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Earth history visualization system for Gondwana basins

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TimeScale Creator, a free JAVA package (www.tscreator.org) developed in conjunction with the authors of the series of books “The Geologic Time Scale” and the Geologic TimeScale Foundation, includes: (1) On-screen exploration of any portion of the geologic time scale from internal datasets (ca. 20,000 biologic, geomagnetic, sea-level, stable isotope, igneous provinces, bolide impacts, images of reconstructions and fossils, and other events), (2) Loading additional specialized regional stratigraphy datapacks of lithologies and fossil zonations compiled jointly with geological surveys (Canada, New Zealand, Britain, Belgium, China, Russia, etc.) or insertion of self-constructed datasets, (3) Geographic interfaces for displays of regional stratigraphy, (4) Transect and evolution-tree displays, (5) Cross-plotting and depth-age conversion of outcrops and wells, and (6) a TSC-Lite web-service and many other features.

As part of the *TSCreator* public datapack suites, we compiled reference stratigraphic columns, transects and the main biostratigraphic zonations (with images) for many of the main onshore/offshore basins of Africa and South America, especially those with major oil-gas resources. These two datapacks complement detailed compilations for Australian onshore/offshore basins and biostratigraphic zonations (compiled in coordination with Geoscience Australia), for the India plate and for the main blocks/basins of China. Age models for all datasets are standardized to both Geologic Time Scale 2012 and the revised Concise Geologic Time Scale 2016 to allow direct comparison of any subsets from Gondwana. The map-based user interfaces are designed for general public use.

The software development and compilation of the extensive datasets were made possible by Purdue students in computer engineering and in earth sciences. The databases and visualization package are envisioned as a convenient reference tool, chart-production assistant, and a window into the geologic history of Gondwana and the rest of our planet for both educational and professional users.

