



## Coastal Engineering and Adaptation Solutions (CEAS)

**SHUBHRA MISRA, PhD, PE, BC.CE, BC.PE**

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### PROFILE

Over twenty years of effective and innovative team-oriented leadership, coordination, advisory, and management experience across industry, consulting, government, and non-profit in multi-disciplinary coastal, port, and marine waterfront engineering, climate-change adaptation, and resilience projects globally. Technical experience in data analysis and analytics, numerical modeling, design, vulnerability and risk assessments, plans, specifications, and drawings. Hands-on extensive experience in numerical and physical modeling of coastal processes (waves, water levels, currents, sediments), vessel motions and wave-structure interactions, berth availability and downtime assessments, channel, berth and navigation aid design, fast- and real-time vessel motion studies, met-ocean studies, marine environmental and ecosystem impact assessments, flood risk management (including sea level rise, compound flooding), and climate change data analysis, vulnerability assessments, and formulating adaptation and resilience strategies. Wide-ranging experience with contractor and vendor supervision and management, office and staff development, stakeholder engagement, client management and business development.

### KEY STRENGTHS

- Extensive project (scope, budget, schedule, resources) execution, technical advisory, and management experience globally.
- Wide-ranging global experience with client and contractor management, business development and marketing, and office and staff development and management.
- Extensive experience in conceptual and detailed design, construction, and operation of coastal, port, marine waterfront and civil infrastructure and environmental ecosystem impact assessments.
- Global experience with data analytics, guidance, plan, and policy development for climate change adaptation and resilience.
- Extensive global network and collaboration with science, technology and engineering experts in academia, industry and Federal government agencies leading to co-authorship in several journals, conference papers, presentations, and workshops.
- Excellent quantitative, analytical, problem solving and programming skills.
- Excellent communication (oral and written), coordination and leadership skills.
- Excellent technical background with advanced degrees in civil and environmental engineering/coastal engineering and ocean engineering/naval architecture.

### EDUCATION

- 2000 – 2005 **Ph.D in Civil and Environmental Engineering** (Coastal Engineering)  
University of Delaware, Newark, DE  
Thesis: The turbulent dynamics of quasi-steady spilling breakers – Theory and experiments  
Adviser: Dr. James T. Kirby, Co-Adviser: Dr. Maurizio Brocchini
- 1997 - 1999 **Masters of Science in Civil and Environmental Engineering** (Coastal Engineering)  
University of Delaware, Newark, DE

Thesis: Determining water depths from surface images using Boussinesq equations  
Adviser: Dr. James T. Kirby

- 1993 - 1997 **Bachelor of Technology in Ocean Engineering and Naval Architecture**  
Indian Institute of Technology, Kharagpur, India  
Thesis: Wave forces on offshore structures using a higher order Stokes wave theory  
Adviser: Dr. D. Sen

## NATIONALITY

US CITIZEN

## PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Individual:
  - Professional Engineer (Civil; Water Resources), TX (No. 107567; Granted 12-29-2010)
  - ASCE ACOPNE Board Certified in Coastal Engineering (BC.CE)
  - ASCE ACOPNE Board Certified in Port Engineering (BC.PE)
- Firm (Coastal Engineering and Adaptation Solutions (CEAS):
  - City of Houston Small Business Enterprise (SBE)
  - City of Houston Minority Business Enterprise (MBE)
  - City of Houston Disadvantaged Business Enterprise (DBE)
  - Port Houston MBE
  - Port Houston SBE
  - Texas Board of Engineers Registered Firm

## EXPERIENCE

**Feb 2025 – Present: Principal and Sole Proprietor, Coastal Engineering and Adaptation Solutions (CEAS), LLC.**

At CEAS (Coastal Engineering and Adaptation Solutions), my mission is to provide effective and creative technical advisory, planning, and engineering solutions in coastal, port, and waterfront engineering, climate adaptation, and resilience.

### Selected Key Experience:

- **Performance Monitoring of Field-deployed DARPA REEFENSE Solutions for Coastal Resilience** – Technical advisor for field measurements (waves, currents, turbulence, inertial motion, sediments, bathymetry etc.) of deployed 3D-printed artificial concrete reef units (SEAHIVE®) at multiple sites spanning open coast, bay, and inland navigable waterway.
- **Managing Flood Inundation Risk to Ensure Naval Facility Resilience and Mission Assurance** – Technical advisor on a risk assessment study/framework to quantify asset and operational risk from coastal compound flooding at multiple Navy installations.
- **City of Jacksonville Coastal Compound Flood Modeling Study** - Technical advisor on ongoing probabilistic compound flood modeling framework, numerical modeling, and analyses specifically tailored to Jacksonville’s tidally influenced rivers and its natural and built environment. This modeling framework is leveraging advancements in machine learning, high performance cloud computing and infrastructure to produce actionable risk data and associated flood mapping products and dashboards.
- **3D Printed Concrete Units for Coastal Restoration and Resilience** – Technical consultant

and commercialization advisor to a 3D concrete printing (3DCP) company for development and deployment of nature-based units for coastal restoration and resilience. Green-gray hybrid patented approaches and products combine conservation and restoration of coastal ecosystems with the selective use of “gray” human-engineered 3DCP technology.

- **Cedar Port Navigation Channel Deepening Project** – Planning and Coastal Engineering Subject Matter Expert for Independent Technical Review of Section 203 Project Feasibility Report and Integrated Environmental Impact Statement to verify that the study is consistent with established criteria, USACE guidance, procedures, and policies. H&H, planning and coastal engineering subject matter expert. The project components include a new deep-draft channel, turning basin, disposal of dredged material offshore and in placement areas, new breakwaters and coastal structures, and nature-based solutions (Beneficial Use Islands; Wetland Creation; Wetland Restoration Construct Oyster Reef; Living Shoreline).
- **Sabine-Neches Waterway Navigation Improvement Project** – Planning and Coastal Engineering and H&H Subject Matter Expert for Independent Technical Review of Section 203 Project Feasibility Report and Integrated Environmental Impact Statement to verify that the study is consistent with established criteria, USACE guidance, procedures, and policies. The project components include widening of three lengths of the existing Sabine-Neches Waterway (SNWW) federal navigation channel to improve navigational efficiency. Channel widening would occur in three discontinuous reaches for a total of 19.4 miles. In these reaches, the existing 400-foot-wide channel would be widened by 100 feet on the left descending bank. The widening would eliminate the existing daylight-only transit restrictions currently imposed on many of the vessels using the channel.
- **Port of Houston Climate Action Plan** – Technical advisor and quality assurance/control for development of a Port Area Climate Action Plan for Port Houston and surrounding communities with a focus on identifying climate hazards for port and communities and scenario development and analyses. The project includes identifying information and data needs, stakeholder climate education, climate action plan community consultations, vulnerability assessments of port and communities, identifying climate hazards for port and communities, scenario analysis, and developing a climate action plan with key performance indicators.
- **Bolivar and West Galveston Beach and Dune System Project** – Technical advisor and quality assurance/control the design of the Bolivar and West Galveston Beach and Dune System consists of approximately 43 miles of beach and dune segments on Bolivar Peninsula and West Galveston Island that work with the Bolivar Roads Gate System and the Galveston Seawall to form a continuous line of defense against Gulf of America surge.
- **Caribbean Marina Development Project** – Coastal engineering consultant advising on design and modeling of coastal structures (including integrating ecological co-benefits) and processes for a large marine development.
- **Philippines transshipment container terminal project** - Coastal engineering consultant advising on design and modeling of a breakwater (including integrating ecological co-benefits) and modeling of associated coastal processes for a transshipment container terminal aimed at reducing berth downtime from wave agitation.

**Feb 2023 – Feb 2025: Deputy Director (Installation Resilience Program)** – Office of Assistant Secretary of Defense for Energy, Installations, and Environment, Department of Defense (DOD), Pentagon.

#### **Selected Key Experience:**

- Development/implementation of DOD’s climate strategy, guidance, and priorities for installation resilience and mission readiness; executing climate change adaptation, mitigation, and planning directives laid out in Statutes, Policy, and Executive Orders.
- Technical lead for development, enhancement, and sustainment of DOD’s climate resilience analytic

tools including the DOD Climate Assessment Tool and the DOD Regional Sea Level database and web interface.

