Università
Ca'Foscari
Venezia

PROJECT ACRONYM AND TITLE: **Development of the ChemDrift module for including ionizing organic and inorganic chemicals for exposure assessment in the marine environment**

FUNDING PROGRAMME: **Other International Funding**

CALL: **MARINKFORSK – Research Programme on Marine Resources and Environment**

DESCRIPTORS: **Oceans, marine sector, energy, transport and low emission, environment-friendly energy, mathematics and science, chemistry, environmental chemistry, natural environmental chemistry**

HOST DEPARTMENT: **Department of Environmental Sciences, Informatics and Statistics**

SCIENTIFIC RESPONSIBLE: **Antonio Marcomini**

FELLOW: **Loris Calgaro**

FINANCIAL DATA:

Project total costs	Overall funding assigned to UNIVE
€ 21.641,50	€ 21.641,50

ABSTRACT:

Langrangian models offer the possibility to investigate the transport of chemicals without losing information on their origin, thus giving fundamental data on the contribution each source has on the overall explosure of the target ecosystem. On the other hand, while the capabilities of these models to predict the transport of chemicals have been widely studied (Onink et al., 2021), the inclusionof chemicals' degradation has been less investigated.

The recently developed ChemicalDrift module for the OpenDrift modelling suite includes only non-ionizing organic chemicals (e.g. polyaromatic hydrocarbons) and describes degradation only as a single overall process. The proposed project aims to extend the applicability of the ChemicalDrift module to ionizing organic and inorganic chemicals (such as emerging pollutants and metals), including also the simulation of different abiotic (i.e. photolysis and hydrolysis) and biotic (i.e. aerobic and anaerobic biodegradation) transformation mechanisms in the water column and the sediments. The improved model will, therefore, better account for specific marine conditions' effects on the transport and degradation of target chemicals while also maintaining the capability to differentiate between different pollution sources. This will be of interest especially in the case of highly variable and dynamic systems, such as coastal environments. Moreover, the model will be applied and tested to investigate the chemical fate of target contaminants originating from anthropogenic activities along a selected part of the Norwegian coast. The improved chemical fate and transport model developed during the proposed project will be publicly available on GitHub repository, thus contributing to the data sharing policy promoted in the present call.

Planned Start date	Planned End date
14th March 2022	18th September 2022

PARTNERSHIP:

1	METEOROLOGISK INSTITUTT	Oslo (NO)	Coordinator
2	Università Ca' Foscari Venezia	Venice (IT)	Partner