Google Earth Visualizations:
Preview and Delivery of Hydrographic and Other Marine Datasets

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Abstract: Existing hydrographic data analysis and visualization tools are very powerful, but lack easy access to web data management tools. Virtual globe software provides a gateway to a host of important data products in formats usable by specialized tools such as CARIS, Fledermaus, and Arc/Info. With virtual globe interfaces, users see complimentary and consistent geographic representations of available data in an easy-to-navigate format. We present a preview of visualizations that build upon virtual globe software. These examples are viewed in Google Earth, but could also be implemented in a number of alternative programs (e.g. NASA World Wind, Dapple, OSSIM Planet).

We have assembled Google Earth visualizations from three datasets to illustrate each of the four primary types of data (handle point, line, area, and time data). The USCG Marine Information for Safety and Law Enforcement (MISLE) database of ship incidents illustrates point data. A short sample of the USCG National Automatic Identification System logs (N-AIS) demonstrates rendering of line data. Area data is exemplified in the United Nations Convention f the Law of the Sea (UNCLOS) multibeam bathymetry. Point, line and area data are combined to present a preview of S57 chart information. Finally, the MISLE database uses time to show maritime incidents that occurred in US waterways.

The visualizations for our initial work were created with hand coding and small scripts. However, tools such as Fledermaus and RockWare have added Google Earth export functionality that makes authoring Google Earth resources easy to construct. For large dataset that require additional processing and analyses, Google Earth visualizations can offer users a range of download formats and suggest what software to use. We believe that this virtual globe-based-approach can make geospatial data sets more widely accessible via the world-wide-web.

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