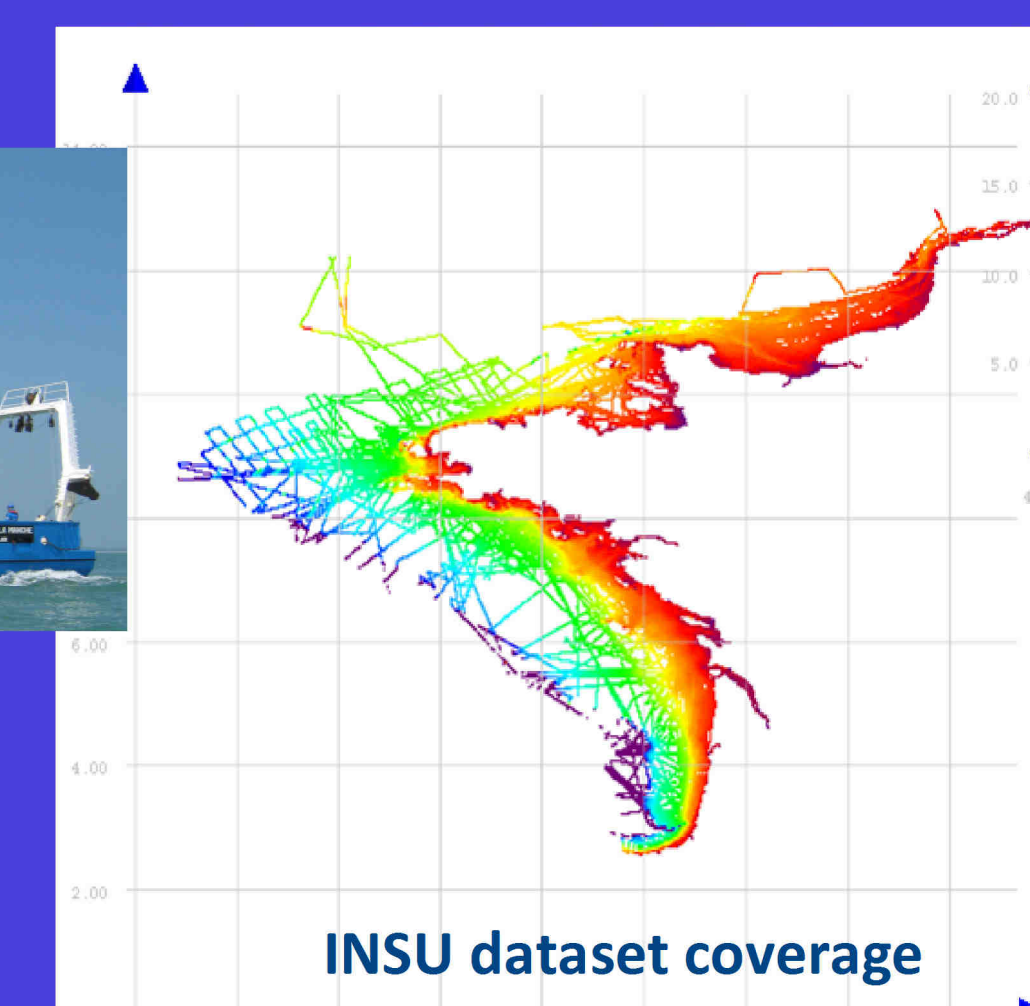


Context & Dataset

- Limited bathymetric knowledge in some areas (Channel Islands, Aquitaine's coast) from local HOs.
- The French Scientific Institute (INSU) acquires and share navigational and bathymetric en-route data from their boats for more than 10 years

