

CHRONOS: TRANSFORMING EARTH HISTORY RESEARCH BY SEAMLESSLY INTEGRATING STRATIGRAPHIC DATA AND TOOLS

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Geologic time is the intellectual theme that connects a wide variety of research endeavors in geoscience – missing is the corresponding cyberinfrastructure that allows the resources of all these endeavors to be pooled. *CHRONOS*'s purpose, emerging from community workshops dating back to 2001, is to transform Earth history research by seamlessly integrating stratigraphic databases and tools into a virtual on-line stratigraphic record. This on-line record accelerates and democratizes research by giving more minds access to more data and faster. This presentation will give a broad overview of *CHRONOS*'s mission and goals.

CHRONOS is a team of geoscientists and information technology specialists creating a cyberinfrastructure that delivers open access to a global federation of Earth history databases, tools, and services, thus providing:

- For academic, government, and industrial scientists – access to multiple, disparate databases on Earth history; data evaluation and conversion services; and powerful analytical tools.
- For autonomous databases, affiliated science initiatives, and data and tool contributors – a larger user community, greater visibility and acknowledgment, and access to tools and best practices, without the cost and burden of reproducing interoperability.
- For educators, students, and policy makers – a convenient source of Earth history data, visualization tools, expert opinion, and educational materials.

The continued enhancement of the *CHRONOS* federation of resources will foster unprecedented cohesiveness within the geoscience community along with a growing pool of geoinformatics specialists. This will result in improved public awareness and appreciation of the knowledge that underpins the hypotheses addressing contemporary issues such as climate change, evolution and extinction, and fossil fuel inventories.

Listening to countless discussions of the emerging system, *CHRONOS* hears three pervasive practical concerns – convenience, quality control, and cost containment -- from which some best practices emerge:

- *CHRONOS*'s architecture is flexible, open, and searchable;
- Users have a choice of data-entry pathways;
- The linked databases maintain autonomy;
- *CHRONOS* integrates time-stratigraphic;
- Tools and data services are developed together;
- Costs are distributed and shared with research opportunities.

CHRONOS's three organizing and operational initiatives provide the framework around which all of our tasks are managed. Each will be accomplished through the major activities identified with it.

1. **Build Cyberinfrastructure:** *To conceive, build and support the robust system of integrated databases, tools, visualizations, and services essential to realize the CHRONOS vision;*
2. **Build and Involve the CHRONOS Community:** *To foster the growth of the CHRONOS community by actively promoting the open participation of diverse groups of users, data providers, and other geoinformatics efforts;*
3. **Give Access to Educational Activities:** *Create an excitement for Earth history and geologic time through the implementation of human-computer interactions.*