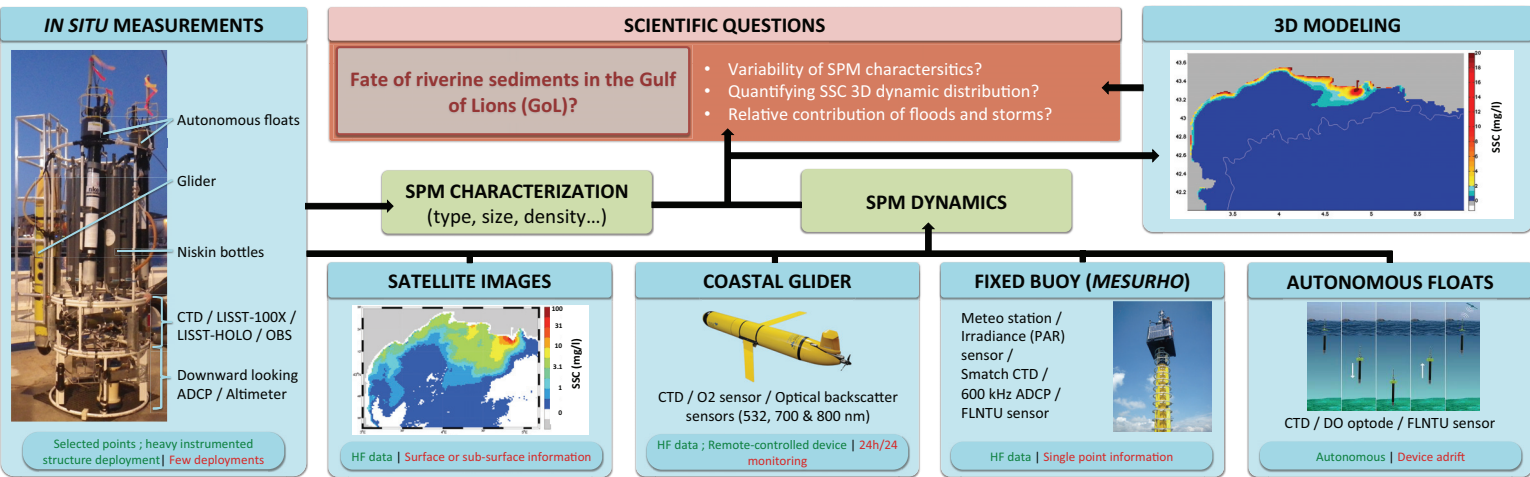


A glider in the plume: an innovative approach to investigate the fate of Rhône river sediments in the Gulf of Lions during the 2014 winter flood

