The aim of this talk is twofold. First, I will present a methodology for proving existence of a unique global strong solution for a stochastic two-dimensional Euler vorticity equation driven by noise of transport type. In particular, I will show that the initial smoothness of the solution is preserved, using an approach based on a linearised approximating sequence. Second, I will refer to the numerical properties of this equation by introducing a probabilistic pathwise approach to effectively calibrate the stochastic parameters in the transport noise part. I will show that the calibration can be performed in an optimal way to match a set of given data, and the model is robust with respect to the stochastic parameters.

This work is based on:


Acknowledgement: this is joint work with Dan Crisan and Wei Pan (Imperial College London).