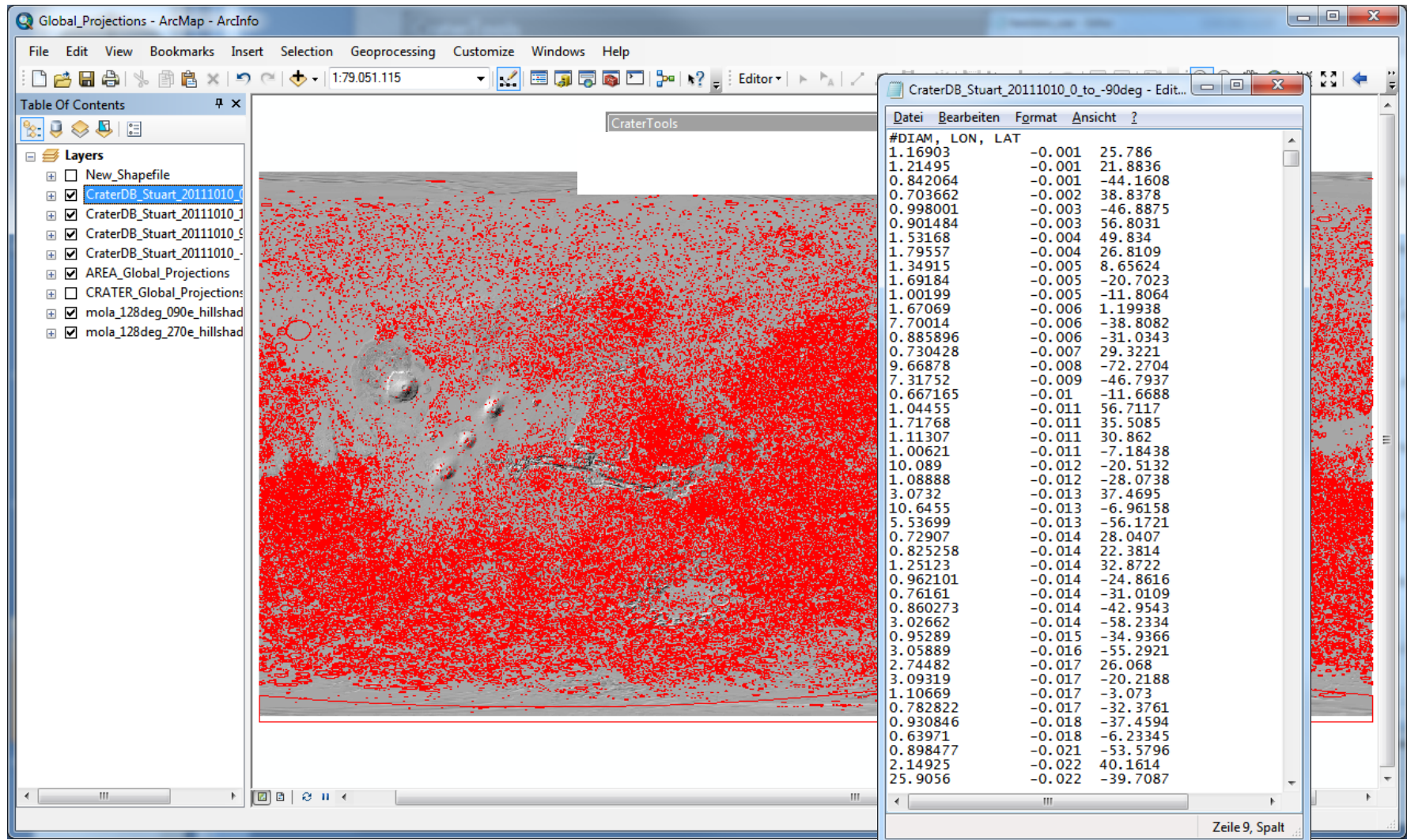


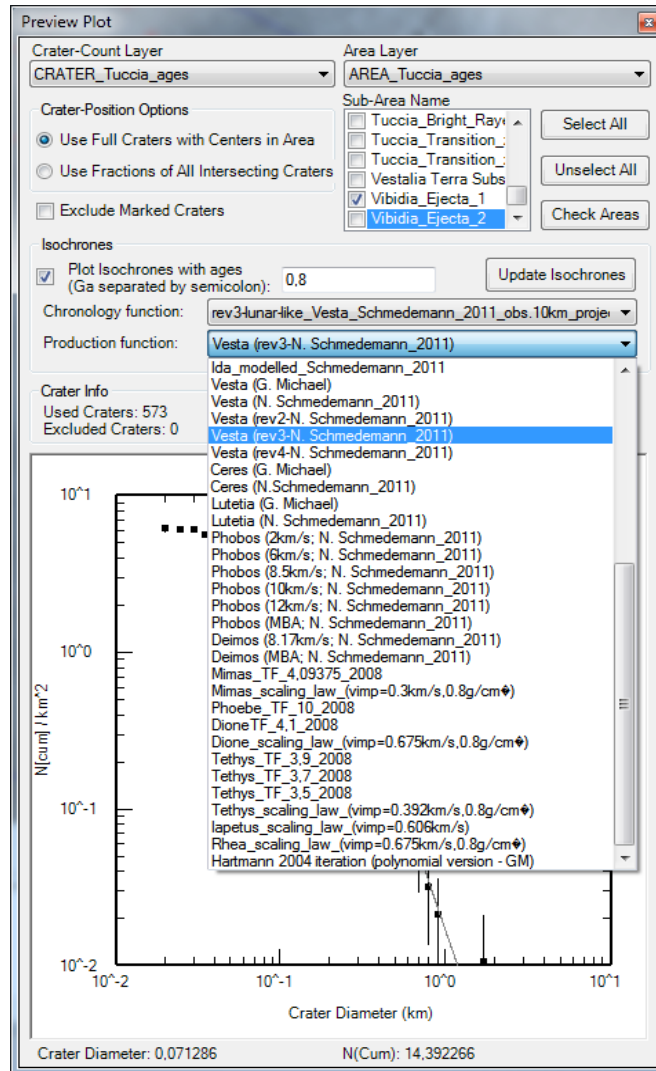


Adding Pre-defined Craters









CraterStats file „functions_user.txt“
Copy to:
C:\Program Files (x86)\Common
Files\ArcGIS

```
# Add your own production functions here

# Production function 1
object = production
name='lunar_impactors_vimp=21km/s,rho_p=3.4g/cm^3'
coefficients=[-5.4071,-1.1244,-0.32598,-0.93679,-0.017785,0.30308,0.099706,0]
range=[0.01,30.]
end_object = production

# Production function 2
object = production
name='Gasptra, after Ivanov (2001)_corr._v=5_Pi=2.8E-18'
coefficients=[-2.5477,-2.9914,0.39275,0.38137,0.03362,-0.085849,-0.022391,0]
range=[0.01,500.]
end_object = production

# Production function 3
object = production
name='Gasptra, after Ivanov (2001)_corr._v=4.6_Pi=3.6E-18'
coefficients=[-2.6044,-2.9751,0.41354,0.38153,0.027955,-0.086639,-0.023516,0]
range=[0.01,500.]
end_object = production

# Production function 4
object = production
name='Ida_modelled_Schmedemann_2011'
coefficients=[-2.6945,-2.9814,0.4562,0.46347,0.0010624,-0.14221,-0.0069263,0]
range=[0.01,500.]
end_object = production

# Production function 5
object = production
name='Vesta (G. Michael)'
coefficients=[-2.8637,-3.13649,0.429332,0.531151,0.0897746,-0.158031,-0.074,0]
range=[0.00567168,500]
end_object = production

# Production function 6
object = production
name='Vesta (N. Schmedemann_2011)'
