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Oak Lake Wetland Restoration: Difference in
Hydrology between Newly Restored and
Reference Wetlands

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Oak Lake Wetland Restoration: Difference in Hydrology between Newly Restored and Reference Wetlands

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SOUTH DAKOTA STATE UNIVERSITY

Department of Natural Resource Management

Wetland Restoration

- Wetlands have been decreasing since the 1780s
 - Upwards of 87% lost; rate of loss has slowed, but not stopped
- Restoration programs started in the 1900s
- State and federal agencies as well as non-profits work on wetland restoration projects
 - USFWS, UDSA, Ducks Unlimited
- The goal is to return the wetland functions and services to levels consistent to a reference wetland in the region



Location

- = Restored Wetland
- = Reference Wetland





Locations of the Wetlands

- Reference Wetland



	Reference	Restored
Basin Length	92 M	133 M
Basin Width	73 M	54 M
Average Depth	37 cm	32 cm

- 1.74 kilometers apart
- Very similar area and depth

- Restored Wetland



Objectives

- Look at three main attributes for both reference and restored wetlands
 - Wetland Hydrology
 - Hydroperiod, dynamic responses (dry/wet periods)
 - Water Chemistry
 - Similar fluctuations & ranges
 - Invertebrate Assemblage Structure
 - Total abundance, composition, & number of species



Wetland Hydrology

- Hydroperiod – Intermittent
 - Most important factor when considering stability of a wetland
 - Period of time that the basin holds water
- Dynamics
 - Dry or wet periods of a wetland
 - Storm Response

