

Florida Water Climate Alliance Webinar Summary: Climate Change Impacts on Wastewater & Stormwater Management September 20, 2021

Introduction:

The Florida Water Climate Alliance (FloridaWCA) is a stakeholder-scientist partnership committed to the co-development of locally relevant and actionable climate science to support informed decision-making in water resource management, planning and supply operations in Florida. The September 2021 webinar, hosted by FloridaWCA and UF Water Institute, focused on the impacts of climate change to wastewater and stormwater management. Nearly 200 participants joined the webinar and came from varied backgrounds and agencies including water utilities, Water Management Districts, government agencies, non-governmental organizations, universities and consulting firms. Nearly half of the attendees were new to FloridaWCA workshops/webinars, demonstrating the growing interest in the group and usefulness of the webinar format. The next webinar is scheduled for January 18, 2022 from 1:00-3:00pm on 'Perspectives on Saltwater Intrusion'.

A recording of the September 20, 2021 webinar and presentation slides are [available here](#).

Updates:

- [Intergovernmental Panel on Climate Change \(IPCC\) - 6th Assessment Report](#)
The IPCC 6th Assessment Report results were shared for Florida's region, Eastern North America. Temperature and coastal issues are projected to increase, and agricultural droughts and heavy precipitation events over land will become more frequent.
- Bulletin of the American Meteorological Society
Some of the FloridaWCA core members published an [article on a collaborative approach to climate adaptation](#) in the Bulletin of the American Meteorological Society. A photo of Peace River Manasota Regional Water Supply Authority's operations was selected as the cover photo of the issue.

Presentations:

1. Monitoring of the 2021 Rainy Season Over Florida's Water Management Districts

The FloridaWCA is currently funded through a NASA-ROSES grant to develop seasonal, water supply relevant 'forecasts' for water management districts and participating water supply utilities. As part of this project, Dr. Vasu Misra (FSU) provided a summary of real-time monitoring efforts of the onset/demise of the 2021 rainy season for water management districts. Four of the five water management districts ended the 2021 rainy season as indicated at the season opening outlook, which was a promising outcome. SRWMD was the exception with wetter than indicated results.

- **SJRWMD:** Onset was delayed 4 days, so a drier than normal rainy season was anticipated. The season ended slightly dry.
- **SFWMD:** Onset was delayed 6 days, so a drier than normal rainy season was anticipated. The season ended slightly dry.
- **SWFWMD:** Onset was delayed by 3 days but was still within the middle (normal) range, so a near normal rainy season was anticipated. The season ended normally.
- **SRWMD:** Onset was delayed 7 days, so a drier than normal rainy season was anticipated. The season ended wet.
- **NWFWMD:** Onset was delayed by 4 days but was still within the middle (normal) range, so a near normal rainy season was anticipated. The season ended normally.

2. Vulnerability Assessment of OSTDS to Sea Level Rise and Storm Surge to Develop Adaptation Plans in St. Augustine, FL

Jessica Beach (City of St. Augustine) and Dr. Tricia Kyzar (Wildwood Consulting) presented a vulnerability assessment of septic systems or onsite treatment and disposal systems (OSTDS) in and around St. Augustine to climate change related impacts. The presentation prioritized OSTDS in terms of vulnerability and the threat they pose to adjacent waterbodies. Their assessment found that the biggest threat to OSTDS between sea level rise, storm surge, and rising groundwater elevations is rising groundwater. A story map of the project is available [here](#).

3. Using Logistic Regression to Model the Risk of Sewer Overflows Triggered by Compound Flooding with Application to Sea Level Rise

Dr. Steven D. Meyers (USF) presented on sewer overflow risk in the Pinellas County area. Historical risk factors and discharge events were used to create an infrastructure failure model. NOAA's weather and climate forecasts were integrated into the model. Model results showed that the number of sewer overflow events doubles for every 0.1 meters of sea level rise due to compound flooding (when flooding from rainfall and storm surge occurs simultaneously during an extreme weather event) and saturated soil. Without improvement, rare discharge events will become common. An online dashboard for the risk assessment is available [here](#).

4. The Importance of Risk-Based Decision Making for Total Maximum Daily Loads in a Changing Climate

Dr. Ebrahim Ahmadisharaf (FAMU-FSU) presented a generalized model strategy for reducing pollutant runoff that impacts E. coli bacteria total maximum daily load (TMDL) concentrations. The emphasis was on a risk-based decision-making framework that is stochastic rather than deterministic to account for climate change impacts that can cause high uncertainty in water quality modeling. Using a stochastic water quality model, reliability of proposed TMDL strategies (different water quality criterion) can be assessed for different climate scenarios.

5. Development of Future Depth-Duration-Frequency Curves for the SFWMD

Michelle M. Irizarry-Ortiz (USGS) presented a review of downscaled datasets over SFWMD and their utility in creating flood frequency and duration curves. Between CORDEX, LOCA, and MACA, MACA showed the least bias in its predictions. MACA also had the highest density of data with 4km-sized grid cells. There was consensus among the models that there will be an increase in precipitation extremes in the future. Change factors of 1.2-1.3 (based on median values, representing 20-30% increase) need to be included in both critical infrastructure designs and lower compound flooding vulnerability assessments. To reduce some of the uncertainties in downscaling, a high-resolution regional climate model (< 2-km) should be developed for the state of Florida.

6. Central and South Florida System, Flood Risk Management Study, and Resiliency Needs

Eva Velez and Jason Engle (USACE) presented on flood risks in south Florida and the need for an integrated resilient approach with cooperation from multiple levels of government and community. The presentation described the complexity of the south Florida flood control system and looked at a wide range of potential adaptation strategies to enhance community resilience. The target execution of a new feasibility cost sharing agreement for the C&SF Flood Risk Management Infrastructure Resiliency Study is expected by June 2022.