

TOWARDS A GLOBAL MACHINE LEARNING BASED IMPACT MODEL FOR TROPICAL CYCLONES

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Image source: [NDTV.com](https://www.ndtv.com)



Image source: [UNICEF.org](https://www.unicef.org)

Municipality-based VS Grid-based Models

Starting Point

- **A model Developed by Netherlands Red Cross' 510 Initiative**

1. Input: data at municipality level

- historical impact(number of houses severely damaged)
- typhoon tracks
- rainfall
- topography
- vulnerability
- exposure

2. Output: early estimates of expected percentage of severely damaged houses per municipality

Our Contribution

- **Generated a grid-based data set**

1. Input: data with few global, grid-based features

- wind speed
- rainfall
- topography

2. Added new global features

- relative wealth index (from Meta)
- %houses-damaged in the last 5 years
- %grid classified as rural, urban or water (from GHSL)

3. Compare both models to a naive baseline model

RMSE	Grid-based model (XGBoost regression)	municipality-based model (XGBoost regression)	Naive baseline model (average of training data)
In total	3.21	5.80	16.81

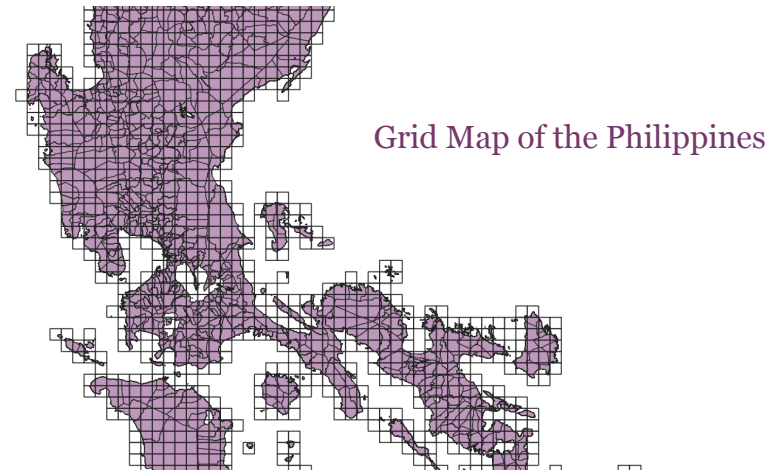
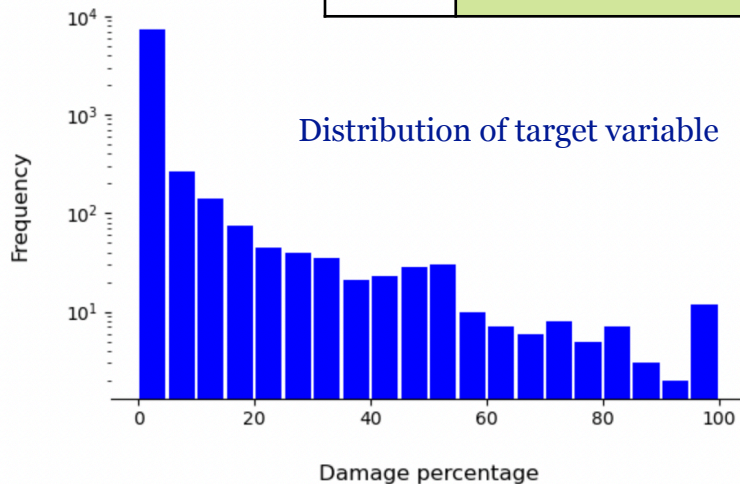




Image source:news.un.org

Thank you

Please feel free to contact us for further details.

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