



## **GPlates: Open source software and data base for plate reconstructions**

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Scientists are increasingly aware that Earth processes are complex and interdependent at many timescales. The evolution of planet Earth cannot be unravelled without the ability to link many different types of observations and models to each other via palaeogeographic/plate kinematic models. New global digital Earth data sets become available with increasing frequency, and are extremely valuable for constraining plate reconstructions and the history of continents and ocean basins through time. In addition, computer technology allows ready manipulation and visualisation of large and diverse data sets in four dimensions. However, no common tool is available to track the time history of point, line, and gridded data broken up into plates, or to simultaneously display models for mantle dynamics or ocean circulation in a plate tectonic framework.

To overcome this obstacle to synthesizing and modelling Earth processes, we have initiated the GPlates consortium to create a universal standard for plate reconstructions, linked to both commonly used data bases and geodynamic models, using open standards and open software ([www.gplates.org](http://www.gplates.org)). GPlates combines the ease of use of a well designed graphical user interface with a powerful mathematical backend and highly flexible database system that allows students and researchers alike to easily acquire, investigate, manipulate and distribute plate tectonic data.

GPlates includes an implementation of the OpenGIS standard GML for its representation of data outside of the program. GML provides unprecedented human and com-

puter readability and editability of data, and further allows for seamless integration with GIS systems and databases. The graphical user interface is designed to allow maximum ease of use, for non-computer – or even non-plate tectonic – experts. A point-and-click interface makes its use quick and easy, and hardware accelerated rendering of pictures using the industry standard OpenGL provides real-time rotation and visualisation of data. GPlates is available under the GNU Public License, allowing anyone to download and use it for free, and to make custom modifications as desired.