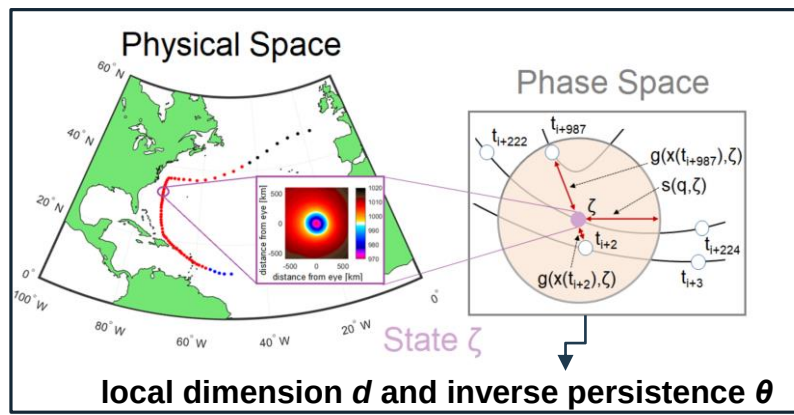


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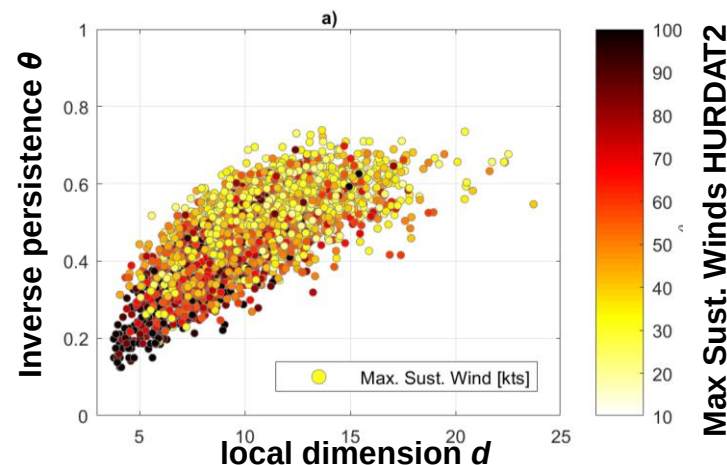
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Objective and Methods

State of the Art Reanalysis and Climate Models **struggle to represent tropical cyclones intensity** due to insufficient resolution. We show that this could be partially overcome by **mapping cyclone intensity through dynamical systems metrics (local dimension and persistence) in phase space**



Results



In the most intense phase of the cyclones, large maximum sustained winds are associated to low values of both d and θ . From a dynamical system viewpoint, the explanation is that air parcels behave almost identically, with rotational degrees of freedom oriented along the global axis of the storm.

Current GCMs and even reanalysis products struggle in reproducing maximum sustained winds comparable to those observed (see Figur). Our study offers a way of mapping intense cyclones in d and θ space and measure, in climate change model experiments or century-long reanalysis products, shifts towards smaller or larger values of the dynamical indicators. *[Preprint available on demand, please contact davide.Faranda@cea.fr]*