1 Connection between resiliencies in OW model and our time series model.

$$D_k = A_k - V_k - \frac{s}{2}$$

$$D_{k+1} - D_k = -\rho D_k \Delta t_{k+1} + \alpha x_{k+1}$$

$$\Delta t_{k+1} := t_{k+1} - t_k, \quad D_k := D_{t_k}, \quad x_k := x_{t_k}, \quad \Delta D_{k+1} := D_{k+1} - D_k.$$

$$V_{k+1} - V_k = \lambda x_{k+1} \to \Delta D_{k+1} = \Delta A_{k+1} - \lambda x_k$$

$$\frac{\Delta D_{k+1}}{\Delta t_{k+1}} = -\rho D_k + \alpha \frac{x_{k+1}}{\Delta t_{k+1}}$$

$$\frac{\Delta D_{k+2}}{\Delta t_{k+2}} - \frac{\Delta D_{k+1}}{\Delta t_{k+1}} = -\rho \Delta D_{k+1} + \alpha(\frac{x_{k+2}}{\Delta t_{k+2}} - \frac{x_{k+1}}{\Delta t_{k+1}})$$

$$\frac{\Delta A_{k+2}}{\Delta t_{k+2}} - \frac{\Delta A_{k+1}}{\Delta t_{k+1}} = -\rho \Delta A_{k+1} + \rho\lambda x_{k+1} + (\alpha + \lambda)(\frac{x_{k+2}}{\Delta t_{k+2}} - \frac{x_{k+1}}{\Delta t_{k+1}})$$