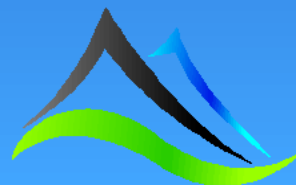


Effect of topography on magnetic intensity

ExploreGeo Technical Note 4



Explanation

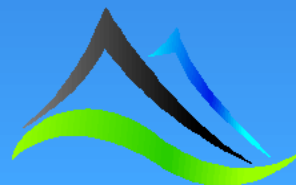
The magnetic response of an area is affected by the topography.

A hill will appear as an additional magnetic source, distorting the field from what would have been recorded over a flat earth. This value will change as a function of both terrain clearance (TC) and the inclination of the magnetic field. We can observe in the next slides that the TC will mainly have an effect on the wavelength, while the inclination will effect the amplitude and phase of the anomaly.

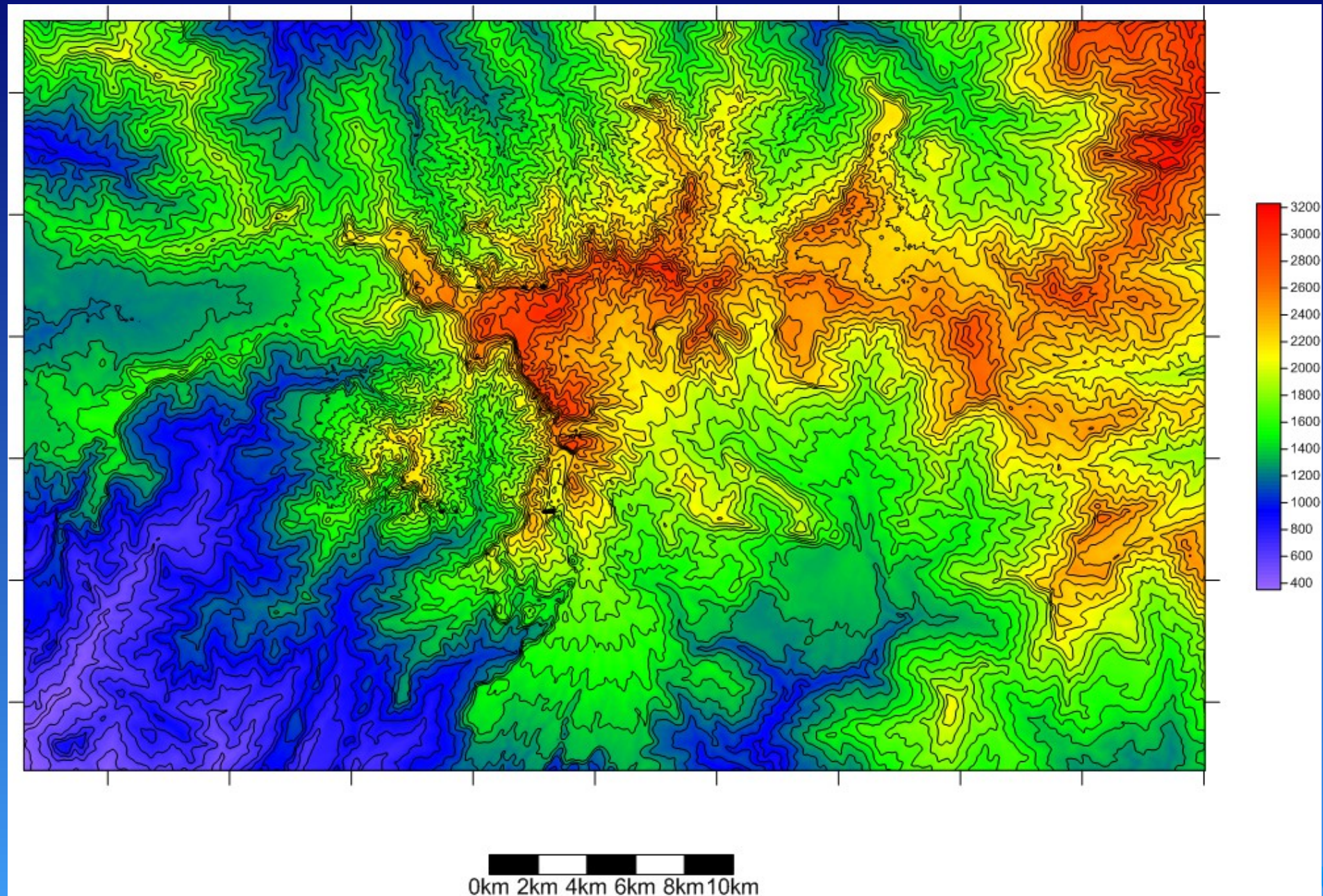
In modelling this effect we have only changed the TC and the inclination. Forward models use a homogeneous earth susceptibility of 0.01 SI.

The mesh is composed of 100m x 100m x 50m voxels.

