Project : CLIMDIS - Programme : CLIMDIS - Projectcode BL/36/VT43

Project title : Management of the water quality in Vietnamese coastal waters impacted by CLIMate change and human induces DISasters using a marine modelling tool (CLIMDIS)

Project period : 15/12/2019 - 15/03/2023
Budget :

Promotor coordinator: Geneviève Lacroix (RBINS)
(Bilateral Call 2018 with Vietnam : 'Climate Change and Disaster Resilience' (CLIMDIS))

Project objectives (summary):

Exploiting the ecosystem services of Vietnam has contributed greatly to the socioeconomic development of the country. This is especially true for the World Natural Heritage of Ha Long Bay (HLB, North Vietnam) to develop tourism has contributed greatly to the socioeconomic development of Quang Ninh province. However, along with the socioeconomic development the water management became increasingly complicated. The water quality in for example HLB is rapidly declining; this reduces the attractiveness for tourists and threatens the sustainable development of the area. In the CLIMDIS project a 3D hydrodynamic model will be used as a base to develop a toolkit that can be used to assess, forecast and monitor the water quality of Vietnam in general and in more detail of the bay. HLB will act as an example of good practices on how to provide real time information on dispersal trends of organic pollutants and implement this in a management setting. A better understanding of the extent of the impact of pollutants and the effects of human activity and climate change on the water quality will help to better manage the health of the marine ecosystem of this area, to minimise the negative impact on the socioeconomic development of the region and to react adequately to rapid changes in the water and ecosystem quality of the region. All this serves the goals of sustainable development.
The workflow followed to develop the tool and to scientifically support the management is divided over six work packages (WPs) that are closely connected. Data collection (WP1) is necessary to provide the driving forces for the model (WP2) and to validate the model results. The model will be used to set up scenarios (WP3) that will simulate the effects of increased organic pollution, a different coastline, increased sedimentation rates… The scenarios for the HLB case study will be designed in close cooperation with the HLB Management Board and several meetings will be organised in the framework of WP4 (Management feedback). To ensure that the management tool, based on a complex marine 3D hydrodynamic model, will be easily handled by the end user to manage HLB, a tool with a web-site based Graphic User Interface (GUI) will be developed (WP5) and the end users will receive an intensive training (WP6). In WP6 training for other Vietnamese scientists will be also given so the methodology and the tool developed in the CLIMDIS project for HLB can be transferred to other regions.
The main outcome of the CLIMDIS project will be a beta version of a tool based on a 3D numerical marine model that can be operated by the Management Board of HLB through a GUI The tool, useable by the Management Board, will assist them with assessing the consequences of natural (climate change, storm, erosion, …) or human induced disasters as well as with taking management decisions related to the water quality of HLB and hence will protect the quality of life in the region. Along with the tool a detailed manual and training will be provided. In addition, measures to

improve the water quality of HLB will be proposed. Results of the project will be disseminated through peer reviewed articles and contributions to international conferences. Meaningful reports dedicated to the managers of HLB about the impact of model scenarios and about the impact of human activities and climate change on water quality and marine ecosystems in HLB will be delivered. Finally, a roadmap will be created on how to further fine-tune the methodology and expand the model to other types of pollutions or to other regions of Vietnam and of the world.

Project partners:

- Belgium

Geneviève Lacroix
glacroix@naturalsciences.be
Royal Belgian Institute of Natural Sciences (RBINS)
https://www.naturalsciences.be/

Copromotors

- Vietnam

Vu Duy Vinh
vinhvd@imer.vast.vn
Institute of Marine Environment and Resources (IMER), Department of Physical Oceanography
http://www.imer.ac.vn/index.eng.asp

Do Tien Thanh
bqlvhl@quangninh.gov.vn
Ha Long Bay Management Department, Environmental management division
http://www.halongbay.com.vn/chi-tiet-tour/co-cau-to-chuc-bo-may?language=eng