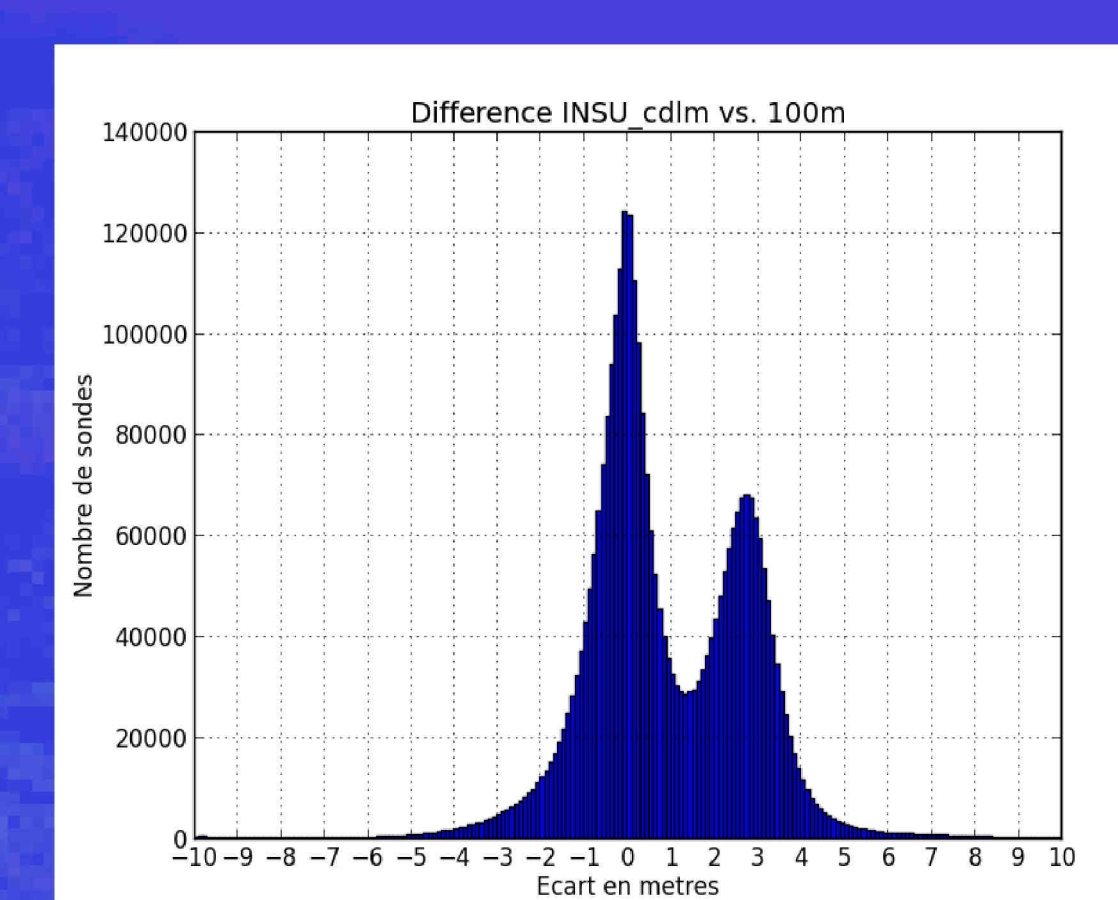


Propose a method to qualify crowd-source bathymetric data
Improve the bathymetric knowledge in specifics areas
Update the DEMs produced by the SHOM

