

TRIASSIC CHRONOSTRATIGRAPHIC DATABASE AND A DISPLAY INTERFACE

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The numerical ages on the Triassic time scale have undergone a major revision since 2002 and will probably remain in flux for some intervals for the next few years. At the same time, the inter-calibrations and taxonomic nomenclature among and within different faunal groups, magnetic polarity zones, sequences and other stratigraphic scales are constantly being revised. This can create headaches, not only for Triassic specialists, but for other geoscientists working with Triassic strata. Ideally, as new information becomes available and is confirmed, an on-line public database and visualization system would allow users to access both the current “standard” scales and annotations that explain the inter-calibrations, uncertainties and history of those scales. This ideal system will probably never be practical, but a greatly simplified version is possible.

A project of the International Commission on Stratigraphy (ICS) is to provide detailed global and regional “reference” scales of Earth history. Such scales integrate biostratigraphy (zones, datums for marine and terrestrial realms), sea-level (curves, sequences), geochemistry (trends, events), magnetic polarity chrons and astronomical cycles. These summarize our current consensus on the inter-calibration of events, their relationships to international divisions of geologic time and their estimated numerical ages. The current Phanerozoic database (about 10000 events and zones in April 2007) includes definitions of geologic stages, major zonations and markers of all significant fossil groups, primary and secondary magnetic polarity scales, and other stratigraphic information. Annotations on each entry include source, reliability, selected taxonomic notes, inter-calibrations, and methods of interpolating numerical age. A primary initial source for the Triassic was the extensive “Mesozoic and Cenozoic Sequence Chronostratigraphic Framework of European Basins” chart series of inter-calibrated bio-, magneto-, chemo- and sequence stratigraphy (Hardenbol et al, 1998), which had been calibrated to the

geologic time scales of 1995. We recalibrated all these chronostratigraphic and sequence stratigraphy events to Geologic Time Scale 2004 (Ogg, in Gradstein et al., 2004) and included selected post-1995 biostratigraphic schemes, marker events and geochemistry correlated to Tethyan and Boreal ammonite zones.

Within these databases, all inter-calibrations and derived numerical ages are in the form of relational equations. Therefore, when a primary age is adjusted or a calibration is revised, then all other associated ages are also rescaled. These databases need to be enhanced through the efforts of the subcommissions of the ICS and other stratigraphic and regional experts.

However, a database is not nearly as convenient as graphics. On-screen display and production of user-tailored time-scale charts from the databases is provided by the *Time-Scale Creator*, a JAVA package available from the ICS/CHRONOS websites (www.stratigraphy.org or www.chronos.org). After specifying the time interval and vertical scale, a user selects a subset of stratigraphic columns and trends (e.g., Gradstein and Ogg, 2006). In addition to screen views and a scalable-vector graphics (SVG) file for importation into popular graphics programs (e.g., Adobe Illustrator), the on-screen display has “hot-cursor-points” to open windows providing additional information on events, zones and boundaries or to link to external URLs for in-depth details. Visualization options also include lithologic columns and range charts. The database and visualization package are envisioned as a convenient reference tool, chart-production assistant, and a window into the geologic history of our planet.

This poster is the current Triassic suite within the TimeScale Creator databases, after recalibration to selected radiometric ages, revised Upper Triassic magnetostratigraphic correlations, and Lower Triassic cycle stratigraphy (e.g., Menning et al., this conference). Revisions and contributions are welcome!

REFERENCES

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