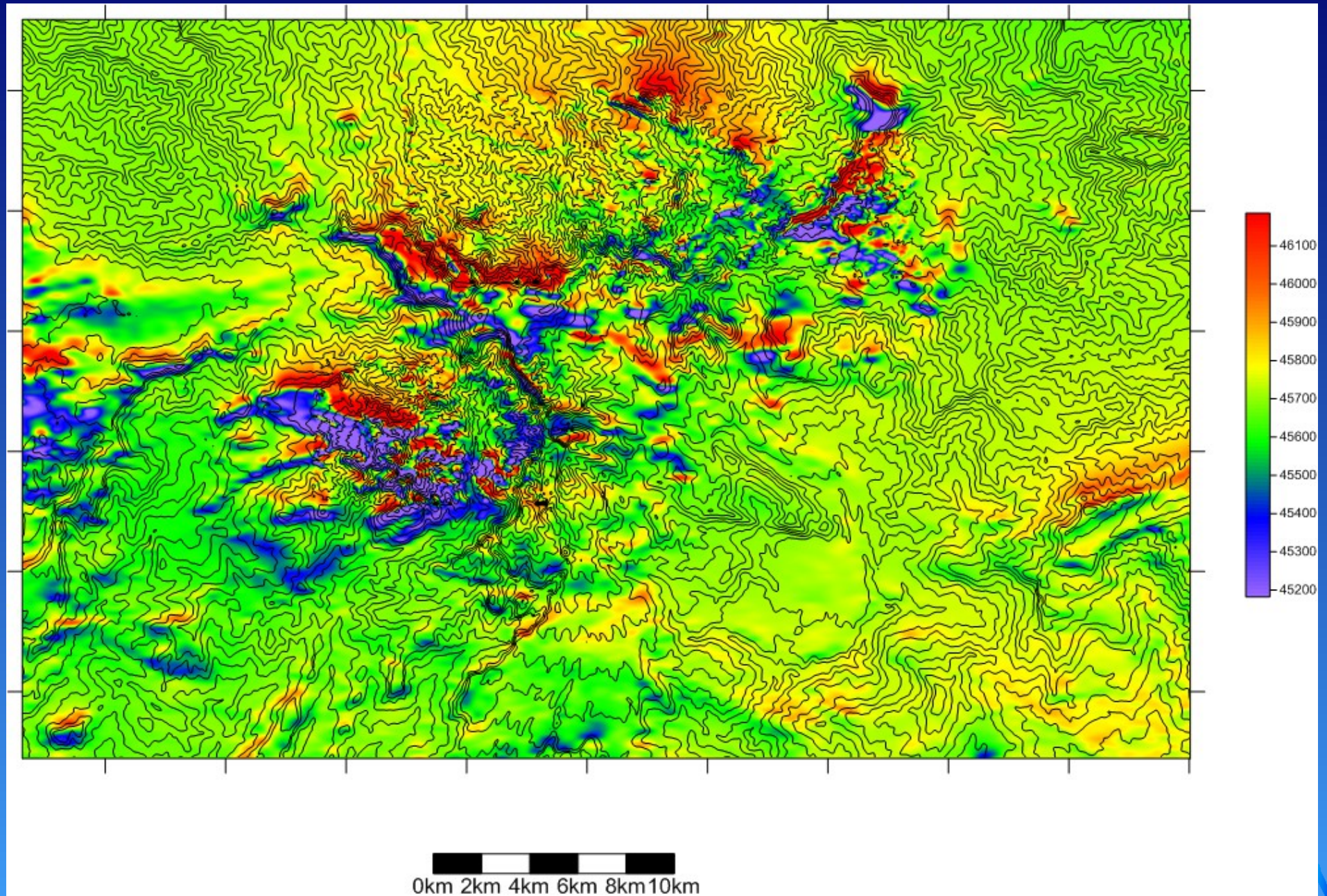
All magnetic images use linear colour scales with a clip of 1%.



