Driving Mechanisms and Timescales of Saltwater Intrusion near Dover, DE

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Study Area

• DE is lowest lying state
• Highest rates of SLR due to isostatic adjustment and subsidence
• City (purple) surrounded by ag land (orange) which is adjacent to tidal wetlands (green)
• Groundwater main source for municipal and agricultural uses
Saltwater Intrusion Mechanisms

**Subsurface Intrusion**

- Sustainable pumping, no SLR
- SLR, increased pumping

**Surface Inundation**

- “Normal” conditions, low tide
- High tide, SLR, storm inundation (can lead to subsurface salinization)
Pond A

Marsh A

Specific Conductance

Water Levels

Pond cut off from marsh

Specific Conductance µS/cm

Conclusions and Next Steps

• Sea level rise will push tides and marshes further in land

• Storm frequency and intensity are expected to increase, potentially increasing residence time of saltwater in irrigation ponds

• Surface water bodies which penetrate the shallowest aquifer could act as direct paths of contamination for SWI (almost instant contamination, long recovery)

• Calibrating 3-D SEAWAT model to assess risk level and timescale of subsurface migration
QUESTIONS

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