

1 Introduction

- Location: Manchester Waterway (MW), in Charlotte Harbor (Charlotte County, Florida) at mouth of Peace and Myakka rivers
- 1,800 home community interested in improving navigational access to Charlotte Harbor
- Community has proposed 3 restoration alternatives through the mangrove vegetated barrier peninsula
- Support has been requested to conduct a flow study to predict the impacts of restoration plans

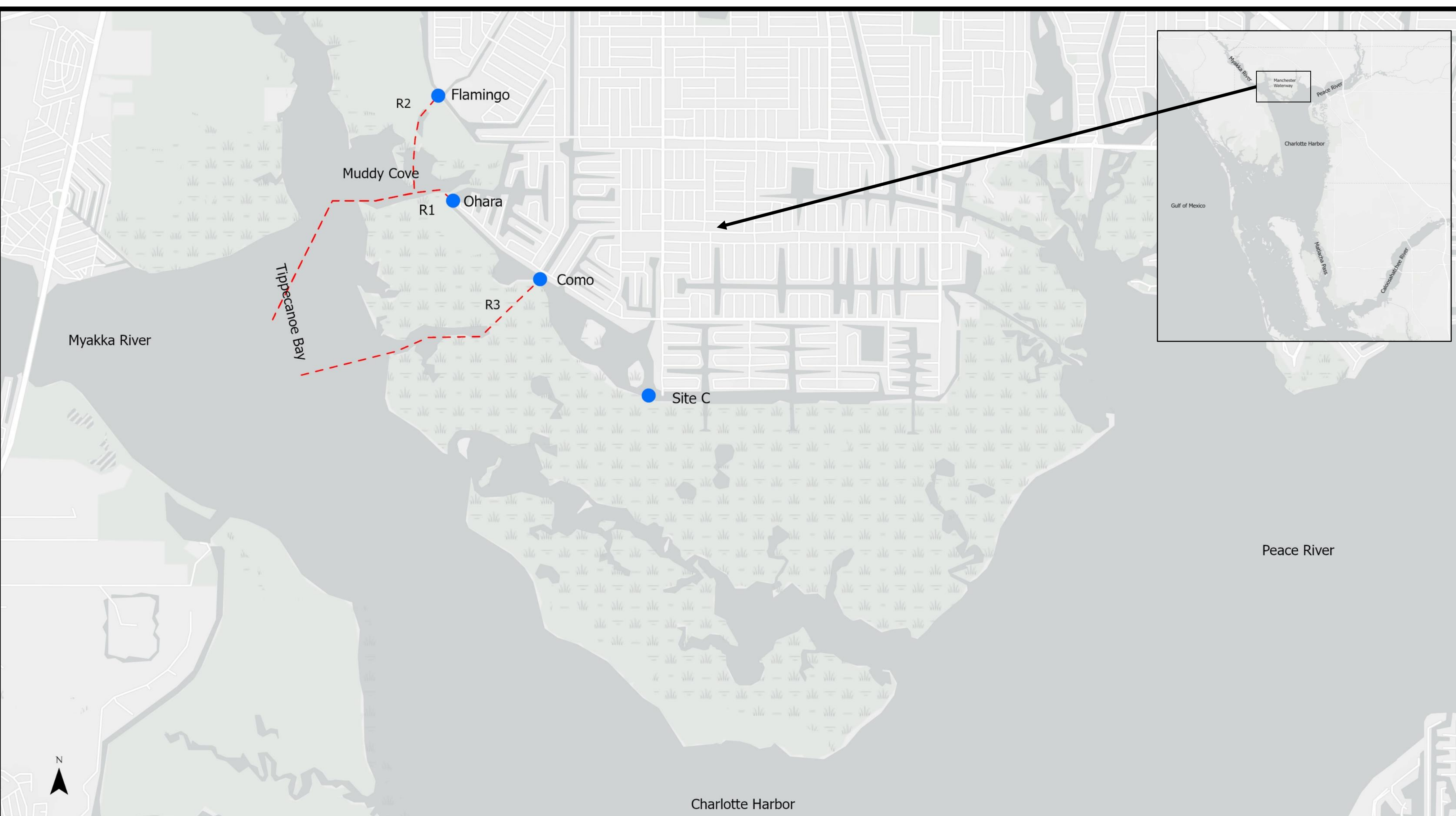
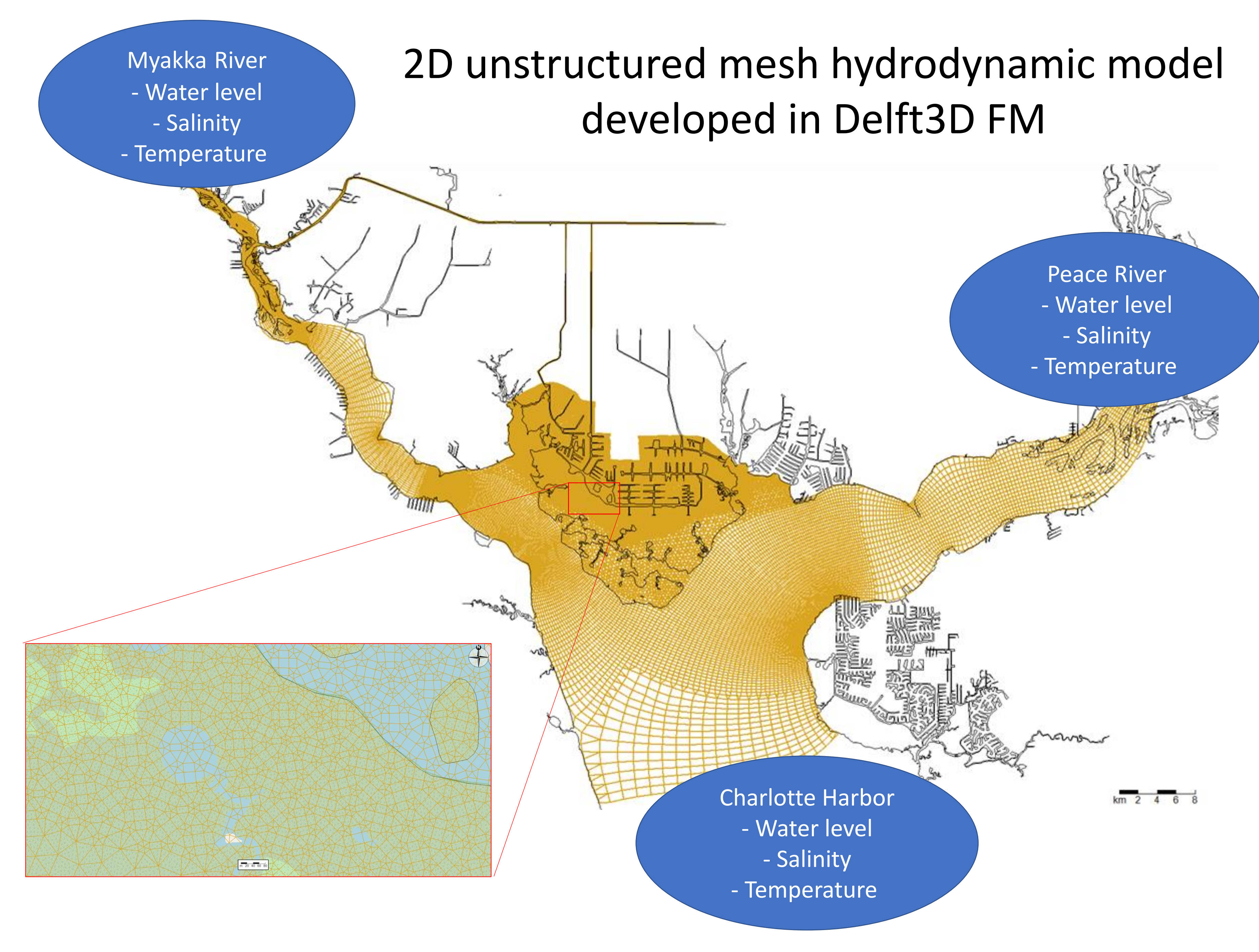
2 Project Objective