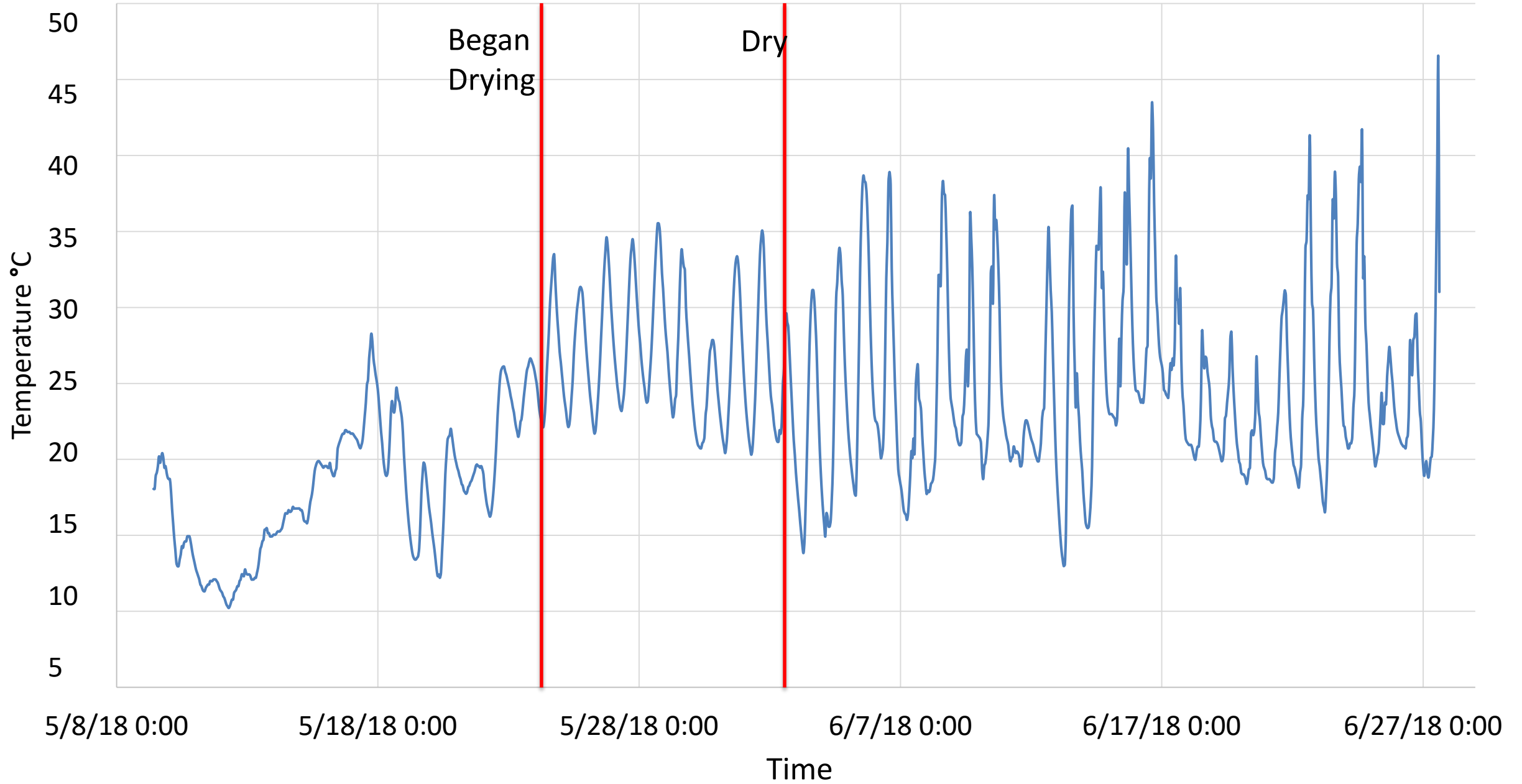


Methods

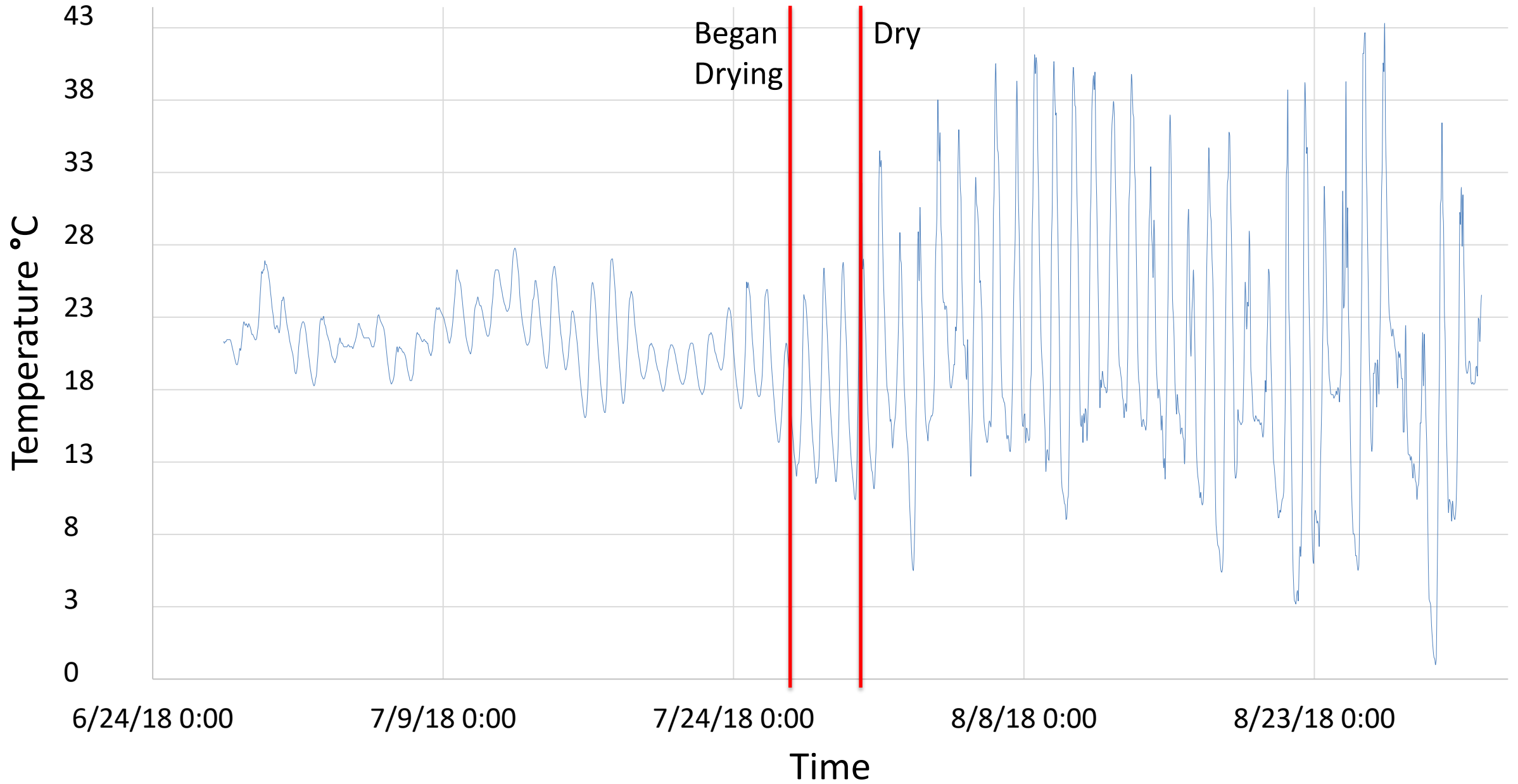
- Measuring Hydroperiod and Dynamics
 - Hobo Data Loggers
 - Set a recording start date
 - Deploy in wetland
 - Retrieve & Replace
 - Download Data & Analyze it
 - Weekly Depth Measurements
 - 3 marked locations