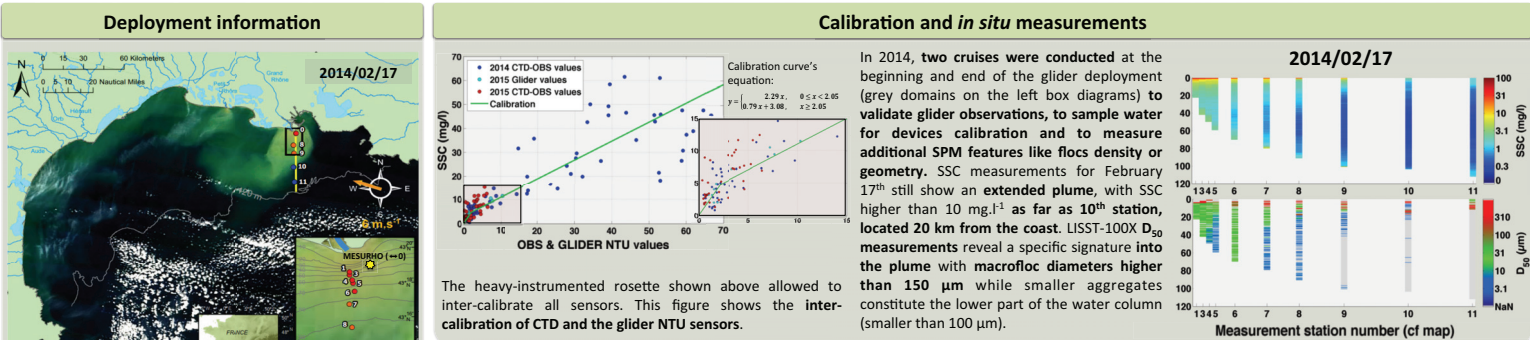
INTRODUCTION

The fate of riverine sediments in Mediterranean coastal environments is driven by two mechanisms: direct transfers associated with plume dynamics and indirect transfers related to sediment resuspension by storms (**ANR AMORAD project**). To better understand and observe these mechanisms, usual but not trivial observations have been made the last decades over the Gulf of Lions (GoL) and more precisely around the Rhône prodelta thanks to: a fixed observatory station deployment (MESURHO), remote sensing ocean color data analysis or autonomous floats, instrumented vehicles and cruises to provide *in situ* physico-chemical and optical data collection. Yet, these techniques fail to provide **repeated observations over the full water column**, along cross-shore or long-shore transects. The **TUCPA project** aimed to (i) investigate the interest of deploying gliders within the river plume to meet these needs, (ii) examine the plume dynamics during a significant Rhône flood event ($Q > 5000\text{m}^3\cdot\text{s}^{-1}$) and (iii) improve our modeling results over the area.

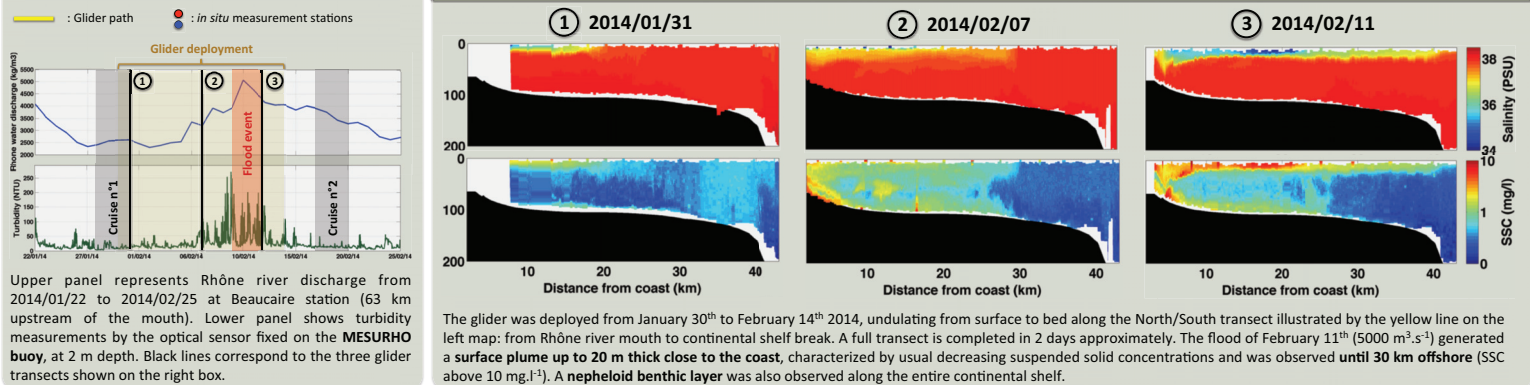
GENERAL CONTEXT



SLOCUM coastal glider / TUCPA cruise: PRELIMINARY RESULTS



A unique observation of Rhône river plume dynamics



CONCLUSION & PERSPECTIVES

These first results showed the **GLIDER** ability to collect hydrological and SPM measurements with **high vertical resolution** over a **full cross-shore transect** and over a **large period**. This potential is exploited further through the **MATUGLI project** (running until 2017), combining optical and acoustic approaches to evaluate sediment structures and sediment fluxes. Model results will be confronted to MODIS satellite images to investigate plume metric patterns (in terms of covered area, central position, cross-shore distance, thickness) in response to different meteorological and hydrological forcings (Strong south-east winds and Rhône floods for example). They will also be confronted to field data to estimate sediment fluxes over the Gulf of Lions and highlight their preferential pathways.