To quantify how the proposed restoration plans would alter the hydrodynamics of the MW

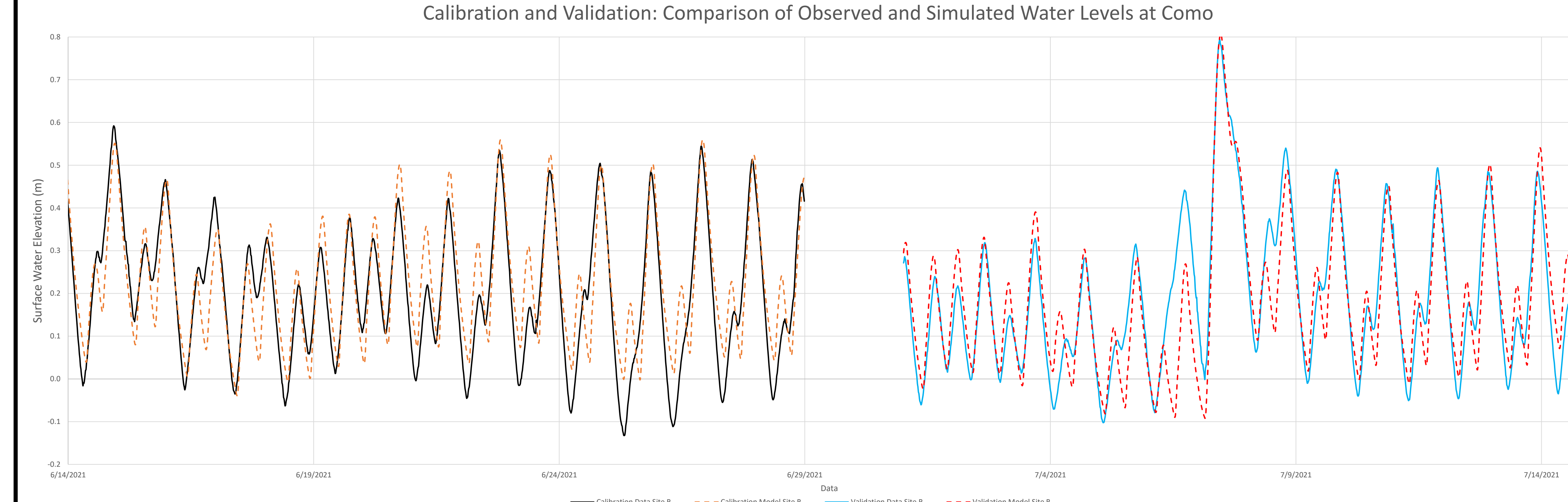
