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# A Bellwether for Change: Groundwater and Sea Level Rise in Southeast Florida

Mike Sukop, Florida International University

Interactions between post-glacial sea level and groundwater likely sculpted the current landscape of Southeast Florida. Following a stabilization of sea level 7,000 years ago, which has been credited with an explosion of complex human societies, sea levels are on the rise again in Southeast Florida, and groundwater is rising along with it. As in many low-lying coastal areas, this means there is less room for stormwater storage in the subsurface. A groundwater-centric view of flooding may be appropriate in many of these environments, and a preliminary assessment of this approach is presented.

Dense urban development near the shore severely limits available permeable area for stormwater infiltration and exposes infrastructure to corrosive saltwater. Disposal of fresh stormwater into saltwater lenses and wedges via injection wells is a widely applied strategy that has not been adequately studied before; exploratory simulations are being conducted. While the corrosive effects on metallic pipes and above-ground reinforced concrete are well known, the impacts of saltwater interfaces and tidal fluctuations in the subsurface on foundations passing through zones of varying salinity have not been broadly investigated.

The 2021 collapse of the Surfside tower and the observed sinking of numerous high-rise buildings in Southeast Florida demand a fuller understanding of subsurface conditions and processes. A near-shore coastal subsurface monitoring system is being implemented in Southeast Florida and coastal hydrogeology is poised to play a prominent role in future adaptation in low-lying coastal areas worldwide.