Robert J. Hollis

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Education and Training

M.S. Marine Science: Geological Oceanography (2018) *University of Southern Mississippi, MS*
B.S. Geology and Geological Oceanography (2014) *University of Rhode Island, Kingston, RI*
Geology Field Camp (July 2014) *Iowa State University, Ames, IA*
Oceans and Climate Program (Sept 2013) *Sea Education Association, Falmouth, MA*

Related Experience

Research Scientist & Geologist- The Water Institute of the Gulf (2022-Present)

Coastal Geologist- Applied Coastal Research and Engineering Inc. (2019-2022)
Technical lead responsible for evaluating natural processes and engineering factors associated with fluvial, wetland and coastal change, including storm impacts, sea level rise (SLR), subsidence, surface geologic controls, regional climate events, and changes in sediment supply over recent and geologic timescales.

- Created regional subsidence map of the Louisiana deltaic and Chenier plain from GPS survey benchmark and water level trend data, correlating subsidence rates to Holocene stratigraphy to inform state restoration project decisions and planning
- Compared natural background subsidence to load induced subsidence due to beach replenishment fill overburden at a deltaic headland coastline to improve restoration design standards
- Facilitated stakeholder workshops in collaboration with USACE in order to compile sediment budget data to be synthesized in an online SBAS data tool for the Northern Gulf of Mexico (NGoM)
- Examined environmental/climate and anthropogenic stressors leading to wetland degradation

Graduate Research Assistant- University of Southern Mississippi, supervised by D.J. Wallace, Ph.D., (Dec 2016-2019)
Thesis Title: "*Late Quaternary Evolution and Stratigraphic Framework Influence on Coastal Systems along the North-Central Gulf of Mexico, USA*"

- Created stratigraphic evolutionary model identifying sand bodies and associated overburden deposited by relict fluvial-deltaic systems, later reworked by coastal processes. Thus, providing a cost-effective strategy working with federal regulatory agencies assessing viable sand resources
- Published peer-reviewed manuscript constraining the Late Quaternary antecedent geologic control on the Holocene evolution of Mississippi-Alabama barrier chain, while identifying critical thresholds of sediment supply and SLR rates forcing barrier geomorphic change (formation, transgression, progradation, degradation) to refine predictions of barrier response to future climate change

Research Associate II- Rhode Island Geological Survey, supervised by J.C. Boothroyd, Ph.D., B.A Oakley, Ph.D., (2014-Dec 2016)

- Collaborated as part of the interdisciplinary Beach Special Area Management Plan (SAMP) group to further coastal erosion and sea level adaptation, outreach, flood risk vulnerability awareness, and coastal policy in local RI communities and stakeholders (www.beachsamp.org)
- Produced a series of resiliency and risk assessment technical reports and updated shoreline change maps, adopted into new coastal regulation documents and public tools
- Created nearshore sediment budget of the upper shoreface and subaerial berm along the Rhode Island South Shore using side scan sonar, CHIRP, grab samples, underwater video, Lidar and continuous RTK-GPS surveys to assess sand volumes and modern morphologic change

- Trained and supervised undergraduate field assistants, citizen scientists, and town officials in beach monitoring methods to expand the State's longest running beach profile survey network

Student Researcher, Iowa State University Field Camp, supervised by Carl Jacobson, Ph.D., (Summer 2014)

- Correlated well logs and stratigraphic columns into the subsurface in the Bighorn Basin, WY
- Interpreted rock and fossil record for paleoenvironments and petroleum exploration
- Mastered field mapping methods to create structural cross sections and other geologic maps

Student Researcher & Crew member, Sea Education Association-Boston University, supervised by Chief Scientist A. Meyer, Ph.D., (Fall 2013)

- Designed and completed interdisciplinary oceanography research project comparing water column stratification levels vs nitrogen producing species distributions in Pacific upwelling currents and gyres
- Crewed a 140 foot brigantine ship as Junior Watch Officer and strengthened team building and problem solving skills while sailing from San Diego, US to Tahiti, French Polynesia for over 6 weeks

Research Associate, Rhode Island Geological Survey, Beach SAMP, supervised by J. Boothroyd, Ph.D., B. Oakley, Ph.D., (Summer 2013)

- Surveyed the South County shoreline and Block Island as part of a shoreline change study
- Utilized other state resiliency guidelines to define "at-risk coastal areas" of Rhode Island
- Data-logged 400+ geotechnical wells and created/interpreted 100+ graphic well log profiles

