Unified Tropical Cyclone (UTC)

reask
earth system risk
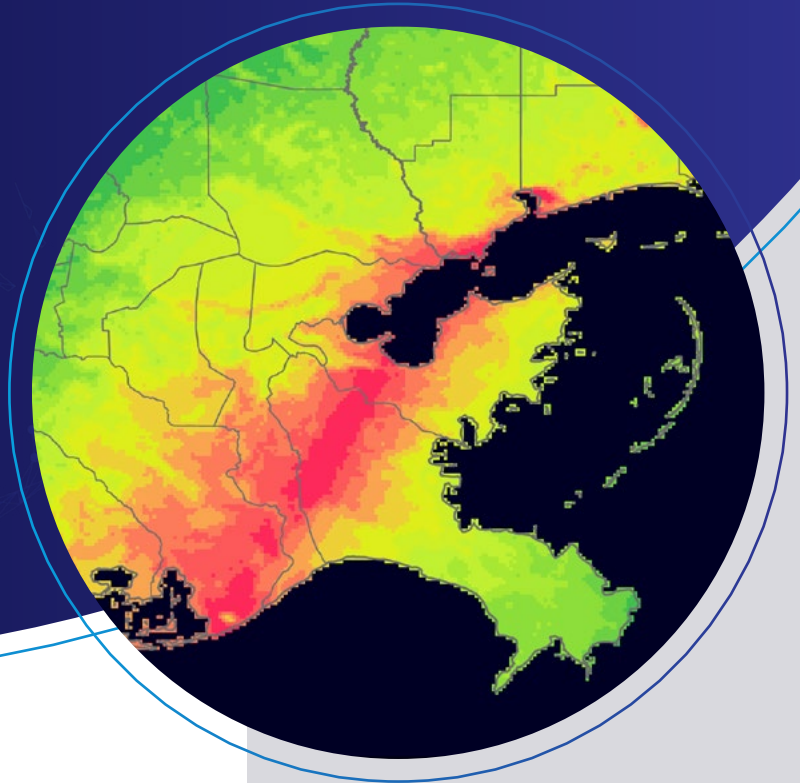
CLIMATE-CONDITIONED
TC WIND MODEL WITH
GLOBAL COVERAGE

A UNIFIED VIEW

GLOBAL, CONNECTED, EVOLVING

Risk Analytics Anywhere & Everywhere

Complete and consistent coverage of all TC affected regions of the globe with one single model

Fully Connected System

Explicit modeling of risk correlations across all basins from machine learning recognition of global teleconnection patterns

A View That Evolves With The Climate

Refined views of risk capturing seasonal trends from continuous monitoring of global climate signals

UNIQUE MODEL FEATURES

1 100'000 years climate conditioned event set

2 Proprietary machine learning wind modeling technology

3 1-km resolution terrain corrected probabilistic gust layers with global coverage

4 Seasonally-adjusted views

5 Future climate probabilistic perspective (coming soon)

CLIMATE-CONNECTED EVENT SET

To simulate event characteristics and allow their generalization beyond regions where historical records are abundantly available, we have trained the UTC model to understand the main climate drivers of TC activity globally. This includes global teleconnection patterns as well as the role played by sea surface temperatures, wind shear and steering flow. Using a combination of ERA5 reanalysis and ensemble members from the NCAR-CESM model as forcing, all synthetic events in the 100k years UTC catalogue are explicitly aware of global climate conditions and local weather patterns.
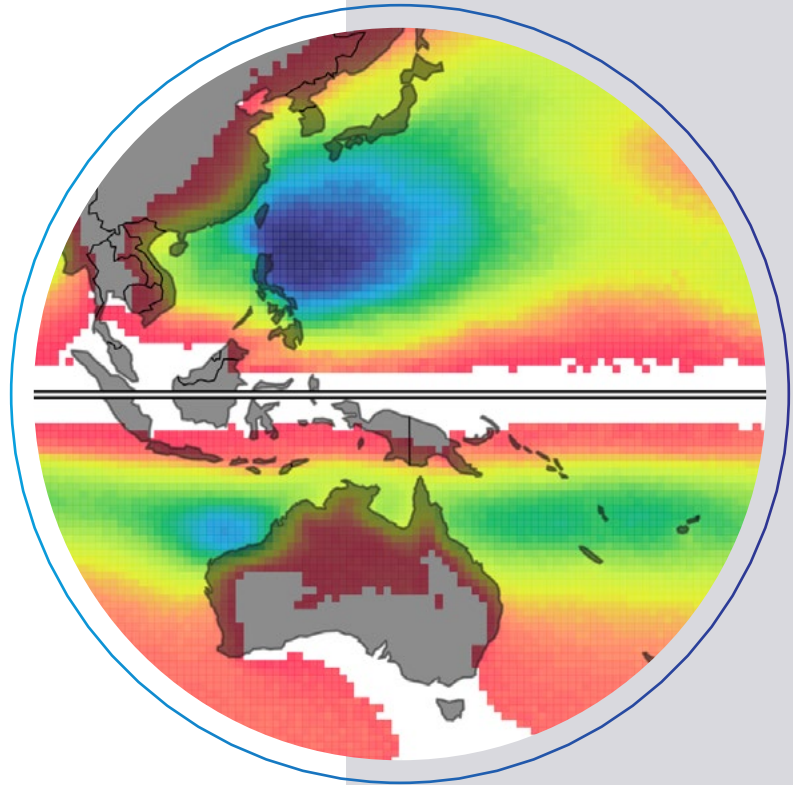
GLOBAL WIND FIELD MODEL

To capture the range of wind field shapes and asymmetries occurring across the globe, we have trained a machine learning model *(Loridan et al., 2017)* using high resolution data from our proprietary database of global TC simulations *(InCyc)*.

GLOBAL TERRAIN CORRECTION MODEL

Thanks to the high resolution boundary layer physics learnt from our *InCyc* 1 km gust simulations the UTC estimates local 3-sec gusts over actual terrain. The model accounts for the impact of changes in terrain roughness and topography both at site, and up to 3 km upwind (i.e. directional wind correction).

RANGE OF LICENCING OPTIONS

1 Gate level landfall summary statistics

2 Average Return Interval (ARI) gust hazard maps

3 100k years event set

4 Event gust footprints

Seasonally adjusted views for any of the above

info@reask.earth