Proposed methodology and results

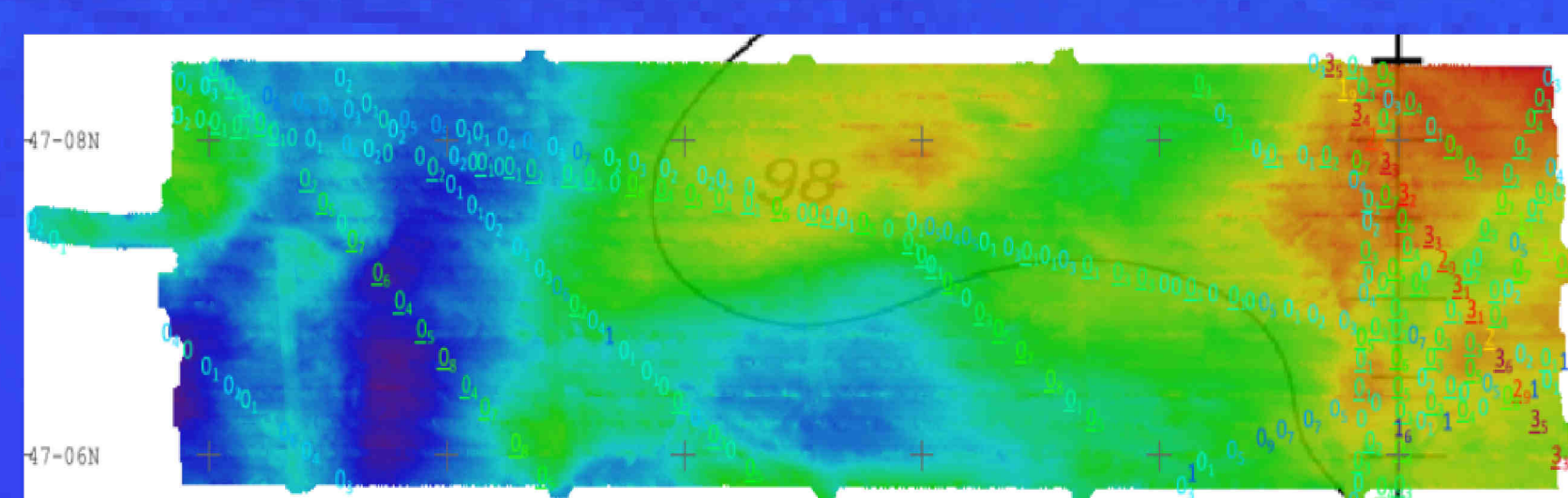
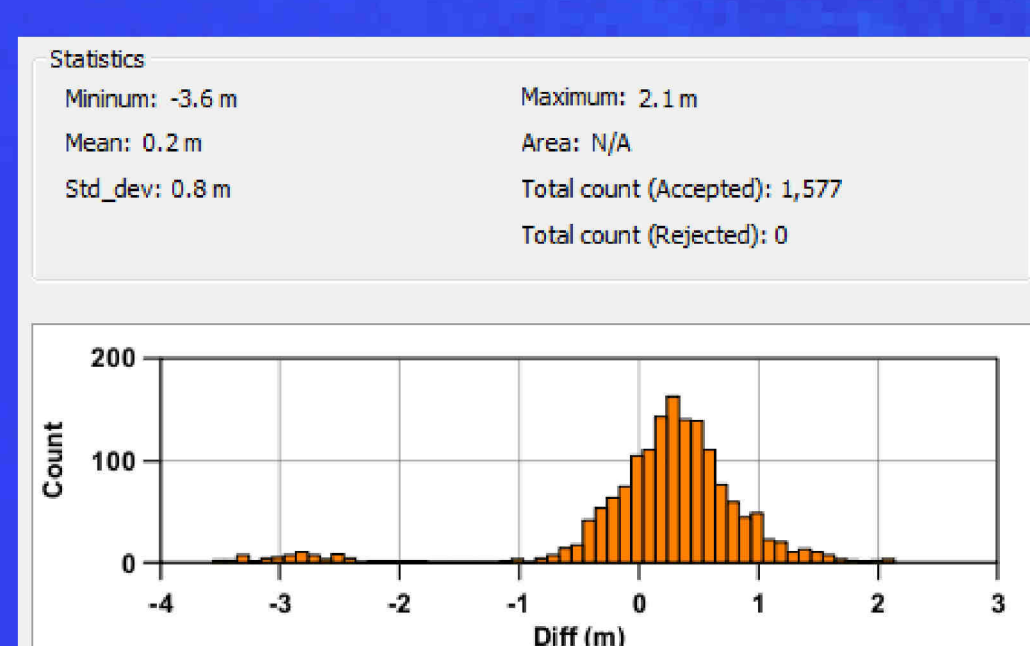