3 Research Tasks

1. Database development
2. Hydrodynamic model setup
3. Model evaluation

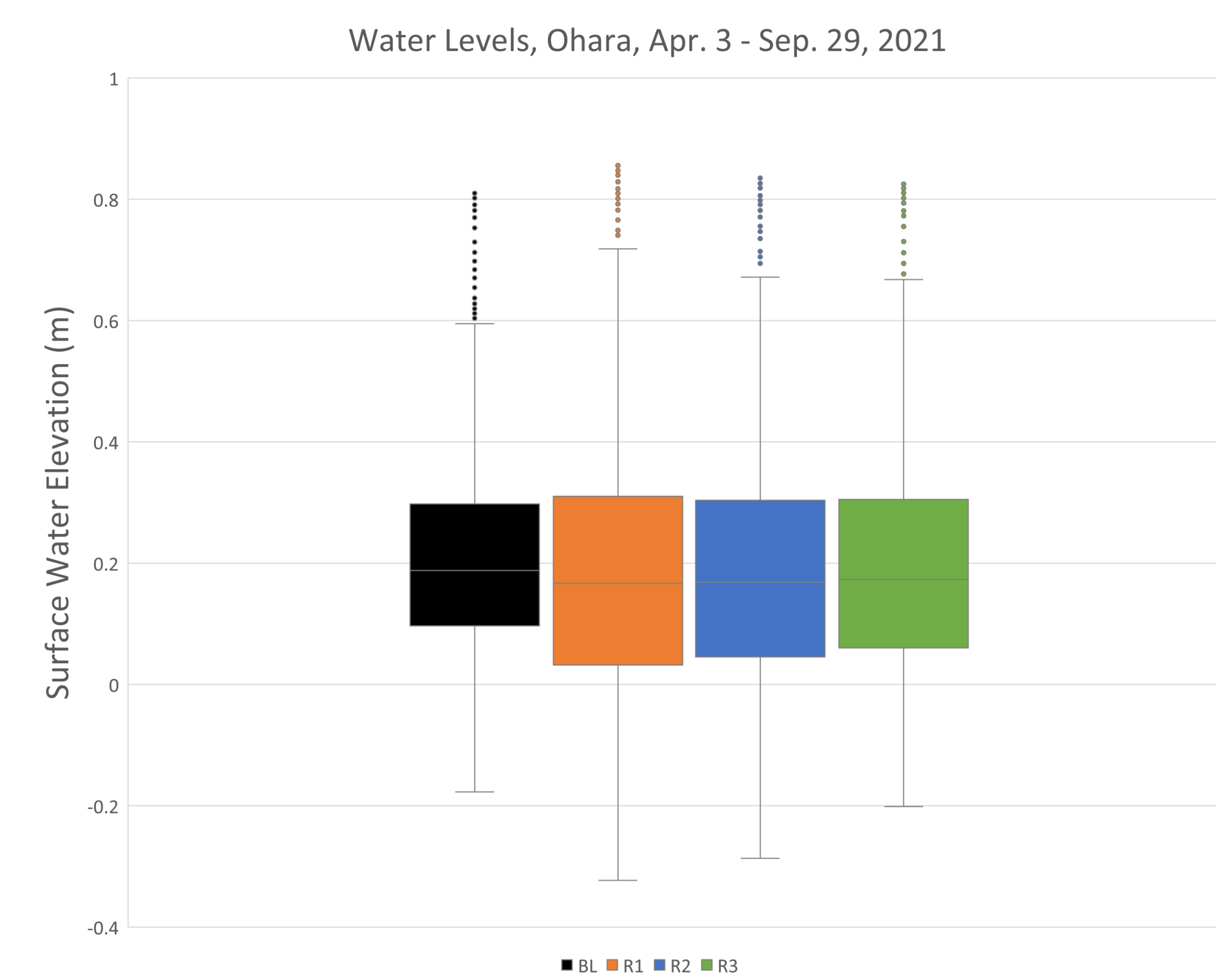
