MODLIT
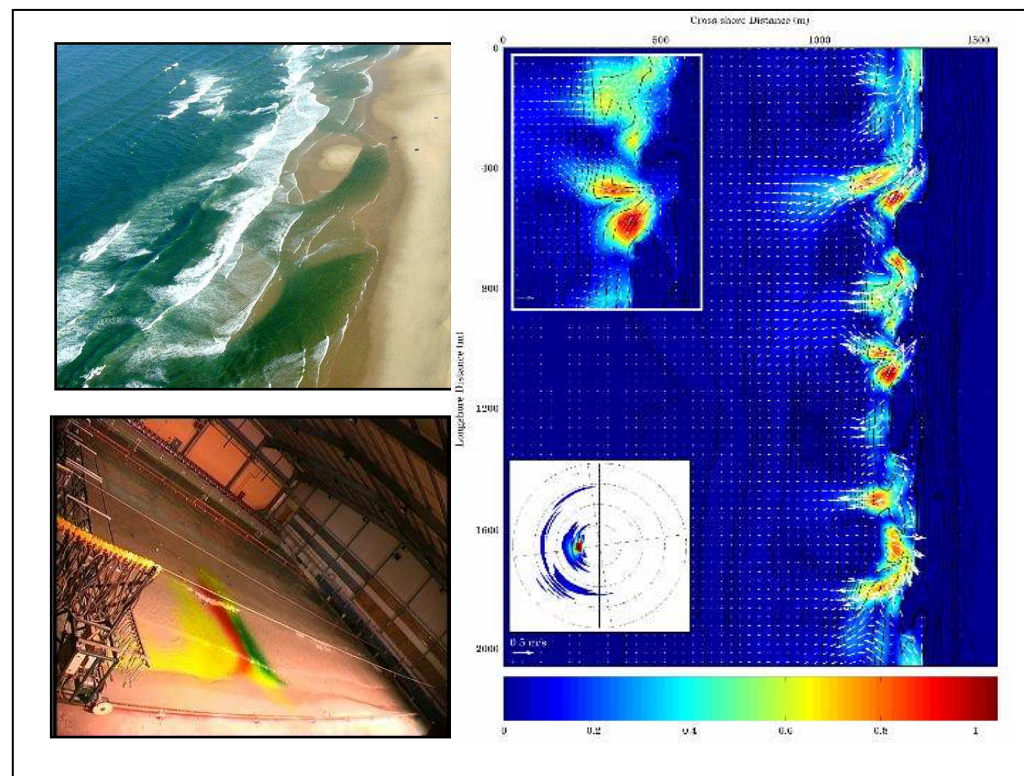## Physical and numerical modeling of sandy beach morphodynamics

Overview of the project

- 3-years project (sept. 2007 – sept. 2010)

- 23 researchers, 11 laboratories (France, Netherlands and Chile)

- 187 000 euros

http://modlit.epoc.u-bordeaux1.fr/

Morphodynamic modeling of the coastal zone

☐ **Task 1**   Characterization of sandy beach dynamics

⇨ Truc Vert beach 2008, PLAMAR, …

☒ **Task 2**

☒ Task 2.1   Numerical modeling of sediment transport and beach morphodynamics
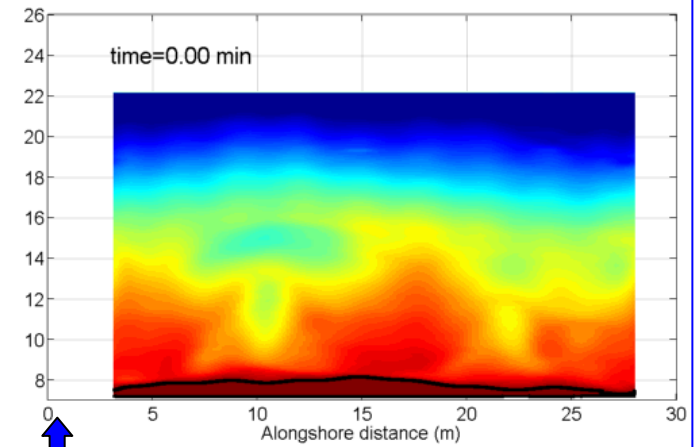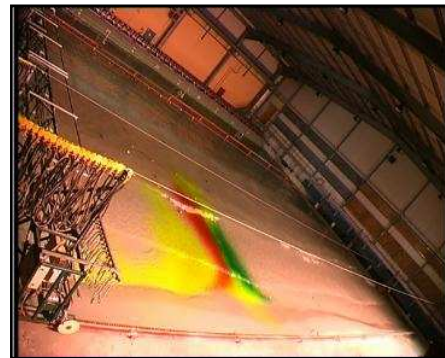
☒ Task 2.2   Physical modeling of beach dynamics
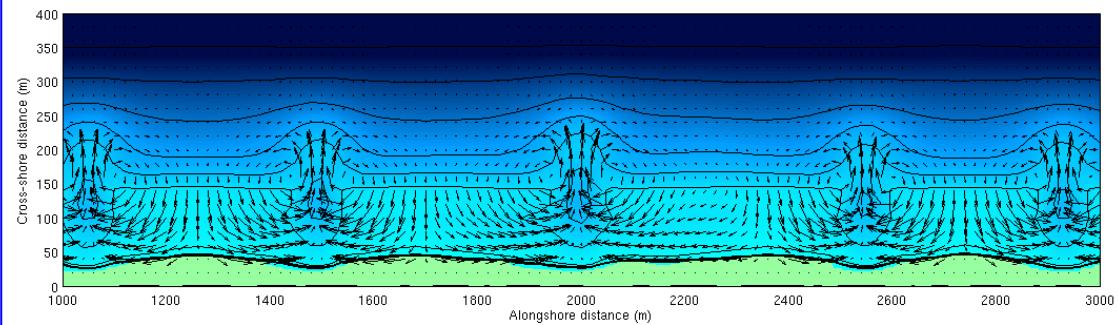
☒ Task 2.3   Remote sensing