- Development and implementation of functional and structural climate adaptation and planning concepts to ensure integration across DOD.
- Lead DOD representative on multiple interagency committees including the 6<sup>th</sup> National Climate Assessment, US Global Change Research Program Subcommittee on Climate Services, Sea Level Rise Task Force, Climate Community of Interest.
- Supported the development of DOD's Climate Adaptation Plan and Greenhouse Gas (GHS) Emissions Reduction Plan.
- Reviewer for DOD's Natural Infrastructure Strategy and Commander's Guide to Nature-based Solutions.
- Peer-reviewer for EPA's Framework for Evaluating Damages and Impacts (FREDI).
- Coordinated and collaborated regularly with the Office of Secretary of Defense Offices, Components, Joint Staff, Military Departments, and the Services to support and enhance climate adaptation and resilience of DOD military facilities and installations.
- Oversaw efforts to evaluate and optimize financing mechanisms to facilitate more rapid deployment of climate change adaptation and resilience planning and implementation by DOD Components.
- Supervised and managed multiple contractor teams and projects
- Prepared reports, white paper, briefings, talking points and read-aheads for Senior DOD Leadership (including Secretary and Deputy Secretary of Defense), White House, Federal Agencies, and Congress on DOD's climate change adaptation, mitigation, and resilience activities.
- Led multiple climate change adaptation working groups within DOD including coordination with all Military Departments, Joint Staff and DOD agencies.
- Represented DOD on external engagements including NATO, Norwegian Defense Agencies, Canadian Defense Forces, Regional Defense Fellowship Program, and various other partner nations and allies.
- Led partnerships (including funding) between DOD and multiple Federal agencies (USGS, FEMA, USACE, NOAA, State Department, NASA) and academia (e.g., Princeton University, University of South Florida)
- Provided climate resilience analytics outreach and training to hundreds of personnel across DOD.

**Aug 2021 – Jan 2023: Senior Research Scientist and Climate Resilience Specialist – The Water Institute.**

#### **Selected Key Experience:**

- **Compound Flooding Pilot Study for the Louisiana Watershed Initiative (LWI)** - Technical lead for the pilot project and managed a diverse team of internal and external researchers and external academic collaborators focused on a statewide implementation of hydrological, hydraulic and coastal modeling of tropical and non-tropical storms, extended joint probability methods and optimal sampling, uncertainty and bias quantification, recurrence analysis and development of compound flood hazard maps.
- **Louisiana Climate Action Plan** – Policy analyst responsible for modeling (using the Energy Policy Simulator tool customized for LA - free and open-source computer model created by Energy Innovation LLC.) of various hypothetical scenarios – informed by inputs from a large and diverse stakeholder group and public inputs - to evaluate optimal net-zero pathway(s) for Louisiana.
- **Compound Flooding Pilot Study for Texas General Land Office Combine River Basin Flooding Study** – Technical coastal lead for a diverse team of researchers, including external academic collaborators, focused on a state-wide implementation of hydrological and hydraulic modeling of tropical and non-tropical storms, bivariate copula analysis, extended joint

probability methods and optimal sampling, uncertainty and bias quantification, recurrence analysis and development of compound flood hazard maps. I supported the development of Standard Operating Procedures (SOP) for state-wide implementation of methodologies developing during the pilot study.

- **Louisiana Real Time Flood Forecast System** – Technical Advisor/Compound Flooding Lead. In areas like south Louisiana, inland watersheds are often directly connected to the coastal zone. In these cases, flooding occurs directly from rainfall events or tides/waves/surge or all the above. This complex interaction underscores the importance of developing coastal and inland numerical models that can be seamlessly and effectively integrated while leveraging authoritative (e.g., NOAA) forecast products for met-ocean drivers such as rainfall, wind speeds, atmospheric pressure, coastal surge. Designed to give emergency responders, governments, and residents more time for better preparations, this Real-Time Forecasting tool will provide a flash flood forecasting and warning system based on the specific topography and hydrology of the area in question. By incorporating land elevations, land use, and drainage information into the modeling, the Real-Time Forecasting tool can provide estimates of flood depths, potential road closures, and flood duration for specific locations.

**June 2018 – Aug 2021: Lead H&H/Coastal Engineer** – US Army Corps of Engineers (USACE), Galveston District.

#### **Selected Key Experience:**

- **Sabine Pass to Galveston Bay Pre-Construction, Engineering and Design (PED) Coastal Storm Risk Management Project** – Lead Hydrologic/Hydraulic/Coastal Engineer for USACE Galveston district's largest ~ \$4Billion civil works pre-construction, engineering, and design (PED) project in the district's history. Led and managed a large team of hydrologic, hydraulic, and coastal engineers within the USACE across the nation (ERDC Coastal Hydraulics Laboratory, USACE Galveston, New Orleans, Fort Worth, Chicago districts), as well as several academic researchers (U. of Delaware, U. of Southern California, U. Texas. U. Central Florida and others), in delivering hydrological/hydraulic/coastal design parameters for the project. The recommended plan consists of three Coastal Storm Risk Management systems (CSRMs); Orange and Vicinity CSRMs – consists of a new levee system comprising levees, floodwalls, drainage structures, nature-based features, road/railroad closure structures and sliding gates, vertical lift gates, navigable sector gate structures and pump stations; Port Arthur and Vicinity CSRMs - consists of levee raises, floodwall replacement and road/railroad closure structures replacement; and lastly, Freeport and Vicinity CSRMs - consists of levee raises, floodwall replacement, road/railroad closure structure replacement and a new navigable sector gate structure. Lead H&H-C engineer responsible for a large ensemble of design analysis including hydrological and hydraulic analysis for interior drainage, riverine flows and impacts to CSRMs design, coastal storm surge and wave hazards, ship-induced wave impacts, propeller-wash impacts to floodwall integrity, and developing scour and erosion protection. Led several innovative R&D efforts to supplement design activities and reduce uncertainty/risk including statistical and numerical assessment of compound flooding, application of natural and nature-based features (NNBF) using Engineering-with-Nature (EwN) principles (thin layer placement, living shorelines, wetland and marsh restoration etc.), application of Boussinesq models in storm wave transformation (including infragravity wave generation), ship-induced waves and run-up/overtopping, field overtopping tests. Regularly prepared briefs for district leadership, Non-federal sponsors, and stakeholders, Southwestern Division and USACE HQ Senior Executive Service leadership.
- **Corpus Christ Jetty Repairs Project** – Lead Hydrologic/Hydraulic/Coastal Engineer for conducting coastal engineering analysis (extremes analysis, wave transformation modeling,

hydraulic loads, armor sizing, toe design etc.) and supporting the development of plans and specifications for repairs to significantly deteriorated jetties at Aransas Pass, Corpus Christi, TX. One significant challenge in this work was the assessment of a large range of empirical design guidance for coastal structures as no empirical guidance exists for submerged jetties with single layer armor, and because the jetties had to be restored as far as possible to their “original” (1962) design. Implemented response-based (as opposed to event-based) design incorporating multiple combinations of waves and water levels. Developed civil designs (entire reaches of both North and South jetties) for hydraulic engineering, and coastal engineering project aspects. I developed novel data analysis and methodology implementation (e.g., use of AIS data in ship-wake analysis, use of LiDAR and multi-beam bathymetry data to map structure displacement and damage). Coordinated among technical disciplines (structural, geotechnical, hydraulic, civil) to ensure a fully coordinated and compatible design. Optimized the design for construction which led to significant cost savings and mitigation of constructability challenges. Responded to and resolved various RFIs from construction contractors.

