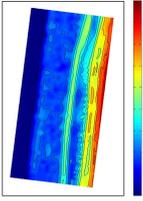


Application

Rip currents modeling and nearshore bathymetry from video data

Site : Egmond aan Zee , 5 ARGUS camera
Field campaign : 22 Aug-26 Aug 2011

- Typical barred beach
- Inner bar rhythmic, interrupted by channels



Video data

- Wave dissipation maps from video : 37 maps
- Period of maps : 5 Aug - 25 Aug
- Maps show bar breaking signal as well as interrupted inner bar



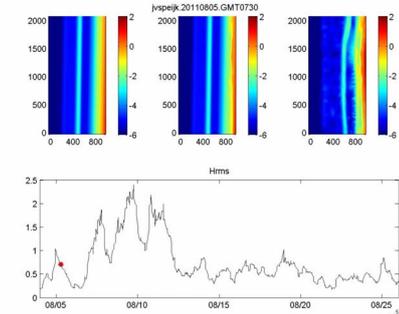
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Application

Rip currents modeling and nearshore bathymetry from video data

Results – Bathymetry evolution

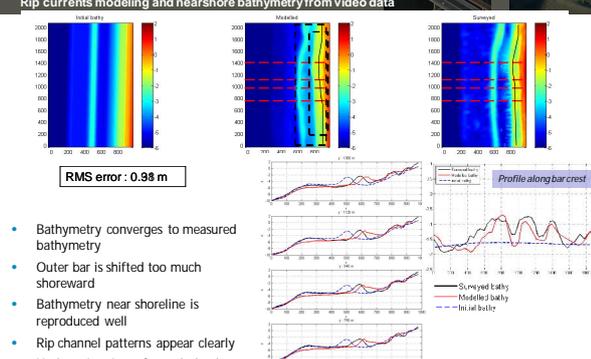


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Application

Rip currents modeling and nearshore bathymetry from video data



RMS error : 0.98 m

- Bathymetry converges to measured bathymetry
- Outer bar is shifted too much shoreward
- Bathymetry near shoreline is reproduced well
- Rip channel patterns appear clearly
- Underestimation of trough depth

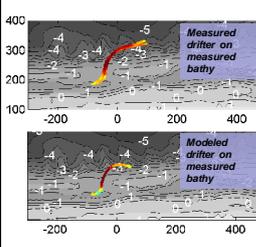
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Application

Rip currents modeling and nearshore bathymetry from video data

- XBeach model for Egmond



Model performs well for measured bathymetry, how does it do on a Beachwizard Bathymetry?

Set up similar model, but using BeachWizard bathymetry
Rip's location (spatial skill)
Rip's strength (magnitude skill)

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Application

Rip currents modeling and nearshore bathymetry from video data

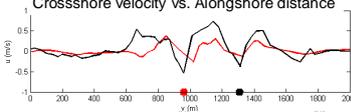
Skill over 2 rip boxes

- Alongshore location
- Magnitude

Visually, locations of concentrated offshore-ward flow are confirmed, and consistent over the period of simulation

Locations of maximum seaward velocity are in good agreement, Alongshore offset : 10 m (Box 1) 70 m (Box 2)

Max rip velocity (10-min average)		
	Box 1	Box 2
Measured bathy	0.44 m/s	0.54 m/s
BeachWizard bathy	0.26 m/s	0.28 m/s



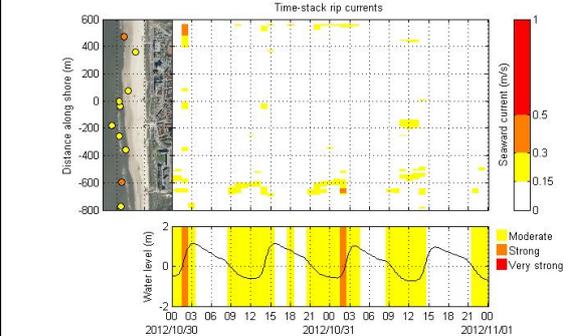
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Application – information product for life guards

Rip current prediction

Time-stack rip currents



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Conclusions

1. *COSMOS can accurately predict waves and waterlevels.*
2. *Beach Wizard can nowcast nearshore bathymetry including rip channels.*
3. *Rip current location and strength can be predicted by XBeach model using BeachWizard bathymetry*
4. *Combination of COSMOS and BeachWizard can provide useful information for life guards and beach visitors.*

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