

PROJECT DESCRIPTION

Coldwater Consulting Ltd. was contracted by Ausenco-Sandwell to undertake an assessment of sedimentation and shoreline response in the vicinity of a proposed marine terminal expansion at Ubu, Brazil. The aims of the study were to:

- review hydrodynamic and sediment conditions in the study area;
- develop a computational flow model of the study area including the effects of tides, winds and the Brazil Current;
- evaluate the response of the study site to construction of the proposed expansion in terms of sedimentation and erosion including an assessment of expected maintenance dredging requirements, and;
- evaluate expected shoreline response to the proposed development and develop conceptual remediation designs as necessary.

CLIENT

Ausenco-Sandwell
Vancouver, BC

LOCATION

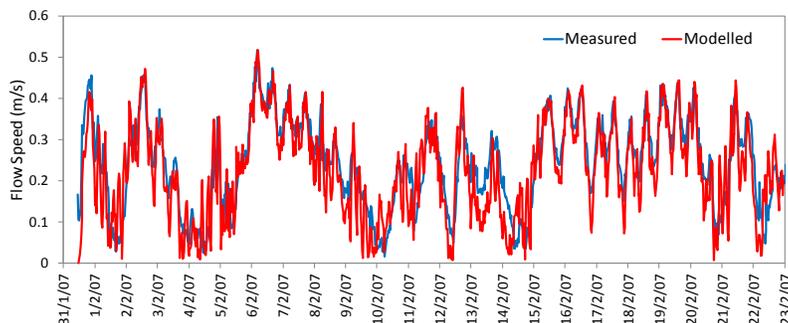
Ubu, Brazil

DATE

2011

DESIGN APPROACH

Two separate ADCIRC circulation models were developed for this study: a far-field tidal circulation model and a near-field current model. Wave conditions were established using a nested SWAN wave generation model set up. Sediment transport and offshore morphological evolution under the combined wave-current forcing was studied using Coldwater’s proprietary model, PTM-Morph. The non-cohesive sediments were modelled using PTM-Morph’s total load and advection-diffusion approaches. Shoreline change was analyzed using the GENESIS model, which computes changes to beach plan-shape in response to sediment supply, waves, and the presence of sediment control structures.



Comparison of measured and modelled currents