- **Coastal Texas Project** – Subject matter expert (SME) advising the Project Delivery Team on coastal modeling and engineering aspects of the project including overtopping analysis and thresholds, response-based probabilistic coastal storm hazards analyses for hydraulic loading of coastal structures, vertical walls and gates, and beach/dune design, and numerical modeling of Galveston Bay tidal flushing and residence time analyses. Authorized for a total cost of \$29 Billion, the project represents an integrated and comprehensive coastal resiliency strategy, addressing a wide array of immediate and long-term coastal risk reduction and ecosystem restoration needs across the entire Texas coast.
- **South Padre Island Sand Management Plan** – Lead Engineer on a Public Assistance to States (PAS) project to develop a Sand Management Plan for South Padre Island. Work involved sand tracer field study, performing a sediment budget analysis, deployment of a mini-ARGUS system, development of alternatives for backpassing/bypassing including nearshore Beneficial Use of Dredged Material (BUDM), and numerical hydrodynamic and morphological modeling.
- **Galveston Island BUDM** – Lead Engineer on a Continuing Authorities Program (CAP) project to develop and evaluate including suitability and economic feasibility of BUDM for beach placement of dredged material to address chronic erosion and episodic storm erosion and damage to infrastructure.
- **Port Mansfield Bird Island Breakwater Project** - USACE District Quality Control (DQC) representative for internal technical review of hydraulic and coastal engineering analysis and design for a new breakwater for a dredged material placement area.
- **Corpus Christi Ship Channel Expansion Project** – Developed spreadsheet-based tools (based on empirical formulas) for assessing ship-induced wave parameters for design of placement areas and mentored and trained colleagues in the application of the tools.
- **Peer Reviewer – EPA Draft Technical Documentation for the Temperature Binning Framework** – As an independent, qualified, and objective expert I performed a peer-review to ensure that the information summarized by EPA was technically supported, competently performed, properly documented, consistent with established quality criteria, and communicated clearly. The framework estimates damages for nine climate impact sectors within the contiguous United States (US) using downscaled climate projections from six global

climate models, at integer degrees of US national warming. The potential for adaptive measures to decrease damages was also demonstrated for select sectors; differences in damages across adaptation response scenarios within some sectors were as much as an order of magnitude.

- **Policy Analyst / Climate Change Specialist - Department of Defense (DoD) Climate Action Plan (Climate Preparedness and Resilience), Office of Deputy Assistant Secretary of Defense (Energy and Environmental Resilience) ODASD (E&ER).** Served as a Climate Preparedness and Resilience Specialist in the Climate Action Team (CAT). Along with other members of the team, I provided inputs to the DoD Climate Adaptation Plan, performed Climate Exposure Assessments of DoD Installations using the Defense Climate Assessment Tool (DCAT), personnel, operations, mission areas worldwide (INDOPACOM, Rest of the World, CONUS, Arctic etc.), reviewed climate change research within the Earth system and its subsystems to evaluate severity of environmental hazards to DoD, developed a Primer for the Defense Climate Assessment Tool, developed authoritative language for climate-change related terminology, and supported various other actions and initiatives in response to Executive Order 14008. Developed talking points on DoD Carbon Disclosure. I developed a conceptual Exposure, Sensitivity and Adaptive Capacity (ESAC) extension to the Defense Climate Assessment Tool (DCAT) to perform Vulnerability analyses.
- **Aransas National Wildlife Refuge (ANWR) Beneficial Use Site (BUS) Improvements -** Internal Technical Reviewer for design documentation report, plans and specifications for the project.
- **Chocolate Bayou Placement Area Design and Construction** – Internal Technical Reviewer for design documentation report, plans and specifications for the project.
- **USACE Nationwide Working Groups – Frequent Flooding and Coastal Compound Flooding.** As a member of the Climate Community of Practice (CoP) within USACE, I was part of two nationwide working groups that were formed to identify agency gaps and challenges in Compound Flooding and Frequent Flooding with regard to existing authority/interpretation, updating and developing best practice/guidance and provide recommendations on research and development.
- Led the organization of Boussinesq Modeling and Coastal Overtopping workshops with USACE nationwide, Federal agencies (e.g., FEMA), non-federal sponsors, academic experts and Project Delivery team to develop innovative strategies for wave modeling and overtopping analyses for coastal storm risk management projects.

**April 2012 – May 2018: Marine Facilities Engineer / Project Manager – Chevron.**

#### **Selected Key Experience:**

- **Waterfront Remediation and Culvert Replacement, South Africa** – As civil engineering project advisor I evaluated construction contractor drawings, technical proposal, and construction work method statements, including equipment specifications, to remediate contaminated waterfront area and replacement of outfall culverts; construction work scope included dredging of contaminated soils, capping and disposal, earth moving and concrete works. Recommended modifications to construction methodology to minimize environmental impacts and ensure integrity of infrastructure during construction.
- **Malongo Geotube Breakwater Project, Africa** – Specialist and lead coastal engineer subject

matter expert responsible for developing and evaluating various strategies and design coastal protection, including geotube breakwaters and sheet pile cofferdams to provide coastal protection for construction repairs of an operational pipeline. Developed sketches and plans for various geotube breakwater configurations. Conducted analysis for hydrodynamic stability and structural integrity of geotube breakwaters. Assessed available Metocean and geotechnical field data to recommend additional data collection to verify design and constructability. Coordinated with geotechnical engineers to assess settlement and global stability of breakwaters.

- **Gorgon LNG Tug Harbor Project** – Subject matter expert responsible for managing various vendor/consultant's work in assessing and mitigating wave-induced tug/pontoon motions and structural damage. Led development of novel data analysis and methodology implementation (e.g., use of hybrid CFD-phase-resolving wave modeling to assess penetration and agitation; use of pressure transducers to obtain wave information). Reviewed as-built structural drawings and specifications, as well as field inspection photographs and notes for damage to pontoons and gangways/walkways. Assessed available hydrodynamic field data and developed plans and specifications for additional data collection.
- **TengizChevroil Cargo Transportation Route Project** – Led and managed a multi-disciplinary team on all coastal engineering components of an extensive design, construction and operability assurance project for a greenfield port/material offloading facility. The project consists of a 76 km-long capital dredged navigation channel, multiple lay-by areas, dozens of dredged spoil islands (seal and bird habitat), hundreds of navigation aids, turning basin, cargo offloading facilities with seven berths, 14 km heavy haul road causeway across a floodplain, flood protection levees and block-mat design and construction, mooring and breasting dolphins, access road. Led a multi-disciplinary engineering team on a site visit and provided more than two dozen recommendations to the construction team which were implemented to increase productivity while reducing personnel safety and environmental risks. I provided analytical and design solutions to a variety of challenging issues including sea level variability in the Caspian Sea, metocean design forcing, impacts on transportation, levee breaches and inundation.
- **Gorgon LNG Project** – Led a team on a root cause analysis of beach erosion and coastal morphological instability impacting sensitive environmental receptors (nesting turtles), review of soils characterization and coastal analyses conducted in-house and by contractors, developed construction schedule and cost estimates for various alternatives of sediment sourcing and fill placement for inclusion in organizational budget planning, advised on a comparative assessment of various beach nourishment options including offshore dredging and fill, backpassing, bypassing, beach scraping, selecting the most effective construction equipment, coordination with Health Environment Safety (HES) personnel and contractors, highlighting permitting and construction risks, identifying stakeholder concerns, providing recommendations on preferred mitigation solutions including ecosystem and habitat restoration. Developed civil designs (beach nourishment, tug harbor, breakwaters) for hydraulic engineering, and coastal engineering project aspects.
- **Kitimat LNG Plant Project** – Managed and coordinated a multi-disciplinary (coastal, structural, geotechnical, environmental, HES, and shipping specialists across engineering, construction, logistics functions) team in the official (wet signature) acceptance of EPC contractor's deliverables for the siting, design, analysis, construction and operability of all marine and coastal infrastructure for the project. Developed civil designs (onshore water management and discharge, terminal layout, dredging and navigation, land reclamation, revetments and breakwaters, dock facilities) for hydrological, hydraulic engineering, and coastal engineering project aspects. The activities focused on design of fixed and floating

marine facilities, site investigation/development /permitting activities including marine disposal of excavated material, floodplain assessment for stormwater infrastructure, conceptual design of jetty and FSO moorings, vessel motion response analyses, deployment of multiple shallow and deep-water Metocean instrumentation campaigns, shipping export and navigation reliability studies, landslide tsunami wave and current modeling, waterway suitability assessment studies, design of land-backed reclamation for marine offloading facility, construction and structural assessment of a trestle for the transport and disposal of clay. I developed an innovating tsunami loads-resistant mooring system for FSOs and provided solutions for excavated material disposal while mitigating impacts to various sensitive ecosystem components (eel grass, crabs) and developing new habitat as ecosystem restoration/compensation.

