CHAD A. STEED

Computational Data Analytics Group
Computational Sciences and Engineering Division
Oak Ridge National Laboratory
P.O. Box 2008, MS-6085
One Bethel Valley Rd.
Oak Ridge, TN 37831-6085 U.S.A.

Phone: 865-574-7168

email: csteed@acm.org
WEBSITE: http://csteed.github.io/
LINKEDIN: http://www.linkedin.com/in/chadsteed
TWITTER: https://twitter.com/docchad
GOOGLE SCHOLAR: http://scholar.google.com/citations?user=DF2gMWkAAAAJ
RESEARCHGATE: https://www.researchgate.net/profile/Chad_Steed2

Professional Career

2010–present	Computer Science Research Staff
	Computational Sciences and Engineering Division
	Oak Ridge National Laboratory, Oak Ridge, TN
2013–present	Joint Faculty Appointment
	Electrical Engineering and Computer Science Department
	The University of Tennessee, Knoxville, TN
2013–present	Research Affiliate
	Climate Change Science Institute
	Oak Ridge National Laboratory, Oak Ridge, TN
2012–present	Research Affiliate
	Center for Intelligent Systems and Machine Learning
	College of Engineering, The University of Tennessee, Knoxville, TN
2012–present	Adjunct Professor
	Department of Computer Science and Engineering
	Mississippi State University, Mississippi State, MS
2009	Adjunct Faculty
	School of Computing
	University of Southern Mississippi, Hattiesburg, MS
2001-2010	Computer Scientist
	Geospatial Science and Technology Branch
	Naval Research Laboratory, Stennis Space Center, MS
1999-2001	Software Engineer
	Scientific Systems
	Lockheed Martin, Stennis Space Center, MS

Areas of specialization

Visual Analytics; Extreme Scale Computing; Intelligent User Interfaces; Human-centered Computing; Human-computer Interaction; Information Visualization; Scientific Visualization; Data Mining; Text Mining; Social Media; Illustrative Visualization; Computer Graphics; Graphic Design; Fine Art.

Education

2005–2008 Ph.D. in Computer Science (Computer Graphics and Visualization)
Mississippi State University, Starkville, MS
Dissertation Title: "Development of a Geovisual Analytics Environment using Parallel Coordinates with Applications to Tropical Cyclone Analysis"
Advisor: J. Edward Swan II
Committee: T.J. Jankun-Kelly, Robert J. Moorhead, Edward B. Allen, and Patrick J. Fitzpatrick

2002–2004 M.S. in Hydrographic Science
The University of Southern Mississippi, Hattiesburg, MS
Project Title: "A Hydrographic Survey of the Pearl River from Stennis Space Center to the I-10 Bridge"

1994–1999 B.S. in Software Engineering (Minor: Fine Art)
The University of Southern Mississippi, Hattiesburg, MS
Honors

Honors *&* Awards

2014 ORNL Early-Career Researcher Award
2014 ORNL Significant Event Award (SEA) (for successful ACME project demonstration)
2014 Elsevier Computers & Geosciences Journal 2013 Best Paper Award
2013 ORNL Technology Commercialization Award
2013 R&D 100 Award
2013 ORNL Significant Event Award (SEA) (for development and licensing of DTHSTR)
2002-2009 NRL Merit Award
2008 Inductee, Upsilon Pi Epsilon Honor Society
2005-2007 NRL Select Graduate
2005 NRL Technology Transfer Award (for GDBV Project)
1999 Lockheed Martin Lightning Award (for DBDB-V Project)
1999 "Best of Show" Painting Award in USM Fine Art Dept. Student Art Show
1997 USM College of Science and Technology Scholar

Grants *&* Contracts

PI *&* Co-PI on 27 grants or contracts for a total of $10.9M.
Lead PI on 11 grants or contracts totaling $5.3M.

2015–2016 *Principal Investigator*, "In Situ Visual Analytics for Transformative Extreme Scale Science," ORNL LDRD, $700,000 (Co-PIs: Jamison Daniel, Dali Wang, and Justin Beaver, ORNL).
2015–2016 *Investigator*, "Algorithms for Context-specific Analysis of Heterogeneous Unstructured Big Health Data," ORNL LDRD, $700,000 (Lead PI: Georgia Tourassi, ORNL).
2014–2015 *Principal Investigator*, "Visual Analytics of Complex Systems," DOD, $330,000 (Co-PI: Justin Beaver, ORNL).
2013–2014 *Principal Investigator*, "Interactive Analysis of High Throughput, Unstructured Information Streams," ORNL LDRD, $900,000 (Co-PIs: John Goodall, Robert Patton, Thomas Potok, and Christopher Symons, ORNL).
2012 *Investigator*, "A Scalable Framework for Timely Discovery and Situational Understanding of Cyber Attacks," ORNL LDRD, $350,000 (Lead PI: John Goodall, ORNL).
2011–2012 *Investigator*, "Citizen Engagement for Energy Efficient Communities (CoNNECT)," ORNL LDRD, $320,000 (Lead PI: Olufemi A. Omitaomu, ORNL).

2011–2012   *Investigator (Visualization Research Lead)*, "CMS Knowledge Discovery Infrastructure," Center for Medicare and Medicaid Services (CMS), $200,000 ($18M project total) (Lead PI: Wade McNair, ORNL).

2011-2012   *Principal Investigator*, "Multi-State Sharing Initiative," DHS S&T Southeast Region Research Initiative, $300,000 (Co-PIs: Christopher Symons and Frank DeNap, ORNL).

2011   *Investigator (Visualization Task Lead)*, "Scalable Connections for Diverse Information Stores: Knowledge Efficiencies for Streamlining National Health Informatics," ORNL LDRD, $150,000 (Lead PI: Wade McNair, ORNL).

2011–2013   *Investigator*, "Climate Science for a Sustainable Energy Future," DOE Office of Science, $300,000 (Lead PI: Peter Thornton, ORNL).

2010–2014   *Investigator*, "Ultra-scale Visualization Climate Data Analysis Tools," DOE Office of Science, $350,000 (Lead PI: Dean Williams, LLNL).

2010–2011   *Investigator*, "Massively Parallel Algorithms for Scalable Exascale Data Analysis," ORNL LDRD, $720,000 (Lead PI: Cathy Jiao, ORNL).

2010–2011   *Investigator*, "Multi-State Sharing Initiative," DHS S&T Southeast Region Research Initiative, $300,000 (Lead PI: Frank DeNap, ORNL).

2010   *Investigator*, "Scale Dependency in Dynamical Downscaling of Extreme Climate Events over Complex Topography," ORNL LDRD, $200,000 (Lead PI: Tony King, ORNL).

2010   *Principal Investigator*, "Visual Analytics for Undersea Warfare Planning Study," PEO-C4I & Space PMW-120 Tactical Oceanographic Capabilities / Undersea Warfare, $40,000.

2010   *Investigator*, "Bathymetry/Hydrography Uncertainty Normalization," PEO-C4I & Space PMW-120 METOC Futures Program, $180,000 (Lead PI: Paul Elmore, ORNL).

2006–2010   *Principal Investigator*, "Geophysical Data Base Variable Resolution Version 2," PEO-C4I & Space PMW-120 Ocean Bottom Characterization Initiative, $540,000.

2008–2010   *Principal Investigator*, "Autonomous Underwater Vehicle Bathymetry," PEO-C4I & Space PMW-120 LBSF&I Program, $755,000 (Co-PIs: Brian Bourgeois, Will Avera, Paul Elmore, NRL).

2008–2010   *Principal Investigator*, "Undersea Semi-Submersible (USS) Vehicle," PEO-C4I & Space PMW-120 Congressional Plus-up Project, $200,000 (Co-PIs: Mike Harris and Will Avera, NRL).

2006–2009   *Investigator*, "OAML Bathymetric Data Fusion," PEO-C4I & Space METOC Futures Program, $472,000 (Lead PI: Paul Elmore, NRL).

