

Future Sea Level Change in the North Atlantic Coast Comprehensive Study

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Background

- Intergovernmental Panel on Climate Change predicts continued or accelerated global warming, which will cause continued or accelerated rise in global mean sea-level
- Climate-driven global mean sea level change (SLC) scenarios have been developed by USACE (2011) and NOAA (2012)
- These scenarios are suitable for use in assessing the future impacts of sea level change on the natural environment and human infrastructure
- The application of these SLC scenarios for the North Atlantic Coast Comprehensive Study (NACCS) is outlined in this presentation

USACE 2011: *Sea-Level Change Considerations for Civil Works Programs*

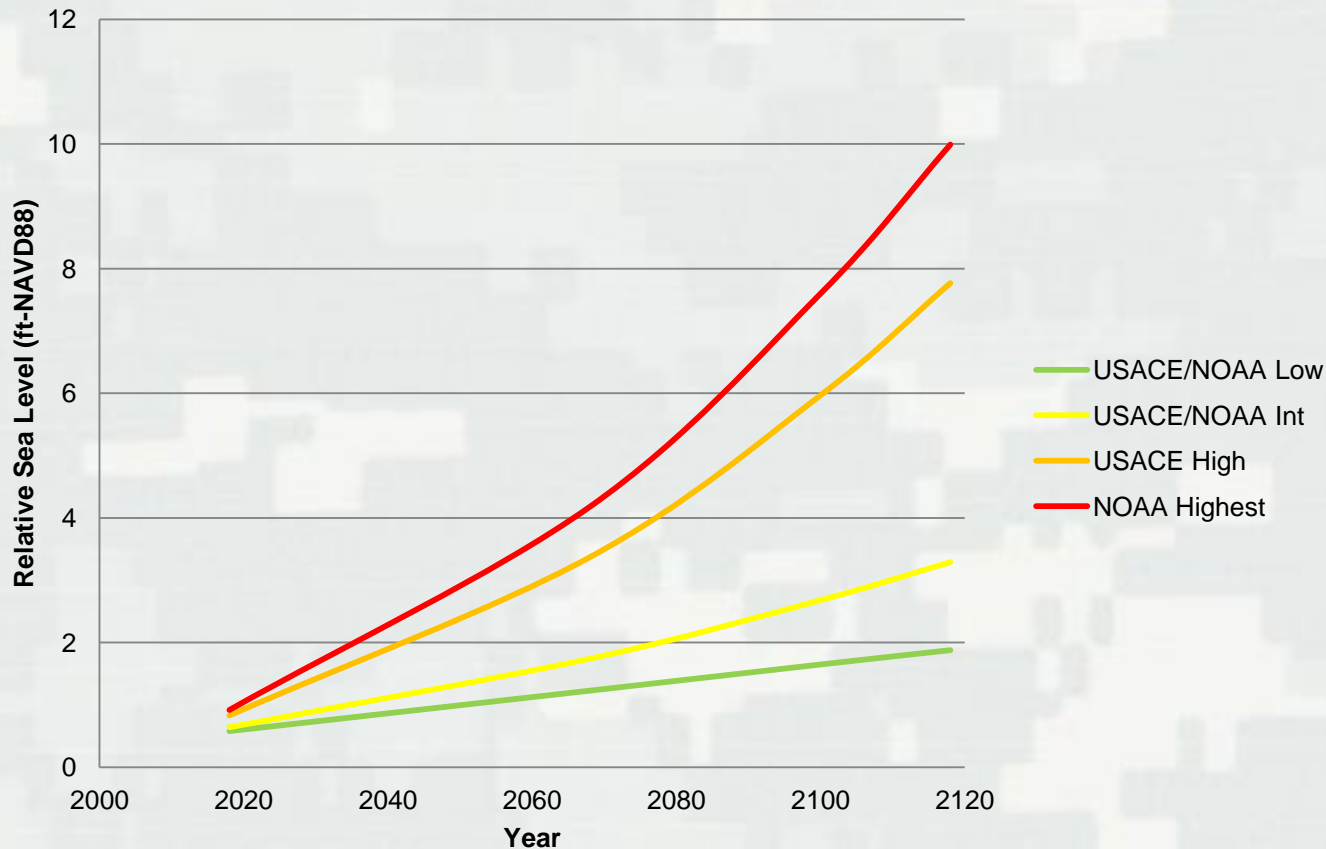
NOAA 2012: *Global Sea Level Rise Scenarios for the United States National Climate Assessment*



