The WARMER model is an adaptation of the Callaway et al. (1996) model of marsh accretion. The model has been modified to incorporate a temporally dynamic SLR function as well as spatially dynamic organic matter accretion and non-linear sediment input. The 1-D (vertical) cohort model is applied at a single elevation representative of a single marsh or a portion of a marsh. For our runs 3 elevations are used to represent low, mean, and high elevations at each of our 4 field sites and the results are interpolated across the marsh surface.

Organic matter inputs
- Parabolic accumulation rate function based on Morris et al. (2002) defined by site specific tidal range (MSL to MAT) and measured organic matter accumulation in sediment cores.
- Divided between Above ground productivity and Root Growth by root-to-shoot ratio for Sarcocornia.
- New root growth is distributed exponentially through the depth of the soil column.

Sediment input
- Calculated from paired SSC and water surface elevation records
- Calibrated to measured sediment accumulation rates in sediment cores

Compaction and Decay are not changed from Callaway et al. (1996) with parameterization from Deverel et al. (2008)
- Compaction is modeled as the rate of decrease, \( \rho \), in porosity of a given cohort is a function of the density of all of the material above that cohort, \( \rho_{\text{over}} \), and \( \rho_{\text{out}} \) is a calibration constant.
- Decay decreases exponentially with depth and decreases with age for organic matter 1, 2 and 3 years or older.

References