2008   *Investigator*, "Transparent Urban Structures II," Office of Naval Research, $560,000 (Lead PI: Kevin Shaw, NRL).

2008   *Investigator*, "Metrics to Evaluate the Effectiveness of Distributed AUV Sensors," NRL Base Program 6.2, $20,000 (Lead PI: Josette Fabre, NRL).

2007   *Investigator*, "Autonomous Underwater Vehicle Data Acquisition and Planning," PEO-C4I & Space PMW-180 LBSF&I, $100,000 (Lead PI: Michael Harris, NRL).

2005–2006   *Principal Investigator*, "Shipping Noise Data Base (SNDB)," PEO-C4I & Space PMW-180, $211,000.

2004–2005   *Investigator*, "AQS-20 Through-The-Sensor Rapid Transition Project," PEO-C4I & Space PMW-150, $1,200,00 (Lead PI: Michael Harris, NRL).

2003–2004   *Principal Investigator*, "Geophysical Data Base Variable Resolution," SPAWAR PMW-150, $345,000.

2001–2002   *Principal Investigator*, "Precision Underwater MApping System (PUMA)–Tactical Environmental Data Server (TEDS) System," SPAWAR PMW-150, $340,000.

Open Source Projects

Several minor open source projects are available at http://github.com/csteed/, http://gist.github.com/csteed, and http://bl.ocks.org/csteed

2012-2014 Exploratory Data analysis ENvironment (EDEN) http://cda.ornl.gov/projects/eden/.
Description: A visual analytics tool for interactive analysis of large scale multivariate data sets with specific functionality for climate simulation data.
License: UT-Battelle BSD License.

Publications

70 research publications (5 journal articles, 20 conference papers, 6 referred abstracts, 13 workshop or position papers, 1 book chapter, 24 technical reports and 1 dissertation), and 3 patent applications.

Most of these publications are available on my web site http://csteed.github.io/.

JOURNAL ARTICLES (5)

2014 Dali Wang, Yang Xu, Peter Thornton, Anthony King, **Chad A. Steed**, Lianhong Gu, and Joseph Schuchart. A Functional Unit Testing Platform for the Community Land Model. *Environmental Modeling and Software*, 55:25–31, 2014. doi:http://dx.doi.org/10.1016/j.envsoft.2014.01.015

2013 **Chad A. Steed**, Daniel M. Ricciuto, Galen Shipman, Brian Smith, Peter E. Thornton, Dali Wang, and Dean N. Williams. Big Data Visual Analytics for Exploratory Earth System Simulation Analysis. *Computers & Geosciences*, 61:71–82, 2013. doi:http://dx.doi.org/10.1016/j.cageo.2013.07.025 ***CAGEO 2013 Best Paper Award***

2013 Dean N. Williams, Timo Bremer, Charles Doutriaux, John Patchett, Sean Williams, Galen Shipman, Ross Miller, David R. Pugmire, Brian Smith, **Chad A. Steed**, E. Wes Bethel, Hank Childs, Harinarayan Krishnan, Prabhat, Claudio T. Silva, Emanuele Santos, David Koop, Tommy Ellqvist, Jorge Poco, Berk Geveci, Aashish Chaudhary, Andy Bauer, Alexander Pletzer, Dave Kindig, Gerald L. Potter, and Thomas P. Maxwell. The Ultra-scale Visualization Climate data Analysis Tools (UV-CDAT): Data Analysis and Visualization for Geoscience Data. *IEEE Computer*. 46(9):68–76, 2013. doi:10.1109/MC.2013.119

2009 **Chad A. Steed**, Patrick J. Fitzpatrick, T.J. Jankun-Kelly, Amber N. Yancey, and J. Edward Swan II. An Interactive Parallel Coordinates Technique Applied to a Tropical Cyclone Climate Analysis. *Computers & Geosciences*, 35(7):1529–1539, 2009. doi:10.1016/j.cageo.2008.11.004

2009 **Chad A. Steed**, Patrick J. Fitzpatrick, J. Edward Swan II, and T.J. Jankun-Kelly. Tropical Cyclone Trend Analysis using Enhanced Parallel Coordinates and Statistical Analytics. *Cartography and Geographic Information Science*, 36(3):251–265, 2009. doi:10.1559/152304009788988314

CONFERENCE PAPERS (20)

2014 **Chad A. Steed**, Katherine J. Evans, John F. Harney, Brian C. Jewell, Galen Shipman, Brian E. Smith, Peter E. Thornton, and Dean N. Williams. Web-based Visual Analytics for Extreme Scale Climate Science. In *Proceedings of the IEEE International Conference on Big Data (IEEE Big Data 2014)*, pp. 383–392, Oct. 2014. doi:110.1109/BigData.2014.7004255

2013 Robert Patton, **Chad A. Steed**, Chris G. Stahl, and Jim N. Treadwell. Observing Community Resiliency in Social Media. *The 13th International Conference on Computational Science and Applications (ICCSA 2013)*, pp. 491–501, June 2013. doi:10.1007/978-3-642-39640-3_36

2013   Brian Smith, Daniel M. Ricciuto, Peter E. Thornton, Galen Shipman, **Chad Steed**, and Dean Williams. ParCAT: Parallel Climate Analysis Toolkit. In *Proceedings of the International Conference on Computational Science*, pp. 2367–2375, June 2013. doi:10.1016/j.procs.2013.05.408

2012   Arvind Ramanathan, **Chad A. Steed**, Laura L. Pullum. Verification of Compartmental Epidemiological Models using Metamorphic Testing, Model Checking and Visual Analytics. In *Proceedings of the ASE/IEEE International Conference on BioMedical Computing (BioMedCom)*, Washington, D.C., Dec. 2012. doi:10.1109/BioMedCom.2012.18

2012   Songhua Xu, Brian Jewell, **Chad Steed**, and Jack Schryver. A New Collaborative Tool for Visually Understanding National Health Indicators. In *Proceedings of the International Conference on Applied Human Factors and Ergonomics (AHFE)*, San Francisco, CA, July 2012.

2012   **Chad A. Steed**, Galen Shipman, Peter Thornton, Daniel Ricciuto, David Erickson, and Marcia Branstetter. Practical Application of Parallel Coordinates for Climate Model Analysis. In *Proceedings of the International Conference on Computational Science*, pp. 877–886, June 2012. doi:10.1016/j.procs.2012.04.094

2012   **Chad A. Steed**, Christopher Symons, Frank DeNap, and Thomas E. Potok. Guided Text Analysis Using Adaptive Visual Analytics. In *Proceedings of the Visualization and Data Analysis Conference*, SPIE. doi:10.1117/12.904904 (24/50 [48%] acceptance rate)

2011   Robert M. Patton, Justin M. Beaver, **Chad A. Steed**, Thomas E. Potok, and Jim N. Treadwell. Hierarchical Clustering and Visualization of Aggregate Cyber Data. In *Proceedings of the International Wireless Communications and Mobile Computing Conference*, pp. 1287–1291, IEEE Computer Society. doi:10.1109/IWCMC.2011.5982725 (35% acceptance rate)

2011   Justin M. Beaver, **Chad A. Steed**, Robert M. Patton, Xiaohui Cui, and Matthew Schultz. Visualization Techniques for Computer Network Defense. In *Proceedings of the Defense & Security Symposium*, vol. 8019, pp. 1–9, SPIE. doi:10.1117/12.883487

2009   Art Kleiner, David Alleman, Pete Alleman, and **Chad A. Steed**. Development of a New Unmanned Semi Submersible (USS) Vehicle. In *Proceedings of Oceans 2009*, pp. 1–6, MTS/IEEE.

