



# **The Problem**

- Certain environmental conditions around the Kankakee River are causing large mats of aquatic grasses to be released from the riverbed and move downstream.
- When aquatic grass builds up downstream too quickly, this causes the cooling intake structure at the Dresden Generating Station to clog.
- These grassing events are unpredictable, leading to unanticipated energy disruptions for up to 1.4 million homes in the surrounding area.

## **Team Members**





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# The Solution

**NASA DEVELOP** is using Earth observations (EO) to locate patches of floating aquatic vegetation (FAV) that are responsible for energy disruptions. Extracting this information will help inform what environmental conditions are causing grassing events along the Kankakee River.





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(Project Lead)



# How well do EO satellites detect aquatic vegetation?







### Landsat 8 OLI & 9 OLI-2

Vegetation patches can be resolved at this resolution

Long historical data archive  $\checkmark$ 

Spatial resolution comparable to PlanetScope

Data acquisition at no cost

### PlanetScope DOVE



Low spectral availability

Inaccuracies at the river boundary



Costly data acquisition

Sentinel-2 MSI Imagery in High Contrast True Color to Highlight FAV

## **Project Partners**

- Constellation Nuclear
- United States Geological Survey Central Midwest Water Science Center

## Acknowledgements

Caroline Williams – NASA DEVELOP Austin Madson – University of Wyoming Rebecca Maddox – Constellation Nuclear Daniel Murphy – Constellation Nuclear Allison Atkinson - United States Geological Survey David Heimann – United States Geological Survey





# What are the potential predictors for the occurrence of grassing events?

% Cloud Cover	Medium Positive Correlation
Precipitation	Medium Positive Correlation
Discharge	Strong Negative Correlation

## **The Conclusion**

While it is feasible to detect aquatic vegetation in rivers, limitations in temporal resolution make it difficult to identify movement in FAV that could lead to energy disruptions. Environmental correlations point to grassing events being localized, suggesting data requirements outside of EO capabilities.



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