- **Puerto Cortes Marine Terminal Upgrade Project** – SME responsible for the assurance of contractor’s detailed design deliverables. Coordinated with structural and geotechnical engineers and shipping specialists to ensure continued and safe operability of infrastructure and marine operations. Provide recommendations on optimizing hydrographic surveying and dredging, including equipment and procedures. Implemented pre-cast concrete solutions to reduce construction schedule and safety risks, and mitigate risks of operational discontinuity, thereby increasing overall commercial viability. The project focused on repair, rehabilitation, and upgrade of dock, loading platform, breasting and mooring dolphins; root cause analysis and developing mitigation solutions for excessive sedimentation in berthing areas by maintenance dredging.
- **Malongo PW Outfall Replacement, Dock Expansion and Pipeline Replacement Project** – SME on a multi-disciplinary team assessing environmental impacts of outfall discharges and regulatory compliance, route selection, design and constructability of new produced water outfall. Developed civil designs (dredging, dock infrastructure, outfalls) for hydrological, hydraulic engineering, and coastal engineering project aspects. Reviewed plans, specifications, and drawings for features of design to ensure a fully coordinated and compatible design. Reviewed and approved IFC drawings from construction contractor for a dock expansion and dredging work scope. Developed and implemented a quantitative ranking matrix of various alternatives with all team members that was critical in selecting the optimal solution.
- **Boscan Heavy Oil Thermal Pilot Project** – SME responsible for assessing berth availability, operability and downtime of dock facilities, assessment of various greenfield sites for two new docks, performing conceptual design and cost and construction schedule estimates to be included in customer’s financial planning. Established project scope that incorporated criteria, specifications, risks, assumptions, and contingencies for successful project delivery. Coordinated with pipeline, storage, dredging specialists and shipping personnel. Developed and evaluated various design and construction alternatives for both marine and onshore infrastructure with multiple disciplined engineers to establish project specifications and criteria.
- **Escravos Gas Plant Project** – SME responsible for functional capacity assessment of existing dock, and development of designs, cost and construction schedule estimates for a new dock alternative. Led a multi-disciplinary team of geotechnical, metocean and structural engineers in performing geotechnical and structural analysis. Coordinated with shipping SMEs to establish navigation constraints and perform commercial berth availability analyses of new berths (fixed and floating). Developed civil designs (dock layout, fendering and moorings) for hydraulic engineering, and coastal engineering project aspects. Managed contractors conducting berth availability and shipping studies, including contractor’s project scope, contingencies, schedule, budget and deliverables.

- **Feasibility Assessment for New Oil Terminals (Location Confidential)** – Performed site visit, internal (commercial and shipping functions) and external stakeholder engagement for high-level assessment of brownfield and greenfield opportunities for new marine and onshore oil delivery and storage terminals. Work included assessment of multiple sites for geotechnical and met-ocean conditions, environmental constraints, permit requirements, and developing high-level cost and schedule estimates for development.
- **Wheatstone LNG Plant Project** – Led the audit and assurance of several of EPC contractor’s coastal and marine engineering deliverables for module offloading facilities, loading jetty, breakwater design, constructability, numerical modeling and impact assessment of multiple intakes/outfall systems to ensure compliance with statutory permit conditions and ecosystem habitat protection. Developed civil designs (discharge water management infrastructure) for hydrological, hydraulic engineering, and coastal engineering project aspects. Led a team consisting of multiple disciplines through problem resolution on outfall design, routing, impact assessment and installation assessment, as well as breakwater construction and inspection, to ensure project work stoppages are minimal.
- **Chevron Engineering Standard for LNG Marine Loading Arms** – Lead author for extensive revisions to Chevron’s engineering specification and standard (applied globally to all Chevron projects) on marine loading arms for LNG service, including coordination with a multi-disciplinary team of process, structural, electrical, marine, mechanical engineers.
- **Long-term Coastal Zone Dynamics: Interactions and Feedbacks between Natural and Human Processes along the U.S. Gulf Coast** – National Academies of Sciences, Engineering and Medicine (NASEM) Committee Member. The two-year project was aimed at assessing the interactions and feedback between coastal zone dynamics (sea level rise, subsidence, erosion, wetlands loss, storm surge flooding etc.) and energy-related infrastructure / coastal developments along the Gulf of Mexico coast (TX, LA, MS, AL, FL), on decadal and longer time scales. Final report available here – <https://www.nationalacademies.org/our-work/long-term-coastal-zone-dynamics-interactions-and-feedbacks-between-natural-and-human-processes-along-the-us-gulf-coast>
- **Ballena Gas Plant Coastal Erosion Project** – Led and managed a project assessing historical erosion, flooding and resulting threats to oil and gas infrastructure, development of mitigation plans, conceptual design of erosion and flood protection alternatives, preliminary construction schedule and cost estimates (for inclusion in customer’s financial planning), addressed stakeholder (national navy, municipality, indigenous people) concerns and permitting/regulatory requirements, for protecting key coastal oil and gas infrastructure components from chronic coastal erosion and flooding impacts. Developed civil designs (beach nourishment and pre-fill, breakwaters, groins, outfalls, run-off channels) for hydrological, hydraulic engineering, and coastal engineering project aspects.
- Instructor and course developer for Construction of Nearshore Coastal and Marine Facilities taught to Chevron engineers worldwide.

**April 2011 – April 2012: Senior Project Manager / Principal Coastal Engineer – AECOM.**

- Project management (scope, funds/budgets, schedules, and deliverables) of multi-disciplinary civil works projects through stages of planning, execution and delivery; as the Project Manager, I optimized, controlled, and managed all resources – technical and financial - across projects/programs assigned to me.

- Leading multi-disciplinary teams through project execution and delivery
- Business development and proposal writing
- Developed strategic relationships and coordinating with partner firms, external stakeholders, and clients/customers.
- Mentored junior project coordinators through their preparation of project schedules and budgets to encourage development.
- Technical leadership on coastal engineering analyses, modeling and design in support of navigation and coastal infrastructure projects, FEMA flood maps.

### **Selected Key Project Experience:**

- **Dry-Berth of Battleship Texas State Historic Site; Texas**  
Deputy Project Manager for a large team of A/E, environmental and vessel inspection and salvage firms responsible for management of sub-contractors' invoices and deliverables, monitoring project progress, assessment of vessel inspection and structural integrity, intact and damaged vessel stability, ship repair options, assessment of various statutory permitting requirements, vessel restoration and regulatory requirements, and supporting geotechnical and structural design of dry-berth and temporary mooring options. Developed civil designs (dry-berth layouts and vessel mooring and fendering) for hydraulic engineering, and coastal engineering project aspects.
- **Greenfield LNG Import Terminal (Location Confidential)**  
Project Manager for a feasibility study for new marine LNG terminal and onshore facilities (storage and regasification) development. Led a multi-disciplinary team of geotechnical and environmental engineers in performing a site visit, condition assessment of existing dock, assessing various right-of-ways for pipelines and vehicular access, metocean and geotechnical site conditions, constructability assessment, hazard and quantitative risk analyses, advised client on Federal Energy Regulatory Commission (FERC) requirements, managed budget, schedule and deliverables from team members and held regular meetings with client on project status and deliverables.
- **Port of Houston Ship Channel Widening and Deepening; Texas**  
Project engineer supporting various tasks on the project related to channel modifications/dredging, vessel navigation, channel sedimentation/shoaling and beneficial use of dredged material including design and stability assessment of underwater placement areas. Developed civil designs (placement areas) for hydraulic engineering, and coastal engineering project aspects. Reviewed plans, specifications, and drawings for features of design to ensure a fully coordinated and compatible design. Developed scope of work and selected a contractor to establish a detailed numerical model of Galveston Bay to be used for a comparative evaluation of various dredging and reclamation options including an assessment of the stability of placement areas in Galveston Bay.
- **Simandou Iron Ore Project**  
Project engineer responsible for metocean analysis, wave and hydrodynamic modeling for design optimization of port and coastal structures for a greenfield export port.
- **Jizan (Saudi Arabia) Economic City Port**  
Coastal engineer responsible for Boussinesq wave modeling in support of port and breakwater layout optimization.
- **New Doha Port Project**  
Expert reviewer for coastal engineering analyses, modeling and design undertaken by third parties.
- **Port Metro Vancouver Roberts Bank Terminal, Vancouver**  
Project engineer for assessment of extreme and operational wave parameters for terminal infrastructure

design.

