





Dr. Bradley M. Battista, PhD, CGP-E


Senior Geoscientist

 (919) 717 0009

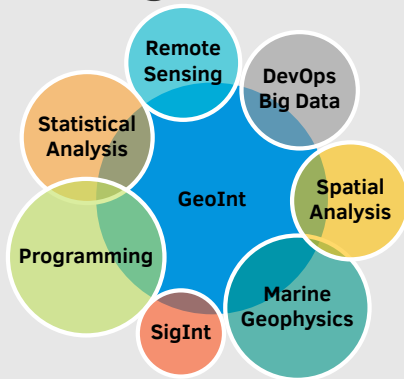
 energieosol.com

 mbattista@battlespace.com

 /in/bbattista

 bbattista

Strengths



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Projects

BOEM - Atlantic offshore wind energy development, geophysical mapping and identification of paleolandscapes and historic shipwrecks offshore of South Carolina.

USACE - Integrated and automated fleet vessel tracking and reporting with the USACE's Dredge Quality Management (DQM) program.

DoE/NOAA/MMS - A seafloor observatory in the Northern Gulf of Mexico, utilizing seismoacoustic, geochemical and microbiologic sensors monitoring ambient noise, fluid venting and environmental conditions.

DoD - SigInt utilities for extending electromagnetic range detection and identification of submarine vessels.

DoD/US Navy - Acquired, processed, interpreted, reported, published, archived geospatial, acoustic bottom loss data for real-time support of deployed U.S. Navy Fleets.

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About

Dr. Battista possesses core competencies prerequisite to leadership roles involving research, product development, and development of innovative geo-technologies. He is currently pursuing challenging opportunities, contributing to the advancement of geo-technologies applied to geospatial intelligence and public well being.

Experience

Jun 2018 - Present **Directory, Science & Technology** Battlespace, Inc, 40 hrs/wk

- Identify opportunities in the area of science, technology, and engineering.
- Serve as Capture Manager.
- Coordinate the efforts of personnel from multidisciplinary teams to achieve science/engineering objectives for short and long term projects.
- Plan, execute, and document structured research endeavors to promote the interests of a diverse customer base, advancing the state of the art pertinent to data management, analysis, interpretation and data utilization.
- Conduct empirical field studies, whether independently or in partnership with established research teams.
- Publish and/or present study results in the capacity of Principal Investigator (PI) or Subject Matter Expert (SME).
- Apply innovative statistical and numerical methods to analyze and interpret acoustic, atmospheric, oceanographic, meteorological, and/or biological data.
- Develop analysis methodologies and software applications to address unique end user requirements and/or problems.
- Provide documentation and technical support for independently developed software applications and codes.
- Develop, implement and maintain IT software applications and associated hardware systems.

Jun 2006 - Present **Geophysicist & Chief Technologist** EnerGeo Solutions, <20 hrs/wk

- Developed, managed and mined large, geospatial data bases from multiple nations.
- Applied innovative statistical and numerical methods to analyze and interpret acoustic, atmospheric, oceanographic, meteorological, and/or biological data.
- Developed analysis methodologies and software applications to address unique end user requirements and/or problems.
- Provided documentation and technical support for independently developed software applications and codes.
- Developed, implemented and maintained IT software applications and associated hardware systems.
- Coordinated the efforts of personnel from multidisciplinary teams to achieve science/engineering objectives for both short and long-term projects.
- Mentored junior staff to achieve optimal use of human resources and expanded participation in ongoing engineering and science Programs such as USACE vessel tracking and BOEM Wind Energy research.
- Planned, executed, and documented structured research endeavors to promote the interests of a diverse customer base, advancing the state of the art pertinent to data management, analysis, interpretation and data utilization.
- Conducted empirical field studies, whether independently or in partnership with established research teams.
- Published and/or presented study results in the capacity of Principal Investigator (PI), Subject Matter Expert (SME), or hired consultant.

Nov 2008 -
Aug 2014

Chief Marine Technology Engineer

eTrac Inc, 40 hrs/wk

- Oversaw hardware development supporting real-time geospatial and multisensor data acquisition.
- Led the development of automated vessel tracking and reporting using embedded Linux and programmable microcontrollers.
- Trained and led junior personnel in maintenance and safe installation procedures involving marine construction and vessel tracking equipment.
- Trained customers in the usage of tracking hardware for Environmental Protection Agency and United States Army Corps of Engineers compliance through the dredge quality management (DQM) program.
- Maintained customer relations in the marine construction industry for installation and maintenance of tracking hardware.
- Maintained hardware and software warehouses for readiness and immediate mobilization of equipment.
- Maintained high-availability web applications and databases for customer and regulatory agency access.
- Developed mobile web application for calibrating and configuring instrumentation in real time, remotely and during onsite inspections.
- Participated in hydrographic surveys.
- Transported and/or piloted survey vessels in support of survey operations.
- Served as Lead Geophysicist in geophysical surveys.

