Project : MINERVA - Programme : CLIMDIS - Projectcode BL/67/VT44

Project title : Monitoring climate Impact aNd disastEr Resilience of Vietnamese Agro-ecosystems (MINERVA)

Project period : 01/12/2016 - 30/11/2019

Promotor coordinator: Anne Gobin (VITO)
(Bilateral Call 2018 with Vietnam : 'Climate Change and Disaster Resilience' (CLIMDIS))

Project objectives (summary):

Climate projections draw a worrying picture of Vietnam's climate impacts and disaster resilience in the coming decades. The country's low-lying deltas, long coastline and highlands make it extremely vulnerable to the effects of climate change. The MINERVA project will focus on climate change and disaster resilience in Vietnam, and specifically, but not exclusively, on monitoring climate impacts and disaster resilience of Vietnamese agro-ecosystems. Within the framework of natural disaster risk reduction the project addresses the articulated need of the Vietnamese government for synchronized interaction with science and technology, sustainable development goals and gender equality. The project is situated at the nexus of the Sustainable Development Goals of climate action (SDG13), food security (SDG2) and life on land (SDG15).

We hypothesise that the combination of optical remote sensing archives with statistics, climate data and geo-data information enables the identification of major zones of climate impact and disaster resilience. The major objective is to elucidate climate impacts and disaster resilience in Vietnam. The aim is to contribute to the monitoring of climate and disaster impacts on agro-ecosystems, since agriculture, rural land use and livelihood, will be mostly affected.
The specific objectives are to characterize climate and disaster events; evaluate their impacts on **agro-ecosystems**; elucidate adaptation and mitigation strategies and options; analyse spatio-temporal vulnerability and disaster resilience; develop a prototype digital exploitation geo-platform for valorisation; and, support capacity building and technology transfer.

A chain of risk methodology will be developed to achieve the specific objectives formulated. The approach will be demonstrated in a nested strategy of focusing on increasingly more vulnerable zones, from the country and province to district scale and related decision making levels. Climate and disaster characterization, now and under climate change, will rely on extreme value theory.

The impacts on agro-ecosystems will be evaluated using land cover/use maps; agri-meteorological indicators and their distributions; and, relevant Copernicus products such as Sentinel derived dry matter productivity. Adaptation and mitigation strategies will be elucidated using targeted interviews and participatory methods. Climate and disaster resilience requires spatial analysis of all the information available to delineate vulnerable and resilient zones. A digital geo-platform will be developed upon products obtained from the Copernicus Sentinel and Proba-V satellites (VITO) in combination with geo-data and statistics (IG); climate scenarios and meteorology (IMHEN); and in situ data (IG, IMHEN). The geo-platform will be shaped with relevant stakeholders in a co-creation process from co-design to co-delivery. The ambition is to support the use of Open and

FAIR Data (FAIR=Findable, Accessible, Interoperable and Reusable). Capacity building and technology transfer will be realized during workshops and trainings.
The MINERVA project will promote a robust and flexible prototype geo-platform by demonstrating its performance, and by ensuring its relevance to all stakeholders.
The **digital geo-platform** will be built on open and FAIR data. The project will realise a co-creation between Belgian-Vietnamese scientists, technology experts, government officials and stakeholders from different sectors. We aim to enable technology transfer of Copernicus products and services; and, facilitate capacity building to develop the prototype platform further beyond the project's duration. Research findings will be documented in peer-reviewed SCI publications and disseminated through national and international workshop

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