Coastal Inlets Research Program

US Army Corps of Engineers ®
Engineer Research and Development Center

GenCade Model, Version 1.1

Need

Predicting long-term shoreline change plays an important role in planning and management of coastal zones and regional sediment management. Shoreline change is driven not only by natural processes such as wave- and current-induced sediment transport but by engineering activities such as placement of coastal structures and beach nourishment. The shoreline evolution model GenCade has been developed as a stand-alone application to assess the impact of coastal engineering projects. GenCade calculates shoreline change, wave-induced longshore sand transport, and morphology change along open coasts and at inlets on a local to regional scale. It also accounts for engineering structures such as jetties, seawalls, and groins, as well as engineering activities such as dredging and beach nourishment. In an effort to expand upon existing model capabilities, new features are presently being developed to better constrain the effects of cross-shore sediment transport, model uncertainty, and sea level rise. In addition, continued validation is a long-term strategic goal to improve model performance.
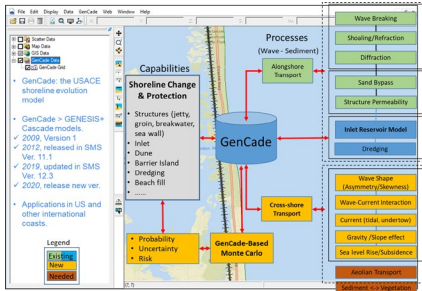
Technology

GenCade is a numerical model which combines the engineering power of GENESIS and the regional processes capability of the Cascade model. GenCade calculates shoreline change, wave-induced longshore sand transport, and morphology change at inlets on a local to regional scale and can be applied as a planning or engineering tool. GenCade is operated within the Surface-water Modeling System interface, bringing functionality of a georeferenced environment together with accessibility to other U.S. Army Corps of Engineers numerical models. GenCade is being developed by the Coastal Inlets Research Program and the Regional Sediment Management Program.
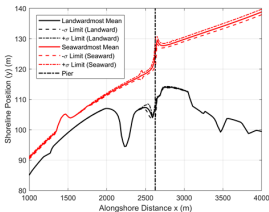
Benefits/Savings

GenCade provides a rapid assessment of multiple engineering alternatives in a robust self-contained operating platform that can be setup and executed with minimal preparation. As such, it serves as an economically viable application for shoreline change analysis.

Available Documentation

A User's Guide and other technical reports are available on the CIRP Webpage for GenCade: http://cirp.usace.army.mil/products/gencade.php and on the CIRP Wiki: http://cirpwiki.info/wiki/GenCade.

Available Training and Support

Periodic technology-transfer workshops and webinars are organized by the ERDC staff. Please refer to the CIRP webpage (http://cirp.usace.army.mil) for training announcements.

Support is available by contacting the ERDC POC or commercial support from Aquaveo at support@aquaveo.com.

Distribution Sources

GenCade is available on the CIRP Webpage: http://cirp.usace.army.mil/products/gencade.php, and from Aquaveo at http://aquaveo.com/GenCade.

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