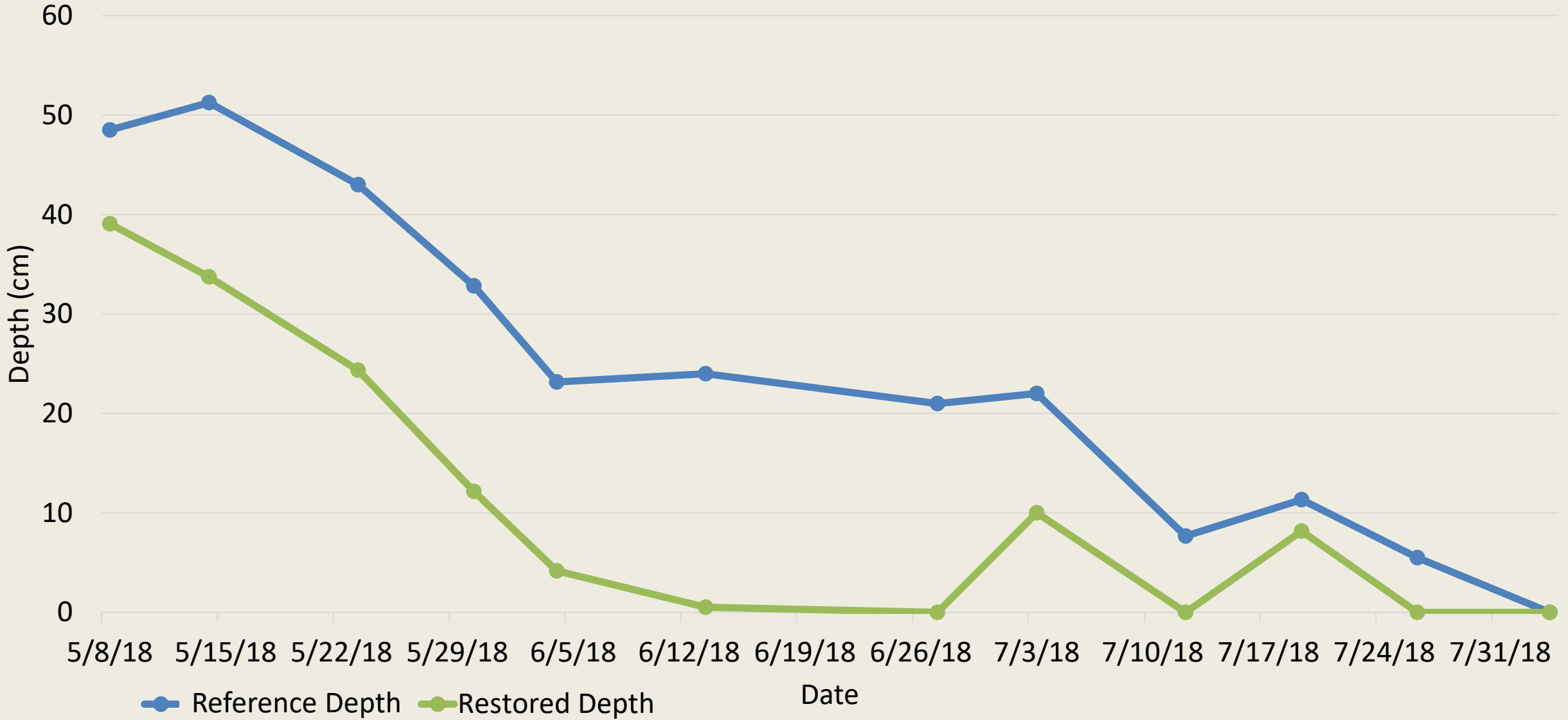
Restored Wetland Wet/Dry Periods



Reference Wetland Dry/Wet Period



Depth over Time for Restored and Reference Wetlands



Conclusion

- Hydroperiod
 - Wet longer than 2017, but still doesn't hold water as long as reference
- Dynamic responses (dry/wet periods)
 - Similar in both wetlands; depth increase after rainfall events
- Restored basin has wetland hydrology
 - Hydrology is there; looks more like reference every year











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