- **North Carolina Maritime Strategy Study; NC**  
Expert reviewer responsible for defining and assessing various coastal engineering site selection, planning, and screening criteria for new ports in North Carolina.
- **FEMA RiskMAP**  
QA/Q of deliverables related to numerical modeling and statistical extremes analysis of waves and water levels performed by third party for FEMA flood map delineations.
- **Jeddah Stormwater Drainage Program**  
Led an inter-disciplinary team to develop outfall siting and conceptual designs and assess environmental impacts for an extensive new stormwater drainage program for Jeddah. Developed civil designs (stormwater drainage features) for hydrological, hydraulic engineering, and coastal engineering project aspects.
- **Georgetown Cruise Terminal**  
Project engineer responsible for feasibility-level assessment of port sedimentation, hydraulic loadings on piles and decks, and nearshore coastal impacts.

#### **August 2009 – Feb 2011: Project Manager/Office Manager/Area Manager – COWI**

- Project management (scope, budget, schedule, and deliverables) and client liaisons
- Leading multi-disciplinary teams (both within company and with partner firms) in the planning and execution of civil works projects related to port and marine waterfront development, navigation and flood control; as the Project and Area Manager, I optimized, controlled, and managed all resources – technical and financial - across all projects/programs under my control and supervision.
- Management of sub-contractors
- Business development and marketing
- Office and staff management.
- Strategic regional and national business plan development.
- Mentoring interns and junior engineers
- Grew company capability in coastal engineering analyses and design.

#### **Selected Key Project Experience:**

- **Best Practices for Physical Process and Impact Assessment in Support of Dredging Operations on the U.S. Outer Continental Shelf**  
Deputy Project Manager for the team (comprised of multiple A/E firms and academic institutions) responsible for oversight and management of multiple analyses and numerical morphological modeling methodologies for assessment of near- and far-field impacts of offshore sand mining and development of best practice guidance.
- **Texas A&M Galveston Dock Renovation and Repair; Texas**  
Deputy Project manager for the team (comprised of multiple A/E firms) responsible for over- and under-water inspection of dock infrastructure, berthing and mooring analyses and assessment of loads for structural design, recommendations for renovation and repair.
- **Port of Gulfport Restoration Program; Mississippi**  
Deputy project manager and technical lead for the team (comprised of multiple A/E firms) responsible for planning, management and execution of all coastal engineering design, analyses and modeling

services for a port restoration and expansion program. Tasks included modeling of storm-surge, water quality, extreme and operational waves, coarse and fine sediments, and shoreline evolution, estimates of shoaling and maintenance dredging requirements, developing storm-surge flood risk and protection design options for infrastructure, field data acquisition and design of coastal structures. Developed civil designs (navigation channel and berth layout, dredging plans, siltation prevention measures) for hydraulic engineering, and coastal engineering project aspects.

- **USACE Galveston District, Houston-Galveston Navigation Channel (HGNC) Multiple Site Repairs in Harris and Chambers Counties; Texas**  
Performed Quality Assurance for assessment of impacts from passing vessel wakes and hurricane storm surge on the design crest elevation of slope protection along the shore of Spilman's Island.
- **New Orleans East Land Bridge Study (LPV 111 to Chef Menteur, Chef Menteur to Rigolets); Louisiana**  
Deputy Project Manager and Technical Lead on feasibility study project to evaluate existing system-wide regional and local flood protection options and develop new designs (structural and non-structural measures) for augmenting flood protection while ensuring compliance with CPRA master plan and minimizing environmental and ecosystem impacts. Developed civil designs (restoration of “land bridge” with natural, nature-based, and hard structural features including breakwaters) for hydraulic engineering, and coastal engineering project aspects.
- **Common Seawater Supplies Facility Project; Iraq**  
Project manager responsible for siting and conceptual design of various intake and outfall arrangements. Responsibilities included budget, staff, schedule, and client management. Developed civil designs (intakes and outfalls, diffusers, scour protection) for hydrological, hydraulic engineering, and coastal engineering project aspects.
- **LNG Jetty and Marine Structures; Gorgon Barrow Island LNG, Australia**  
Expert reviewer for wave modeling and analysis studies related to independent design verification of LNG marine facilities.
- **Crescent City Harbor Rehabilitation and Tsunami Study**  
Quality Control/Quality Assurance. Project scope included numerical modeling of wave agitation within the harbor and inner boat basin, numerical modeling of tsunami waves, assessment of hydrodynamic loads on moored vessels, assessment of wave-current loads on piles, planning, layout and design of wave attenuators, marina floats, finger piers, and gangways.

**October 2005 – July 2009: Project Manager/Staff Manager/Senior Coastal Engineer – JACOBS.**

- Project (scope, budget, deliverables, and schedules) and staff management, and coordination responsibilities within multi-disciplinary teams
- Conceptual and detailed design of coastal, port, and marine waterfront structures
- Developed ecological data management tools for marine habitat impact assessment.
- Ship navigation, maneuvering and dynamic mooring analysis for optimizing port, terminal, and marina layouts.
- Wave, hydrodynamic, cohesive, and non-cohesive sediment transport modeling
- Physical modeling planning and supervision of two- and three-dimensional studies of coastal structures, harbor agitation, ship motion and coastal morphology.
- Marine infrastructure and habitat impact assessment studies with thermo-saline effluents and dredging processes geared toward optimizing port and industrial infrastructure.
- Optimization of large capacity outfall and submerged multipoint diffuser systems
- Development of various tools for probabilistic and statistical data processing, including extreme value

analysis

- Mentoring of junior engineers and development of staff in their technical and project/client management abilities

### **Selected Key Project Experience:**

- **Haifa New Container Terminal; Israel**  
Project Manager leading a multi-disciplinary team responsible for planning, management and execution of all coastal engineering tasks including numerical and physical modeling of coastal processes, vessel motions, and engineering design (including plans and specifications) of coastal structures for a new container terminal development. Developed civil designs (port infrastructure including channels, berthing facilities, breakwaters) for hydraulic engineering, and coastal engineering project aspects.
- **Das Island Integrated Gas Development; UAE**  
Project Manager responsible for planning, management and execution of all tasks including numerical modeling of coastal processes, and engineering design of breakwaters, revetment, and quay walls for a new gas development.
- **Khalifa Port and Industrial Zone; UAE**  
Coastal engineer responsible for planning, execution and management of multiple tasks, budgets, schedules, deliverables and leadership of teams undertaking numerical modeling, dynamic mooring analysis, vessel maneuvering simulations, metocean instrumentation deployment and data analyses, detailed engineering design of coastal structures, extensive dredging and reclamation design, two- and three-dimensional physical hydraulic modeling of coastal structures and vessel motion and harbor agitation. Developed and implemented tools for quantitative assessment of impacts to sensitive ecosystem habitats including seagrass and coral reefs by combining habitat suitability rules and stressors (turbidity, salinity, temperature, light attenuation), conducted near-field dilution and hydraulics modeling studies for conceptual submerged outfall design and parameterization. Developed civil designs (port layout, breakwaters, navigation channels, navigation aids) for hydraulic engineering, and coastal engineering project aspects. Led and inspired a team of multiple contractors and consultants to invent a new method – KEOFLOAT technology - for measuring small vessel motions in a hydraulic physical model.
- **Jebel Ali New Container Terminal; UAE**  
Senior Coastal Engineer on various numerical wave modeling tasks, engineering detailed design of coastal structures, desktop fast-time vessel maneuvering and navigation, two-dimensional and three-dimensional hydraulic physical modeling of coastal structures and vessel motion for a new container terminal development. Developed civil designs (extensive breakwaters, revetments, navigation channel, turning basin, berth layouts) for hydraulic engineering, and coastal engineering project aspects. I developed and integrated innovative approaches to attain goals and minimize expenditures including those incurred during extensive physical model testing for hydraulic stability and harbor agitation.
- **Guidebook for Hydrodynamic Considerations in EIA Applications**  
Technical adviser for establishing, assessing, and reviewing various national guidelines, regulatory requirements, and specifications for field and numerical studies for coastal development projects.
- **Saraya Islands Development; UAE**  
Project engineer/technical adviser for reviewing and assessing physical modeling proposals and reports for two-dimensional and three-dimensional stability modeling of coastal structures and mobile bed physical modeling of sediment transport under operational and storm conditions. Developed civil

designs (groins, breakwaters, beach nourishment and navigation channels) for hydraulic engineering, and coastal engineering project aspects.

○ **Environmental Impact Assessments**

Technical adviser for assessing various environmental impacts assessment studies undertaken by third parties for coastal developments including port development, offshore land reclamation and outfall design.