2009   **Chad A. Steed**, J. Edward Swan II, T.J. Jankun-Kelly, and Patrick J. Fitzpatrick. Guided Analysis of Hurricane Trends using Statistical Processes Integrated with Interactive Parallel Coordinates. In *Proceedings of Symposium on Visual Analytics Science and Technology* (J. Stasko and Jarke J. van Wijk, eds.), Atlantic City, NJ, pp. 19–26, IEEE Computer Society, Oct. 2009 (26/69 [38%] acceptance rate; Proceedings cover page featured a figure from this paper). doi:10.1109/VAST.2009.5332586

2009   **Chad A. Steed**, T.J. Jankun-Kelly, and J. Edward Swan II. Illustrative Visualization of Hurricane Advisory Information. In *Proceedings of Oceans 2009*, Biloxi, MS, pp. 1–9, MTS/IEEE, Oct. 2009.

2009   **Chad A. Steed**, Chiu-Fu "Tiger" Cheng, and David W. Harvey. Development of a Flexible, Geophysical Database using HDF5. In *Proceedings of Oceans 2009*, Biloxi, MS, pp. 1–6, MTS/IEEE, Oct. 2009.

2005   Costin Barbu, William E. Avera, Dale Bibee, Michael M. Harris, and **Chad Steed**. AQS-20 Sonar Processing Enhancement for Bathymetry Estimation. In *Proceedings of Oceans 2005*, Washington, D.C., vol. 3, pp. 2025–2029, MTS/IEEE, Sep. 2005. doi:10.1109/OCEANS.2005.1640057

2005   Michael Harris, William Avera, **Chad Steed**, John Sample, L. Dale Bibee, Dave Morgerson, Jim Hammack, and Mark Null. AQS-20 Through-The-Sensor (TTS) Performance Assessment. In *Proceedings of Oceans 2005*, Washington, D.C., vol. 1, pp. 460–465, MTS/IEEE, Sep. 2005. doi:10.1109/OCEANS.2005.1639807

2005   **Chad A. Steed**, John Sample, Michael Harris, William Avera, and L. Dale Bibee. AQS-20 Through-The-Sensor Environmental Data Sharing. In *Proceedings of the Defense & Security Symposium*, Orlando, FL, vol. 5778, pp. 32–41, SPIE, Mar. 2005. doi:10.1117/12.606327

2004   Michael Harris, Will Avera, L. Dale Bibee, **Chad Steed**, John Sample, Mark Null, and Jim

Hammack. Environmental Data Collection, Sensor to Decision Aid. In *Sixth International Symposium on Technology and the Mine Problem*, Monterey, CA, pp. 818–823, Naval Postgraduate School, May 2004.

2004   Stephanie Myrick and **Chad Steed**. 3D Enhancements for Visualizing Lane Navigation Performance. In *Proceedings of the Human Performance, Situation Awareness, and Automation Technology Conference*, Daytona Beach, FL, pp. 248–252, Lawrence Erlbaum Association, Mar. 2004.

2003   **Chad A. Steed**, Kim Koehler, Dave Harvey, and Bruce Northridge. Geophysical Data Base Variable Resolution (GDBV): An Object-Oriented Database for Dynamic Geo-acoustic Data Storage. In *Proceedings of Oceans 2003*, San Diego, CA, pp. 132–140, MTS/IEEE, Sep. 2003. doi:10.1109/OCEANS.2003.178534

2002   **Chad A. Steed**, Kim Koehler, and James E. Braud. VGRID: A Generic, Dynamic HDF5 Storage Model for Georeferenced Grid Data. In *Proceedings of Oceans 2002*, Biloxi, MS, pp. 900–907, MTS/IEEE, Oct. 2002. doi:10.1109/OCEANS.2002.1192087

Referred Abstracts (6)

2012   Blake Haugen, Brian Smith, **Chad A. Steed**, Daniel Ricciuto, Peter E. Thornton, and Galen Shipman. ParCAT: A Parallel Climate Analysis Toolkit. *AGU 2012 Fall Meeting*, San Francisco, CA, Dec. 2012.

2012   Christopher Maness, **Chad A. Steed**, and Olufemi Omitaomu. Practical Web Based Visualization for Comparative Energy Usage Analysis. In *IEEE Visualization Conference Compendium*, Seattle, WA, pp. 1–2, IEEE Computer Society.

2011   David J. Erickson, Auroop R. Ganguly, Robert James Oglesby, Evan A. Kodra, Debasish Das, Anthony W. King, Cindy Hays, **Chad Steed**, Robert Patton, and Chris Lenhardt. Scale Dependency in Dynamic Downscaling of Extreme Climate Events over Complex Topography. Abstract GC24B-05, *AGU 2011 Fall Meeting*, San Francisco, CA, Dec. 2011.

2010   Debasish Das, Evan Kodra, Karsten Steinhaeuser, Shih-Chieh Kao, Auroop R. Ganguly, Marcia L. Branstetter, David J. Erickson, Raymond Flanery, Maria Martinez Gonzalez, Cynthia Hays, Anthony W. King, Christopher Lenhardt, Robert Oglesby, Robert M. Patton, Clinton M. Rowe, Alexander Sorokine, **Chad Steed**. Scale Dependency in Dynamic Downscaling of Extreme Climate Events Over Complex Topography. *AGU Fall Meeting Poster Session*, San Francisco, CA, Dec. 2010.

2009   **Chad A. Steed**, T.J. Jankun-Kelly, J. Edward Swan II, and Robert J. Moorhead. Illustrative Visualization of Hurricane Advisory Information. In *IEEE Visualization Conference Compendium*, Atlantic City, NJ, pp. 1–2, IEEE Computer Society, Oct. 2009.

2007   **Chad A. Steed**, Patrick J. Fitzpatrick, T.J. Jankun-Kelly, Amber N. Yancey, and J. Edward Swan II. Practical Application of Parallel Coordinates to Hurricane Trend Analysis. In *IEEE Information Visualization Conference Compendium*, pp. 4–5, IEEE Computer Society, Oct. 2007.

Workshop or Position Papers (13)

2013   **Chad A. Steed**, Thomas E. Potok, Laura L. Pullum, Arvind Ramanathan, Galen Shipman, and Peter E. Thornton. Extreme Scale Visual Analytics. In *Proceedings of the 4th SuperComputing Workshop on Petascale Data Analytics (SC13)*, Denver, CO, Nov. 2013.

2013   Arvind Ramanathan, Laura L. Pullum, **Chad A. Steed**, Shannon S. Quinn, and Chakra S. Chennubhotla. Oak Ridge Bio-surveillance Toolkit. In *Proceedings of IEEE VAST Workshop on Public Health's Wicked Problems: Can InfoVis Save Lives?*, Atlanta, GA, Oct. 2013.

2013   Arvind Ramanathan, Laura L. Pullum, **Chad A. Steed**, Shannon S. Quinn, Chakra S. Chennubhotla, and Tara Parker. Integrating Heterogeneous Healthcare Datasets and Visual Analytics for Disease Bio-surveillance and Dynamics. In *Proceedings of the 3rd Interactive Visual Text Analytics Workshop*, Atlanta, GA, Oct. 2013.

2013   Dali Wang, Yang Xu, Peter Thornton, Anthony King, and **Chad A. Steed**. A Pilot Study on Functional Unit Testing for Community Land Model. *Computational Data Analytics Workshop (CDAW-13)*, Oak Ridge, TN, Oct. 2013.

2013   Robert Patton, **Chad A. Steed**, Chris Stahl. Visualizing Community Resilience Metrics from Twitter Data. *The 2nd Workshop on Social Media Visualization (ICWSM-13)*, Boston, MA, Jul. 2013.

