OPTIMISING THE GEOMETRY OF SMOOTHED CONTOUR LINES ON BATHYMETRIC MAPS

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Perhaps the most classic way to represent 3D-objects, like the DTM from a bathymetric survey, on a 2D medium is by generating contour lines. The sight of an unsmoothed contour map can be too rough and therefore being rejected by the map users, especially when a shelving surface is being represented. However, many users object to smoothing on grounds that smoothed contours do not honour the linear character of the source data. Therefore, the application of smoothing procedures for aesthetic purposes should be in respect to the geometrical properties of the source data. A popular method to smooth contour lines consists in smoothing each contour independently of the rest. This approach is often referred to as line smoothing. A second approach engages the distillation of contour lines from smooth surface patches. An eclectic procedure has been worked out to comprise the advantages and minimize the drawbacks of both approaches. The eclectic method has been refined in order to adjust the smoothing according to the user preferences or needs. Furthermore, optimisation algorithms have been added which, depending on the geometrical properties of the vertices of the raw lines, adapt the smoothing of the contours, thus increasing the geometrical integrity of the smoothed lines.

References

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