○ **Ras Laffan EPIC; Qatar**

Project engineer responsible for scour protection design in the form of concrete mattresses.

○ **Hurricane Wave Analysis; Roatan, Honduras**

Project Engineer responsible for conducting design hurricane wave studies to assess wave penetration and design criteria for terminal facilities.

○ **Apra Harbor; Guam**

Project engineer responsible for conducting numerical wave transformation and harbor agitation modeling and extreme analysis of waves and water levels for design of berthing facilities.

○ **Guapo Shoreline Protection; Trinidad**

Project Engineer responsible for various coastal processes tasks including numerical studies of wave transformation and sediment transport, design of submerged detached breakwaters, and three-dimensional physical modeling of coastal structures design and sediment transport under operational and extreme conditions, engineering support during construction of beach nourishment, seawall modifications and multiple offshore breakwaters.

○ **Sparrows Point LNG; Baltimore, MD**

Coastal engineer assisting in scour assessment due to propeller wash.

○ **Eastside Development; Gibraltar**

Technical reviewer for wave transformation and fast-time navigation studies related to vessel approach, entry, berthing, de-berthing and exit maneuvers.

○ **Bridgehampton Beach Erosion**

Coastal engineer assisting in evaluation of storm-induced beach response, wave transformation modeling and conceptual “soft” (nature-based) and “hard (structural)” design recommendations for beach protection. Developed civil designs (beach nourishment and groins) for hydraulic engineering, and coastal engineering project aspects.

○ **Sabine Pass LNG Construction Dock**

Coastal engineer supporting numerical modeling of passing vessel effects on dock response and vessel motion.

○ **Hong Kong LNG**

Coastal engineer responsible for harbor agitation and tranquility studies with Boussinesq models for design of support tug vessel harbor, and extreme wave transformation studies with spectral wave models and extreme analysis for design conditions of LNG berthing facility.

**July 2005 – September 2005: Post-doctoral Associate** – College of Marine Studies, University of Delaware, Newark, DE 19716

- Theoretical and experimental post-doctoral research on air-sea interactions.

**June 1993 – June 2005: Research Assistant** – Center for Applied Coastal Research, University of Delaware, Newark, DE 19716

- Graduate research and coursework in civil and environmental engineering (coastal engineering)

**May 1996 - Aug 1996 Summer Intern** - Metallurgical and Engineering Consultants Ltd, Bangalore, India

- Developed a numerical model to predict wave forces on submerged pipelines and marine risers.

#### **SELECTED INVITED TALKS**

- **ASBPA TX Coastal Symposium, 2025, *Design and constructability optimization in the repair and restoration of 60-year-old rubble mound jetties: A case study of Aransas Pass jetties, Texas, USA.*** Harte Research Institute, Corpus Christi, TX, Apr 04, 2025.
- **Keeping History Above Water/Pacific Islands Climate Adaptation Research and Development, 2024, *Climate Resilience at the US Department of Defense***
- **NATO MILMET Technical Panel, 2023, *Overview of DOD Climate Adaptation Plan and DOD Climate Assessment Tool.***
- **Department of National Defence, Government of Canada, 2023, *DOD Climate Assessment Tools for Adaptation and Resilience.***
- **Defense Attaché and Defense Cooperation Attaché, Royal Norwegian Embassy, 2023, *Overview of DOD and Partner Nation Climate Assessment Tools.***
- **USACE ERDC Comprehensive Water Risk Management Symposium, 2022, “[Precipitation uncertainty and bias in coastal compound flooding.**
- **Bureau of Economic Geology, TX (BEG), 2022, *Compound Flooding, A high-level overview of recent technical advancements and practical applications.***
- **Structural Engineers Association of New York (SEAoNY), 2022, *Compound Flooding, A high-level overview of recent technical advancements and practical applications.***
- **University of Notre Dame, 2021, *Coastal Compound Flooding.***
- **USACE Coastal Engineering Research Board (CERB) meeting, Mar 2019 and at USACE Galveston Stakeholder Partnership Forum, Mar 2019. *Implementation of coastal R&D innovations in hurricane supplemental projects.***
- **Texas A&M University, College Station, TX, USA, 2011, *The increasing reliance on and acceptance of high-end modeling and analyses in the coastal engineering industry.***
- **Texas A&M University, College station, TX, USA, 2009, *A storm-surge suppression barrier for the upper Texas coast?***
- **DIAM (Dipartimento di Ingegneria Ambientale), Genova, Italy, *The dynamics of quasi-steady breakers – Theory and experiments.***
- **LEGI (Laboratory of Geophysical and Industrial Fluid Flows), Grenoble, France, *The turbulent dynamics of spilling breakers.***

#### **PUBLIC MEDIA**

- Nov 2021: Featured in National Academies Gulf Research Program workshop on resilient Gulf infrastructure (<https://youtu.be/A3oFKa2-3pg>)
- Sep, 2021: Interviewed by NPR interview on Hurricane Ida’s impact in Louisiana (<https://www.npr.org/2021/09/01/1033374443/hurricane-ida-hit-an-important-oil-and-gas-hub-which-will-likely-drive-up-gas-pr>)
- Apr, 2021: Department of Defense (DoD) interview and news article on DoD’s climate action team (<https://www.defense.gov/News/News-Stories/Article/Article/2577354/action-team-leads-dod-efforts->

to-adapt-to-climate-change-effects/)

- July 2019: Interview by E&E News Climate Wire on Compound Flooding (“Ever heard of 'compound' disasters? It is new to experts, too”).

## PUBLICATIONS/PRESENTATIONS

- Lentz, E. E., Passeri, D. L., Zeigler, S. L., White, K., Wahl, T., Stoltz, A. D., Pendleton, E., **Misra, S.**, Meckley, T., Hamlington, B., Ganju, N., Cravens, A. E., Carr, J., and Buckel, C. A. (2026) *Challenges and Opportunities for National-Scale Projections of Future Coastal Landscape Change*. Earth's Future, 14, e2024EF005833. <https://doi.org/10.1029/2024EF005833>
- Stehno, A., Melby, J., **Misra, S.**, Massey, C., and Nadal-Caraballo, N. (2026) *A fully probabilistic and response-driven approach for design of coastal storm risk management systems: A Case Study of the Sabine Pass to Galveston Bay Project*. J. Waterways, Port, Coastal, and Ocean Engineering (accepted).
- Bartlett, M. S., Geldner, N., Cobell, Z., Partida, L., Diaz, O., Johnson, D. R., Kim, H., McMann, B., Villarini, G., **Misra, S.**, Roberts, H. J., and Narayanaswamy, M. (2026) *Extending the Joint Probability Method to Compound Flooding: Statistical Delineation of Transition Zones and Design Event Selection*. (Submitted to Water Resources Research)
- **Misra, S. K.**, Maglio, C., Islam, S., and Thomas, R. (2025) *Design and constructability optimization in the repair and restoration of 60-year-old rubble mound jetties: A case study of Aransas Pass jetties, Texas, USA*. Journal of Waterway, Port, Coastal, and Ocean Engineering, Volume 152, Issue 1, <https://doi.org/10.1061/JWPED5.WWENG-2334>
- Thomas, R. C., **Misra, S.**, Winkelman, J. H., Brownell, L., and Rooney, E. (2025) *Coastal engineering community of practice: The case for adoption of board certification*. 29<sup>th</sup> International Conf. in Coastal Engineering, May 17 – 22, Galveston, TX
- Nanditha J. S., Villarini, G., **Misra, S.**, and White, K. (2025) *Regional Variability in the Projected Changes in Sub-daily Precipitation IDF Curves across the Contiguous United States*. Environ. Res. Lett. 20 094006. DOI 10.1088/1748-9326/adf07d
- Olsen, R. et al. (2025), *ASCE Manual of Practice on Compound Flooding* (In Blue Ribbon review).
- Arkema, K., ..., **Misra, S.**, Stenstrom, A. (2024) *Advancing Climate Vulnerability Assessment for Defense Installations by Incorporating Sensitivity and Adaptive Capacity*, 3<sup>rd</sup> Batelle Innovations in Climate Resilience Conference, Apr 22 – 24, 2024
- **Misra, S. K.** (2024) *Operationalizing Climate Resilience R&D into DoD Missions and Policies*, ASCE-NAVFAC Workshop on Resilience of Navy Waterfront Facilities in a Changing Climate, Apr 23 – 24, 2024, Reston, Virginia.
- Tavakoly et al. (2024) *Comprehensive riverine modeling and mapping of frequency-based flood events across the United States*, American Geophysical Union conference, December 2024, Washington, DC.
- Osler, M., Hamlington, B., Stockdon, H., Veatch, W., Higgins, W., and **Misra, S.** (2024) *Advancing collaborative federal sea level science and information*. 104<sup>th</sup> Annual AMS Meeting, Vol 104, 436575
- Chini, C.M., Yoon, J., Catalano, Arielle, **Misra, S.**, White, K., Stenstrom, A. (2024). *Department of Defense Installation Resilience and Mission Adaptation in the face of Climate Change*. American Geophysical Union conference, December 2024, Washington, DC.
- Chini, C.M., Yoon, J., White, K., Stenstrom, A., and **Misra, S.** (2024). *DOD Installation mission Adaptation to a Changing Climate*. Battelle Conference on Innovations in Climate Resilience, 22-24 April 2024, Washington, DC.
- **Misra, S. K.** (2023), *Overview of DOD Climate Assessment Tool*, Army Environmental and Range Readiness Training Symposium (AERRTS), 2 May 2023, Fort Cavazos, TX.
- Hamlington, B., Lindemer, C., Osler, M. and Misra, S. (2023) *Advancing Collaborative Delivery of Federal Sea Level Science & Information*. AGU Fall Meeting 2023, held in San Francisco, CA, 11-15 December 2023, Session: Science and Society / Science Policy II Poster, Poster No. 0842, id. SY21D-0842.
- Kim, H., Villarini, G., Jane, R., Wahl, T., **Misra, S. K.**, and Michalek, A. (2022) *On the generation of*

