StagLab: Post-Processing and Visualisation in Geodynamics

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Despite being simplifications of nature, today's Geodynamic numerical models can, often do, and sometimes have to become very complex. Additionally, a steadily-increasing amount of raw model data results from more elaborate numerical codes and the still continuously-increasing computational power available for their execution. The current need for efficient post-processing and sensible visualisation is thus apparent.

StagLab (www.fabiocrameri.ch/software) provides such much-needed strongly-automated post-processing in combination with state-of-the-art visualisation. Written in MatLab, StagLab is simple, flexible, efficient and reliable. It produces figures and movies that are both fully-reproducible and publication-ready.
StagLab's post-processing capabilities include numerous diagnostics for plate tectonics and mantle dynamics. Featured are accurate plate-boundary identification, slab-polarity recognition, plate-bending derivation, mantle-plume detection, and surface-topography component splitting. These and many other diagnostics are derived conveniently from only a few parameter fields thanks to powerful image processing tools and other capable algorithms.
Additionally, StagLab aims to prevent scientific visualisation pitfalls that are, unfortunately, still too common in the Geodynamics community. Misinterpretation of raw data and exclusion of colourblind people introduced with the continuous use of the rainbow (a.k.a. jet) colour scheme is just one, but a dramatic example (e.g., Rogowitz and Treinish, 1998; Light and Bartlein, 2004; Borland and Ii, 2007).
StagLab is currently optimised for binary StagYY output (e.g., Tackley 2008), but is adjustable for the potential use with other Geodynamic codes. Additionally, StagLab's post-processing routines are open-source.

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