Research Fellow, Coastal Fellowship, URI Geology Dept., supervised by D. Cardace, Ph.D., (Summer 2012)

- Constructed soil depth vs serpentinite outcrop boundary maps of field site UC Davis McLaughlin Natural Reserve, Lower Lake, California
- Analyzed mineralogy of 24 ophiolite samples using X-Ray Diffraction
- Wrote and received grant proposal from Rhode Island Space grant to fund field work ($2200)
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Peer-Reviewed Publications

www.researchgate.net/profile/Robert-Hollis-4

- Gal N.S., Wallace D.J., Miner M.D., **Hollis R.J.,** Dike C.H., Flocks J.G., 2020, Holocene Formation of Horn Island, Mississippi, USA. Marine Geology 431, 106375 doi.org/10.1016/j.margeo.2020.106375
- Oakley B. A., Murphy C., Lee K.K., **Hollis R.J.,** Caccioppoli B., King J.W., 2020, Sediment deposition following construction of a breakwater harbor: Point Judith Harbor of Refuge, Rhode Island, USA. Journal of Marine Science and Engineering 8, 863 doi.org/10.3390/jmse8110863
- **Hollis R.J**., Wallace D.J., Miner M.D., Gal N.S., Dike C.H., Flocks J.G., 2019, Late Quaternary Evolution and Stratigraphic Framework Influence on Coastal Systems along the North-Central Gulf of Mexico, USA. Quaternary Science Reviews 223 1-24. doi.org/10.1016/j.quascirev.2019.105910
- Oakley B. A., Murphy C., Varney M., **Hollis R.J.,** 2019, Spatial Extent and Volume of the Shoreface Depositional Platform on the Upper Shoreface of the Glaciated Rhode Island South Shore. Estuaries and Coasts doi.org/10.1007/s12237-019-00594-2

Selected Technical Reports

- Byrnes M., **Hollis R.J**., Britsch L.D., Berlinghoff J.L., Johnson R., 2021, Recent Subsidence Trends for Southeastern Louisiana Derived from Static GPS Measurements at Primary and Secondary Benchmarks. CPRA Technical Report https://cims.coastal.louisiana.gov/RecordDetail.aspx?Root=0&sid=24573
- Byrnes, M. **Hollis R.J**., 2020, Consolidation Settlement Associated with Beach Restoration along the Caminada Headland Shoreline, LA: February 2013 to March 2020. CPRA Technical Report https://cims.coastal.louisiana.gov/RecordDetail.aspx?Root=0&sid=24522
- Oakley B. A., **Hollis R.J**., Boothroyd J.C., 2016, Shoreline change mapping 1939-2014: Washington County (Excluding Block Island), Rhode Island. A technical chapter prepared for the Rhode Island Shoreline Change Special Area Management Plan.
- Oakley B.A., **Hollis R.J.**, Boothroyd J.C., Freedman J., Boyd J., Fugate G., 2016, Preliminary Identification of at Risk Areas: Shoreline Change Special Area Management Plan (SAMP) Phase II – Narragansett Bay and Rhode Island Sound shorelines.
- **Hollis, R.J.**, Oakley, B.A**.,** Boothroyd, J.C., 2014, Benthic Geologic Habitats of Briggs Marsh, Rhode Island: Rhode Island Geological Survey Open-File Map. Scale 1:3,000
- Oakley, B.A., **Hollis, R.J.**, Boothroyd, J.C., Freedman and J., Fugate, G., 2013, Preliminary Identification of At Risk Areas: Shoreline Change Special Area Management Plan (SAMP) Phase I – Rhode Island South Shore and Block Island. Technical report prepared for the Rhode Island Bay's Rivers and Watersheds Coordination Team