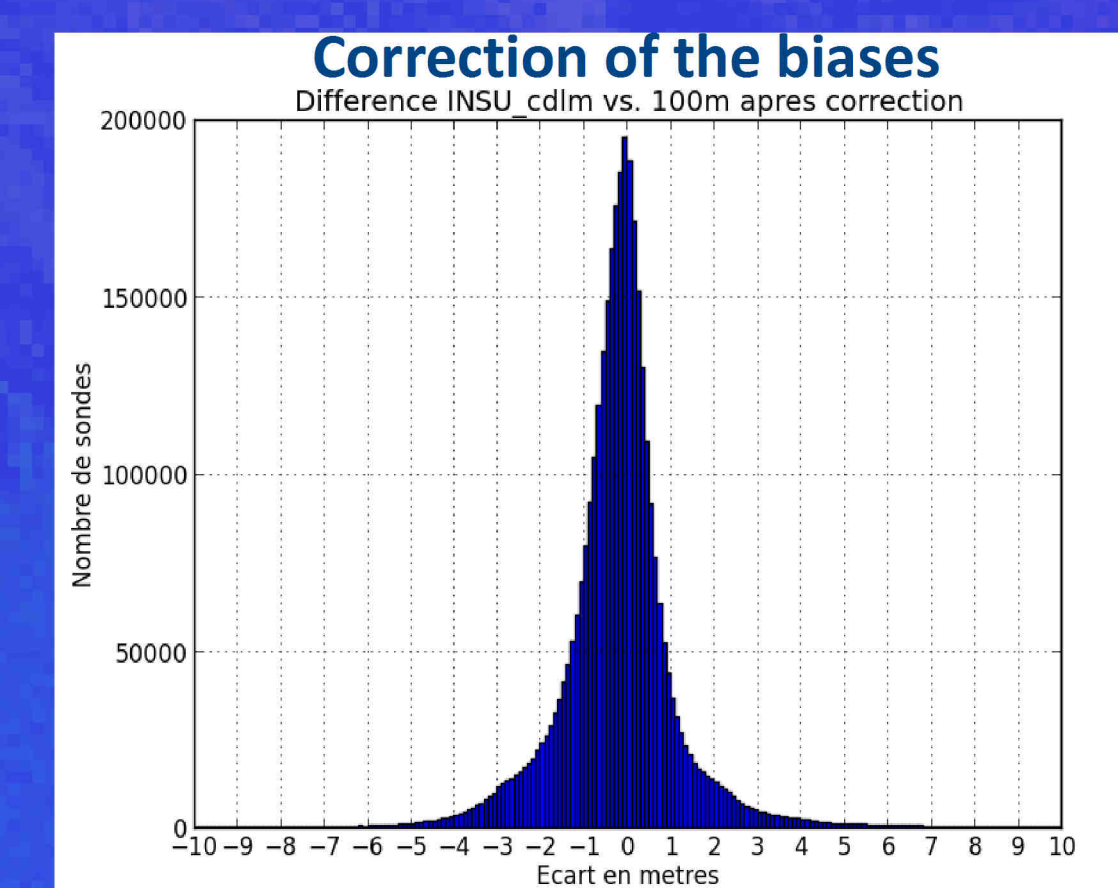
1. Filtering out / Processing erratic data