NACCS SLR Scenarios

USACE 2011: Sea-Level Change Considerations for Civil Works Programs

NOAA 2012: Global Sea Level Rise Scenarios for the United States National Climate Assessment



Global vs. Local SLC

- During the 20th century global mean sea level rise stabilized to approximately 1.7mm/yr (IPCC 2007)
- Local Relative Sea Level Change (RSLC) is influenced by decadal-scale climate and oceanographic patterns
- These patterns may influence sea level on a temporary (decadal or shorter) basis, but these fluctuations are NOT associated with long-term sea level change patterns
- RSLC relies on long-term water level records > 30 years to remove non-GMSL sea level fluctuations and capture local/regional land uplift and subsidence

IPCC 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*



Site-Specific Future Sea Level Change

- RSLC is the sum of global mean sea level change and regional/local vertical land subsidence/uplift
- Relative sea level change (RSLC) is required to assess sea level change impacts at specific sites
- RSLC has been measured directly by NOAA long term water level gages
- 35 NOAA water level gage sites from VA to MA were evaluated for NACCS



Example Future Sea Levels

(Examples from New York)

Gauge: 8510560, NY, Montauk: 60 yrs				
All values are in feet (NAVD88)				
Year	USACE Low	USACE Int	USACE High	NOAA High
2018	0.58	0.64	0.83	0.93
2068	1.06	1.57	3.2	4.01
2100	1.37	2.41	5.69	7.33
2118	1.54	2.95	7.43	9.65

