

Flood Monitoring and Mitigation Strategies for Flood-Prone Urban Areas

(Technical Report)

Coastal Virginia Communities and Their

Response to Increased Flooding

(STS Research Paper)

An Undergraduate Thesis Portfolio

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## Preface

How can flooding in the United States be mitigated? Climate change has increased the magnitude and frequency of flooding in both coastal and inland communities in the U.S. Successful flood mitigation will require both technical and social innovation.

How can flooding events in the City of Charlottesville be mitigated? Charlottesville needs a modeling and sensing capability to locate flooding sites in real-time. City officials now depend on residents to alert them, a subjective and sometimes inequitable method. With a list of storm structures ranked by total peak flow, the city can identify the sites most in need of maintenance, including unreported sites. With sensors the city can use real-time data to reveal areas needing flooding relief and resources.

How are coastal Virginia communities responding to growing threat of flooding? Flooding bears immense infrastructural, social, and environmental costs. Government agencies, elected officials, businesses and advocacies are competing to shape the responses and how they are funded. Some favor major flood-mitigation projects; others demand reductions in greenhouse gas emissions to limit the effects of global climate change.

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