Oral Presentations

- **Hollis, R.J.**, Wallace, D.J., Miner, M., Constraining the Holocene Evolution and Sand Sources for Formation of Petit Bois, Mississippi, USA. Louisiana Coastal Geology Symposium (July 2018)
- **Hollis, R.J.**, Wallace, D.J., Constraining Holocene Evolution Of The Eastern Mississippi-Alabama Inner Shelf and Mississippi Sound, USA. University of Southern Mississippi Graduate Symposium (April 2018)
- **Hollis, R.J.**, Oakley, B.A., Shoreline Change Trends at Varying Timescales Along The Rhode Island South Shore: Barriers vs. Headlands. Coastal & Estuarine Research Federation (Nov 2017)
- Oakley, B.A., Murphy, C.J., **Hollis, R.J.,** Spatial Extent and Volume of Sand on the Upper Shoreface of the Glaciated Rhode Island South Shore; Relationship to Decadal Scale Shoreline Change and Longshore Sediment Transport. Geological Society of America National Meeting (Oct 2017)
- **Hollis, R.J.**, Wallace, D.J., Constraining Holocene Evolution Of The Petit Bois Island System. Young Coastal Scientists and Engineers Conference of the America's (Aug 2017)
- **Hollis, R.J.**, Oakley, B.A**.,** Boothroyd, J.C., Variable Rates of Shoreline Change Along the Rhode Island South Shore: A Closer Look at Processes and Methods. Geological Society of America Northeastern Meeting (Mar 2016)
- Oakley, B.A., Turenne, J.D., Bartosiewicz, J., **Hollis, R.J.**, Alvarez, J.D., Borrelli, M., Boothroyd, J.C., Mapping Benthic Geologic Habitat in Shallow Estuarine and Lagoon Environments: Case Studies, Experience and Results from Southern New England. Geological Society of America Northeastern Meeting (Mar 2016)
- Oakley, B.A., Freedman J., **Hollis, R.J.**, Boothroyd, J.C., The Misquamicut State Beach Replenishment Project: One year later measured using RTK-GPS, DGPS and Beach Profiles. Geological Society of America National Meeting (Nov 2015)
- **Hollis, R.J.,** Great September Hurricane 1815: How Barrier Breaches Changed Town Boundaries. Invited talk for the town of Narragansett, RI (Dec 2015)

Poster Presentations

- Obecz, J., Wood, W.T., Phrampus, B.J., **Hollis, R.J.,** Geospatial Prediction of Subsurface Wood-Bearing Sediments in the Northern Gulf of Mexico. Community Surface Dynamics Modeling System Conference (May 2019)
- **Hollis, R.J.**, Wallace, D.J., Miner, M., Constraining Holocene Evolution of Shelf Bayhead Delta Deposits Offshore Mississippi, USA. American Geophysical Union (Dec 2017)
- **Hollis, R.J**., Carnevale, D., Cardace, D., Field Mapping and Mineralogical Analysis of Serpentinite Outcrops in a Mars Analog Setting Geological Society of America. Northeastern Meeting (Mar 2013)
- **Hollis, R.J**., Grabb, K., A Comparison of Nitrite and Nitrate profiles through varying current systems in the Eastern Pacific. Sea Education Association poster presentation (Dec 2013)

Special Skills & Certificates

Laboratory X-ray diffraction, Scanning electron microscopy, Malvern grain size analysis
Field ADCP, underwater video, various subsurface and core sampling methods
Geophysical CHIRP and boomer seismic, side scan sonar collection & interpretation, GPR interpretation
Surveying RTK-GPS, DGPS, Drone Aerial Photography, Dumpy Level, Modified Emery Method
Computer ArcGIS, ArcPro, MATLAB, Strater, Ocean Data Viewer, SonarWiz, DSAS, Adobe Illustrator, Photoshop, Golden Software Grapher & Surfer

Awards and Certificates

Nature-Based Solutions for Disaster and Climate Resilience	2022
MS Boater License	2017
AAUS recognized Scientific Diver	2015
First Aid/CPR certified	2015
Dr. Roger Larson Iowa State University Field Camp Scholarship ($3600	2014
SEA Alumni Referral Award ($2500)	2013
SSI Scuba Open Water Diving Certified	2012
University of Rhode Island Coastal Fellowship ($2800)	2012
Rhode Island Space Grant ($2200)	2012
Giant Steps Scholarship ($500)	2010
CT Boater License	2004

Selected Marine Research Summary (120 days at sea)

Gulf of Mexico: geophysical data collection, shallow water coring, scuba deployment and recovery of ADCP mooring, collection of offshore sediment trap, multicoring and water sampling
New England: nearshore and swash zone geophysical data collection, benthic habitat mapping
SEA Semester: junior watch officer aboard 140 ft brigantine sailing vessel from San Diego, CA to Tahiti, French Polynesia, learning celestial navigation, working as cohesive team, growing leadership skills in fast paced/challenging environment. Designed and completed oceanographic research project comparing distribution of nitrogen producing species in Pacific upwelling currents/gyres (44 days at sea).