Field applications

Physical modeling

Numerical modeling

1 - Cross-shore sediment transport and beach profile evolution

- role of velocity and acceleration skewness on cross-shore sediment transport

- measurements of sand bed dynamics

- onshore and offshore sandbar migration during low and high energy conditions

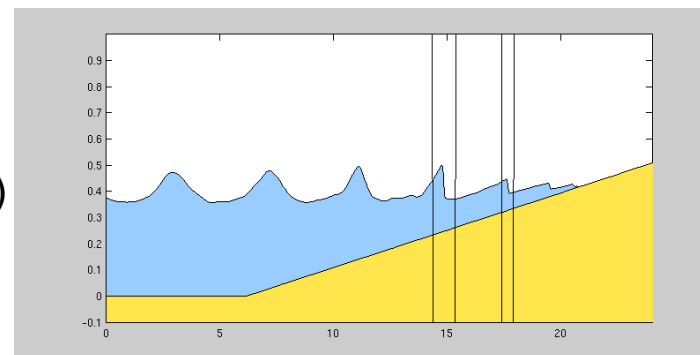- beach profile equilibrium and transient bar states

■ wave flume morphodynamics experiment
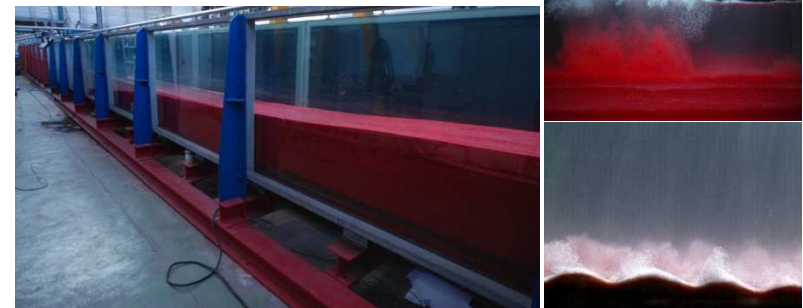
LEGI

■ cross-shore modeling

1DBeach (phase-averaged),

SERR1D and SURF-WB (Boussinesq)

SURF-WB

2- Topographically-controlled wave-driven circulation and 3D sand bar morphodynamics

- macro-vorticity and rip current dynamics

- quantitative observation of 3D-sand bar evolution

- coupling versus self-organization mechanisms in multiple sand bar systems
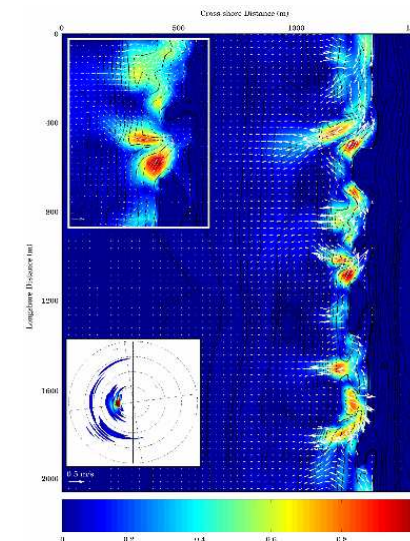

- an original large-scale laboratory beach

  morphodynamics experiment

  LHF

- development of 2DH morphodynamics models :

  MORPHODYN, Xbeach, MARS/SWAN

- bathymetry inversion from video images

MARS/SWAN

Session 1: **Tuesday 6th July (14h-15h30)**

● **Cross-shore sediment transport and beach profile evolution**

Session 2: **Wednesday 7th July (9h-10h30)**

● **Topographically-controlled wave-driven circulation**

Session 3: **Thursday 8th July (10h-11h30)**

● **Three-dimensional sand bar morphodynamics**

● **Conclusion and perspectives of the MODLIT project**