2012   **Chad A. Steed**, Thomas E. Potok, Robert M. Patton, John R. Goodall, Christopher Maness, James Senter. Interactive Visual Analysis of High Throughput Text Streams. In *Proceedings of the 2nd Interactive Visual Text Analytics Workshop*, Seattle, WA, Oct. 2012. http://research.microsoft.com/en-us/um/people/shliu/tasmc/

2012   Olufemi A. Omitaomu, Christopher S. Maness, Ian S. Kramer, Jeffrey B. Kodysh, Budhendra L. Bhaduri, **Chad A. Steed**, Rajasekar Karthik, Philip J. Nugent, Aaron T. Myers. An Integrated Geovisual Analytics Framework for Analysis of Energy Consumption Data and Renewable Energy Potentials. In *Proceedings of the GeoSpatial Visual Analytics Workshop at GIScience*, Columbus, OH, Sep. 2012. http://geoanalytics.net/GeoVA(t)2012/

2009   **Chad A. Steed**, Patrick J. Fitzpatrick, T.J. Jankun-Kelly, and J. Edward Swan II. North Atlantic Hurricane Trend Analysis using Parallel Coordinates and Statistical Techniques. In *Proceedings of the GeoSpatial Visual Analytics Workshop*, Park City, UT, pp. 1—4, Sep. 2008. http://geoanalytics.net/GeoVisualAnalytics08/

2008   Paul Elmore and **Chad A. Steed**. Algorithm for Bathymetry Fusion with Uncertainty Assessment. In *Proceedings of the NRL Technical Metrics Workshop*, Stennis Space Center, MS, May 2008.

2008   **Chad A. Steed**. Advanced Visualization Techniques for Undersea Warfare. In *Proceedings of the NRL Technical Metrics Workshop*, Stennis Space Center, MS, May 2008.

2004   Stephanie Myrick and **Chad Steed**. 3 Dimensional Scene Reconstruction and Animation using VRML/X3D. In *Proceedings of Mississippi Academy of Sciences Annual Meeting*, Biloxi, MS, Mississippi Academy of Sciences, Feb. 2004.

2003   Kim Koehler, Michael Harris, Dale Bibee, **Chad Steed**, and Dave Bates. Ocean Through The Sensor (TTS) Update. *SPAWAR PMW-150 Quarterly Newsletter*, pp. 1—11, Space and Naval Warfare Command, Dec. 2003.

2002   **Chad A. Steed** and Hillary Mesick. A Method for Overcoming Discontinuity Between Neighboring UTM Zone Grids. In *Proceedings of Mississippi Academy of Sciences Annual Meeting*, Biloxi, MS, Mississippi Academy of Sciences, Feb. 2002.

Book Chapters (1)

2013   **Chad A. Steed**, J. Edward Swan II, Patrick J. Fitzpatrick, and T.J. Jankun-Kelly. A Visual Analytics Approach for Correlation, Classification, and Regression Analysis. In *Innovative Approaches of Data Visualization and Visual Analytics*. Eds. Maolin Huang and Weidong Huang. pp. 25–45, 2013. doi:10.4018/978-1-4666-4309-3.ch002

Technical Reports (24)

2013   Dean N. Williams, Andrew Bauer, Aashish Chaudhary, Berk Geveci, Harinarayan Krishnan, David Bader, Timo Bremer, Charles Doutriaux, Daniel Fedor-Thurman, Matthew Harris, Elo Leung, Renata McCoy, James Ahrens, Curt Canada, Phil Jones, Boonthanome Nouanesengsy, John Patchett, Sean Williams, Thomas Maxwell, Gerald Potter, Cecelia DeLuca, Ryan O'Kuinghttons, Robert Oehmke, David Pugmire, Galen Shipman, Brian Smith, **Chad Steed**, Ben Burnett, Aritra Dasgupta, Tommy Ellqvist, David Koop, Emanuele Marques, Jorge Poco, Remi Rampin, Claudio Silva, Huy Vo, David Kindig, Alexander Pletzer, Cameron Christensen, Sidharth Kumar, Valerio Pascucci, Giorgio Scorzelli, Brian Summa. Ultrascale Visualization Climate Data Analysis Tools. LLNL Technical Report LLNL-TR-643624, Lawrence Livermore National Laboratory, Livermore, CA, Sep. 2013. 96 pp.

2012   **Chad A. Steed**, Christopher T. Symons, James K. Senter, and Frank A. DeNap. Guided Text Search Using Adaptive Visual Analytics. ORNL Technical Report ORNL/TM-2012/479, Oak Ridge National Laboratory, Oak Ridge, TN, 31 Oct. 2012. 20 pp.

2012   **Chad A. Steed**, J. Edward Swan II, Patrick J. Fitzpatrick, and T.J. Jankun-Kelly. A Visual Analytics Approach for Correlation, Classification, and Regression Analysis. ORNL Technical Report ORNL/TM-2012/68, Oak Ridge National Laboratory, Oak Ridge, TN, 21 Feb. 2012. 30 pp.

2011   Yu Jiao, Erik Ferragut, Sudharshan Vazhkudai, Stuart Campbell, Mark Hagen, Stephen Miller, Christopher Griffin, and **Chad A. Steed**. Massively Parallel Algorithms for Scalable Exascale Analysis. ORNL LDRD Report 31964, Oct. 2011. 2 pp.

2010   **Chad A. Steed**, Jeffrey Russell, and J. Paquin Fabre. Under Sea Warfare Visual Analytics: Fiscal Year 2010 Prototype System Report. Memorandum Report NRL/MR/7440–10-9285, U.S. Naval Research Laboratory, Stennis Space Center, MS, 30 Nov. 2010. 13 pp.

2010   **Chad A. Steed**, Chiu-Fu "Tiger" Cheng, and David W. Harvey. Geophysical Data Base Variable Resolution Version 2: Final Design Report. Memorandum Report NRL/MR/7440–09-9229, U.S. Naval Research Laboratory, Stennis Space Center, MS, April 2010. 16 pp.

2009   Kevin Shaw, John Sample, and **Chad Steed**. Environmental Components Integrations and Dissemination (ECID) Study Preliminary Report. Formal Report NRL/FR/7440–09-10,177, U.S. Naval Research Laboratory, Stennis Space Center, MS, Dec. 2009. 30 pp.

2009   **Chad A. Steed** and David W. Harvey. Geophysical Data Base Variable Resolution Version 2: Planning Report. Formal Report NRL/FR/7440–08-10,173, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jan. 2009. 12 pp.

2008   Paul A. Elmore and **Chad A. Steed**. Algorithm Design Study for Bathymetry Fusion - Review of Current State-of-the-Art and Recommended Design Approach. Formal Report NRL/FR/7440–08-10,162, U.S. Naval Research Laboratory, Stennis Space Center, MS, Oct. 2008. 26 pp.

2008   **Chad A. Steed**, Patrick J. Fitzpatrick, T.J. Jankun-Kelly, and J. Edward Swan II. Visual Analysis of North Atlantic Hurricane Trends Using Parallel Coordinates and Statistical Techniques. Memorandum Report NRL/MR/7440–08-9130, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jul. 2008. 18 pp.

2008   **Chad A. Steed**, Patrick Fitzpatrick, T.J. Jankun-Kelly, and J. Edward Swan II. An Interactive Parallel Coordinates Technique Applied to a Tropical Cyclone Climate Analysis. Memorandum Report NRL/MR/7440–08-9126, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jun. 2008. 25 pp.

2008   Michael M. Harris, William E. Avera, and **Chad A. Steed**. AUV Data Assimilation: Requirements, Limitations, and Recommendations. Formal Report NRL/FR/7440–08-1060, U.S. Naval Research Laboratory, Stennis Space Center, MS, May 2008. 18 pp.

2006   Michael M. Harris, William E. Avera, John T. Sample, **Chad A. Steed**, Leonard D. Bibee, and Dave Morgerson. AN/AQS-20 Environmental Data Collection: End-to-End Demonstration 3, Tactical Sensor to Tactical Decision Aid, June 1 Through 3, 2005. Formal Report NRL/FR/7440–06-10,134, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jul. 2006. 66 pp.

2006   **Chad A. Steed**. Standard Operating Procedure for the AQS-20 Rapid Transition Project: NAVOCEANO Value Added Processes. Memorandum Report NRL/MR/7440–06-8936, U.S. Naval Research Laboratory, Stennis Space Center, MS, Mar. 2006. 7 pp.

2006   **Chad A. Steed**, Kevyn Malpass, Edward Braithwaite, Michael M. Harris, William E. Avera, and John T. Sample. SeaBED User's Guide. Formal Report NRL/FR/7440–06-10,128, U.S. Naval Research Laboratory, Stennis Space Center, MS, Mar. 2006. 50 pp.

