



Catchment and Coastal Environments Research Group

Research Themes

Beach change over individual wave cycles on sand and gravel beaches

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Swash action on Truc Vert

Project details :

This project represents a collaboration between the University of Plymouth (UoP) and the University of New South Wales (UNSW). Funding for the UoP component is by the Natural Environment Research Council (NERC), whereas the UNSW component is funded by the Australian Research Council (ARC). The UoP part of the project runs over two years from 2008-2009 and the total funding received was £77k.

Research team:

Investigators	Gerd Masselink, Paul Russell, Ian Turner
Research staff	Chris Blenckinsopp, Scott Peak
Technical support:	Peter Ganderton
MSc students	William Hibberd, James Moon
Field assistants	Martin Austin , Daniel Buscombe, Amaia Ruiz de Alegria Arzaburu, Tim Scott

Research aim and approach

The swash zone is that part of the beach that is alternatively covered and exposed by wave uprush/ backwash, and marks the transition between the subaerial beach and the submerged surf zone. The aim of this research is to advance our quantitative understanding of fundamental erosion/accretion processes in this zone through analysis of comprehensive field data collected on a sandy beach in France and a gravel beach in the UK.



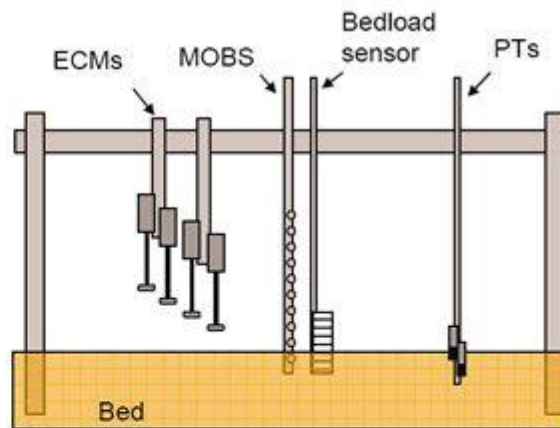
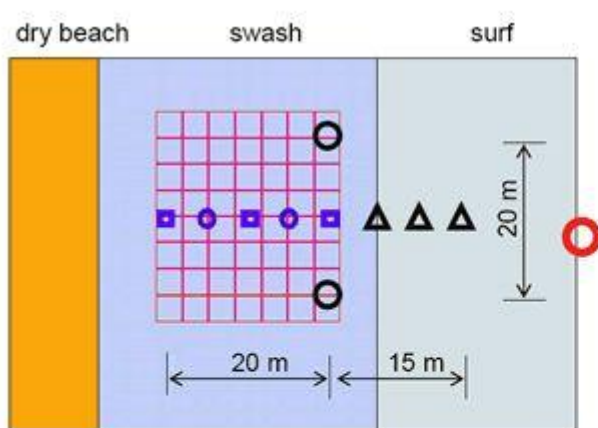
Truc Vert on the Aquitaine coast in France



Slapton Sands in Devon, UK

Experimental set-up

During both field campaigns hydro- and sediment-dynamics will be measured by a range of instruments deployed in the high tide swash zone, complemented by extensive morphological measurements and sediment trapping. Each experiment will last 2 weeks and measurements will be made every tidal cycle. Data will be recorded on shore-based computers and sampled at 4 Hz.



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|--|--|--------------------------|--|--|---|
| ■ Main rigs | ○ Aux rigs | Bed-level sensors | ○ Alongshore rigs | ○ ADCP (beyond breakpoint) | ▲ Surf-zone |
| <ul style="list-style-type: none"> • 2 PTs • MOBS tube • 4 ECMs • Bedload sensor | <ul style="list-style-type: none"> • PT • ECM • D&A OBS | | <ul style="list-style-type: none"> • PT • ECM • D&A OBS | | <ul style="list-style-type: none"> • PT • ADV • Altimeter • D&A OBS |

Planned instrument deployment on Truc Vert

Instrumentation

Instruments to be deployed include electromagnetic current meters, mini-optical backscatterance sensors and pressure sensors. Key to the project is the deployment of a large number of ultrasonic bed-level sensing devices, jointly developed by UNSW and UoP, capable of resolving the bed level in the swash zone at sub-mm accuracy. These sensors will be mounted above the swash zone water surface, away from the highly energetic zone of direct wave impact, and their data will be used to derive net sediment transport over individual swash cycles through the mass balance.



Instrumentation and measurement techniques used during both field experiments

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