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Documentation and Help for GenCade

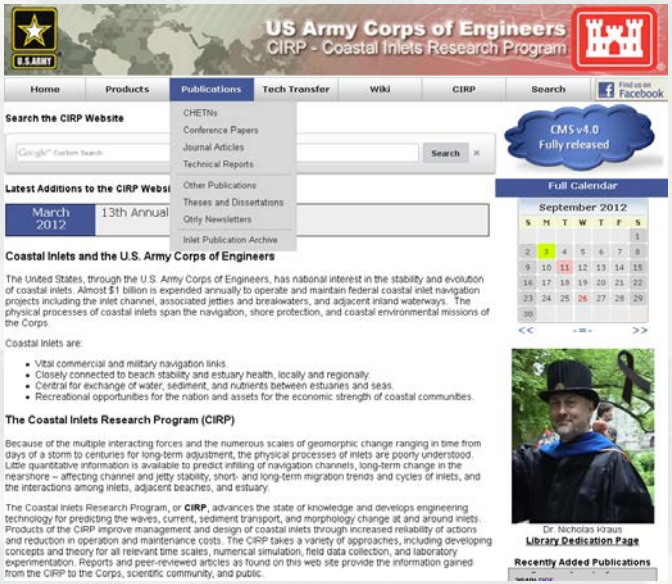
Ashley Frey

Research Civil Engineer, Co-PI of the Inlet Engineering Toolbox work unit of CIRP

US Army Corps of Engineers®

Documentation

- CIRP Website



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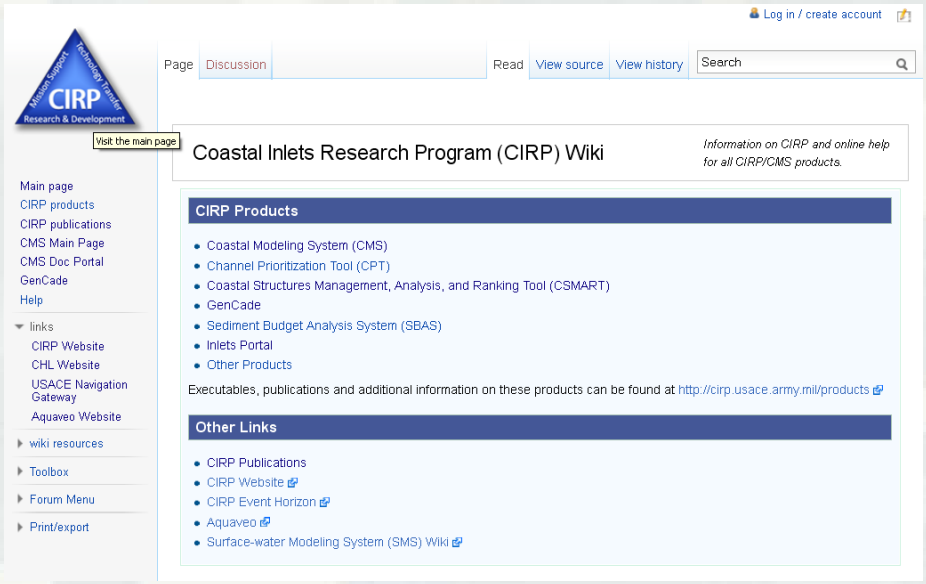

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GenCade

GenCade is a 1D model that combines GENESIS and Cascade. It is operated within the Surface-water Modeling System (SMS) interface. The first official release of GenCade is expected to occur in 2011. A beta version of GenCade is presently available and can be obtained by contacting the POC below. A user guide, examples of simple cases, applications, frequently asked questions, and important information will be posted here. A Technical Report is presently being drafted.