4 Methods



5 Results

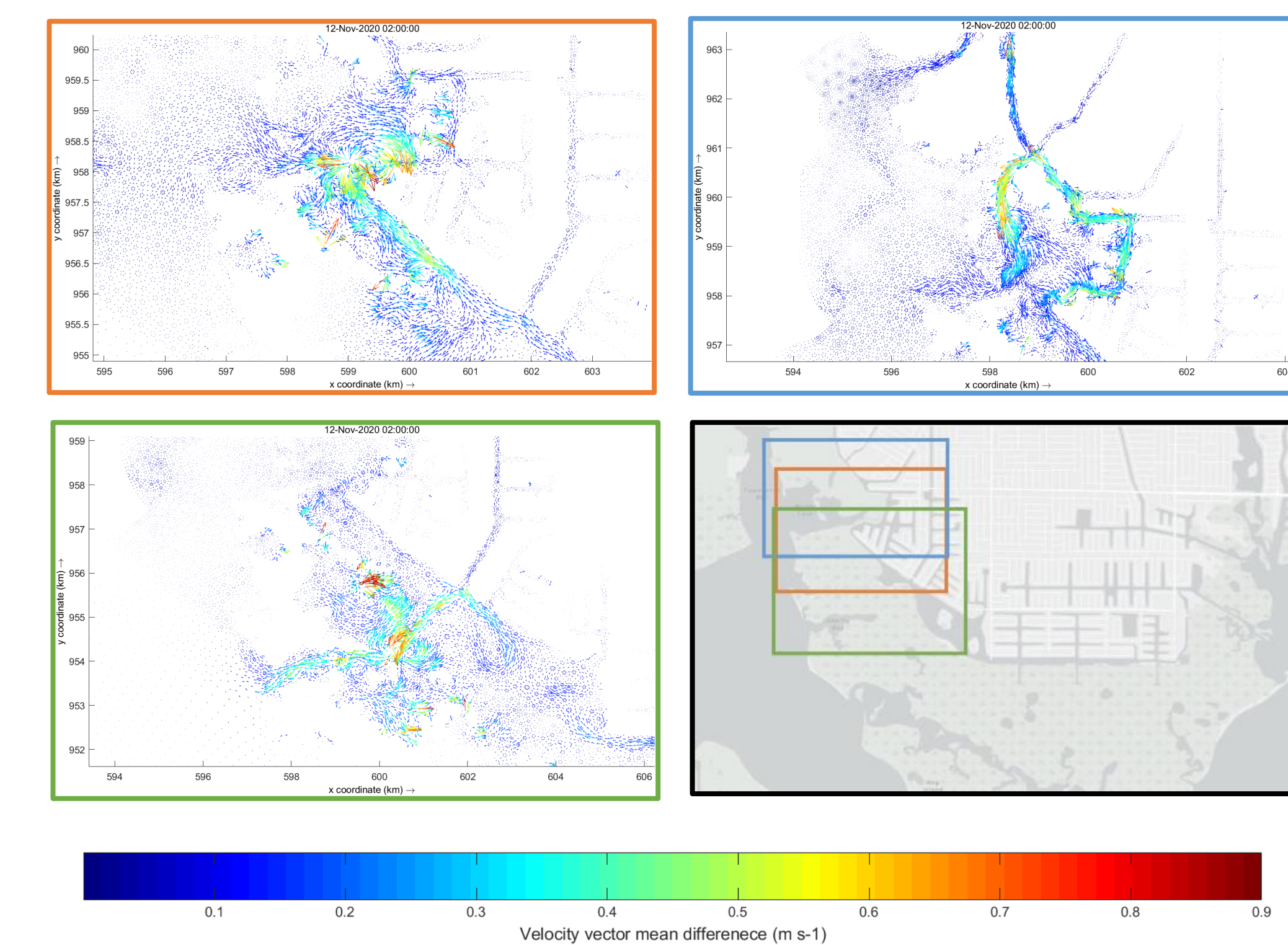


Historic Scenario

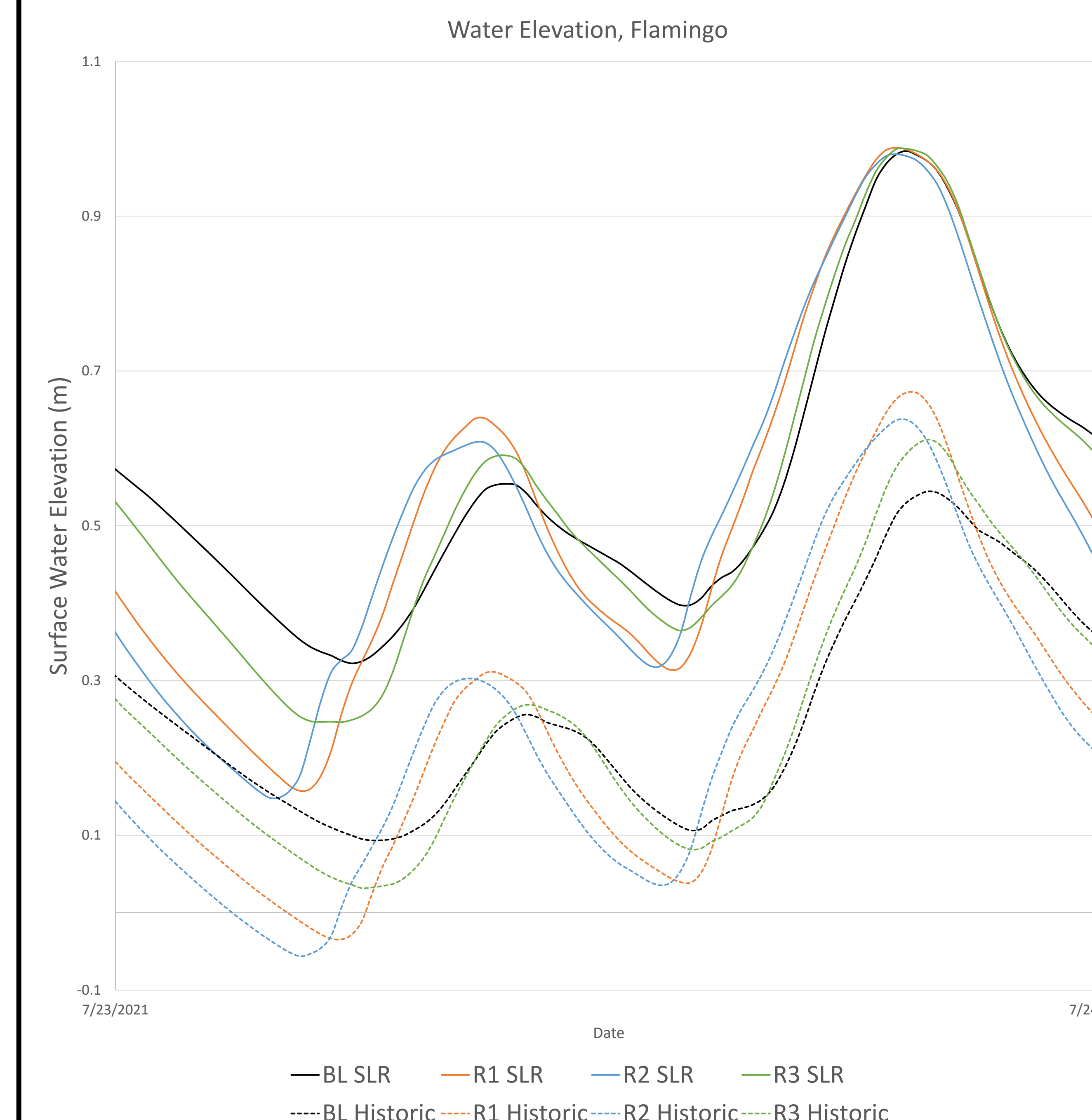


Extreme Weather Scenario

Difference in mean velocity between BL and restoration options 2AM Nov. 12th, 2020

