SCG67-10　　　　　　　Room:106　　　　　　　Time:May 22 17:00-17:15

Precise visualization of global plate motions

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GPlates (http://www.gplates.org/) is the one of the best free tools for visualizing global plate motions. However, it is still developing and has some problems for visualizing such as precise and smooth hotspot track formations on both sides between past oceanic ridges.

We developed a method to solve this problems by utilizing global data (gravity anomaly, Isochron positions), modifying the Euler rotation data sets, and by interpolating more data for precise positions and shapes of past plates. We needed to modify some Euler rotation angles of Muller et al., 1999 for consistency between the Euler rotations and Isochron data positions on two plates.

One of the merits on this study is that there are no limitations for types of data, time intervals, area, and types of visualization methods to visualize plate motions. We can also change vertical values of gravity anomaly or geoid data as a function of time for consistency of values of both sides of past spreading centers. This may be the most important part for future studies. Another thing we would like to emphasize is that these animations will be great materials for Earth science education.

Figure below is an example of reconstructed past positions of the South American plate relative to the African plate(45.6Ma, 83.5Ma).

All animations created in this study are downloadable at
http://kutty.og.u-tokai.ac.jp/~harada/

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