# B-spline Curve Smoothing for Isobathymetric Line Generalization

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**Abstract**

This paper introduces a new method for curve smoothing which is specific for isobathymetric line generalization. Isobaths are modeled with B-spline curves that can maintain the smooth feature of the curves. Smoothing is performed by keeping the curve points always on the deepest side of the original curve so that the result is consistent with the safety constraint. It is done by using a snake model in which the constraints and the smoothness are expressed via external and internal energies defined from the curve derivatives. The advantage of the model is that the deformation is done by minimizing the system energy and, by tuning the parameters during the process, convergence towards a valid solution is ensured. Results from real case studies are presented.

**Key words**

cartographic generalization, B-spline curve, snake, curve smoothing