2005   Michael M. Harris, William E. Avera, **Chad A. Steed**, and John T. Sample. AN/AQS-20 Environmental Data Collection Demonstration 2, March 21-25, 2005. Formal Report

NRL/FR/7440–05-10,113, U.S. Naval Research Laboratory, Stennis Space Center, MS, Dec. 2005. 63 pp.

2005   Michael M. Harris, William E. Avera, **Chad A. Steed**, Leonard D. Bibee, Warren T. Wood, William D. Morgerson, and Christopher S. Robinson. Through-The-Sensor Determination of AN/AQS-20 Sensor Performance Demonstration 1, December 13 through 17, 2004. Formal Report NRL/FR/7440–05-10,106, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jun. 2005. 21 pp.

2004   **Chad A. Steed**. Results of the Conversion of the OAML SST to the GDBV Format. Formal Report NRL/FR/7440–04-10,083, U.S. Naval Research Laboratory, Stennis Space Center, MS, Sep. 2004. 15 pp.

2004   **Chad A. Steed**. GAIT GDBV Quick Start Guide. Memorandum Report NRL/MR/7440–04-8772, U.S. Naval Research Laboratory, Stennis Space Center, MS, May 2004. 8 pp.

2003   **Chad A. Steed**. Geophysical Data Base Variable Resolution (GDBV): Database Definition Document. Formal Report NRL/FR/7440–03-10,063, U.S. Naval Research Laboratory, Stennis Space Center, MS, Dec. 2003. 27 pp.

2003   **Chad A. Steed** and William E. Rankin. OAML Feathering Algorithm Overview. Formal Report NRL/FR/7440–03-10,052, U.S. Naval Research Laboratory, Stennis Space Center, MS, May 2003. 10 pp.

2003   John T. Sample, **Chad A. Steed**, Frank P. McCreedy, and Michael M. Harris. Analysis of Global and Selected Geographic Areas with Depths Between 50 and 100 Feet. Memorandum Report NRL/MR/7440–03-8295, U.S. Naval Research Laboratory, Stennis Space Center, MS, Feb. 2003. 23 pp.

2002   **Chad A. Steed** and James E. Braud. A Flat Earth Model for DBDB-V. Formal Report NRL/FR/7440–02-10,025, U.S. Naval Research Laboratory, Stennis Space Center, MS, Aug. 2002. 12 pp.

2002   **Chad A. Steed**, Jerry Landrum, and Christopher Moreau. PUMA-TEDS Technical Execution Plan. Formal Report NRL/FR/7440-02-10,003, U.S. Naval Research Laboratory, Stennis Space Center, MS, Jun. 2002. 32 pp.

Dissertation (1)

2008   **Chad A. Steed**. Development of a Geovisual Analytics Environment using Parallel Coordinates with Applications to Tropical Cyclone Trend Analysis. Ph.D. Dissertation, Mississippi State University, Mississippi State, MS, Dec. 2008. 221 pp.

Patents (3)

2014   **Chad A. Steed**, Thomas E. Potok, Robert Patton, Paul Bogen, and Christopher Symons. Interactive Visual Analytics for Situational Awareness of Social Media, Application No. 14/476,252, filed 3 Sep. 2014.

2013   Thomas E. Potok, Robert Patton, **Chad A. Steed**. Method and System to Discover and Recommend Interesting Documents. Application No. 13/737,652, filed 9 Jan. 2013.

2013   **Chad A. Steed**, J. Edward Swan II, T.J. Jankun-Kelly, and Patrick J. Fitzpatrick. Information Assisted Visual Interface, System, and Method for Identifying and Quantifying Multivariate Associations. 1 Jan. 2013.

Presentations & Demonstrations

Presentations & Invited Talks

Oct. 2014   **Chad A. Steed**. "Web-based Visual Analytics for Extreme Scale Climate Science." Presentation at the 2nd IEEE International Conference on Big Data. Bethesda, MD., Host:

Saumyadipta Pyne.

Sep. 2014   **Chad A. Steed**. "Visual Analytics for Extreme Scale Science." Invited Presentation at the ORNL Spallation Neutron Source (SNS), Oak Ridge, TN. Host: Thomas Proffen.

August 2014   **Chad A. Steed**. "Visual Analytics for Extreme Scale Science." Invited Presentation at NOAA Atmospheric Turbulence and Diffusion Division, Oak Ridge, TN. Host: Bruce Baker.

August 2014   **Chad A. Steed**. "Visual Analytics for Extreme Scale Science." Invited Presentation at North Carolina State University's Computer Science Department, Raleigh, NC. Host: Christopher Healey.

June 2014   **Chad A. Steed**. "In Situ Visual Analytics for Transformative Extreme Scale Science." LDRD Phase 2 Research Proposal (Computer Science and Math for Exascale Computing Focus) to the ORNL LDRD Advisory Council, Oak Ridge, TN. Host: Vladimir Protopopescu.

June 2014   **Chad A. Steed**. "Social Media Visual Analytics". Presentation to Dr. Sean M. Kirkpatrick, Defense Intelligence Officer for S&TI, Oak Ridge, TN. Host: JD Stauffer.

May 2014   **Chad A. Steed**. "Extreme Scale Visual Analytics". Presentation to Dr. Adedeji Badiru, Dean, Graduate School of Engineering and Management, Air Force Institute of Technology, Oak Ridge, TN. Host: Dick Webber.

Mar. 2014   **Chad A. Steed**. "Extreme Scale Visual Analytics". Presentation to Air Force Research Laboratory (AFRL) Executive Director Mr. Ricky Peters, Oak Ridge, TN. Host: Tim Vane.

Feb. 2014   **Chad A. Steed**. "Extreme Scale Visual Analytics". Invited Presentation at the Clemson University Visual / Human-Centered Computing Seminar Series, Clemson, SC. Host: Dr. Donald House.

Nov. 2013   **Chad A. Steed**. "Extreme Scale Visual Analytics". Invited Paper Presentation at the 4th SuperComputing Workshop on Petascale Data Analytics, SuperComputing 2013. Denver, CO, Host: Scott Klasky.

Sep. 2013   **Chad A. Steed**. "Social Media Visual Analytics". Presentation to Distinguished Visitors from Auburn University LTG (R) Ron Burgess, Dr. Ralph Zee, Dr. Bob Norton, Jeffrey Overby, David Umphress, and Larry Fillmer, Oak Ridge, TN. Host: Dick Webber.

July 2013   **Chad A. Steed**. "Interactive Visual Analysis of High Throughput, Unstructured Information Streams". Presentation to ORNL Global Security Directorate's Intel and Cyber Strategic Advisory Group Meeting, Oak Ridge, TN. Host: George Fisher.

June 2013   **Chad A. Steed**. "Interactive Visual Analysis of High Throughput, Unstructured Information Streams". ORNL Global Security Directorate LDRD Review, Oak Ridge, TN. Host: Yarom Polsky.

May 2013   **Chad A. Steed**. "Interactive Visual Analysis of High Throughput, Unstructured Information Streams". Presentation to FBI Science and Technology Contingent, Oak Ridge, TN. Host: Brigadier Gen. (Retired) J.D. Stauffer.

Apr. 2013   **Chad A. Steed**. "Big Data Visual Analytics". Presentation to Frederick W. Smith, Chairman and CEO of FedEx Corporation, Oak Ridge, TN. Host: Leigha Edwards.

Apr. 2013   **Chad A. Steed**. "Big Data Visual Analytics". Invited Presentation at the University of Tennessee's Center for Intelligent Systems and Machine Learning Industry Affiliate Workshop, Knoxville, TN. Host: Dr. Michael Berry.

Mar. 2013   **Chad A. Steed**. "Big Data Visual Analytics". Invited Presentation at the Clemson University Visual / Human-Centered Computing Seminar Series, Clemson, SC. Host: Dr. Donald House.

