



## **On the Computation of the Ultra-High Harmonic Coefficients of the Topographic-Isostatic Masses within the Data Window**

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The classical remove-restore technique faces a problem of the proper handling of the different wavelengths of the earth's gravity field. The window remove-restore technique (Abd-Elmotaal and Kühtreiber, 2003) has been proposed to solve that problem by avoiding the double consideration of the topographic-isostatic masses in the neighbourhood of the computational point. In that technique, the effect of the topographic-isostatic masses is removed from the global geopotential reference model yielding an adapted reference geopotential model. This adapted geopotential reference model is then used within the remove-restore technique. The recent global geopotential models are now available to ultra high-degrees. Therefore, the computation of the harmonic coefficients of the topographic-isostatic masses within the data window has to be carried out to the same ultra high-degrees. The derivation of rigorous expressions for computing the harmonic coefficients of the topographic-isostatic masses within the data window is given in this paper. Numerical tests proved that the derived expressions within this paper give high accuracy of the computed harmonic coefficients of the topographic-isostatic masses within the data window.