

The git repository provides all the codes and data to reproduce all the experiments related to the Campbell2D function that are described in the paper.

More precisely :

- GpOutput2D-main contains the code from Elodie Perrin to perform FPCA combined with Gaussian Processes.
- Campbell2D.R is the Campbell2D function generating the Campbell maps.
- NewFitting\_Charlie\_v090821.RData are historical data related to the offshore conditions, providing the probabilistic distributions.
- Campbell\_utils.R contains different functions useful for all the notebooks.
- PMalgo\_true.Rmd performs the lloyd algorithm with the true campbell maps.
- perf\_probas.Rmd tunes the hyperparameters of the metamodel and evaluates the relative probability error.
- PMalgo\_pred.Rmd performs the lloyd algorithm with the predicted campbell maps.
- compute\_probas.Rmd computes the probabilities associated to the Voronoi cells with a higher number of maps than the one used in the lloyd algorithm to increase precision.
- importance\_sampling\_error.Rmd compute the errors from the importance sampling :
  - The IS coefficient of variation of the membership probability
  - The IS centroid standard deviation
- error\_quanti.Rmd computes the excess in quantization error due to the metamodel