Jan. 2013   **Chad A. Steed**. "Interactive Visual Analysis of High Throughput, Unstructured Information Streams". Invited Presentation to the Big Data for Defense and Homeland Security Symposium, Alexandria, VA. Host: Thomas Engelman.

Nov. 2012   **Chad A. Steed**. "Student Research Opportunities with ORNL CDA". Invited Presentation to Dr. Mike Berry's Data Mining Class at the University of Tennessee Department of Electrical Engineering & Computer Science, Knoxville, TN. Host: Dr. Mike Berry.

Oct. 2012   **Chad A. Steed**. "Interactive Visual Analysis of High Throughput Text Streams." Presentation

at the 2nd Workshop on Interactive Visual Text Analytics. Seattle, WA, Host: Eser Kandogan.

Oct. 2012   **Chad A. Steed**. "Extreme Scale Visual Analytics." Invited Presentation to the University of Tennessee Department of Electrical Engineering & Computer Science for Joint Faculty Appointment, Knoxville, TN. Host: Dr. Jian Huang.

Sep. 2012   **Chad A. Steed**. "Extreme Scale Visual Analytics." Invited Seminar Presentation to the Mississippi State University Computer Science and Engineering Department, Starkville, MS. Host: Dr. Donna Reese, Department Head.

July 2012   **Chad A. Steed**. "Visual Analytics for Climate Model Analysis." Invited Presentation to the Naval Research Laboratory, Stennis Space Center, MS. Host: Kevin Shaw, Code 7440 Branch Head.

June 2012   **Chad A. Steed**. "Interactive Analytics for High Throughput, Unstructured Information Streams." LDRD Phase 2 Research Proposal (Global Security Focus) to the ORNL LDRD Advisory Council, Oak Ridge, TN. Host: Brent Park.

May 2012   **Chad A. Steed**. "Visual Analytics for Climate Analysis." Invited Presentation to the Tennessee Valley Authority (TVA) River Forecast Center, Knoxville, TN. Host: Curt Jawdy.

Apr. 2012   **Chad A. Steed**. "Visual Analytics For Social Media." Presentation to the USNORTHCOM, Oak Ridge, TN. Host: Richard "Tony" Turner.

Apr. 2012   **Chad A. Steed**. "Big Data Lessons Learned." Presentation to Mississippi Department of Transportation Chief, Willie Huff, Oak Ridge, TN. Host: Randy Walker.

Apr. 2012   **Chad A. Steed**. "Visual Analytics for Climate and Text Analysis." Invited Seminar Presentation to the Mississippi State University Computer Science and Engineering Department, Starkville, MS. Host: J. Edward Swan II.

Apr. 2012   **Chad A. Steed**. "Visual Analytics for Climate and Text Analysis." Invited Seminar Presentation to the University of Tennessee Center for Intelligent Systems and Machine Learning (CISML), Knoxville, TN. Host: Scott Wells.

Mar. 2012   **Chad A. Steed**. "CDA Visual Analytics Research Overview." Presentation to the Senate Select Committee on Intelligence Staff, Oak Ridge, TN. Host: BG (R) Rob Carr.

Mar. 2012   **Chad A. Steed**. "Visual Analytics Tools for CLM." Invited Presentation to the Joint Land and Biogeochemistry Working Groups, NCAR Mesa Lab, Boulder, CO. Host: David Lawrence.

Jan. 2012   **Chad A. Steed**, Christopher Symons, Frank DeNap, and Thomas E. Potok. "Guided Text Analysis Using Adaptive Visual Analytics." Presentation at the SPIE Visualization and Data Analysis Conference, Burlingame, CA. Host: Chaomei Chen.

Oct. 2011   **Chad A. Steed**. "An Overview of the SERRI Smart Search Analytics." Presentation to Tennessee Dept. of Safety and Homeland Security Deputy Commissioner, Larry A. Godwin, Oak Ridge, TN. Host: Wilson Lannom Jr.

Oct. 2011   **Chad A. Steed**. "SERRI Smart Search Analytics." DHS SERRI Program Review 2011, Crystal City, VA. Host: Ben Thomas and Warren Edwards.

July 2011   **Chad A. Steed**. "SERRI Smart Search Analytics." Presentation to NGA Program Managers (Melissa Dicker and Greg Davis), Oak Ridge, TN. Host: Jim Treadwell.

Mar. 2011   **Chad A. Steed** and Christopher Symons. "SERRI Smart Search Analytics." Presentation to DHS/TBI Nashville Fusion Center, Nashville, TN. Host: Steve Hewitt.

Apr. 2010   **Chad A. Steed**. "USW Visual Analytics." Presentation to the CNMOC Technical Director, Mr. Ed Gough, Stennis Space Center, MS.

Mar. 2010   **Chad A. Steed**. "GDBV V2." Presentation at the Ocean Bottom Characterization Initiative (OBCI) Annual Reviews, Stennis Space Center, MS. Host: Marcus Speckhahn.

Mar. 2010   **Chad A. Steed**. "Under Sea Warfare Visual Analytics." Presentation at the PEO-C4I & Space PMS-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS. Host: Edward Mozley.

Mar. 2010   **Chad A. Steed** and Jeff Russell. "AUV Bathymetry." Presentation at the PEO-C4I & Space PMS-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS. Host: Edward Mozley.

Jan. 2010   **Chad A. Steed**. "USW Visual Analytics Prototype Demonstration." Presentation and tech-

nical demonstration to NAVOCEANO ASW Subject Matter Experts, Stennis Space Center, MS. Host: David Harvey.

Dec. 2009 **Chad A. Steed**. "New Visual Analytics and Illustrative Visualization Methods for the Analysis of Hurricane Information." Invited seminar presentation at Oak Ridge National Laboratory, Oak Ridge, TN. Host: Tom Potok.

Nov. 2009 **Chad A. Steed**. "Guided Hurricane Trend Analysis using Enhanced Parallel Coordinates." Invited seminar talk to the Computer Science Department at the University of Southern Mississippi, Hattiesburg, MS. Host: Jian Chen.

Nov. 2009 **Chad A. Steed**. "The Unmanned Semi-Submersible (USS) Project." Technical Presentation at the International Technical Cooperation Program (TTCP) Annual Panel Meeting, Stennis Space Center, MS. Host: Rick Allard.

Oct. 2009 **Chad A. Steed**, T.J. Jankun-Kelly, and J. Edward Swan II. "Illustrative Visualization Techniques for Hurricane Advisory Information." Presentation at the MTS/IEEE Oceans 2009 Conference, Biloxi, MS. Host: Robert Moorhead.

Oct. 2009 **Chad A. Steed**, Chiu-Fu Cheng, and David Harvey. "Development of the Geophysical Data Base Variable Resolution (GDBV) Version 2 Using HDF5." Presentation at the MTS/IEEE Oceans 2009 Conference, Biloxi, MS. Host: Barbara Reed.

Oct. 2009 **Chad A. Steed**. "Undersea Warfare Visual Analytics." Presentation at the Performance Surface Management Council Meeting, COMNAVMETOCCOM, Stennis Space Center, MS. Host: Pamela McDowell.

Oct. 2009 **Chad A. Steed**, J. Edward Swan II, T.J. Jankun-Kelly, and Patrick J. Fitzpatrick. "Guided Analysis of Hurricane Trends Using Statistical Processes Integrated with Interactive Parallel Coordinates." Presentation at the Visual Analytics Science and Technology Symposium (VAST), Atlantic City, NJ. Host: Jason Dykes.

Sep. 2009 **Chad A. Steed**. "Database and Database Management Systems." Guest lecture to the Hydrographic Science Program at the University of Southern Mississippi, Stennis Space Center, MS. Host: Maxim van Norden.

Sep. 2009 **Chad A. Steed**. "Geophysical Data Base Variable Resolution Version 2 (GDBV V2) Status." PMW-120 GEOglider Planning Meeting, Stennis Space Center, MS. Host: Marcus Speckhahn.

May 2009 **Chad A. Steed**. "GDBV V2." Presentation at the PEO-C4I & Space PMW-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS. Host: Edward Mozley.