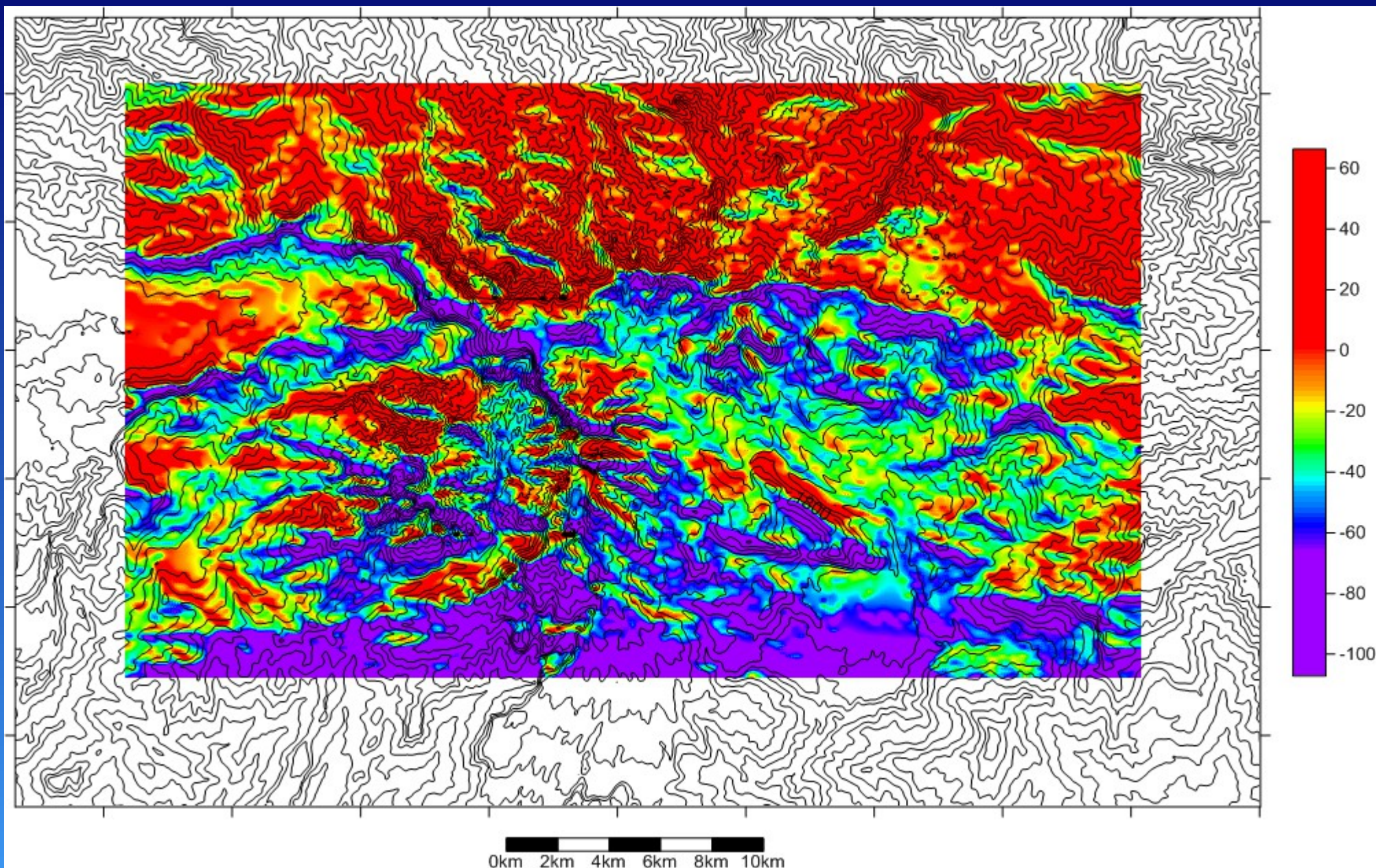
Topography of the area



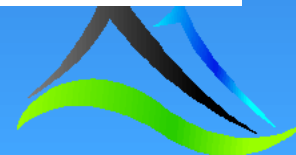
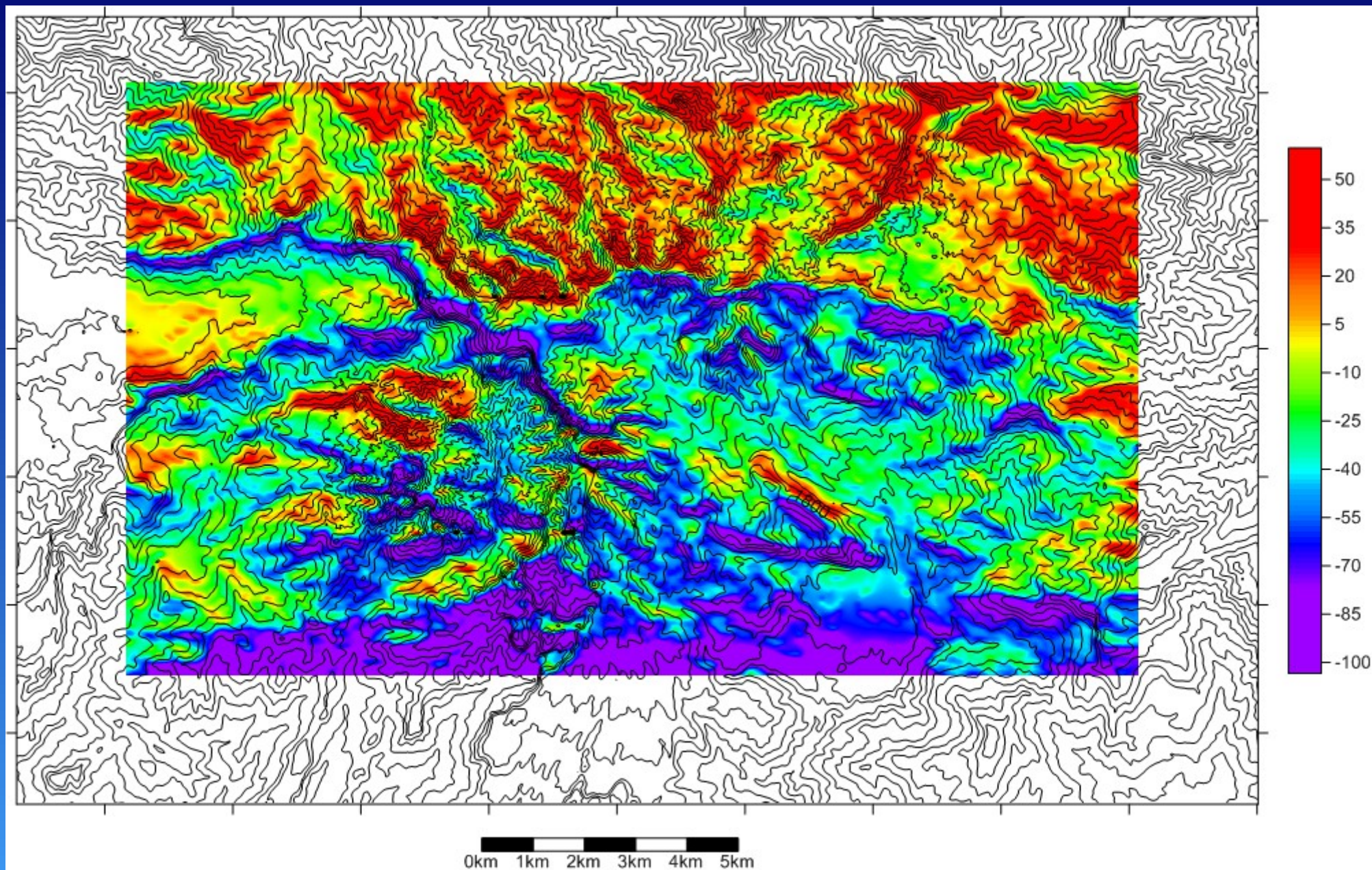
Observed Total Magnetic Intensity Image with Topo contours



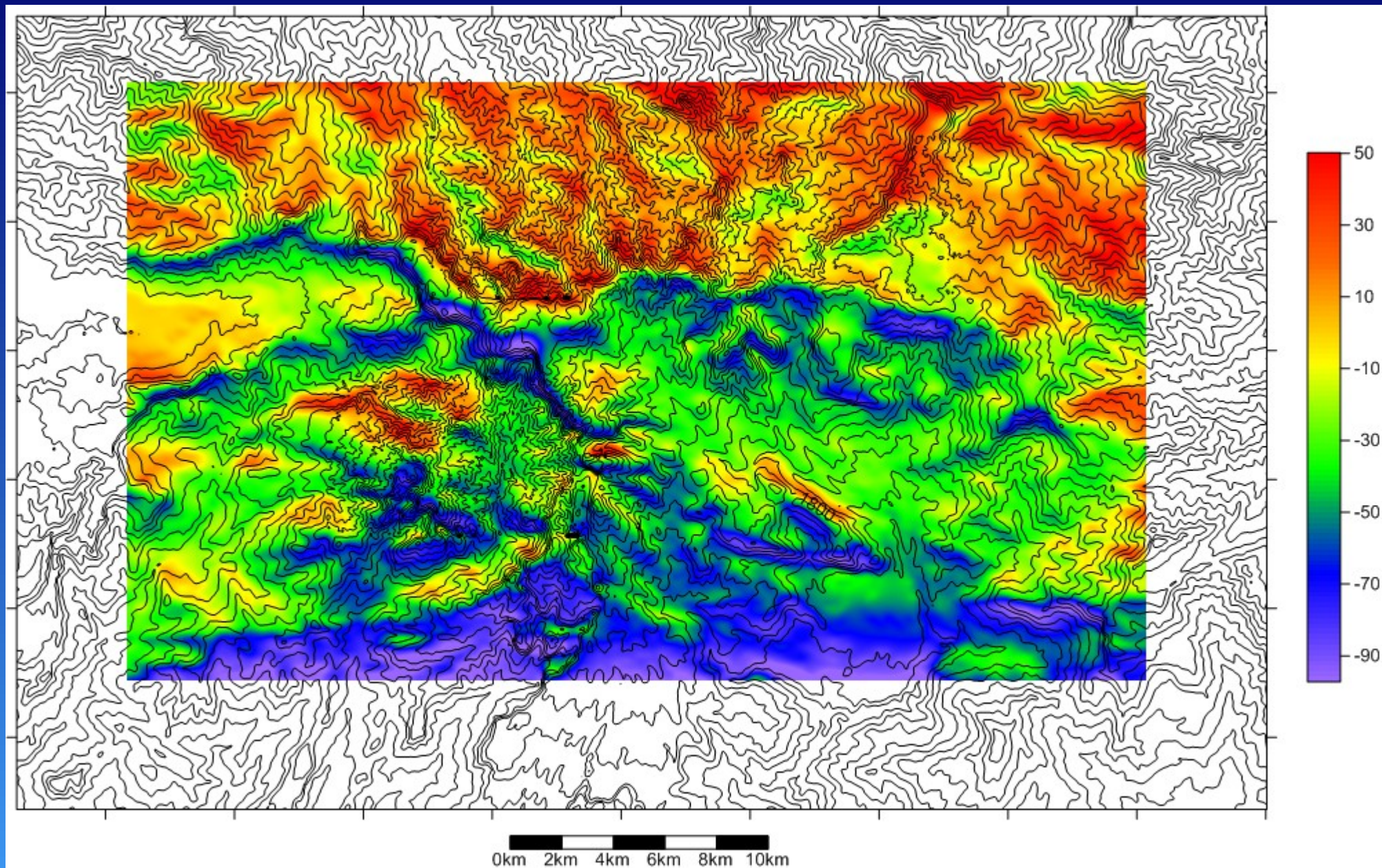
Forward models : Inclination -28° - TC 50m



