Remote Sensing Data for Investigating the Morphodynamics of the Belgian Multi-barred Macro-tidal Beach (RS4MoDy)
Why is a multi-barred macro-tidal beach important

Intertidal bar systems are:

→ ubiquitous features of macro-tidal sandy beach
→ morphological expressions of the interaction of waves with the beach sand
→ protection of the beach from storm erosion
Aim

Investigate the morphodynamics of macro-tidal barred beach from short (storm event) to long-term (>25-years)
Study site: Koksijde (Belgium)

- Sandy multi-barred beach
- Macro-tidal, medium wave energy
- At least one storm/per year
Approach

**Short-term:**
Two camera UAV flights:
- Before a storm event
- After a storm event
- 1-month after storm

**Long-term:**
Historical collected dataset 1990 – 2017
- RGB digital camera
- Airborne LiDAR
- DTM available
Modeling approach

Data input

Meteorology & marine
Spatial images of the barred beach system

Build indicators

Forcing factors
1D and 2D bar morphology and change

Model of the morphodynamics of macro-tidal barred beach
Thanks

Anne-Lise Montreuil
anne-lise.montreuil@vub.be
Modeling approach

Data input

Meteorological & marine forcings

Spatial images of the barred beach system

Build indicators

Yearly indicators for the forcings

Spatial maps of barred beach system

- DEM (+ classification)
- Yearly morphological change maps
- Time series of bars morphology & surface/volume changes

Linkage with statistical model
Objectives

➢ Realise an inventory of archive of high spatial resolution airborne data available;

➢ Demonstrate the use of UAV systems (Digicam & LiDAR) for accurate mapping of the intertidal bars;

➢ Develop an algorithm based on data fusion of a high resolution DTM for the automated extraction of beach morphology;

➢ Analyze and model how the intertidal bars are structured in space and time based on a statistical analysis;

➢ Develop a conceptual model of barred beach morphodynamics incorporating external forcing factors.