May 2009 **Chad A. Steed**, Will Avera, Mike Harris, Paul Elmore, and Brian Bourgeois. "AUV Bathymetry." Presentation at the PEO-C4I & Space PMW-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS. Host: Edward Mozley.

Feb. 2009 **Chad A. Steed**. "GDBV V2." Presentation at the CNMOC / NAVOCEANO Adaptive Sensors and Survey Techniques Program Reviews, Stennis Space Center, MS.

Feb. 2009 **Chad A. Steed**, Will Avera, Mike Harris, and Paul Elmore. "AUV Bathymetry." Presentation at the CNMOC / NAVOCEANO Adaptive Sensors and Survey Techniques Program Reviews, Stennis Space Center, MS.

Mar. 2009 **Chad A. Steed**. "GDBV V2." Presentation at the Ocean Bottom Characterization Initiative (OBCI) Program Reviews, Stennis Space Center, MS. Host: Marcus Speckhahn.

Jan. 2009 **Chad A. Steed**. "HDF5 Issues and GDBV Background." Invited presentation at the Sensor Optimization Working Group (SOWG) Meeting, Stennis Space Center, MS. Host: Eleanor Holmes.

Oct. 2008 **Chad A. Steed**, Josette P. Fabre, and Mark Livingston. "Advanced Geovisual Analysis for Undersea Warfare." NRL 6.2 New Start Research Proposal Presentation to the NRL Research Advisory Council, Washington, D.C. Host: Edward Franchi.

Sep. 2008 **Chad A. Steed**, Patrick J. Fitzpatrick, T.J. Jankun-Kelly, and J. Edward Swan II. "North Atlantic Hurricane Trend Analysis Using Parallel Coordinates and Statistical Techniques." Presentation at the GeoSpatial Visual Analytics Workshop, Park City, UT. Host: Gennady An-

drienko.

May 2008 · **Chad A. Steed**. "Advanced Visualization Techniques for Undersea Warfare." Invited presentation at the NRL Technical Metrics Workshop, Stennis Space Center, MS. Host: Josette Fabre.

Apr. 2008 · **Chad A. Steed** and Kevin Shaw. "Urban Operations Data: Acquisition, Fusion, and Visualization." Office of Naval Research (ONR) Transparent Urban Structures II 6.2 Technical Reviews, Arlington, VA. Host: Martin Kruger.

Mar. 2008 · **Chad A. Steed**. "GDBV V2." Presentation at PEO-C4I & Space PMW-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS.

Mar. 2008 · **Chad A. Steed**, Will Avera, Mike Harris, and Paul Elmore. "AUV Data Assimilation and AUV Bathymetry." Presentation at the PEO-C4I & Space PMW-120 6.2 and 6.4 Technical Reviews, Stennis Space Center, MS.

Jan. 2008 · **Chad A. Steed**. "GDBV Version 2." Presentation at the CNMOC / NAVOCEANO Adaptive Sensors and Survey Techniques Program Reviews, Stennis Space Center, MS.

Jan. 2008 · **Chad A. Steed**, Will Avera, Mike Harris, and Paul Elmore. "LBSF&I AUV Bathymetry: Historical Uncertainty." Presentation to Captain Paul Stewart (NRL Commanding Officer), Stennis Space Center, MS.

Oct. 2007 · **Chad A. Steed**. "Practical Application of Parallel Coordinates to Hurricane Trend Analysis." Presentation at IEEE Visualization 2007 Conference Poster Session, Sacramento, CA. Host: Lars Linsen.

Oct. 2007 · **Chad A. Steed**. "GDBV Version 2." Presentation at the Oceanographic and Atmospheric Master Library (OAML) Software Review Board Meeting, Stennis Space Center, MS. Host: Walt Moskal.

Jan. 2007 · **Chad A. Steed**. "GDBV Version 2." Presentation at the Ocean Bottom Characterization Initiative (OBCI) Program Reviews, Stennis Space Center, MS. Host: Marcus Speckhahn.

Sep. 2006 · **Chad A. Steed**. "Multivariate Geospatial Data Visualization Using NPR Techniques." Invited presentation to Dr. Lloyd Treinish (IBM Research), High Performance Collaboratory Mississippi State University, MS. Host: Robert J. Moorhead.

May 2005 · **Chad A. Steed** and Jennifer Wozencraft. "Data Visualization using Fledermaus for Hydrography." Guest lecture to the Hydrographic Science Program at the University of Southern Mississippi, Stennis Space Center, MS. Host: David Dodd.

Apr. 2005 · **Chad A. Steed** and Chris Drance. "AQS-20 RTP REA Processing using VNE-NCS." Presentation at the OAML Software Review Board Meeting, Stennis Space Center, MS. Host: Walt Moskal.

Feb. 2004 · **Chad A. Steed**. "Geophysical Data Base Variable Grid (GDB-V) and Ambient Noise Database." Presentation at the CNMOC / NAVOCEANO Adaptive Sensors and Survey Techniques Program Reviews, Stennis Space Center, MS.

Apr. 2004 · **Chad A. Steed**. "GDBV Development Status." Presentation at the OAML Software Review Board Meeting, Stennis Space Center, MS. Host: Walt Moskal.

Sep. 2003 · **Chad A. Steed**. "GDBV: An Object-Oriented Database for Dynamic Geo-Acoustic Data Storage." Presentation at MTS/IEEE Oceans 2003, San Diego, CA. Host: John Lever.

July 2003 · **Chad A. Steed**. "Precision Underwater MApping (PUMA) – Submarine Tactical Decision Aid (STDA)." Presentation at the Sensor Optimization Working Group (SOWG) Meeting, Fairfax, VA. Host: Eleanor Holmes.

Apr. 2003 · **Chad A. Steed**. "Geophysical Data Base Variable Resolution." Presentation at the OAML Software Review Board Meeting, Stennis Space Center, MS. Host: Walt Moskal.

Oct. 2002 · **Chad A. Steed**. "VGRID: A Generic, Dynamic HDF5 Storage Model for Georeferenced, Grid Data." Presentation at MTS/IEEE Oceans 2002, Biloxi, MS. Host: John Lever.

Dec. 2002 · **Chad A. Steed**. "PUMA-TEDS." Presentation at the CNMOC / NAVOCEANO Adaptive Sensors and Survey Techniques Program Reviews, Stennis Space Center, MS.

Sep. 2001   **Chad A. Steed**. "PUMA-TEDS NRL/NAVOCEANO Final Design Review." Presentation at the PUMA-TEDS Integration Final Design Review, Crystal City, VA. Host: Kim Koehler.

Demonstrations

2009   Brian Bourgeois, **Chad A. Steed**, and William E. Avera. Unmanned Semi-Submersible (USS) Sea-trial and Demonstration. Technical demonstration and sea-trials for the USS vessel at the Naval Air Station Pensacola. Pensacola, FL, Nov. 1-6, 2009.

2005   Michael M. Harris, William E. Avera, John T. Sample, **Chad A. Steed**, Leonard D. Bibee, and Dave Morgerson. AN/AQS-20 Environmental Data Collection Demonstration. Technical Demonstration for AQS-20 Rapid Transition Project at the Naval Surface Warfare Center Panama City (NSWC-PC) in conjunction with the U.S. Navy's GOMEX Mine Warfare Exercise. Panama City, FL, Jun. 2005. Results also published in NRL Formal Report NRL/FR/7440—06-10,134.

2005   Michael M. Harris, William E. Avera, **Chad A. Steed**, and John T. Sample. AN/AQS-20 Environmental Data Collection Demonstration. Technical Demonstration for AQS-20 Rapid Transition Project, Panama City, FL, Mar. 2005. Results also published in NRL Formal Report NRL/FR/7440—05-10,113.

2004   Michael M. Harris, William E. Avera, **Chad A. Steed**, Leonard D. Bibee, Warren T. Wood, William D. Morgerson, and Christopher S. Robinson. AN/AQS-20 Through-The-Sensor Determination of Sensor Performance Demonstration. Technical Demonstration for AQS-20 Rapid Transition Project, Stennis Space Center, MS, Dec. 2004. Results also published in NRL Formal Report NRL/FR/7440—05-10,106.