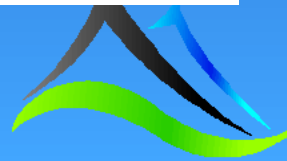
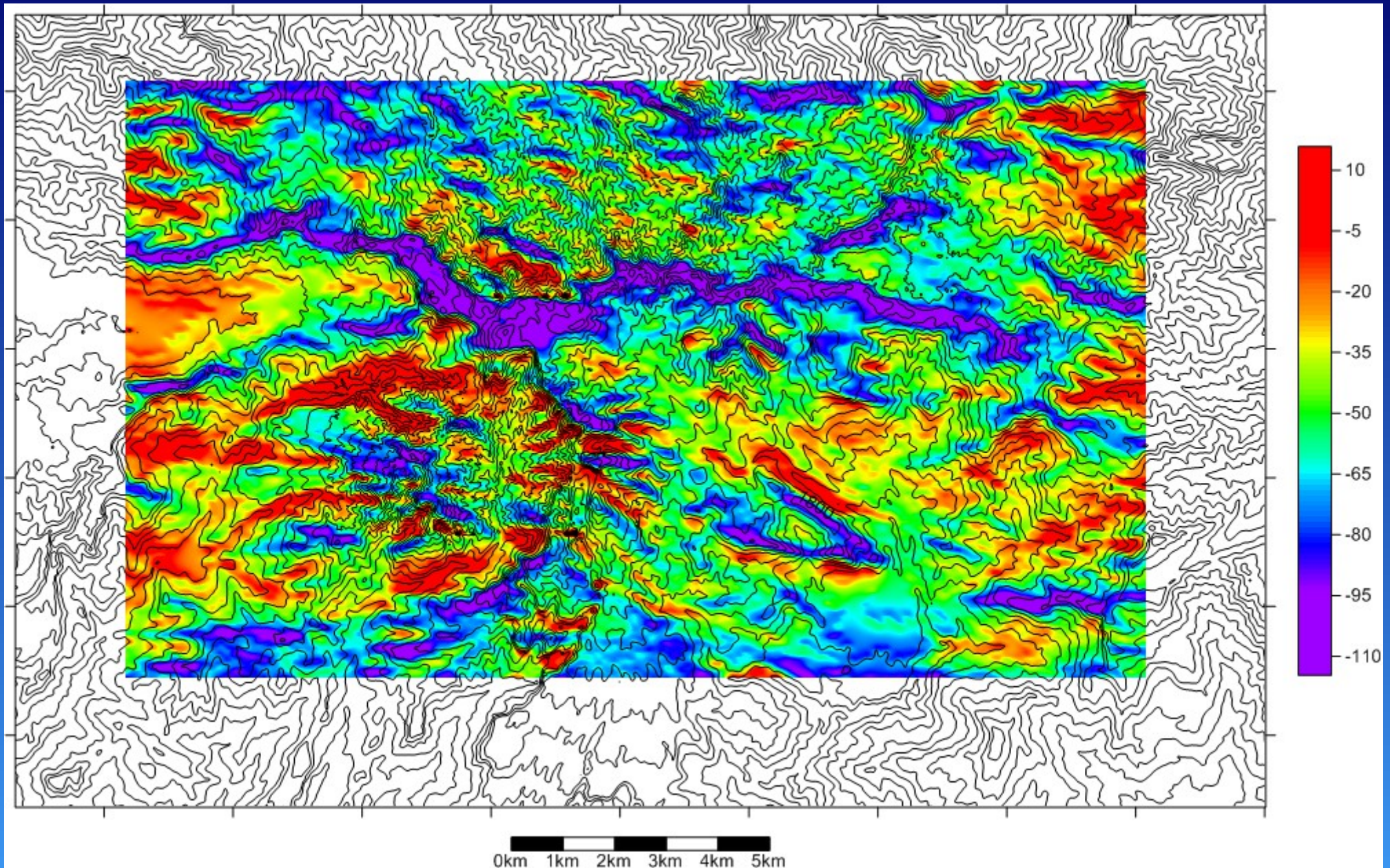
Forward models : Inclination -28° - TC 100m



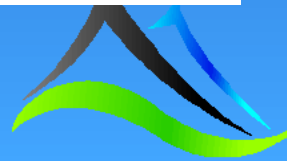
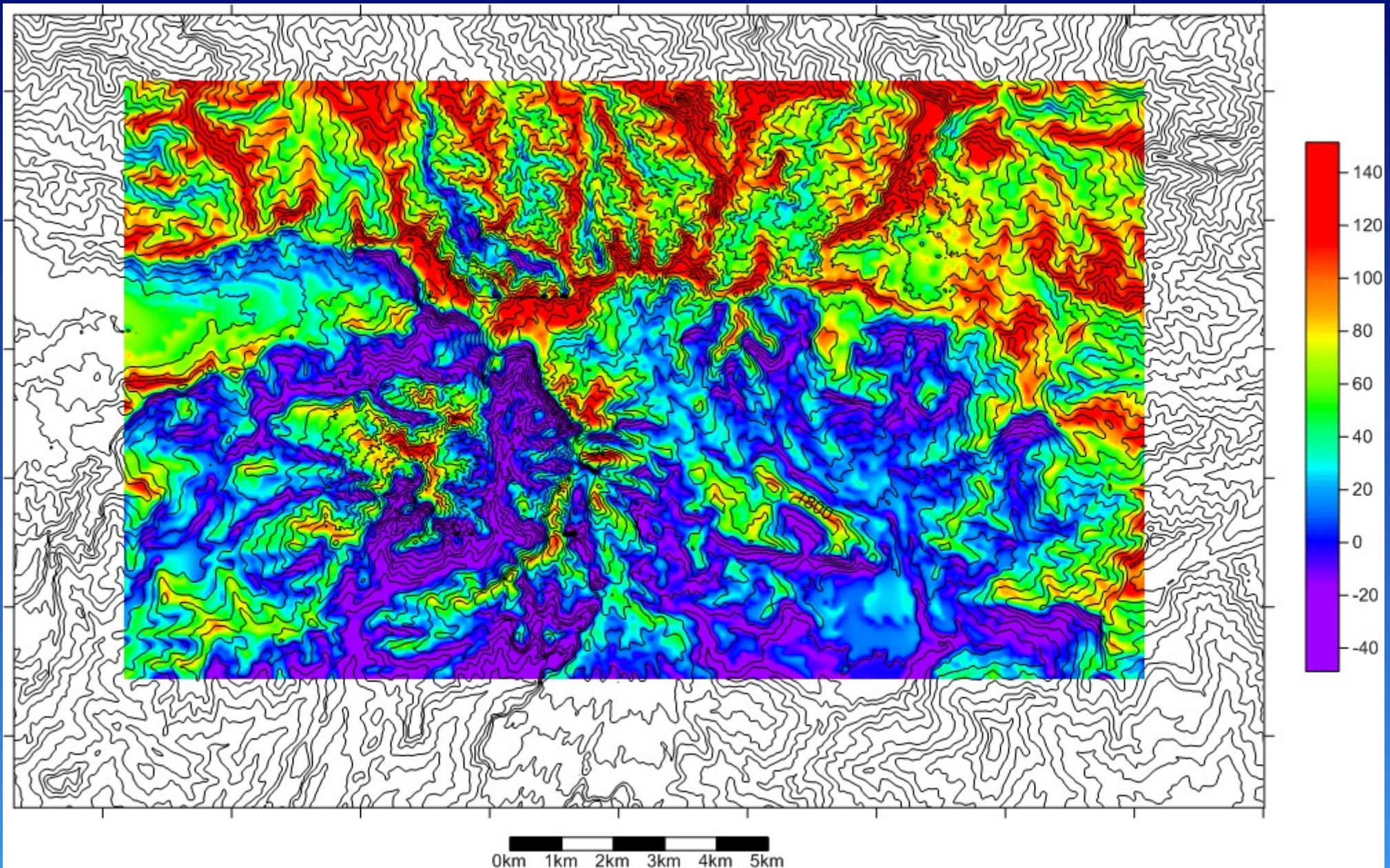
Forward models : Inclination -28° - TC 200m



