



Modeling Insured Housing Losses from Major Flood Events in Texas and Florida



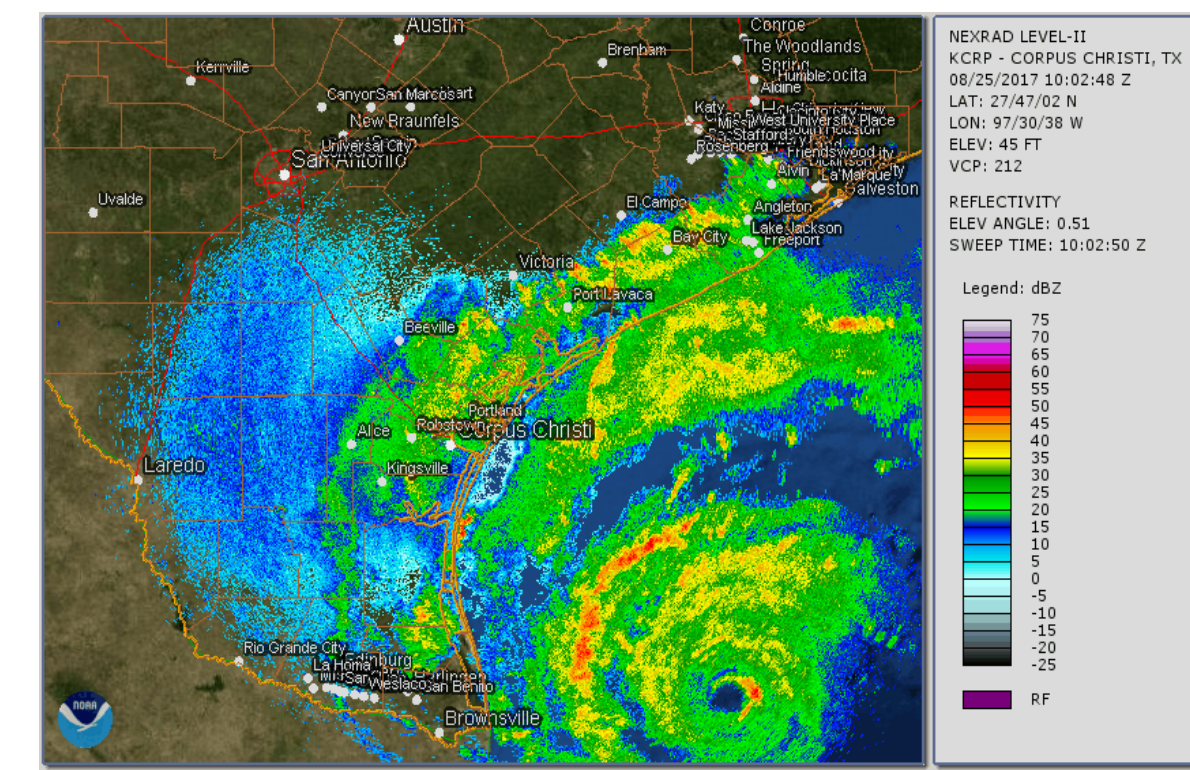
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INTRODUCTION

- Flood losses are not driven by rainfall alone
- Exposure and vulnerability shape where losses occur

Research Questions:

- Are the wettest places always the most damaged?
- How well do flood models perform and can they be applied across different events?



METHODOLOGY

- HEV framework: Hazard, Exposure, Vulnerability
- Outcome: Normalized loss ratio
- Models: Regression and classification
- Flood events: 2016 Tax Day, 2017 Harvey, 2017 Irma

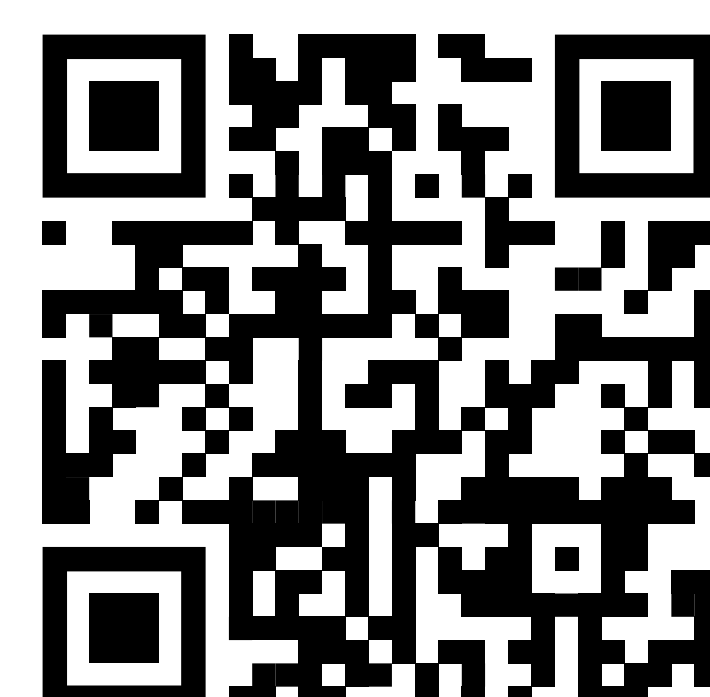
Applications

- Flood risk assessments should incorporate exposure and social vulnerability, which strongly influence where losses occur, not rainfall alone
- Federal, state, and local agencies should target mitigation investments toward high-risk areas to reduce future disaster losses and recovery costs.
- Flood models should be locally calibrated before use in planning or policy, as performance and transferability vary across events and regions

Conclusion

Flood losses are not driven by rainfall alone. Classification models outperform regression models for cross-event comparison, but performance varies across events, limiting transferability.

