



Enhancing the USCG's Operational Effectiveness With COAST

A DHS Science and Technology Center of Excellence Solution

Suite of Tools Optimizes USCG Operations

Researchers from the Center for Visual and Data Analytics (CVADA), a Department of Homeland Security (DHS) Science and Technology (S&T) Center of Excellence, are working with the United States Coast Guard (USCG) to develop the **Coastal Operations Analysis Suite of Tools (COAST)** that meets a broad set of USCG mission requirements. This suite of tools includes visualization, simulation, math modeling, and optimization techniques.

USCG Partnership Key to Developing COAST

COAST will help USCG station commanders and headquarters decision makers more effectively analyze a range of mission demands and individual operational unit tasks related to asset capabilities, acquisitions, and allocations; unit locations; policies and concepts of operations; and mission tradeoffs. COAST will incorporate several analytical tools, each designed to address a mission or operational unit. These tools will be able to interface with each other.



Two COAST Tools Implemented

Two COAST modules have been implemented:

- The **Boat Allocation Module** helps users optimize the number of boats needed to accomplish missions at each station.
- The **Boat Station Search and Rescue Module** helps users analyze boat station performance of search and rescue operations, calculate operational effectiveness, and evaluate the impact of changes to asset capabilities or search and rescue policy.

Benefits of Using COAST

- Incorporates and integrates existing USCG datasets
- Can be used across USCG missions and districts
- Will be able to perform multiple functions such as resource allocation, risk and vulnerability assessment, activity scheduling, trend analysis, training simulations, decision support, and impact on operational effectiveness based on changes in policy and programs.

Success with cgSARVA

COAST expands on the geographic applicability of a previously developed tool, the **Coast Guard Search and Rescue Visual Analytics (cgSARVA)***, which CVADA developed with the USCG specifically for the Great Lakes region. The cgSARVA suite of tools provides an interactive visualization, analysis and assessment of search and rescue missions. It also helps decision makers and analysts understand the risks, efficiencies and benefits of reallocating or reducing various types of resources. The USCG used cgSARVA during Superstorm Sandy to determine how to reallocate resources in light of damage caused to USCG stations in New Jersey. In April 2013, the USCG accredited cgSARVA for USCG-wide use.



Screen shot of the cgSARVA tool showing analysis in the Great Lakes region.

* CVADA co-lead Purdue University received a Commander Atlantic Area's Excellence Coin for its work developing cgSARVA with USCG District Nine.