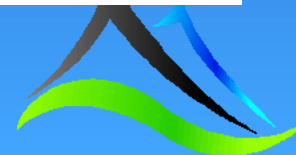
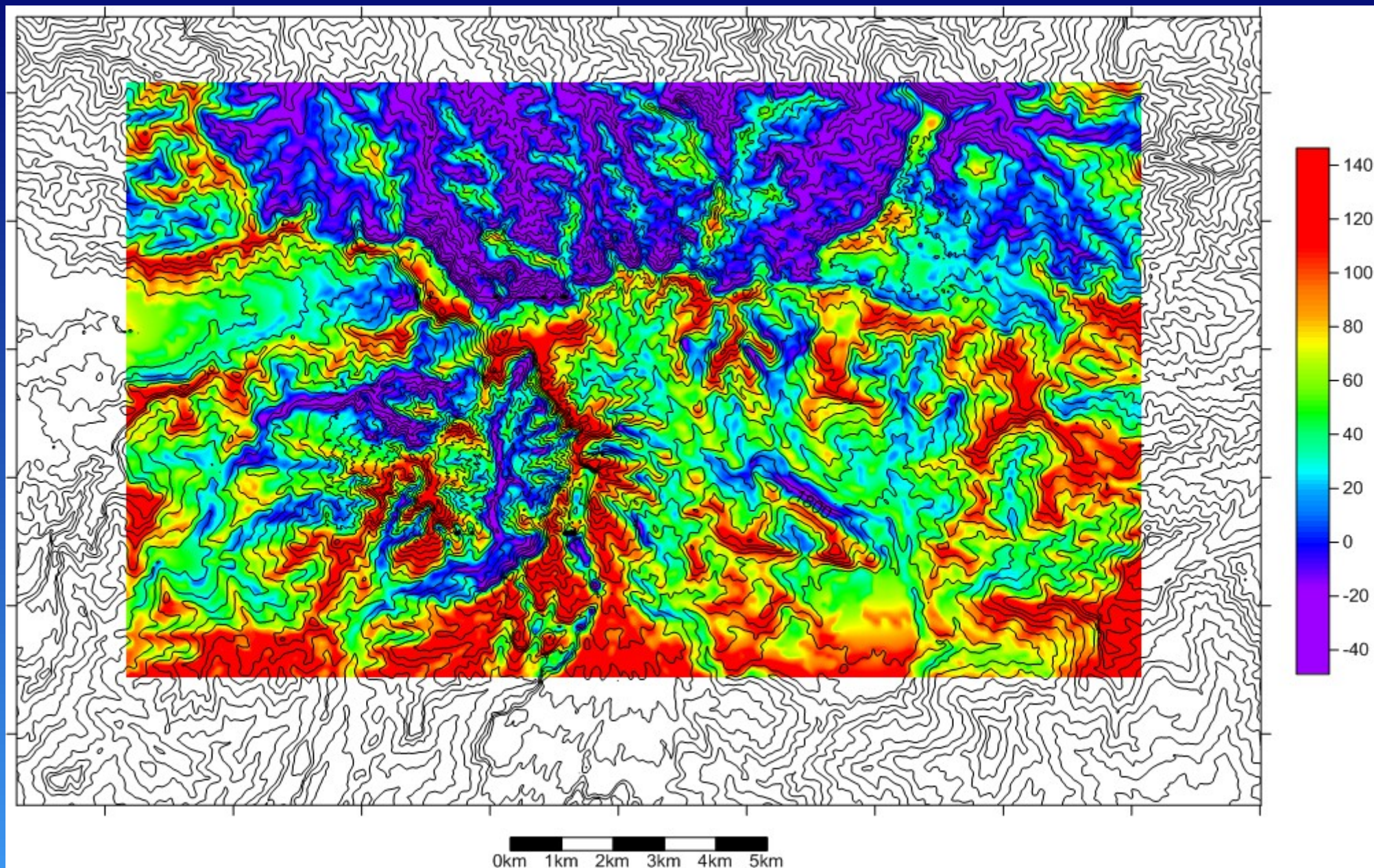
Forward models : Inclination 0° - TC 100m



