A Graphical User Interface (GUI) in Matlab to Compute the Thermal Lithospheric Thickness and its Error Bounds

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Abstract

Graphical user interface packages in Matlab are getting very popular with the geo-scientific researchers. Matlab GUI (graphical user interface) is a graphical display containing controls which helps in computing and graphically representing the results. In this paper a simple graphical user interface (GUI) viewer is developed in MATLAB that computes the thermal lithospheric structure along with its error bounds. The m-file in the package is integrated through a GUI and the controlling thermal parameters such as crustal thickness, radiogenic heat production, characteristic depth, surface temperature, surface heat flow and thermal conductivity are all given on the screen. The thermal conductivity is considered to be Gaussian random variable with a known coefficient of variability and a correlation length scale. The output is in the form of temperature, depth and its standard deviation. The lithospheric
thickness along with the error bounds for the region is then inferred from these graphs. The developed GUI is applied to quantify the lithospheric thickness along with its error structure for any given region where conductive heat transfer is dominant.

References

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Index Terms

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Keywords

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