

State of the World's Beaches

*Global Sandy Shoreline Dynamics
derived from Satellite Imagery*

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Motivation



Training with OSM Data (Texel, NL)



Training Dataset
Deltares

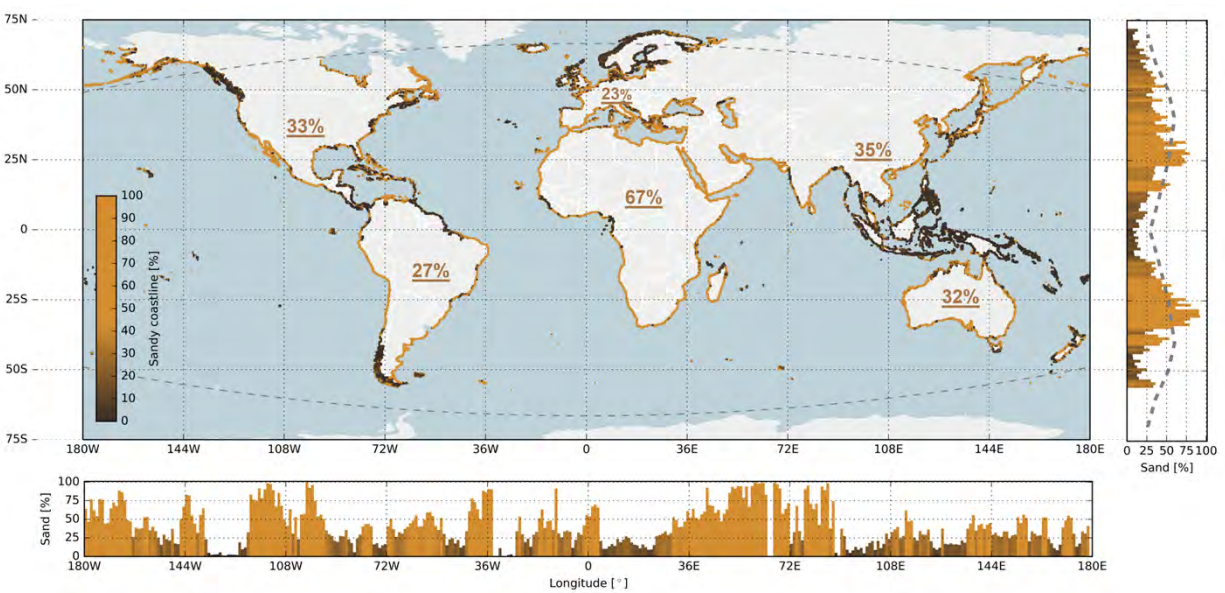


Sand Classification
(Sentinel 2)



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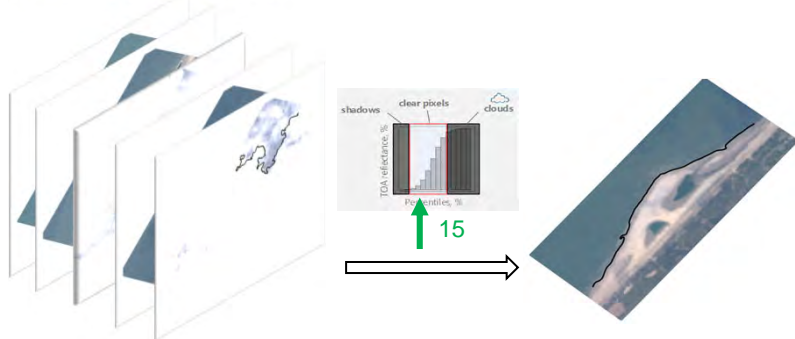
Global sandy beach map



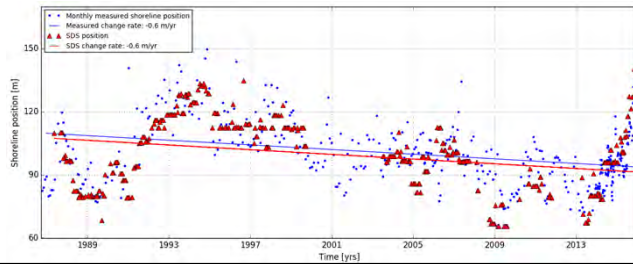
4

Automated shoreline detection

- Filtering of: Clouds, tidal stages, surge, waves, shadows, seasonal effects, etc.