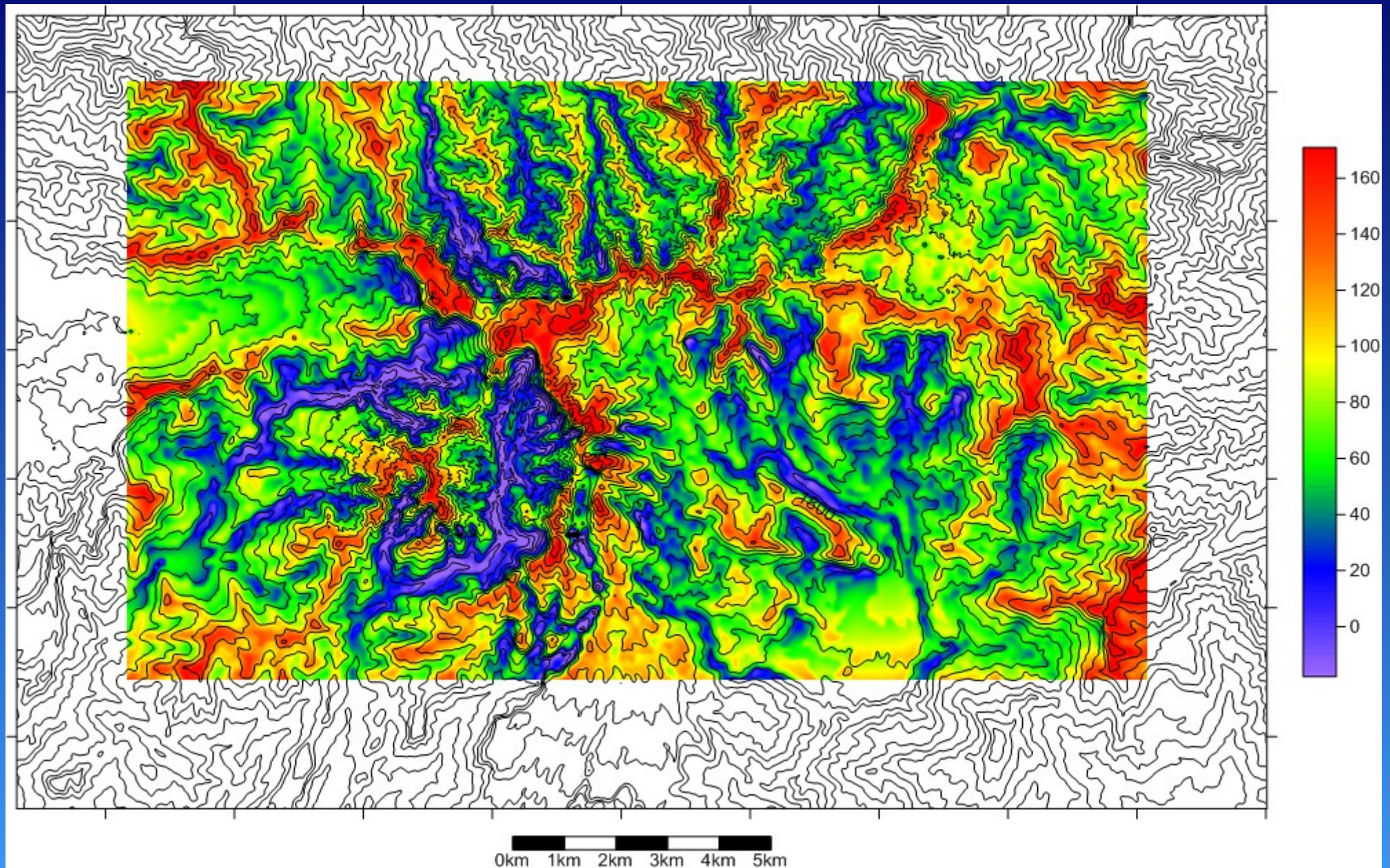
Forward models : Inclination -60° - TC 100m



Forward models : Inclination 60° - TC 100m



Forward models : Inclination 90° - TC 100m



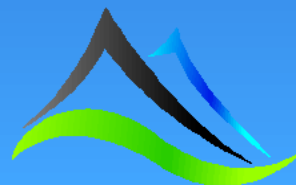
Section lines

The next slides show two sections through the area, respectively called Western Section and Eastern Section.

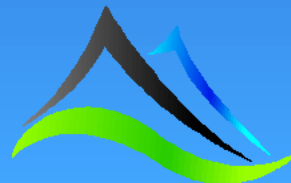
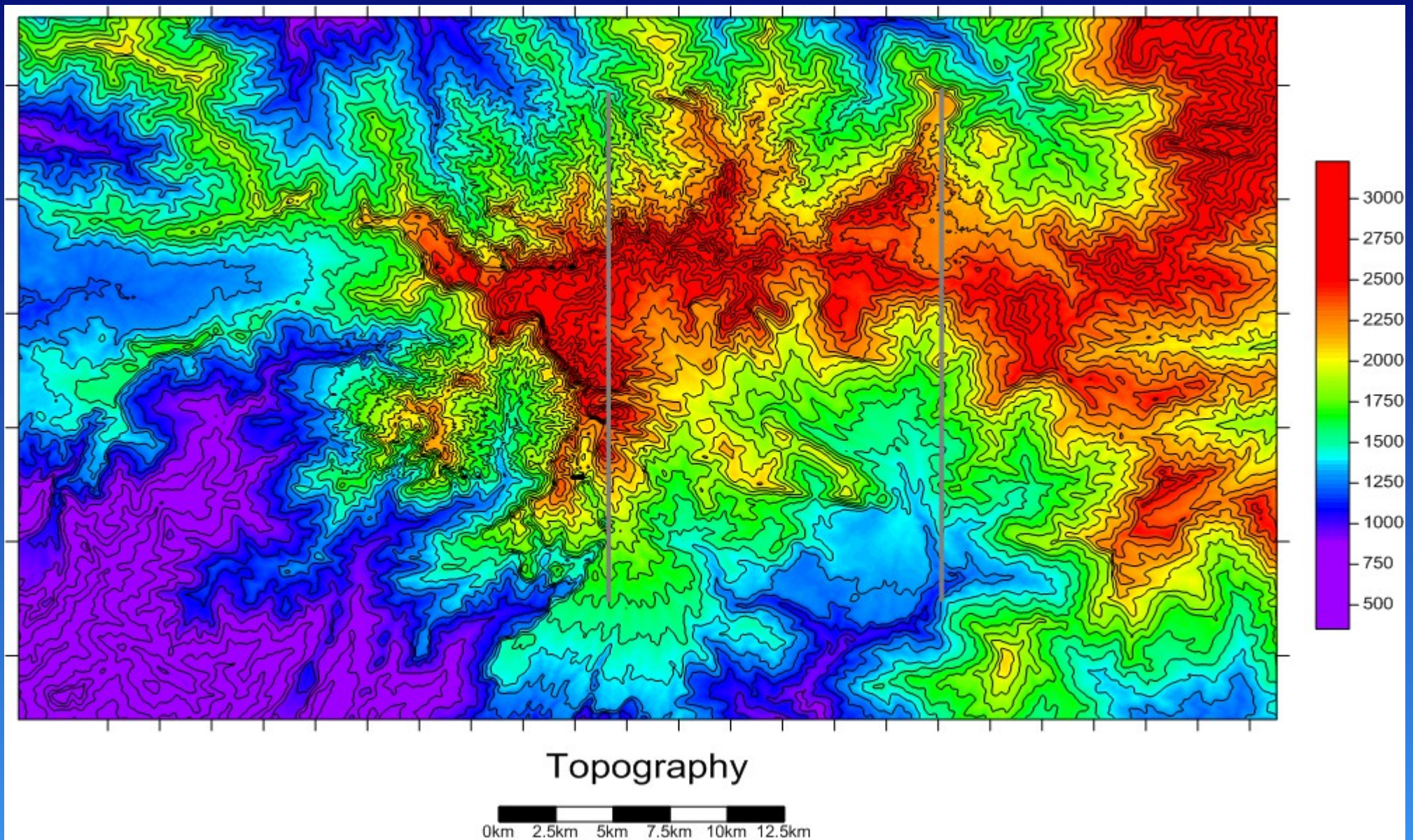
They were created using UBC's Magfor3D. A grid of observation points at 100m x 100m density was used.