Aug 2008 -
Dec 2008

Postdoctoral Researcher

University of South Carolina, 20 hrs/wk

- Extended Doctoral research for commercial application of a new data-driven approach to locating buried methane gas hydrates in the Northern Gulf of Mexico.
- Published results in the *Journal of Applied Geophysics*.

Aug 2002 -
Oct 2007

GeoInt & SigInt Engineer

Information Systems Laboratories, 40 hrs/wk

- Researched electromagnetic characteristics of vessels and submarines in commercial shipping lanes.
- Applied nonlinear, time-domain signal processing routines to nonlinear time series data convolved with stochastic noise sources.
- Created statistical receiver operator characteristic (ROC) profiles for dynamic environmental conditions pertaining to the detection of electromagnetic dipole signatures.
- Collaborated with Scripps Institute of Oceanography and U.S. Navy Space and Warfighting Support Center to conduct surveys and publish findings.

Sep 1997 -
Aug 2002

Oceanographer

Naval Oceanographic Office, 40 hrs/wk

Series: 1360, Plan: GS, Grade: 11

- Served as lead or supporting survey technician onboard Navy TAGS-60 research vessels.
- Participated in open-water acoustic and oceanographic research cruises lasting weeks to months per year.
- Managed geospatial hardware, software, and data at sea and in the office.
- Created bottom-type sediment maps of the seafloor.
- Created sub-bottom stratigraphic maps of the seafloor.
- Modeled and assigned acoustic properties to mapped products.
- Served as systems administrator for 60+ workstations in a secured laboratory.
- Created workflows, work breakdown structures (WBS), and designed algorithms for integrating acoustic and geospatial data into geospatial databases used for Naval Fleet support.

Education

- 2003 - 2008 **Ph.D., Geological Sciences** (GPA: 4.0) University of South Carolina, USA
Adaptation of the Empirical Mode Decomposition for Use with Very High Resolution Seismic Reflection Data from Both Acoustic and Electromagnetic Sources.
- 1997 - 2001 **M.Sci., Marine Sciences** University of Southern Mississippi, USA
Large to Fine-scale Subduction Processes in the Middle America Trench.
- 1993 - 1997 **B.Sci., Marine Sciences** Coastal Carolina University, USA
Coastal Processes and Their Effect on Grain Size Distribution of Nearshore Myrtle Beach, SC.

Projects, R&D

- Sep 2016 -
Sep 2017 **Innovation** EnerGeo Solutions
In-Progress Seismic Resurgence across the Isthmus of Panama and Its Implications for Volcán Barú in the Chiriquí Province.
- This research involved living in remote regions of the Republic of Panama for twelve months, learning Spanish, and functioning independently.
 - Located and recovered data from a private seismic network procured by the Universidad de Panamá and the OSOP seismic observatory.
 - Data from the private seismic monitoring network suggests evolving patterns of seismic behavior.
 - Created a web application for mining and analyzing data from public and private seismic networks, including station locations, seafloor maps, volcano locations, tectonic boundaries, heatmaps, and D3js three-dimensional epicenter browser.
 - Discovered evidence for new delineation of tectonic boundaries relating to the Panama Block.
 - A publication is being prepared for peer review and as a stimulus to raise risk awareness near the Provinces affected by Volcán Barú.
- 2015 -
2017 **BOEM** University of South Carolina
Atlantic Offshore Wind Energy Development- Geophysical Mapping and Identification of Paleolandscapes and Historic Shipwrecks Offshore South Carolina.
- Led the design of a data integration workflow assimilating bathymetry, backscatter, sub-bottom, and magnetic datasets.
 - Trained and led students in calibrating and processing each dataset.
 - Trained and led students in focused research efforts leading to data visualization and interpretation of each dataset.
 - Served as a SME advising PIs to resolve conflicts between datasets.
 - Provided Geographical Information Systems (GIS) advisement while producing project deliverables.
 - Created online map products showcasing datasets as raster map tiles and vector layers.
 - Provided data archival, backup, and file serving solutions minimizing the risk of data loss.
- 2008 -
2014 **USACE** eTrac Inc
Overcoming the Pitfalls of Using Embedded Debian Linux for Near Real-Time Data Acquisition in Harsh Environments.
- Resolved various system failures resulting from non-grounded electrical systems on steel barges, sensor damage, and saltwater intrusion.
 - Significantly reduced power profile of data logger to ensure battery life and minimal solar charging demand.
 - Optimized mobile hardware to allow for maximum uptime of internet service- up to ten miles offshore.
 - Overcame SD card corruption when using a flash-based filesystem for datalogging in conditions where power was not guaranteed.

