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PEG-BOARD - Open Access, Reuse and Preservation of Palæoclimate Data

Introduction
The BRIDGE research group was set up in 2003, and aims to improve the understanding of natural climate and environmental variability and to use this knowledge to predict future changes more accurately and assess its impact on all aspects of human society.

Data Preservation
The work on which the PEG-BOARD project focuses inherits from prior developments in the same area, including a software and service basis designed to support a primary activity of the research group - palæoclimate modeling via software simulation around sampled historical data. This service set is approximately fifteen years old. Palæoclimate simulations generate a great deal of data that is frequently reused by researchers in the sciences and humanities, worldwide. However, as a high-performance computing application, the quantities of data created are extremely large, meaning that participants have historically had to develop and apply de-facto preservation and data compression or summarisation policies. Since types of information required by users from areas as diverse as evolutionary biology, archaeology and earth science vary greatly, the project has also developed, based on existing software, an in-house interface designed to support tailored information extraction from climate model information.

BRIDGE Data
The BRIDGE group has chosen to provide open access to data, with particular focus on those working internally to the research group, external researchers in the same field, and researchers with an interdisciplinary focus meshing in some way with the data available from BRIDGE palæoclimate research, such as archaeologists, biologists, and earth scientists. As user requirements have become evident over the past decade, a web site has been developed in an ad hoc manner that has enabled non-expert users to make use of a number of common methods of individual or comparative analysis, that is, to make use of the data for their own purposes.

Educational Reuse
The proportion of internal and external data reuse is approximately equal. Educational reuse occurs periodically following the term-based structure. Another major form of reuse is the research-oriented reuse, unsurprisingly since the platform operates primarily as an e-Science resource.

Media Reuse
BBC’s Incredible Human Journey is an example of media use of a dataset developed from a set of simulations originally designed for a single purpose. It is noticeable that it has been accessed a number of times, each time by different users. Whilst the first two spikes in reuse are likely to do with its initial use case, later accesses are probably irrelevant, as the documentary had already been aired. There is a reasonably clean ‘decay curve’ visible in this graph, expected for resources with declining importance over time.

Discussion & Conclusion
This study shows that each dataset beats with a different pulse, and that the key to gaining a better understanding of these patterns of use is to begin to model them according to the forces that drive each underlying process. To provide a detailed model for each form of reuse is perhaps beyond practical reach. Predictive modeling of reuse patterns of a given dataset shares a characteristic with climate data modeling: that is, that the behaviour of the wider system that drives interest and activity in a research domain might properly be described as having a chaotic element. Through data mining, we also begin to see how data sets interrelate.

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http://www.bridge.bristol.ac.uk/
http://www.paleo.bris.ac.uk/projects/peg-board/

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