- Use of co-registered data (time stamp, weather, position, speed)
- Tide correction
- Manual or specific filtering of the positions and bathymetric data



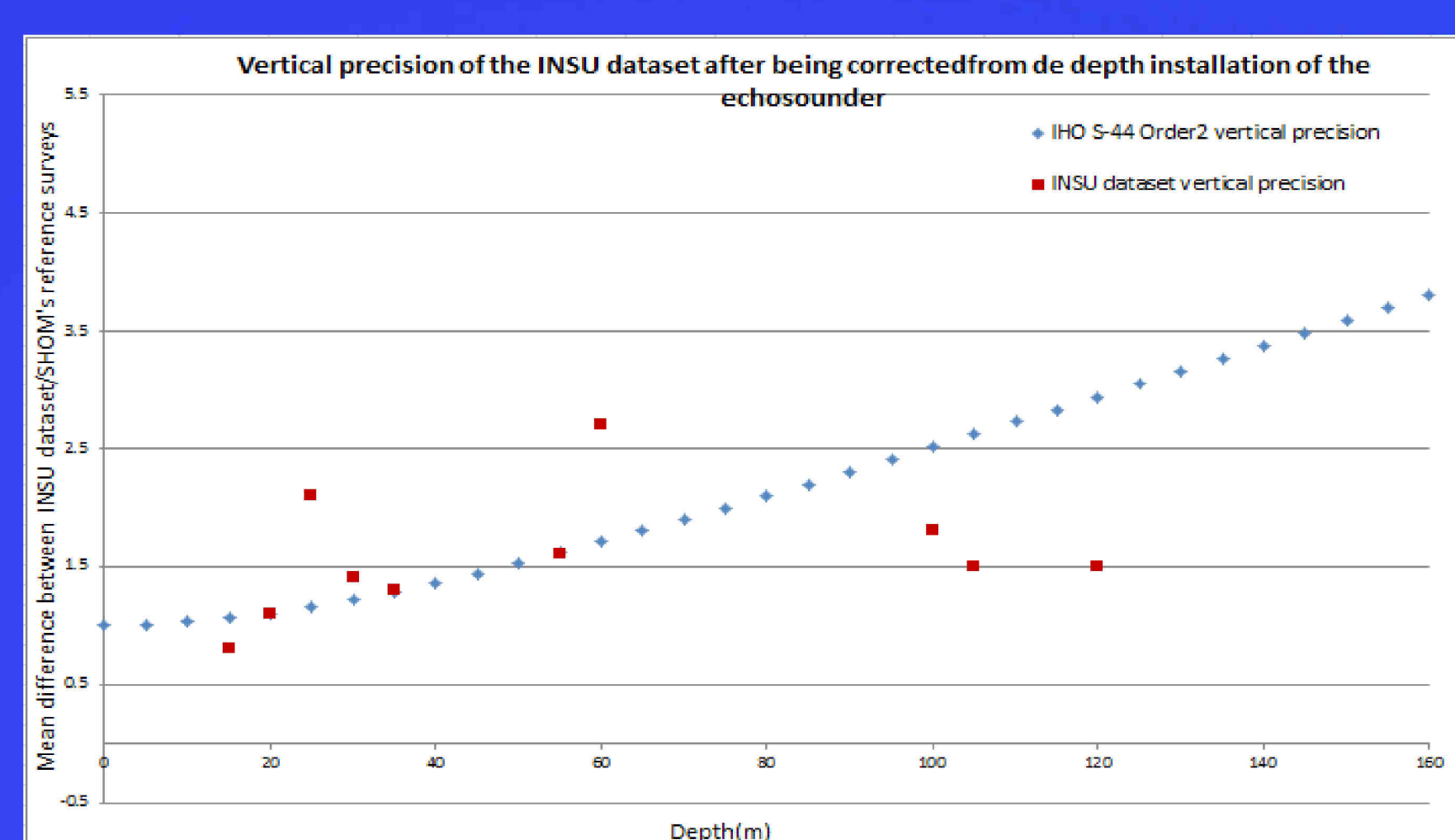
2. Vertical comparison with low resolution gridded product

- Comparison with the nationwide 100m resolution DEM produced by the SHOM to assess the general coherence of the dataset
- Identification, using Gaussian Mixture Model, of vertical bias into the dataset due to inhomogeneous vertical referencing of the echosounders (filtering out or shifting)



3. Comparison with high resolution local datasets

- Comparison with recent SHOM's bathymetry surveys to qualify the vertical precision
- Study of the vertical uncertainty (mean depth + 2xStd-dev)
- IHO S-44 Order 2 globally reached for the vertical precision
- Estimated precision better than 1.7m+1.7 %D (D : water depth)