coefficients=[-2.9348,-3.1294,0.46838,0.57316,0.072025,-0.20769,-0.076061,0]
range=[0.00380141,500]
end_object = production

# Production function 7
object = production
name='Vesta (rev2-N. Schmedemann_2011)'
coefficients=[-3.1045,-3.0796,0.52201,0.67227,0.12169,-0.32563,-0.1484,0.07]
range=[0.00380141,500]
end_object = production

# Production function 8
object = production
name='Vesta (rev3-N. Schmedemann_2011)'
coefficients=[-3.1643,-3.0382,0.5445,0.67305,0.11447,-0.34186,-0.15077,0.07]
range=[0.00380141,500]
end_object = production
```



-
- Figure 1 consists of two panels. Panel (a) shows a network of neurons, represented by red circles of varying sizes, connected by gray lines representing axons. Some neurons are enclosed in white circles. Panel (b) is a zoomed-in view of a neuron (red circle) and its axon (gray line) within a green rectangular region. The axon is labeled with 'D' and 'w'.





Latest functionality is still being tested

- Determination of crater densities per unit area of planetary surfaces
 - => measuring exposure age of a surface
- Crater counting and analysis tools are provided by FU Berlin and constantly improved and updated
- Human errors:
 - Mapping planetary surfaces
 - Counting (area selection, crater identification)
 - Analysing data (setting fit range, resurfacing)
 - Interpreting data



Lava flow in the Syrtis Major Volcanic Province

What is the formation age of the lava flow??