2003 -
2008

DoE/NOAA/MMS

University of South Carolina

Adaptation of the Empirical Mode Decomposition for Use with Very High Resolution Seismic Reflection Data from Both Acoustic and Electromagnetic Sources.

- Customized Empirical Mode Decomposition to include a user interface, signal inspector, and weighting algorithm for emulating an adaptive bandpass filter.
- Identified utilities to preserve phase and amplitude of filtered seismic pulses existing at very poor signal-to-noise ratios, allowing for improved imaging leading to successful detection of buried methane hydrates.
- Seismo-acoustic targets of centimeter scale were successfully imaged from hundreds of meters away, and concluded that seismic resolution could provide structure and composition under the proper conditions.
- Several peer-reviewed publications were accepted and regarded as significant contributions to marine seismic reflection geo-technology.

2002 -
2003

DoD

Information Systems Laboratories

Transient Signals Detection Using the Empirical Mode Decomposition and Hilbert-Huang Transform

- Communicated algorithm and software design with PIs and customers.
- Participated in electromagnetic and magnetotelluric research between the Anza Borrego Desert State Park and offshore Point Loma, CA.
- Created software implementation of the Empirical Mode Decomposition (EMD) and Hilbert-Huang Transform (HHT),
- Integrated the EMD and HHT into existing Least-Squares algorithms aiming to match-filter transient signals in the presence of stochastic noise.
- Demonstrated and published superior results over existing methods of transient signals detection as related to identifying and distinguishing submarine and surface vessels in busy shipping lanes.

1997 -
2002

DoD/US Navy- Acoustics Division, Bottom Interaction Branch

Naval Oceanographic Office

Acoustic and Geophysical Geospatial Database Generation

- Participated in acoustic surveys in support of low-frequency bottom loss (LFBL) and high-frequency bottom loss (HFBL) databases.
- Hand contoured nautical charts for bathymetry, digitized and integrated the results with recent sonar bathymetric data.
- Hand contoured nautical charts for bottom types, digitized, and integrated the results with physical samples.
- Integrated sound velocity profiles (SVP) and core analyses into acoustic models from the sea surface through below the seafloor.
- Integrated conductivity, temperature, and salinity profiles.
- Acquired, processed, interpreted, and integrated sub-bottom profiles from Chirp, Sparker, and Boomer acoustic sources.
- Acquired, processed, interpreted, and integrated bathymetry from single and multibeam sonar systems.
- Designed software to analyze the above efforts and created acoustic models having attributes for water column, seafloor, and sub-bottom acoustical properties.
- Created maps identifying acoustic shadow zones in coastal waters.
- Authored and presented reports and presentations to Branch Heads and Division Leaders.
- Authored and presented findings at conferences.
- Assembled and integrated results into geospatial warehouses held at the Naval Oceanographic Office.

Strengths & Skills

Modus Operandi: Utilize an interdisciplinary background to facilitate optimum data integrity, flow, and preservation through custom and/or advanced workflows that address efficient and innovative solutions to challenging problems involving geo-technology.

Applied

Experience Acoustics, Cartography, Geospatial Databases, Oceanographic Survey, Photogrammetry, Electromagnetic Signal Processing, Underwater Object Detection, Nonlinear Signal Processing, Hydrographic Survey, Embedded Hardware, Embedded Software, Automation, Fleet Vessel Tracking and Reporting, Empirical Mode Decomposition, Hilbert-Transform, GIS Web Integration, web applications and Websockets

Technologies

SysAdmin Raspberry Pi, OpenMediaVault, Ubuntu, Mint, Debian, CentOS, OpenElec, Technologic Systems, Gumstix, DD WRT, Apache2, Nginx, Database Admin, Network Admin, Filesystem Admin, Networked Filesystems, NAS, RAID, ZFS, SVN, Git, Rsync, SSH, Kernel Config, Custom Modules, IPTables, cronab, automation, serial-tcp broadcasting, data logging, mobile communications

Geo Software QPS, Fledermaus, FM Geocoder Toolbox, HyPack, ESRI, QGIS, Google Earth, Petrel, OpendTect, SMT Kingdom Suite, Landmark, ProMax, Vista, SioSeis, Seismic Unix, Generic Mapping Tools, GRASS, Holux, Garmin, Trimble, OpenDroneMap

Programming Python, Perl, PHP, Javascript, HTML, Websockets, Awk, Bash, MatLab, Octave, R, MySQL, SQLite, Spatialite, LaTeX, Ghostscript

Libraries/APIs GDAL, Proj4, RTKLib, OpenLayers, Leaflet, Google Maps, OpenStreetMaps, OpenVPN, D3.js, Plotly, Wordpress, Wix, jQuery, Flot, HighCharts, GIMP, ImageMagick, Inkscape