*high-resolution design events capturing the joint occurrence of rainfall and storm surge in coastal basins*, Intl. J. Climatol. 2022;1–11, DOI: 10.1002/joc.7825.

- Villarini, G. Kim, H., Jane, R., Wahl, T., **Misra, S. K.**, and Michalek, A. (2022) *On the generation of high-resolution design events capturing the joint occurrence of rainfall and storm surge in coastal basins*, 5th International Conference on Advances in Extreme Value Analysis and Application to Natural Hazard (EVAN), 17 to 19 May 2022, Orlando, FL, USA
- Jane, R., Wahl, T., Santos, V. M., **Misra, S. K.** and White, K. D. (2022) *Assessing the Potential for Compound Storm Surge and Extreme River Discharge Events at the Catchment Scale with Statistical Models: Sensitivity Analysis and Recommendations for Best Practice*. J. Hydrol. Eng., 2022, 27(3): 04022001
- Santos, V. M., Wahl, T., Jane, R., **Misra, S. K.**, White, K. D. (2021). *Assessing compound flooding with multivariate statistical models in a complex estuarine system under data constraints*, Journal of Flood Risk Management. e12749. DOI: 10.1111/jfr3.12749.
- Loveland, M., Kiaghadi, A., Dawson, C. N., Rifai, H.S., **Misra, S.K.**, Mosser, H. and Parola, A. (2020). *Developing a modeling framework to simulate compound flooding: When storm surge interacts with riverine flow*. Frontiers in Climate 2:609610. doi: 10.3389/fclim.2020.609610
- National Academies of Sciences, Engineering, and Medicine (2018). *Understanding the Long-Term Evolution of the Coupled Natural-Human Coastal System: The Future of the U.S. Gulf Coast*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25108>.
- Victor M. Santos; Thomas Wahl; Robert Jane; **Misra, S. K.**; Kathleen D. White (2021), *Estimating the Probability of Compound Discharge/surge Events in a Complex Estuarine System Under Data Constraints*; EGU 2021, EGU21-13789 Session NH10.4 – Compound weather and climate events.
- Loveland M, Kiaghadi A, Dawson CN, Rifai HS, **Misra, S.K.**, Mosser H and Parola A (2020) *Developing a Modeling Framework to Simulate Compound Flooding: When Storm Surge Interacts with Riverine Flow*. Front. Clim. 2:609610. doi: 10.3389/fclim.2020.609610
- Kiaghadi, A., Loveland, M., Dawson, C., Misra, S., Mosser, H., and Parola, A. (2020) *Simulating compound flooding: A comparison between HEC-RAS and ADCIRC*. 2020 AGU Fall Meeting, OS002-004.
- Dawson, C., Kiaghadi, A., Loveland, M., Gaither, J., Rodriguez, C. and **Misra, S. K.** (2020) *Modeling of Compound Flooding Due to Rainfall-Induced Riverine Flow and Storm Surge in the Upper Texas Coast*, COMPSAFE, Japan, Mar 2020
- Malagon-Santos, V., Wahl, T., **Misra, S. K.**, and White, K. (2020), *Evaluating Different Multivariate Statistical Models to assess Compound Flooding in Sabine Lake, Texas*, International Conference on Flood Management (ICFM), Iowa, USA, Aug 2020
- Kiaghadi, A., Dawson, C., Rifai, H., Loveland, M., Gaither, J., Rodriguez, C., **Misra, S. K.**, Mosser, H., Parola, A. and Massey, C. (2019) *Compound Flood Modeling of the Upper Coast of Texas*, ASBPA National Coastal Conference, Myrtle Beach, SC, Oct, 2019
- Malagon-Santos, V., Wahl, T., **Misra, S. K.**, and White, K. (2019), *Using Multivariate Statistical Modelling to Assess Compound Flooding Effects in Sabine Lake, Texas*, ASBPA National Coastal Conference, Myrtle Beach, SC, Oct 2019
- R. Jane, T. Wahl, V. M. Santos & **Misra, S. K.**, *Estimating Compound Flooding Potential at the Catchment Level: Recommendations for Best Practice.*, AGU 2020 Fall Meeting, December 2020
- Mark Loveland, Amin Kiaghadi, Clint N. Dawson, Hanadi S. Rifai, **Misra, S. K.**, Helena Mosser, Alessandro Parola, (2020) *Developing a Modeling Framework to Simulate Compound Flooding: When Storm Surge Interacts with Riverine Flow*, under revision for Frontiers in Climate
- Barrett, A. L., Melby, J. A., Massey, T. C., **Misra, S. K.**, Nadal-Caraballo, N., Taflanidis, A., Lynett, P. and Gonzalez, V. (2020) *A comprehensive evaluation of flood hazards for Sabine to Galveston, TX, USA region*, Coastal Engineering Proceedings, (36v), management.22. <https://doi.org/10.9753/icce.v36v.management.22>
- Melby, J. A., Nadal-Caraballo, N., Barrett, A., Massey, T. C., **Misra, S.K.**, Gonzalez, V., Taflanidis, A. (2020) *Improved coastal flood risk estimates through integrated JPM and coupled physics approach*,