7 observation points were removed as they were too close to mesh boundaries.

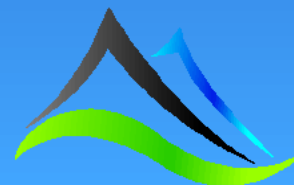
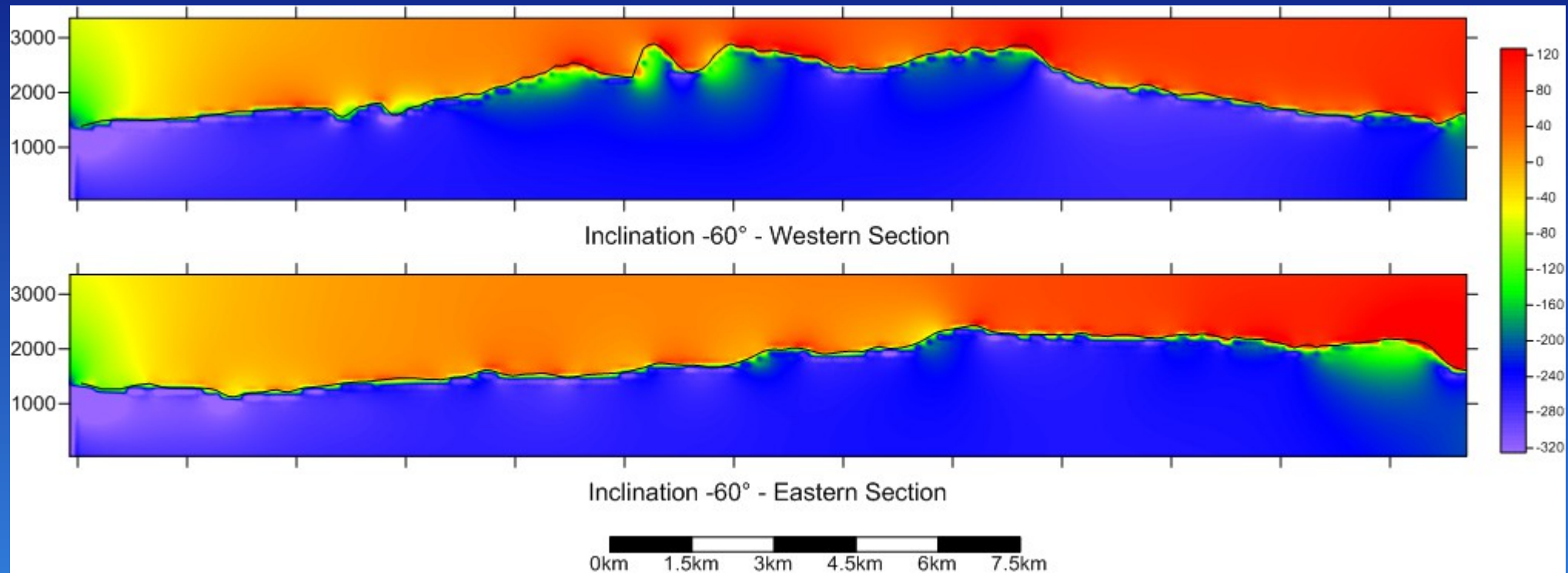
The V:H ratio is 1.



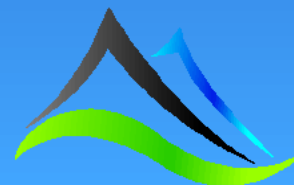
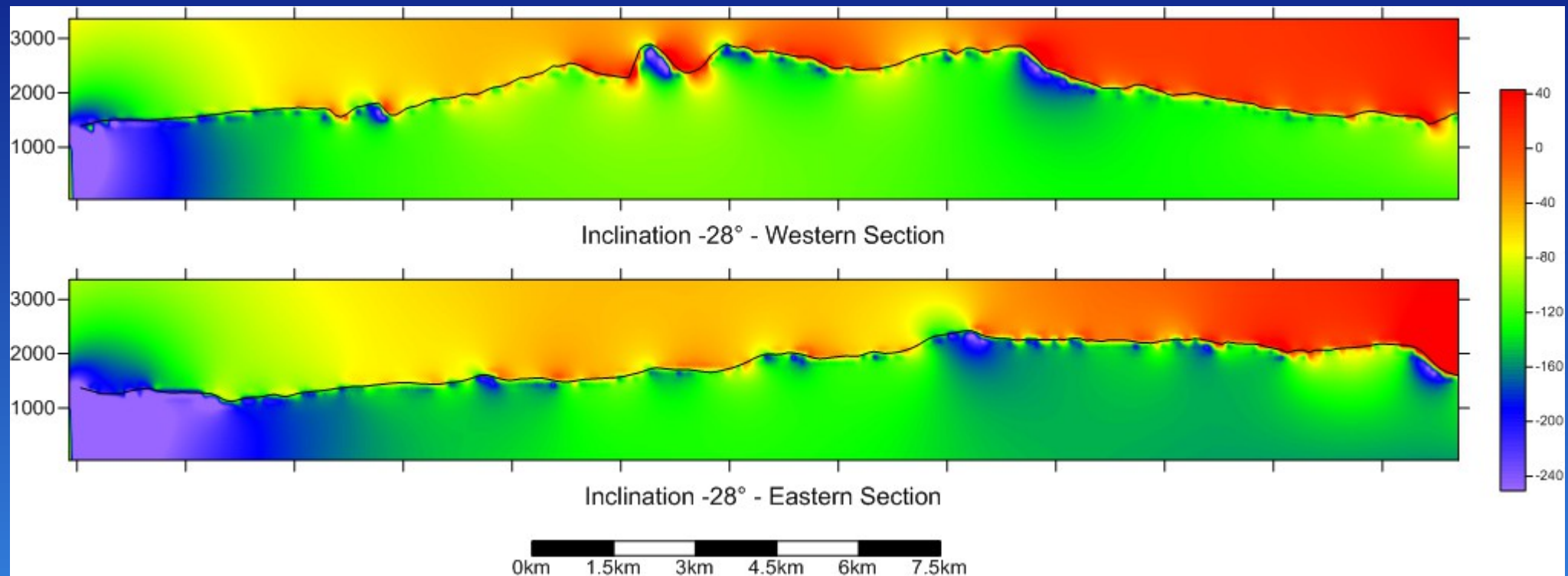
Location of section lines