Cloud GitHub, Resilio (reseller), Virtual Private Servers (VPS), AuthorEA, DocHub, Google, Prezi, Canva, EverNote, Zapier, MailChimp

Activities

Field Hydrographic survey, towing, boat handling, navigation and seamanship, multibeam and singlebeam bathymetry, single-channel and multi-channel seismic reflection profiling, chirp, magnetometer, sparker, boomer, GPR, resistivity, SVP, XBT, CTD, coring, grab sampling, water sampling, tide gauges, acoustic and pressure sensors, moment switches, sea-going vessel transfers, soldering, welding, mechanical tools

Training Chemistry, Biology, Geology, Physics, Marine Chemistry, Marine Biology, Marine Geology, Physical Oceanography, Biological Oceanography, Marine BioGeoChemistry, Marine Geology, Applied Calculus, Statistics, Marine Environments, Ecosystem Analysis, Sedimentary Geology, Sedimentary Analysis, Clay Mineralogy, Coastal Marine Geology, Marine Sediments, Coastal Processes, Earthquake Seismology, Exploration Seismology, Geophysical Signal Processing, Sequence Stratigraphy, Regional Tectonics, Tectonophysics, Advance Seismology, Solute Transport

Certifications TS/SCI, CGP-E, TWIC, HAZWOPER, CPR, PADI Open Water

Personal

Interests Hiking, Camping, Bicycling, Kayaking, Canoeing, SCUBA, Snorkeling, Longboarding, Homebrewing, Hydroponic and Aquaponic Gardening, Biodiesel from waste-vegetable oil, Audio/Video Editing, Home Theater Linux Builds, Linux Server Builds, and Creating Custom Maps

Certifications Process Coaching (teaching strategies for self improvement), Raw Food/Vegan Chef (health/nutrition)

Publications

- Bradley M. Battista, Gregory T. Foscue, and Catherine F. Cahill. **The Role of GEOINT in the Integration of Commercial, Small UAS into the National Airspace System.** *2020 State and Future of GEOINT Report*, pages 10-13, 2020.
- Ethan Anderson, Duke Brantley, Camelia Knapp, Bradley Battista, Paule Gayes, and Christina Maschmeyer. **Geomorphological Assessment of the North Myrtle Beach (SC) Continental Shelf for Wind Energy Development.** *Southeastern Geographer*, Vol.58, No.2, pages 181-192, 2018.
- Leonardo Macelloni, Bradley Battista, and Camelia Knapp. **Optimal Filtering High-Resolution Seismic Reflection Data using a Weighted-Mode Empirical Mode Decomposition Operator.** *Journal of Applied Geophysics*, Vol. 75, No.4, pages 603-614, 2011.
- Bradley Battista, Adrian Addison, and Camelia Knapp. **Empirical Mode Decomposition Operator for Dewowing GPR Data.** *Journal of Environmental & Engineering Geophysics*, Vol. 14, No.4, pages 163-169, 2009.
- Adrian Addison, Bradley Battista, and Camelia Knapp. **Improved Hydrogeophysical Parameter Estimation from Empirical Mode Decomposition Processed Ground Penetrating Radar Data.** *Journal of Environmental & Engineering Geophysics*, Vol 14, No.4, pages 171-178, 2009.
- Bradley Battista, Camelia Knapp, Tom McGee, and Vaughn Goebel. **Application of the Empirical Mode Decomposition and Hilbert-Huang Transform to Seismic Reflection Data.** *Geophysics*, Vol. 72, No.2, pages 29-37., 2007.
- Michael L. Larsen, Jeffrey Ridgway, Cy H. Waldman, Michael Gabbay, Rodney R. Buntzen, and Brad Battista. **Transient Signal Detection Using the Empirical Mode Decomposition.** In *The Hilbert-Huang Transform in Engineering*, edited by N.E. Huang and N.O. Attoh-Okine, CRC press, 328p, 2005.
- Carol Lutkin, Allen Lowrie, Erika Geresi, Richard Bennett, Richard Faas, Bradley Battista, and Tom McGee. **Interpretation of High Resolution Seismic Data From a Geologically Complex Continental Margin, Northern Gulf of Mexico.** *GCAGS/GCSSEPM Transactions*, 53:504:516, 2003.
- Bradley Matthew Battista. **Large to Fine-Scale subduction Processes in the Middle America Trench.** *Master's Thesis, University of Southern Mississippi, December 2001.*
- L. Somoza, B.M. Battista, J. Gardner, and A. Lowrie. **Gulf of Cadiz (Western Spain): Characterized by a Complex Petroleum System.** In *Petroleum Systems of Deep-Water Basins*, pages 741-754. *Proceedings of the GCSSEPM Foundation*, 2001.