SUBJECT: Availability of Velocity Mapping Toolbox (VMT) software

The Office of Surface Water (OSW) announces the availability of the Velocity Mapping Toolbox (VMT). VMT is a Matlab[1]-based software tool for processing and visualizing ADCP data collected along transects in rivers or other bodies of water. VMT was developed by the USGS with colleagues in academia to facilitate analysis and visualization of three-dimensional velocity fields from multiple ADCP transects.

VMT allows rapid processing, visualization, and analysis of a range of ADCP datasets and includes utilities to export ADCP data in ArcGIS-, Tecplot-, and Google Earth-compatible formats. The software can be used to explore patterns of fluid motion in three-dimensions using several methods for calculation of secondary flows. The software also includes capabilities for analyzing the acoustic backscatter and bathymetric data from the ADCP. A user-friendly graphical user interface (GUI) enhances program functionality and provides ready access to two- and three- dimensional plotting functions, allowing rapid display and interrogation of velocity, backscatter, and bathymetry data.

VMT is described in a journal article, "Velocity Mapping Toolbox (VMT): a processing and visualization suite for moving-vessel ADCP measurements" published in the Earth Surface Processes and Landforms journal (http://onlinelibrary.wiley.com/doi/10.1002/esp.3367/abstract). Documentation, tutorials, and the VMT software are available on the OSW Hydroacoustics Web pages at http://hydroacoustics.usgs.gov/movingboat/VMT/VMT.shtml. Although VMT is written in Matlab, a compiled version is available on the VMT Web pages. Examples illustrating the use of VMT are also available on the Hydroacoustics web pages.

The version of VMT that is being released can be used to analyze data collected using Teledyne RD Instruments' (TRDI) Rio Grande and StreamPro ADCPs equipped with GPS. Current plans are to support other ADCPs (SonTek M9s, S5s; TRDI RiverRays) in future versions of the software (currently in testing). OSW plans to release a fact sheet demonstrating some of VMTs capabilities as well as other documentation in the future. Colleagues outside the USGS are also working on enhancements to VMT which, if generally useful, may be incorporated into future releases.

If you have questions regarding VMT, OSW recommends that you use the VMT message board on the Hydroacoustics Forum (http://hydroacoustics.usgs.gov/forum/). Use of the forum

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[1] Use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government

software facilitates exchange of information so this form of communication is encouraged. Please contact Kevin Oberg (email: kaoberg@usgs.gov tel: 217-328-9739) if you have questions about information contained in this OSW Note.

The OSW would like to especially acknowledge Ryan Jackson's role in making VMT a reality. Although others have made significant contributions to VMT, it was Ryan's vision and efforts that pulled the various tools together, generalized them, and created a GUI for the toolbox. Subsequently, Frank Engel has taken the lead on improving, maintaining, and adding functionality to the VMT code.

 /signed/

Kevin Oberg
Office of Surface Water

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OSW notes are archived on the Office of Surface Water Sharepoint site,
https://xcollaboration.usgs.gov/wg/osw/OSWNotes/SitePages/Home.aspx

Reference

Parsons, D.R., P.R. Jackson, J.A. Czuba, F.L. Engel, B.L. Rhoads, K. Oberg, J.L Best, D. S. Mueller, K.K. Johnson, and J.D. Riley. Accepted. Velocity Mapping Toolbox (VMT): A processing and visualization suite for moving-vessel ADCP measurements. Earth Surface Processes and Landforms: accepted for publication, DOI: 10.1002/esp.3367.