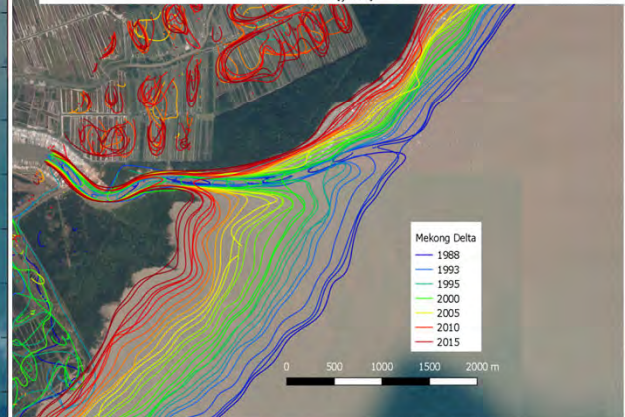
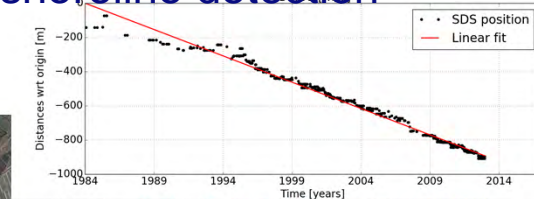
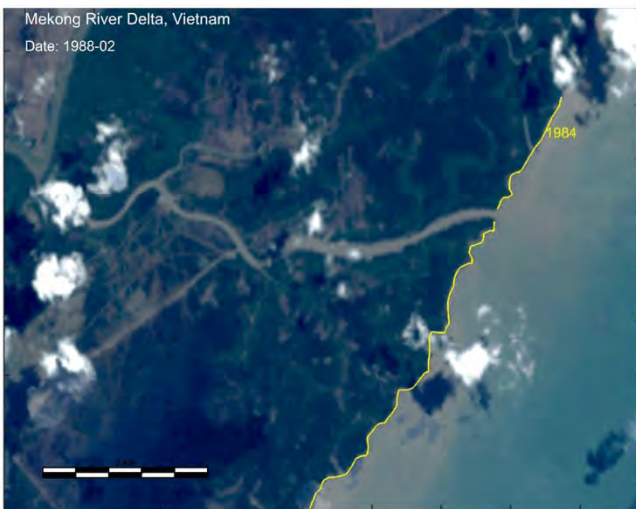
- Composite images: moving time averaging
- Narrabeen, Australia: 40 yr of observations
- RMSE: 13,7 m



Deltares

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Time lapses – Mekong Delta shoreline detection

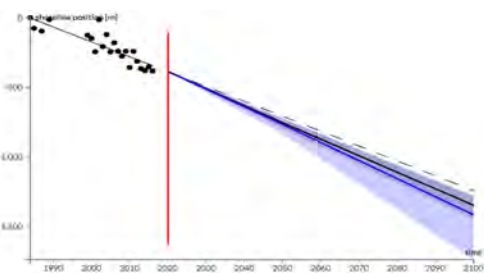
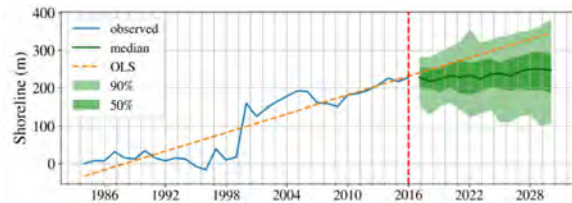


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In-depth utilisation

- National coastline assessments
- Linking drivers to coastal change
- Forecasting shorelines
 - Naïve extrapolation to 2100 (Vousdoukas et al., 2020)
 - Machine-Learning Forecasting (Calkoen et al., 2021)





Questions / suggestions?