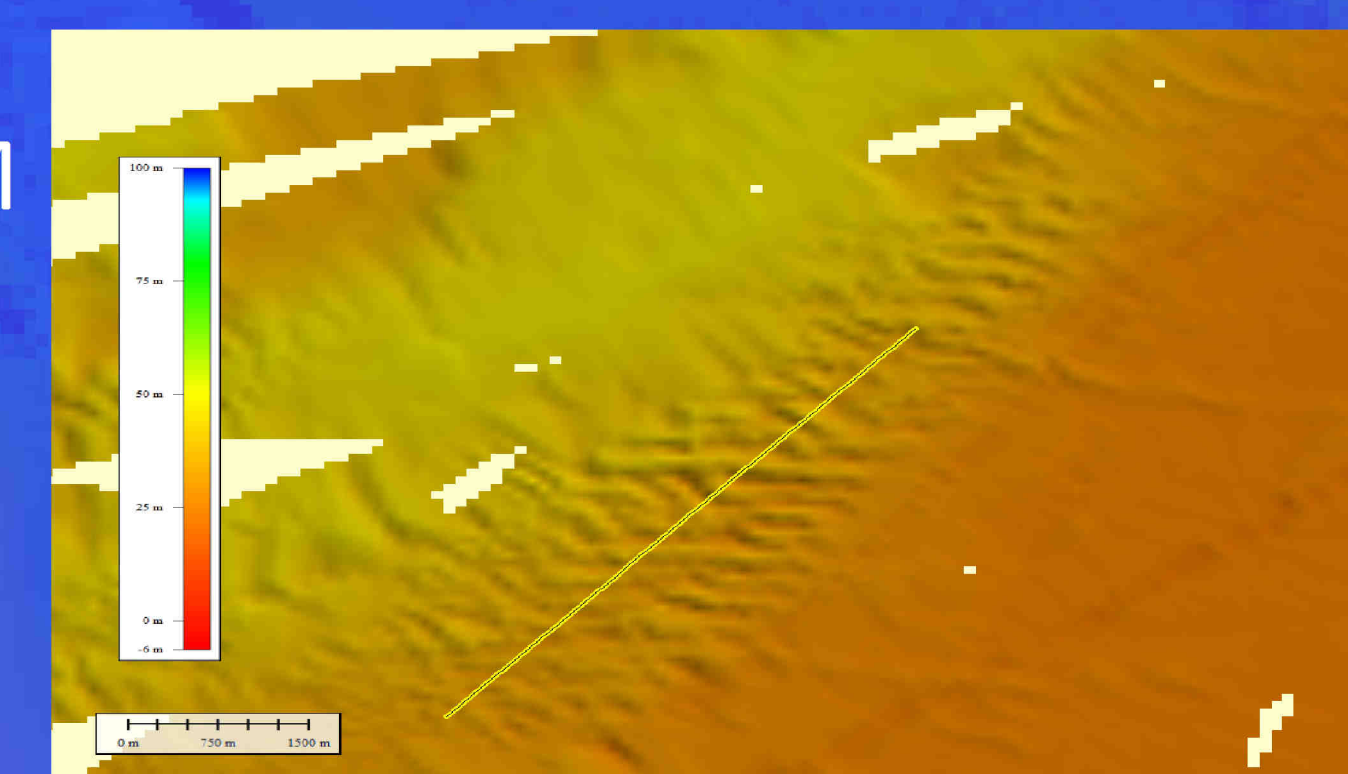


Advantages vs. limits

- Method easy to carry out
- Wide range of filter possible
- Scripted (download, filtering and graphics)
- Poor global knowledge on the data to confirm our choices
- Limited to the area where high resolutions surveys exist

Conclusion & Perspectives

- This methodology has permitted to globally improve crowd-source data
- INSU dataset can be used in DEM on the continental shelf.
- In some areas the dynamic component of the bathymetry will be evaluated (mobility of sand dunes)



Acknowledgements :