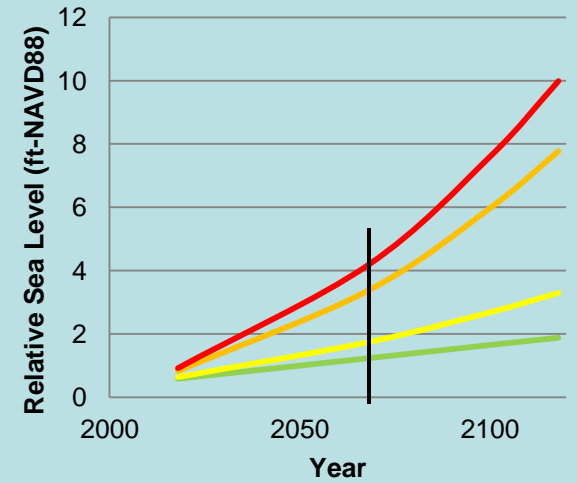
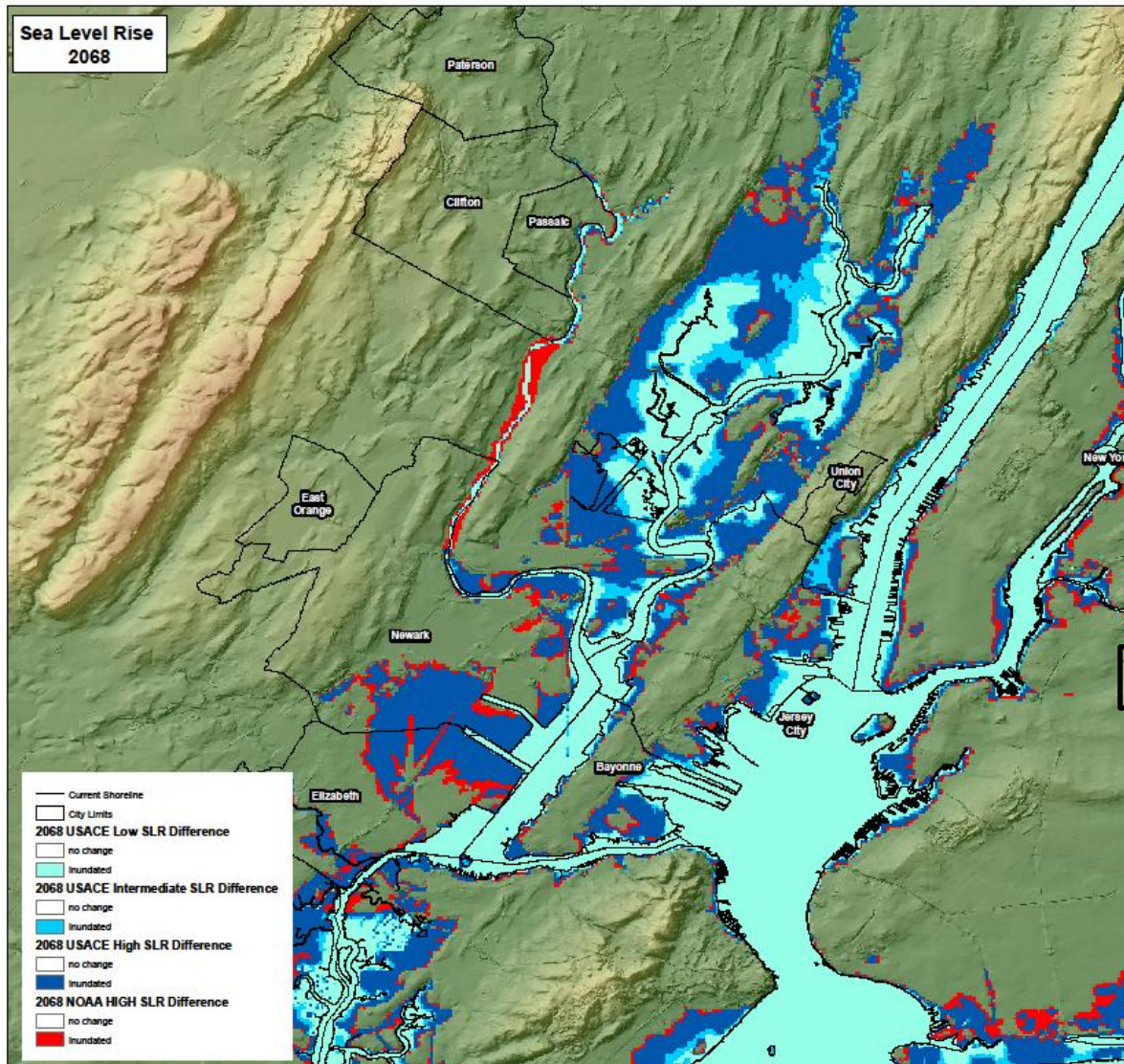
Gauge: 8518750, NY, The Battery: 151 yrs				
All values are in feet (NAVD88)				
Year	USACE Low	USACE Int	USACE High	NOAA High
2018	0.47	0.53	0.72	0.81
2068	0.95	1.46	3.09	3.9
2100	1.25	2.29	5.58	7.21
2118	1.43	2.84	7.31	9.54

Gauge: 8516945, NY, Kings Point: 76 yrs				
All values are in feet (NAVD88)				
Year	USACE Low	USACE Int	USACE High	NOAA High
2018	0.42	0.48	0.67	0.77
2068	0.81	1.32	2.95	3.76
2100	1.06	2.1	5.38	7.02
2118	1.2	2.61	7.09	9.31

Gauge: 8514560, NY, Port Jefferson: <40yrs				
All values are in feet (NAVD88)				
Year	USACE Low	USACE Int	USACE High	NOAA High
2018	0.40	0.46	0.65	0.74
2068	0.80	1.31	2.94	3.75
2100	1.05	2.09	5.38	7.02
2118	1.20	2.61	7.08	9.32



50-Year Sea Level Rise Impacts, Jersey City, NJ



Gauge: 8531680, NJ, Sandy Hook: 75 yrs
All values are in feet (NAVD88)

Year	USACE Low	USACE Int	USACE High	NOAA High
2018	0.58	0.64	0.83	0.92
2068	1.23	1.74	3.37	4.18
2100	1.65	2.68	5.97	7.6
2118	1.88	3.29	7.77	9.99

100-Year Sea Level Rise Impacts, Jersey City, NJ