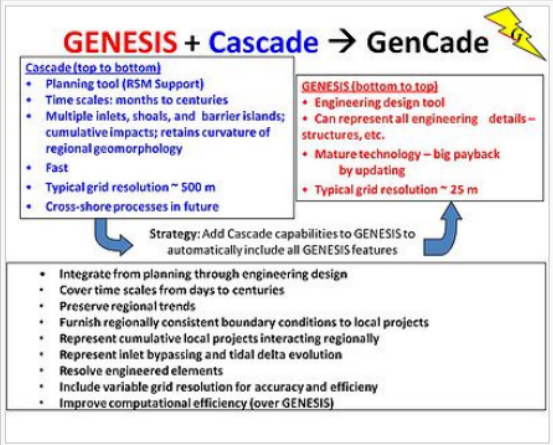

Figure 1. Combination of GENESIS and Cascade

GenCade was highlighted during two CIRP Workshops in 2011. The first took place in February in Jacksonville, FL. This was the first workshop to include GenCade. About 25 students listened to several GenCade presentations, watched a demonstration, and participated in a hands-on example. A full day session of GenCade was featured in San Diego in August. The next CIRP Workshop is scheduled for March 2012 in Philadelphia. An overview of all CIRP tools, including GenCade, will be given on the first morning. A hands-on session of GenCade will take place during the second afternoon.

GenCade on CIRP Wiki

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- User Guide
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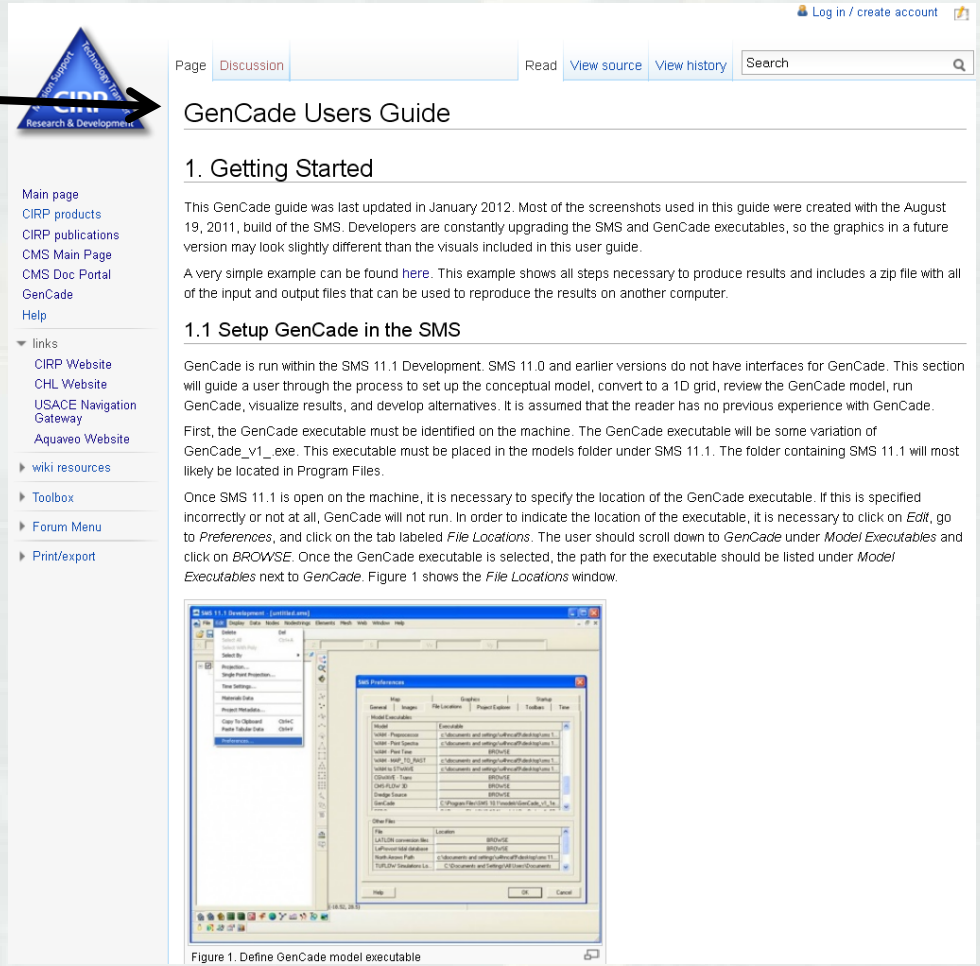
  - Preparing Input Files
  - Grid Setup
  - GenCade Files, Menu, Model Setup, and Execution
  - Developing Alternatives
- GenCade Executable
- Input Files
- Output Files
- Parameters
- GenCade Tutorial/Example
- Boundary Conditions
- Wave Input
- GenCade Applications
- Model Calibration
- Technical Documentation
- Frequently Asked Questions