Media Coverage

2014   "Winners of the 2013 Best Paper Awards". Elsevier CAGEO Journal Website, March 2014, http://www.journals.elsevier.com/computers-and-geosciences/news/winners-of-the-2013-best-paper-awards/.

2013   "Seeing is Believing". OLCF Website, March 2014, https://www.olcf.ornl.gov/2014/03/18/seeing-is-believing/.

2013   "ORNL wins six R&D 100s". ORNL Website, July 2013, http://www.ornl.gov/ornl/news/news-releases/2013/ornl-wins-six-rd-100s.

2012   "Ultra-scale Visualization – Climate Data Analysis Tools (UV-CDAT) Developing New Capabilities in Climate Data Analysis". Oak Ridge Climate Change Science Institute Newsletter, July 2012.

2012   "High-level Military Visit at ORNL." knoxnews.com, 8 January 2012, http://blogs.knoxnews.com/munger/2012/02/high-level-military-visit-at-o.html

2011   "So That's What Climate Change Looks Like." knoxnews.com, 7 October 2011, http://blogs.knoxnews.com/munger/2011/10/so-thats-what-climate-change-l.html

Significant Collaborators

I have jointly authored papers, grants, organized workshops, and/or engaged in significant collaborations with the following individuals:

- *Chris Healey*, NC State, *Amy Apon*, *Donald House*, *Josh Levine*, *Sapna Sarupria*, Clemson University, *J. Edward Swan II*, *T.J. Jankun-Kelly*, *Robert Moorhead*, Mississippi State University, *Mark Livingston*, Naval Research Laboratory, *Dave Pugmire*, *John R. Goodall*, *Sean Ahern*, *Eric Ragan*, *Joel Reed*, *Vladimir Protopopescu* Oak Ridge National Laboratory, *Chris Collins*, Univ. of Ontario Institute of Technology, *Eser Kandogan*, *Michelle X. Zhou*, IBM,

Shixia Liu, Microsoft, *Pak Chung Wong*, PNNL (visualization, interactive interfaces, and visual analytics)

- *Thomas E. Potok*, *Justin Beaver*, *Robert Patton*, *Christopher Symons*, *Laura Pullum*, *David Resseguie*, *Arvind Ramanathan*, Oak Ridge National Laboratory, and *Michael Berry*, *Jian Huang*, *Audris Mockus*, University of Tennessee (social media, biosurveilance, text, cyber security, visual analytics)

- *Peter Thornton*, *Daniel Ricciuto*, *Kate Evans*, *David Erickson*, *Dali Wang*, *Galen Shipman*, ORNL, *Dean Williams*, Lawrence Livermore National Laboratory (climate analytics)

- *Songhua Xu*, *Jack Schryver*, *Wade McNair*, *Georgia Tourassi*, Oak Ridge National Laboratory (healthcare information visualization)

- *Laura Pullum*, *Arvind Ramanathan*, *Xiaohui Cui*, Oak Ridge National Laboratory (agent-based disease modeling and biosurveilance)

- *Kevin Shaw*, *John Sample*, *Josie Fabre*, *Will Avera*, *Mike Harris*, *Maura Lohrenz*, Naval Research Laboratory, *William Rankin*, *Dave Harvey*, Naval Oceanographic Office, *Rick Bailey*, Applied Research Laboratory University of Texas, and *Marc Stewart*, Applied Physics Laboratory University of Washington (geospatial visual analytics and geoscientific databases)

Teaching

Fall 2013	COSC 557/494, Data Visualization, University of Tennessee.
Fall 2009	CSS 360, Introduction to the UNIX Operating System, University of Southern Mississippi.

Student & Intern Mentoring

2014-15	Meg Drouhard, University of Tennessee, M.S. Computer Science. *Graduate Committee Service*
2014	Andrew Stamps, Mississippi State Univ., Ph.D. Computer Science: Illustrative Visualization. *Graduate Committee Service*
2014	Melva James, Clemson University, Ph.D. Computer Science: Social media mining.
2014	Meg Drouhard, University of Tennessee, M.S. Computer Science: Visualization and analysis of social media data.
2014	Warren de Witt, University of Tennessee, M.S. Computer Science: Biomedical visualization.
2014	Joshua Pyle, University of Tennessee, M.S. Computer Science: Visualization and analysis of social media data.
2012, 13, 14	James Senter, Cornell University, B.S. Computer Science: Serious Games, evaluations, investigating swarming algorithms, text mining, social media, and visualization.
2011–2014	Brian Jewell, Tennessee Technological University, M.S. Computer Science: Investigating information visualization on the web.
2013	Adam Gillfillan, North Carolina State University, M.S. Computer Science: Visualization and analysis of cyber event data.
2013	Collin Bell, University of Tennessee, B.S. Computer Science: Visualization and analysis of social media data.
2011–13	Christopher Maness, East Tennessee State University, B.S. Computer Science: Exploring new web based visualization toolkits, multiple linked views, document databases, and social media analysis.
2012	Blake Haugen, University of Tennessee, Ph.D. Computer Science: Investigating parallel processing and I/O for climate data visual analytics.

2011–12   Michael Iannacone, Georgia Tech, M.S. Computer Science: Research on web application frameworks and backend processing.

2009–10   Lewis Jones, University of Southern Mississippi, Ph.D. Computer Science: Research on AUV data processing and graph visualization techniques.

2008–09   Michael McCoy, Mississippi State University, BS Computer Engineering: GPGPU programming and urban structure data visualization on the web.

Professional Service

PROGRAM COMMITTEE: Visualization and Data Analysis Conference (2012, 2013, 2014, 2015).

WORKSHOP ORGANIZER: Workshop on Interactive Visual Text Analytics at IEEE VisWeek (2013).

SESSION CHAIR: Visualization and Data Analysis Conference (2012), MTS/IEEE Oceans (2009).

JOURNAL REVIEWER: IEEE Computer Graphics and Applications (2013), Journal of Computational and Graphical Statistics (2013), WIREs Computational Statistics (2012, 2013), Computers & Geosciences Journal (2012), Cartography and Geographic Information Science (2011), International Journal of Geographical Information Science (2009).

CONFERENCE REVIEWER: ACM Conference on Intelligent User Interfaces (iUI) (2015), ACM CHI Conference (2015), IEEE Symposium on Biological Data Visualization (BioVis) (2014), SPIE Visualization and Data Analysis Conference (2012, 2013), IEEE EuroVis Conference (2012), Hawaii International Conference on System Science (2012), IEEE Visualization Conference (2008–2013), IEEE Information Visualization Conference (2009–2011,2013–2014), IEEE Visual Analytics Science and Technology Conference (2010,2011,2013,2014), IEEE VisWeek Poster Session (2010), MTS/IEEE Oceans Conference (2009), IEEE Pacific Visualization Symposium (2009), IEEE Virtual Reality Conference (2007), International Symposium on Mixed and Augmented Reality (2007).

REVIEW PANEL: NSF Information & Intelligent Systems Division (IIS) Panel (2014), DOE SBIR/STTR Phase 1 Review (2013), NSF Information & Intelligent Systems Division (IIS) Panel (2013), DOE SBIR Data Analysis and Visualization Phase II Review (2012), DOE SBIR Data Analysis and Visualization Phase I Review (2011), NSF Arctic Ocean Visualization (2010), SPAWAR SBIR Optimal Seafloor Mapping Technologies (2009).

WORKSHOPS: ORNL Computational Sciences Directorate Data Strategy Workshop (2011, 2012), NRL Technical Metrics Workshop (2008), NGA NSG Urban Feature Data Conference (2008), SPAWAR TEDS Data Architecture Workshop (2002).

MEMBER: Association of Computing Machinery (ACM), ACM SIGGRAPH, ACM SIGCHI, Institute of Electrical and Electronics Engineers (IEEE), and IEEE Computer Society.