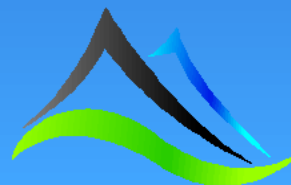
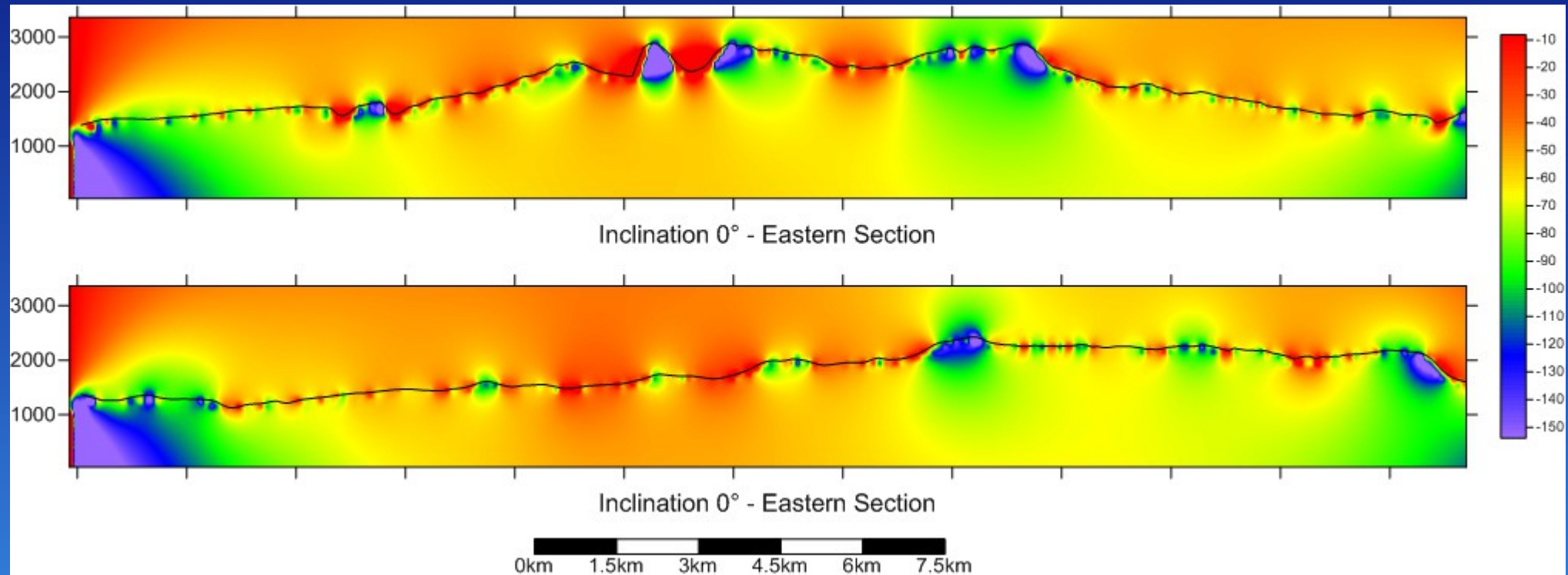
Section : Inclination -60° TC 100m



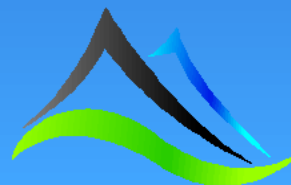
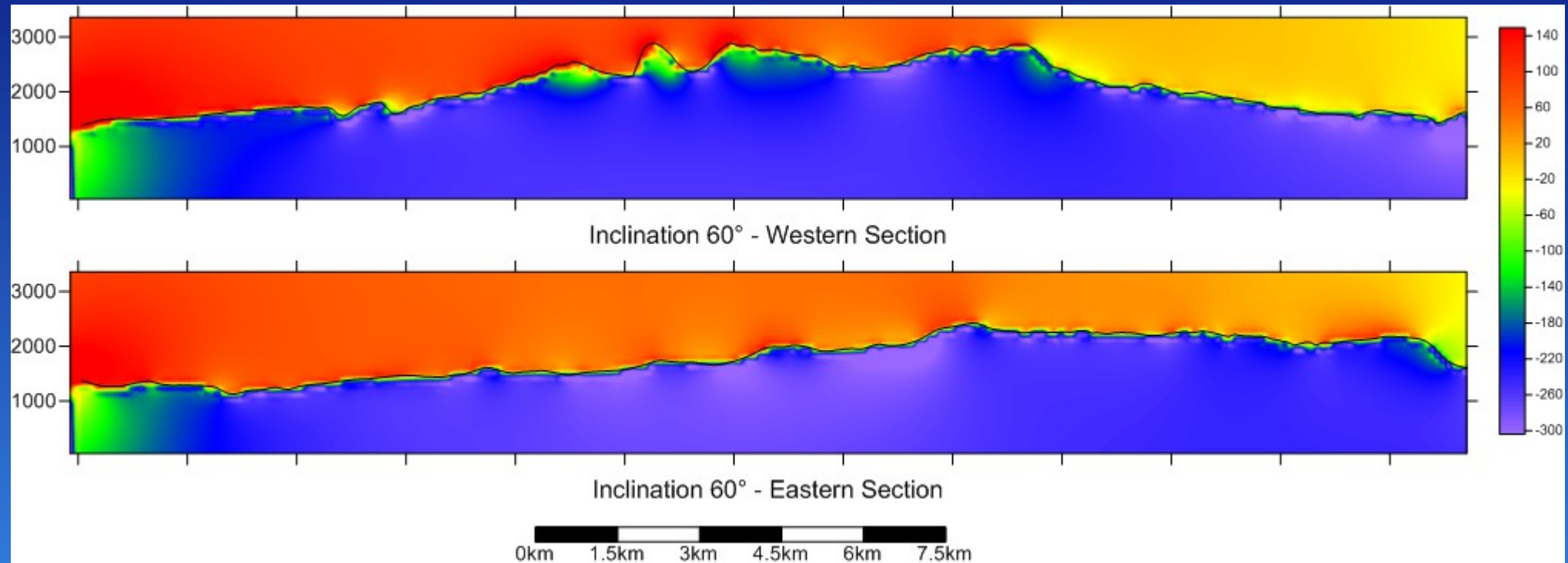
Section : Inclination -28° TC 100m



Section : Inclination 0° TC 100m



Section : Inclination 60° TC 100m



Section : Inclination 90° TC 100m

