Geophysical Research Abstracts
Vol. 21, EGU2019-14792, 2019
EGU General Assembly 2019

Creation, curation and delivery of high resolution spatial datasets ensuring reliability for product development

Chris Williams, Andrew Hulbert, and Russell Lawley
British Geological Survey, Environmental Science Centre, Nicker Hill, Keyworth, Nottingham, NG12 5GG

Large terrain datasets provide the foundation for much of the work carried out by the British Geological Survey (BGS) in developing various environmental data products for a wide range of users. With high resolution data being more readily available today than ever before, it is vital that [1] a given dataset is kept up-to-date and [2] any uncertainty associated with the dataset is effectively accounted for and communicated. We present the workflow implemented by the BGS to maintain elevation datasets as well as the process undertaken to account for the uncertainties associated with derivative products, both as a result of the input elevation data and the methods and approaches available to calculate the various metrics. We also present a range of approaches that have been investigated and implemented to enable effective processing and delivery of these large datasets.

For the management of our most recently acquired terrain dataset of Great Britain, we have developed a complete workflow which maintains full version control of all original data provided whilst enabling the seamless integration of updates as they become available. This provides the basis for the key area of development: accounting for the uncertainty associated with the derivatives based on these terrain data. This is of vital importance for the BGS as where products are developed – e.g. BGS GeoSure which was developed to enable the identification of areas subject to specific geohazards – we ensure that they reliable, repeatable and robust.

Uncertainty surface calculations for each derivative (e.g. slope, aspect, curvature) are based on a Monte Carlo approach. The overall process enables the assessment of both the differences between the various methods available for a given derivative calculation and the potential uncertainty that may be introduced by the input terrain data. The uncertainty associated with each derivative provides a standalone dataset which can then be used within the larger product development cycle.

The provision of robust measures of uncertainty are key when developing and delivering geospatial data products and yet this information can remain hard to acquire, especially with regard to its spatial distribution. This is ever more important where a given product or dataset is promoted based on measures of improved accuracy and granularity. The approach that has been developed and will be presented has improved the transparency and reliability of the input layers that we use throughout our product development life cycle.