

# Springer Handbook of Geographic Information

## Chapter 27 Geology

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### Abstract

This chapter explains the historic impact and future direction of geoinformatics on the geological sciences. The history and purpose of geological surveys is discussed and an introduction into the basic techniques of traditional field mapping is presented. The authors then discuss the recent emergence of digital field capture tools and 3D geological modelling software and methodologies which is beginning to replace the 2 dimensional techniques. The main impact of these advances is that Geologists are now able to capture their knowledge in digital 3 dimensional form freeing them from the constraint of 2 dimensional media such as paper and later GIS. The impact on the delivery of geoscience information through 3 dimensional viewers and over the web is going to revolutionise the way in which Geologists are able to communicate their science. An outlook is also given why Geology is only a small (but important) part of the wider environmental science community and how the need for whole earth system science is forcing geological survey organisations to work closer with other disciplines. Finally this chapter details several global initiatives that have gone a long way to achieving global agreements on standards, institutional arrangements and policies to enable geoscientific information to be accessible across discipline and political boundaries. The conceptual and computational integration and interoperability of static models (eg geology, infrastructure) with dynamic models (eg groundwater and flood forecast models) to provide decision makers with science based decision making tools will be the challenge for geoinformatics for years to come.