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RESULTS

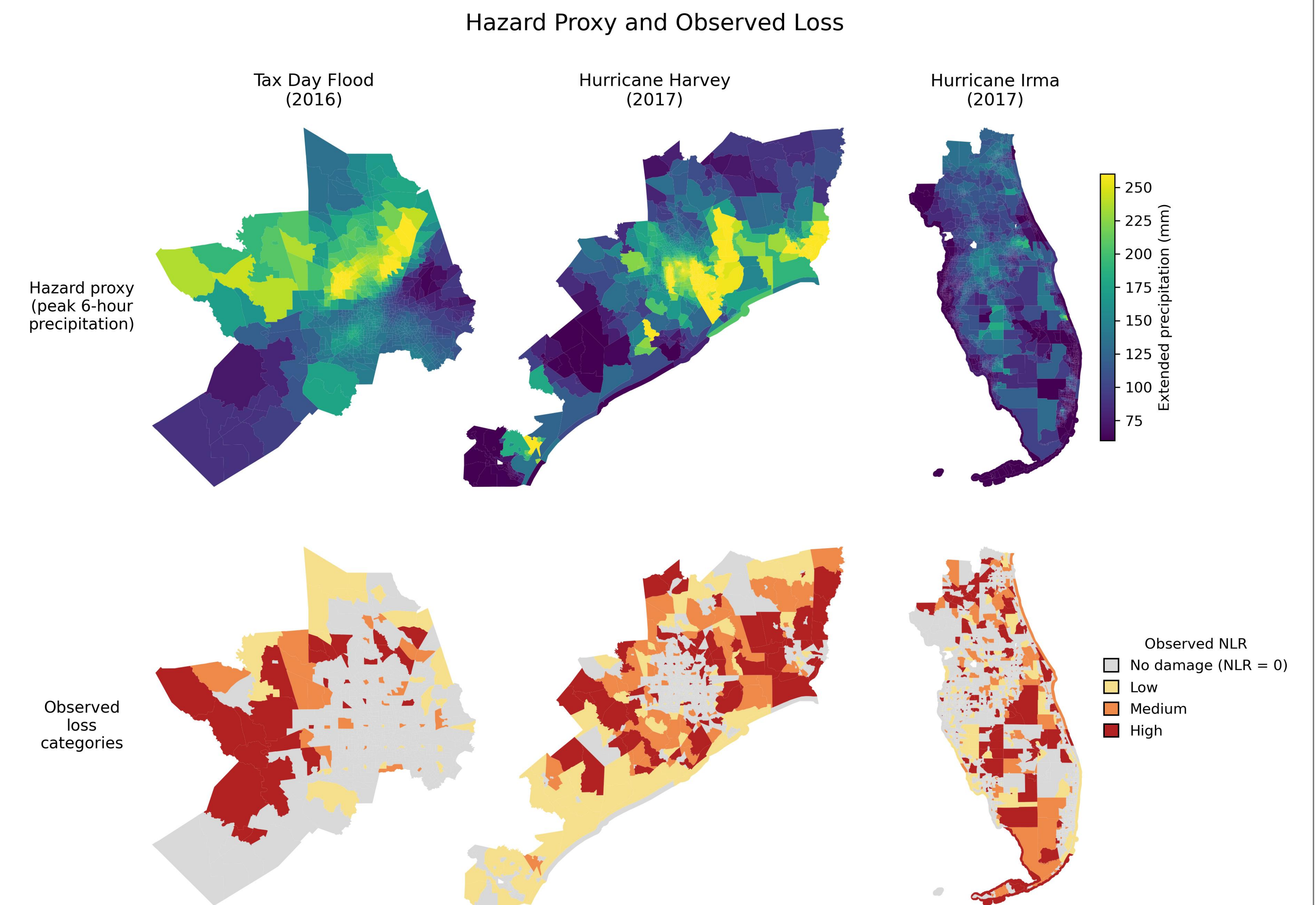
Flood Event	% Wettest match High Damage
Hurricane Harvey	35.9
Hurricane Irma	46.8
Tax Day Flood	50.0

Wettest areas are not always the most damaged

Classification models outperform regression models for cross-event comparison

Model performance varies across events

A model that works for one flood can fail for another



Colored Summary Tables for Key Performance and Transferability Conclusions

