

Development of an instrument platform for UAV mapping and profiling of key atmospheric species in the marine environment

The interface between the ocean and the atmosphere is a crucial boundary of our planet. It not only controls the exchange of substances that influence the chemistry of the atmosphere and our climate, but also the transfer of essential vital elements to human health and to the ecosystems, from the ocean to the land. It is fundamental to understand how these exchanges influence the quality of the coastal air and the climate. In addition, due to the growth in traffic resulting from the considerable increase in the number of passengers and the volume of trade, maritime transport is becoming the fastest growing source of greenhouse gas emissions. This sector has only recently been included in efforts to reduce greenhouse gas emissions, both at European and global level. Considering the essential role that marine gases play in atmospheric chemistry, climate-related processes and impacts on coastal air quality, it is essential to monitor changes in the concentration of these key species in the marine environment.

In this PhD thesis project, we propose to develop a photoacoustic instrument-based platform on board drones for mapping (horizontal axis) and profiling (vertical axis) measurements of the concentrations of key gas species (CO_2 , SO_2 , NO_2 , CH_4) in the marine environment.

Contact : Prof. Weidong CHEN / Email : chen@univ-littoral.fr / Tél : 03-28-65-82-64