

Stable tidal salt marshes exist at an elevation that is supra-optimal relative to peak biomass production, which for *Spartina alterniflora*, and other marsh macrophytes, follows a parabolic distribution as a function of elevation, as a surrogate for inundation frequency. In order to forecast the vulnerability of U.S. Northeastern salt marshes to ecological drowning resulting from sea level rise, we produced field-derived estimates of productivity maxima using field mesocosms in concert with elevation inventories generated through a combination of field surveys and analysis of newly available geomatic data (ARRA funded Northeast and Post-Sandy LiDAR). In contrast to studies conducted in the mid-Atlantic, where marsh elevation was found to be supra-optimal relative to maximum productivity of *Spartina alterniflora*, we instead found that maximum productivity of *Spartina alterniflora* is at elevations above the current marsh platform, and thus current marsh elevations are already sub-optimal relative to productivity maxima. This suggests that productivity will decline with increased inundation. As existing analyses suggest that both salt marsh dieback and displacement of high marsh by low marsh species are already pervasive for Northeastern salt marsh, our data suggests that salt marsh in the U.S. Northeast is extremely vulnerable to the effects of rising sea levels.