# A New Global Tropical Cyclone Model

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Tropical cyclones (also called Hurricanes and Typhoons) are one of the most dangerous natural hazards with approximately 1 billion people exposed to them. They are expected to become even more damaging in the future (1). Much about their fascinating genesis, intensification and decay remains insufficiently understood. It is proving challenging to model this phenomenon in numerical physic models because the wide range of scale in time and space as well as the many physical processes involved. All atmospheric physics processes affect tropical cyclones: dynamics, thermodynamics, radiation. The current generation of climate models do not simulate the strongest and most damaging storms, which makes future projections very uncertain.  An alternative is a special class of simulations using synthetic or stochastic models which are extremely powerful for risk assessments needed by the public and private sectors. The new Imperial College Storm model (IRIS) is such a state-of-the-art stochastic model which is also constrained by physics (2). It can be used both long-term climate change impacts of tropical cyclones globally as well as enabling annual landfall risk predictions which are influenced by the Pacific ElNino oscillation. In this project you will help the tropical cyclone research group to further develop the IRIS model.  We also have access to the supercomputer power volunteered by the public who run IRIS on their smart phones (3). You will join the largest research group in Europe working on tropical cyclones.

1. https://www.annualreviews.org/doi/abs/10.1146/annurev.earth.31.100901.141259

2. https://www.nature.com/articles/s41597-024-03250-y

3. https://www.vodafone.com/vodafone-foundation/focus-areas/dreamlab-app