

# ENGINEERING CONSIDERATIONS

## PHYSICAL CONDITIONS & COASTAL STORM RISK MANAGEMENT

The engineering analysis for this study will consider the natural coastal processes, geological setting, and existing coastal armor in the study area. The team will leverage data and local expertise from the sponsor (PR DNER) and other groups (PR Academia, stakeholders, Federal agencies, and others) in order to fully understand the problems and develop alternatives to reduce storm damages within the study area.

### Coastal Processes

- Winds
- Waves
- Water Levels
- Tides & Currents
- Storms
- Sediment Transport
- Sea Level Rise
- Erosion
- Inundation
- Wave Attack

### Geological Setting

- Offshore Reef & Cemented Dunes
- Rocky Headlands
- Sandy Beach Embayments
- Limited Sediment Supply

### Existing Armor

- Revetments
- Breakwaters
- Groins
- Seawalls

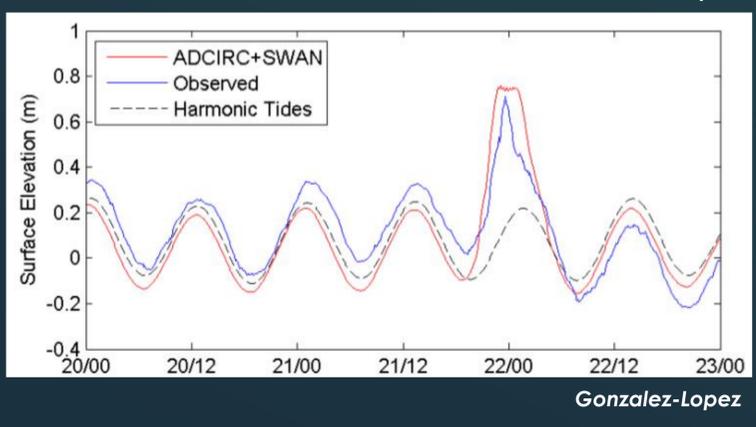
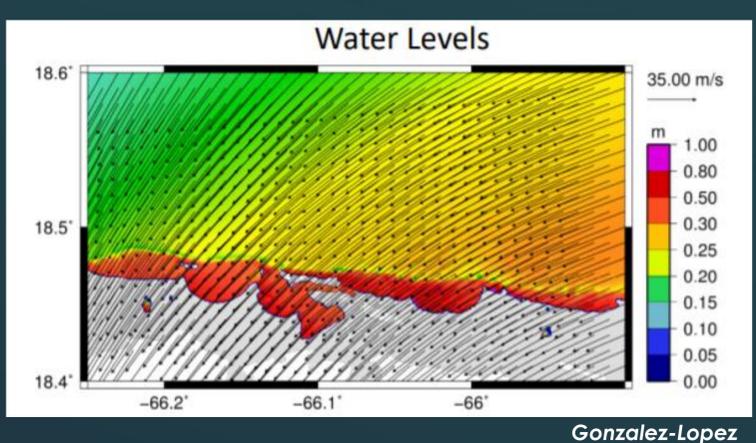


The objective of this project is to contribute to National Economic Development (NED) consistent with environmental statutes. NED benefits are achieved by reducing damages to infrastructure including buildings, roads, utilities, etc. This study will evaluate alternatives that can reduce coastal storm damages. The alternatives could include but are not limited to stand alone or combinations of soft structures (beach and dune), hard structures (seawalls, breakwaters, reefs, rock revetment), and non-structural alternatives (flood proofing).

### Example Alternatives



Hydrodynamic modeling will be used to evaluate storm water levels and impacts in the study area for without project conditions and with alternatives in place.



A probabilistic life-cycle model will be used to evaluate the interaction between the driving forces (storms) and economic assets (infrastructure) over the 50-year period of analysis.