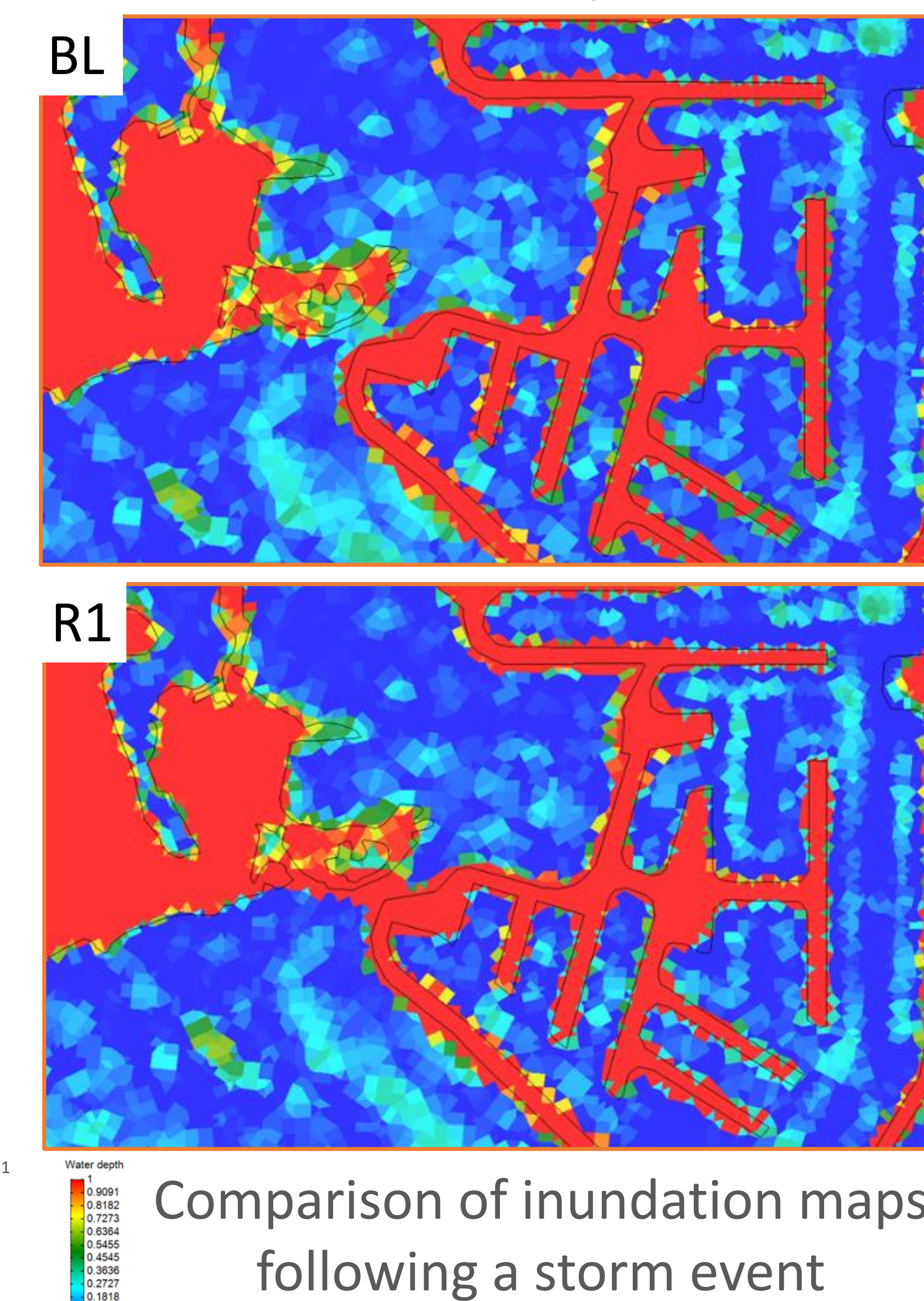


Sea Level Rise Scenario



EW + SLR Scenario

BL vs. R1 Nov 12th, 3:00 PM



6 Summary of Major Findings

1. Increased connectivity tends to locally increase tidal amplitudes, increase maximum water levels, and decrease average water levels, compared to the baseline
2. Velocity magnitudes are impacted locally as a result of restoration in model simulations
3. During storm events, maximum surface water elevations are equal for all restoration and baseline conditions, while restoration options would allow water elevations to lower at a faster rate than the baseline
4. Under high water level conditions, the difference between baseline and restoration water elevations decrease

Comparison of inundation maps following a storm event