**Topic: C**ommunity decision-making around implementing Tidal River Management in southwestern Bangladesh.

**Background**

The low-lying coastal region of southwest Bangladesh, relies on poldering (the creation of embanked islands) to mitigate the effects of tidal inundation and storm surge. This has had the unintended consequence of starving the landscape of sediment and creating a 1-1.5 m offset between the interior polder elevations and the mean high water level (MHWL) of the tidal channel. Meanwhile, elevations of the natural system maintain pace with MHWL. I have previously modeled how the elevation of the poldered system could re-equilibrate to that of the natural system through a reduced-complexity sediment accumulation model. This model does not delve into the engineering of such a solution, but only shows timescales and volume of sediment needed to re-equilibrate a polder with full water exchange with the tidal channel. One engineering practice that has been suggested is Tidal River Management (TRM). Using TRM, locals open embankments to tidal inundation during specific times to encourage sediment accumulation. However, sediment accumulation is not uniform over the entire landscape. Therefore, some communities may opt to close embankment breaches before other communities. Before an engineering project is undertaken, an understanding of this social dynamic is necessary.

**Model Idea**

For my project, I plan to couple the outputs from my previous sediment model to an agent-based decision model. The agents will be communities and the environment will be a polder. Input data will be elevation outputs from my sediment model meant to simulate TRM. The agents will use this information, as well as information from neighboring communities to make decisions on whether or not to close or open an embankment to tidal inundation.

**Tools**

I will use Python to build the ABM. I will call my sediment model as a submodel within the ABM.