

GUIDANCE COMMITTEE CREST

15 January 2016, Oostende

Climate scenarios for the Belgian coast

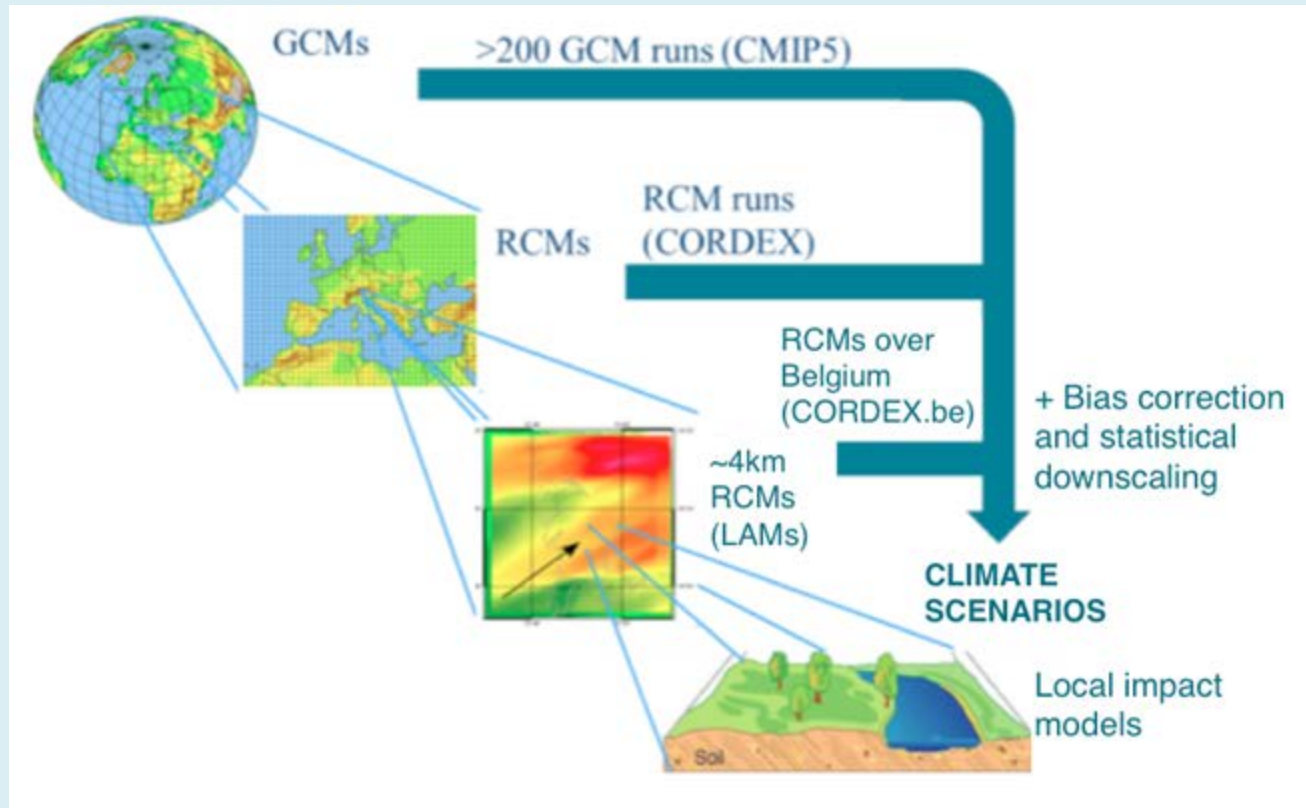
Supporting activity 2

Climate change scenarios for the Belgian coast and impact on hydrodynamic and morphological parameters

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- The CORDEX.be project
- Using CORDEX data in CREST
- Design/simulation/analysis sequence of the climate studies in the CREST project

Description of CORDEX.be



Climate studies in CORDEX.be

1. Local impact models in CORDEX.be:
 - Urban impact (SURFEX and URBCLIM)
 - Vegetation (MEGAN-MOHYCAN)
 - Impact on crops (REGCROP)
 - **Storm-surges and waves** (COHERENS and WAM)
2. Downscaling of different **RCP** (Representative Concentration Pathways) **scenarios** with a resolution of 4km: RCP2.6, RCP4.5, RCP8.5 (2010-2100)
3. 30-year hindcast simulation to identify the model bias (1981-2010)
4. Ensemble climate simulations for 2010-2100 using the different scenarios
5. Output data base: surge, wave height and period, frequency and statistical prediction of return periods
6. Error estimates of the climate predictions
7. Climate report

Climate studies in CREST

1. Extension of the previous CLIMAR (BELSPO) project.
2. Downscaling of CORDEX.be surge and wave/data to from 7.5 to < 1km resolution for the Belgian coastal zone. This data will be distributed in CREST.
3. Design of optimal model setup:
 - Hydrodynamics + sediment transport + morphology (COHERENS) + wave model (SWAN or WAM)
 - Type of coupling mode with wave module (0-, 1- or 2-way coupling ?)
 - 2-D or 3-D ?
 - Ensemble definitions and scenario design (additional to RCP):
 - uncertainty of model estimates (sediment transport and morphodynamics)
 - sea level rise (through available climate data base or imposed)
 - effects of human activities
4. CPU performance is a key factor both for ensemble/scenario definitions and model setup.
5. Definition of output parameters for climate database (in addition to the CORDEX parameters): bathymetry, wave climate, sea bed composition (?)... (in concertation with partners) and end-users)
6. Analysis of climate predictions (error estimate, long-term trends).
7. Making the CORDEX.be data available to the CREST consortium.
8. Climate reports for CREST end-users