

Modeling a Concept and the Concept of Modeling

Hemin Koyi¹

¹Department of Earth Sciences

Abstract

Understanding geological processes starts with putting different observations together and building a conceptual model. In some cases, such conceptual models may sufficiently explain the observed geologic features/structure. However, in some cases, other kinds of modeling beyond the conceptual which furnishes additional, and vital clues are needed. Such models can be analogue or numerical simulations that assist in linking different elements together in a model that satisfies the observations. In these different modeling approaches, both concepts, processes and structures are modeled. However, irrespective of the methodology, or the target, all these modeling approaches share one common ground and try to understand geological and/or geophysical observations. They all go from an observation to analysis and finally to getting closer to a solution or an understanding of the process, the concept or the structure. In this presentation, analogue models are used to illustrate the significance of systematic modeling in understanding physical processes that can have geological applications. In these models, spherical objects with different set-ups are allowed to move through viscous media in order to study the interaction between rising/sinking objects and illustrate the idea of linking observation to interpretation. A specific case where a wake forms behind an object moving through a viscous fluid will be briefly discussed as an example. Model results shown here will be used to argue that all models are a success as long as we are aware of their limitations and understand the effect of different input parameters. Model results are at best as good as their input data.