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The GLIMS Geospatial Glacier Database

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Earth is undergoing many changes related to climate, observed in near-surface temperatures, atmospheric composition, and ocean temperatures. Glaciers and ice caps too are exhibiting marked and rapid changes, showing accelerating loss of mass in most regions of the world. The GLIMS project (Global Land Ice Measurements from Space), comprised of approximately 70 institutions, has implemented and is now filling a geospatial database of Earth's glaciers. The database contains glacier outlines, as well as many scalar data that are compatible with historic glacier databases. This early-21st Century snapshot of the world's glaciers will serve as a baseline for measurement of glacier change in the coming years, as well as serving as a picture of change since maps were made in previous decades (see http://glims.org/).

The GLIMS Glacier Database is now accessible on the World Wide Web, at "http://glims.colorado.edu/glacierdata/". There, users can browse custom maps, display various layers, query information within the GLIMS database, and download original datasets in different GIS-compatible formats. Map layers include glacier outlines, footprints of ASTER images acquired over glaciers, background images, coastlines and political boundaries, cities, and others. Glacier outlines from the Digital Chart of the World (DCW) are also included, and from this one can see the marked improvement that ASTER-derived GLIMS glacier outlines represent compared to DCW data. The database now contains GLIMS outlines and metadata on several hundred glaciers, contributed from approximately eight GLIMS institutions. Glacier data, as well as other data layers, are queryable. The website is an Open Geospatial Consortium compliant Web Map Service and Web Feature Service. This means that other websites can display glacier layers from our site over the Internet, or retrieve glacier features vector format. An interface is available through which users can download the original data for analysis in their own computer environments.

Data currently in the database cover glaciers in Europe, Patagonia, the Antarctic

Peninsula, Asia, Arctic Canada, and Alaska. The database is already useful as a repository of information on climate-related changes in the cryosphere, and as the dataset becomes increasingly complete in the coming years, more complex spatial and temporal analysis will become easier. In this poster we present an example of change detection based on multi-temporal analysis of data in the GLIMS Geospatial Glacier Database.