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After saving the GenCade project, several files will be created in the user specified folder. These files include *.gen, *.shi, *.shr, *.wave, *.shdx, and *.wl. For example, if the name of the project is test, the input files would be named test.gen, test.shi, test.shr, and test_wave1.wave. In order to run GenCade, at least the *.gen, *.wave, and *.shi files are needed. The *.shr file is necessary for a case with a regional contour, while *.shdx is created when variable grid resolution occurs. The *.wl file is only created when using time-dependent wave transmission for a detached breakwater.

The *.gen file is the control file. The first section of this file lists information about the other input and output files. The first line under files shows the path for the location of the initial shoreline. If the case has a regional contour, the next line will list the location for the regional contour. The next line specifies the number of wave gages included for the simulation while the next lines list the cell of the wave gage, the depth, number of time steps for the wave information, and the path for each wave gage. The next section of the *.gen file is the model setup. This section includes the grid origin and orientation, the simulation start and end date, the time step, the longshore sand transport coefficients (K1 and K2), and the number of cells in the offshore contour smoothing window (ISMOOTH). The next section of the *.gen file is the waves section. This section includes the height amplification factor, angle amplification factor, and angle offset. The D50, berm height, closure depth, and boundary conditions are found under the beach heading. Seawalls, beach fills, inlets, groins, and other features included in the conceptual model follow the beach section in the *.gen file.

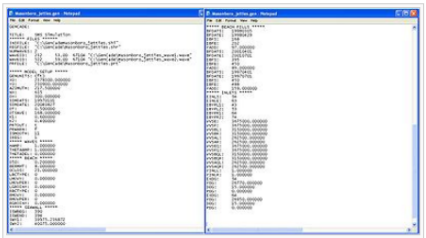
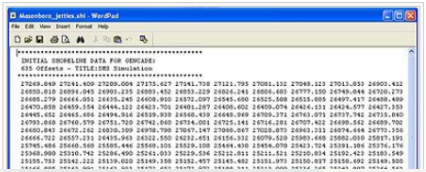


Figure 1. Example *.gen - Left panel is top of file

The *.shi file is the initial shoreline data file. Each number in this file represents a cell, and the number is the distance the shoreline is offset for the baseline.



Technical Reports and Technical Notes

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- Thomas, R., and Dunkin, L. 2012. **Erosion Control and Environment Restoration Plan Development, Matagorda County, Texas, Phase 1: Preliminary Investigation.** ERDC/CHL TR-12-11. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Beck, T. M., and Legault, K. 2012. **Optimization of Ebb Shoal Mining and Beach Nourishment at St. Johns County, St. Augustine Inlet, Florida**. ERDC/CHL TR-12-14; Report 3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Frey, A.E., Munger, S., Williams, G.L., Wutkowski, M.J., and Conner, K.J. 2012. **GenCade Application at Onslow Bay, North Carolina**. ERDC/CHL CHETN-IV-85. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- (In printing) Frey, A.E., Connell, K.J., Hanson, H., Larson, M., Thomas, R.C., Munger, S., and Zundel, A. 2012. **GenCade Version 1 Model Theory and User's Guide**. ERDC/CHL TR-12-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.