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- Malagon-Santos, V., Wahl, T., **Misra, S. K.**, and White, K. (2019), *Using Multivariate Statistical Modelling to Assess Compound Flooding Effects in Sabine Lake, Texas*, ASBPA National Coastal Conference, Myrtle Beach, SC, Oct 2019
- **Misra, S. K.** (2019), *Opportunities and challenges in the pre-construction, design, and engineering of the Sabine-to-Galveston coastal storm risk mitigation project*, ASBPA 2019 Coastal Symposium, Harte Research Institute, Corpus Christi, TX, Apr 15 – Apr 16, 2019
- Yang, X., Kerper, D., **Misra, S. K.**, Stear, J., Shen, T. and Lisaeter, K. (2018) *The dynamics of storm surge and mean sea level variability in the north-eastern Caspian Sea*, 36<sup>th</sup> International Conference on Coastal Engineering (ICCE), Baltimore, July 2018
- Kerper, D., **Misra, S. K.**, Hansen, H., Shi, F., Rao, P., Kirby, J. T., Willey, E. and Ervin, D. (2017) *Nearshore FSO response under rapidly varying landslide tsunami hydrodynamic loads*, ISOPE 2017
- Sancio, R., Rao, P., Hunt, C., Umberg, D., Greene, A., and **Misra, S.K.**, 2017, *Hazard quantification of seismically induced tsunamigenic mass movements*, OTC 2017
- Kirby, J. T., Shi, F., Nicolosky, D. and **Misra, S. K.**, 2016, *The 27 April 1975 Kitimat, British Columbia submarine landslide tsunami: A comparison of modeling approaches*, Landslides, 13, 1421-1434
- Kirby, J. T., Shi, F., Ma, G., **Misra, S. K.** and Rao, P., 2015, *The 1975 Kitimat landslide tsunami: Validation and comparative testing of modeling strategies*, ASCE COPRI Coastal Structures & Solutions to Coastal Disasters Joint Conference, Boston, Sept. 9-11, 2015.
- Aijaz, S, A Driscoll, A. Sayce, K. Kirgaard, M. Klabbers, and **Misra, S. K.**, 2013. *Fine Sediment Transport Modelling for Port Design*. Coasts and Ports 2013 PIANC Conference, September 2013, Sydney.
- Shi, F., Kirby, J., **Misra, S. K.**, Vittori, G. and Ramsey, J., (2012) *Process and input filtering in modeling of sand pit-induced morphological evolution*. Presented at AGU Ocean Sciences Meeting, 2012
- Schmied, L., Eberbach, S., and **Misra, S. K.** (2011) *Coupled Hydrodynamic and Morphodynamic Feedback in the Coastal Zone in Response to Sea Level Rise, Subsidence and Climate Change*, 2011 National American Shore and Beach Preservation Conference, New Orleans, October 2011
- **Misra, S. K.**, Narayanaswamy, M., Bayram, A., and Shi, F. (2010) *Design optimization of caisson breakwater superstructures using a 2DV RANS-VOF numerical model*. Proc. 32nd Intl. Conf. Coastal Engg., Shanghai, China
- Padron, D. V., **Misra S. K.**, Rasch P., Shen, D., Driscoll, A., Tanagho, E., and Abbar, A. (2009) *Expansion of Jebel Ali Port*. ICE Coasts, Marine Structures and Breakwaters, Edinburgh
- **Misra, S.K.**, Driscoll, A., Bayram, A. and Carr, C. (2008) *Parameterization of near-field effects of thermo-haline discharges into far-field coastal hydrodynamic and advection-dispersion models*. PIANC-COPEDEC 2008
- **Misra, S. K.**, Kirby, J. T., Brocchini, M., Veron, F., Thomas, M. and Kambhamettu, C., (2008) *The mean and turbulent flow structure of a weak hydraulic jump*. Physics of Fluids, **20**, 035106
- **Misra, S. K.**, Driscoll, A., Lomonaco, P., Cornett, C., Kirby, J. T., Sayao, O. and Yavary, M. (2008) *Surface gravity wave interactions with deep draft navigation channels – A physical and numerical modeling case study*. Proc. 31<sup>st</sup> Intl. Conf. Coastal Engg., Hamburg
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- **Misra, S. K.**, Thomas, M., Kambhamettu, C., Kirby, J. T., Veron, F. and Brocchini, M., (2006) *Estimation of complex air-water interfaces from PIV images*. Exp. Fluids, 40, 764-775.
- **Misra, S. K.**, Brocchini, M., and Kirby, J.T., (2006) *Turbulent interfacial boundary conditions for spilling breakers*. Proc. 30<sup>th</sup> Intl. Conf. Coastal Eng., San Diego, September 2006

- Thomas, M., **Misra, S. K.**, Kambhamettu, C. and Kirby, J. T., (2006) *Dynamic open contours using particle swarm optimization with application to fluid interface extraction*. Computer Vision – ACCV 2006: 7th Asian Conference on Computer Vision, Hyderabad, India, January 13-16, 2006.
- Thomas, M., **Misra, S. K.**, Kambhamettu, C. and Kirby, J. T., (2005) *A robust motion estimation algorithm for PIV*. Measurement Science and Technology, 16, 865-877
- **Misra, S. K.**, Kirby, J. T., and Brocchini, M., (2005) *The turbulent dynamics of quasi-steady spilling breakers – Theory and experiments*. CACR-05-08
- Saxena, G., **Misra, S. K.**, and Veron, F., (2005) *Air-flow separation over unsteady breaking wind-waves*. 58th Annual Meeting APS Division of Fluid Dynamics (DFD05), October 2005, Chicago, USA
- **Misra, S. K.**, Kirby, J. T., Brocchini, M., Thomas, M., Veron, F. and Kambhamettu, C., (2005) *Coherent structures in a quasi-steady spilling breaker*. Waves 2005, Madrid, Spain
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- Zhao, Q., **Misra, S. K.**, Svendsen, I. A. and Kirby, J. T., (2004) *Numerical simulations of a turbulent hydraulic jump using a VOF model*. 16<sup>th</sup> Engineering Mechanics Conference, Delaware, July 2004
- **Misra, S. K.**, Kennedy, A. B. and Kirby, J. T., (2003) *An approach to determining nearshore bathymetry using remotely sensed ocean surface dynamics*. Coastal Engineering, 47, 265-293
- **Misra, S. K.**, Kirby, J. T. and Svendsen, I. A., (2002) *Simulating non-hydrostatic free surface flows*. Proc. 28th Intl. Conf. Coastal Engrng. Cardiff, July 2002
- **Misra, S. K.**, Kennedy, A. B., Kirby, J. T. and Dalrymple, R. A., (2000) *Determining water depths from surface images using Boussinesq equations*. Proc. 27th Intl. Conf. Coastal Engrng., Sydney, July 2000
- **Misra, S. K.**, Kennedy, A. B. and Kirby, J. T., (2000) *Determining water depths from surface images using Boussinesq equations*. CACR-00-01

#### AWARDS/PROFESSIONAL ACTIVITIES

- Topic editor for *Advances in Machine Learning and AI Applications for Coastal and Offshore Environments*, Frontiers in Built Environment. Nov, 2025 – Apr, 2026.
- GUEs editor for Special Issue (*Texas Coastal Resilience*) in ASCE Journal of Waterway, Port, Coastal, and Ocean Engineering.
- Board of Trustees, Academy of Coastal, Ocean, Port & Navigation Engineers (ACOPNE).
- (Pas) local organizing committee co-chair for 39<sup>th</sup> International Conference in Coastal Engineering, May 2026, Galveston, TX
- 2023 USACE Engineering and Construction CoP Resilience Role Model Award (Team) for the Development and Sustainment of the Department of Defense Climate Assessment Tool.
- 2021 USACE Civilian Service Achievement Medal (Group award for Project Delivery Team in support of the Sabine Pass to Galveston Bay Coastal Storm Risk Management Project).
- Reviewer for *Coastal Engineering Journal*, *Journal of Waterways, Port, Coastal and Ocean Engineering*, *Continental Shelf Research*, *J. Fluids Structures*, *Experiments in Fluids*, *Physics of Fluids*, *Journal of Fluid Mechanics*

#### SOFTWARE and MODELING SYSTEMS

Engineering and Business Software : Ariba, MS Office (Word, Excel, Powerpoint), MS Project, Primavera, MS Publisher, Sharepoint, Coreworx, eB Documentum, Matlab, Maple, Mathematica, LaTeX, MIKE 21/3 (Classical and FM) SW, HD, ST, MT, BW, EVA, SHIPMA, OPTIMOOR, REFDIF, ANSYS-AQWA, FUNWAVE, RIPPLE, SHORECIRC, MONGOOSE (RANS-VOF Model), WAFO, EVIM, SWAN, Familiarity with HEC-HMS and HEC-RAS.

#### SELECTED COURSES

- **Building with Nature** (edX DelftX)
- **Tsunamis and Storm Surges: Introduction to Coastal Disasters** (edX WasedaX; honor code certificate)
- **Coastal Engineering** (Coastal Structure Design, Offshore Structure Design, Hydromechanics, Nearshore Hydrodynamics, Water Wave Mechanics, Modeling Geophysical Flows, Coastal and Estuarine Physical Dynamics, Sediment Transport Mechanics, Littoral Processes)
- **Water Quality** (Water quality modeling: Eutrophication, nutrients and metals, Manhattan College, June 2007)
- **Applied Mathematics** (Asymptotic Perturbation Methods, Advanced Engineering Mathematics, Intermediate Engineering Mathematics, Nonlinear Wave Mechanics, Inverse Methods and Data Assimilation - Summer course by Dr. Andrew Bennett, Oregon State University)

## **OTHER INTERESTS**

Travel, Music, Sports

## **REFERENCES**

Available upon request