



# MSW Variability Mapping and Conversion to Biofuel

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*Changing the World's Energy Future*

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# MSW Variability Mapping and Conversion to Biofuel

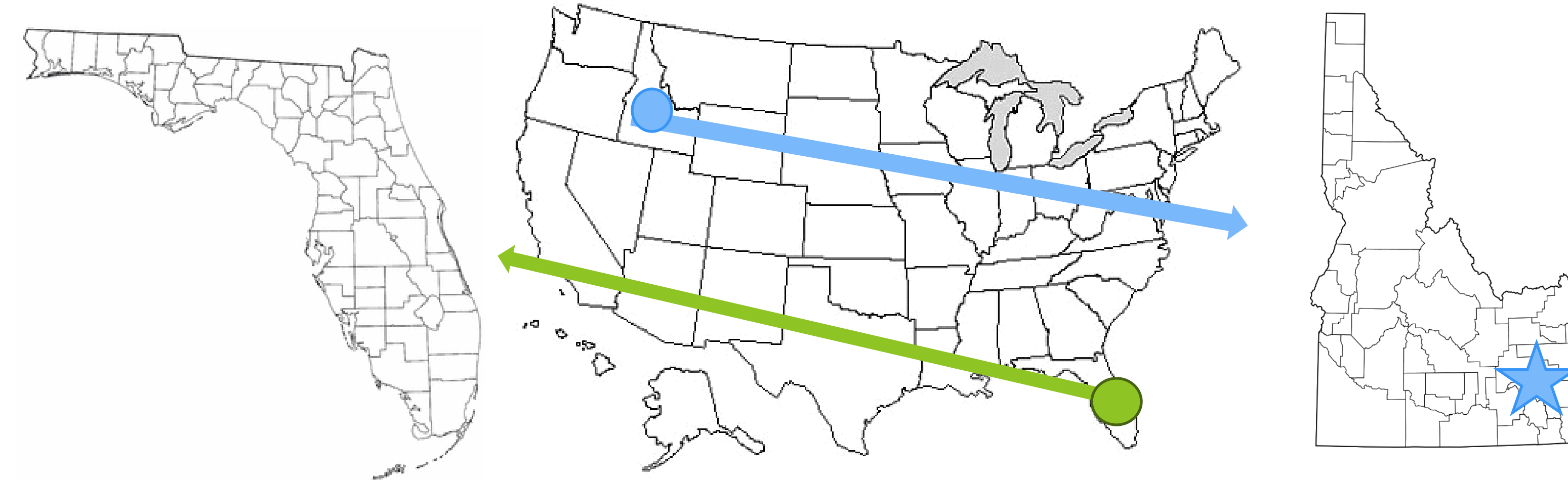
Avery Greene (Lawrence University), Rachel Emerson (INL), Carl Fredrik Mikael Karlsson

## What is MSW?

- MSW (Municipal Solid Waste) is a type of biomass that can be turned into renewable biofuel.

## How did we analyze MSW?

- We looked at Spatial Variability Contributors to see how climate, population, and economic factors affect MSW composition (e.g., paper, plastic)
- Contributors: Social Vulnerability Index, Access to Public Transportation, Racial Distribution, GDP, Personal Income

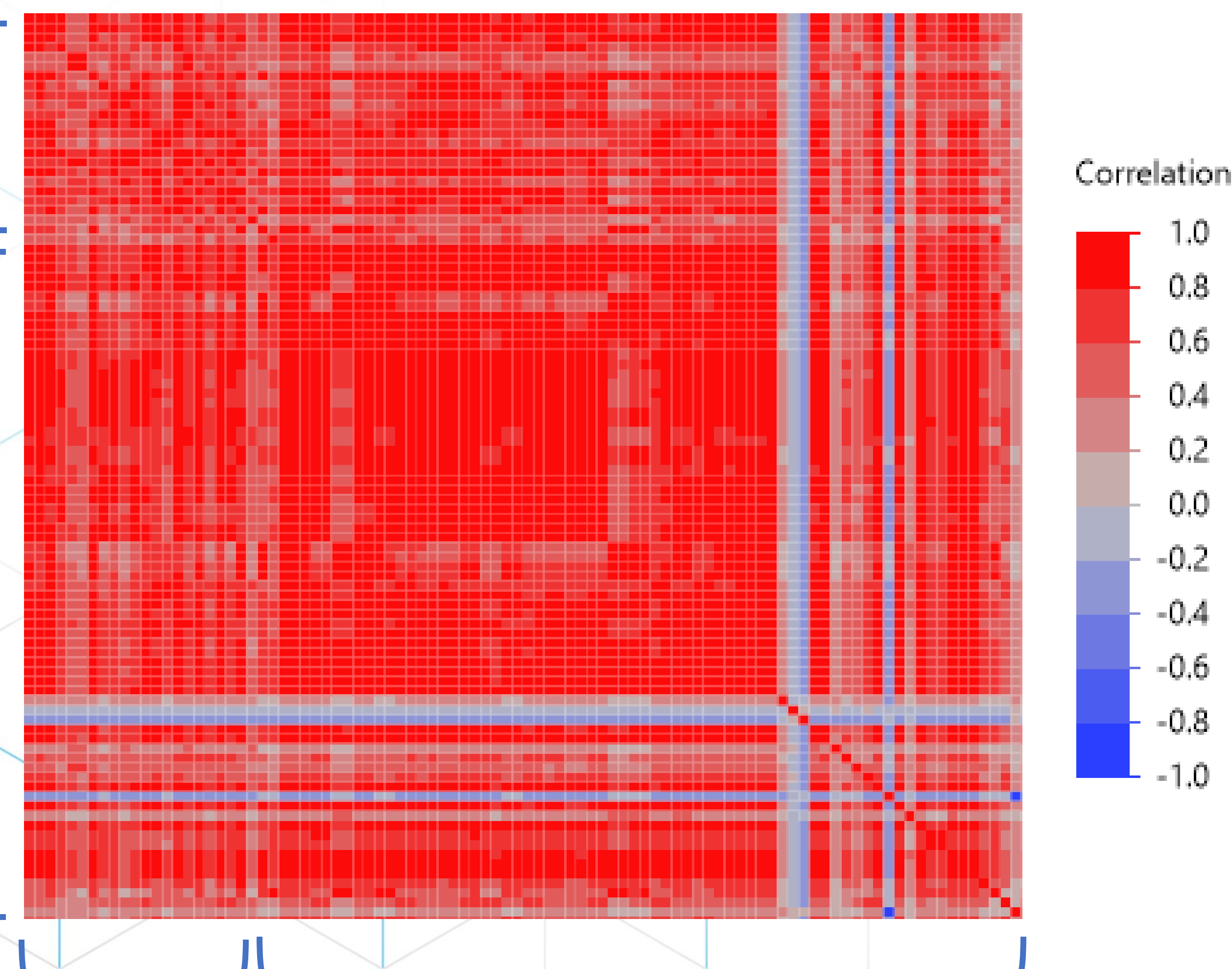


### Notable Florida Correlations

MSW	First Ranked Contributor	VIP Correlation Number ( $\alpha=1.0$ )
• Yard Trash	• Non-Commercial Airports	• 2.34
• Aluminum Cans	• White Females (Non-Hispanic)	• 1.26
	• White Males (Non-Hispanic)	• 1.24
• Steel Cans	• White Females (Hispanic)	• 1.70
	• White Males (Hispanic)	• 1.68

### MSW Composition

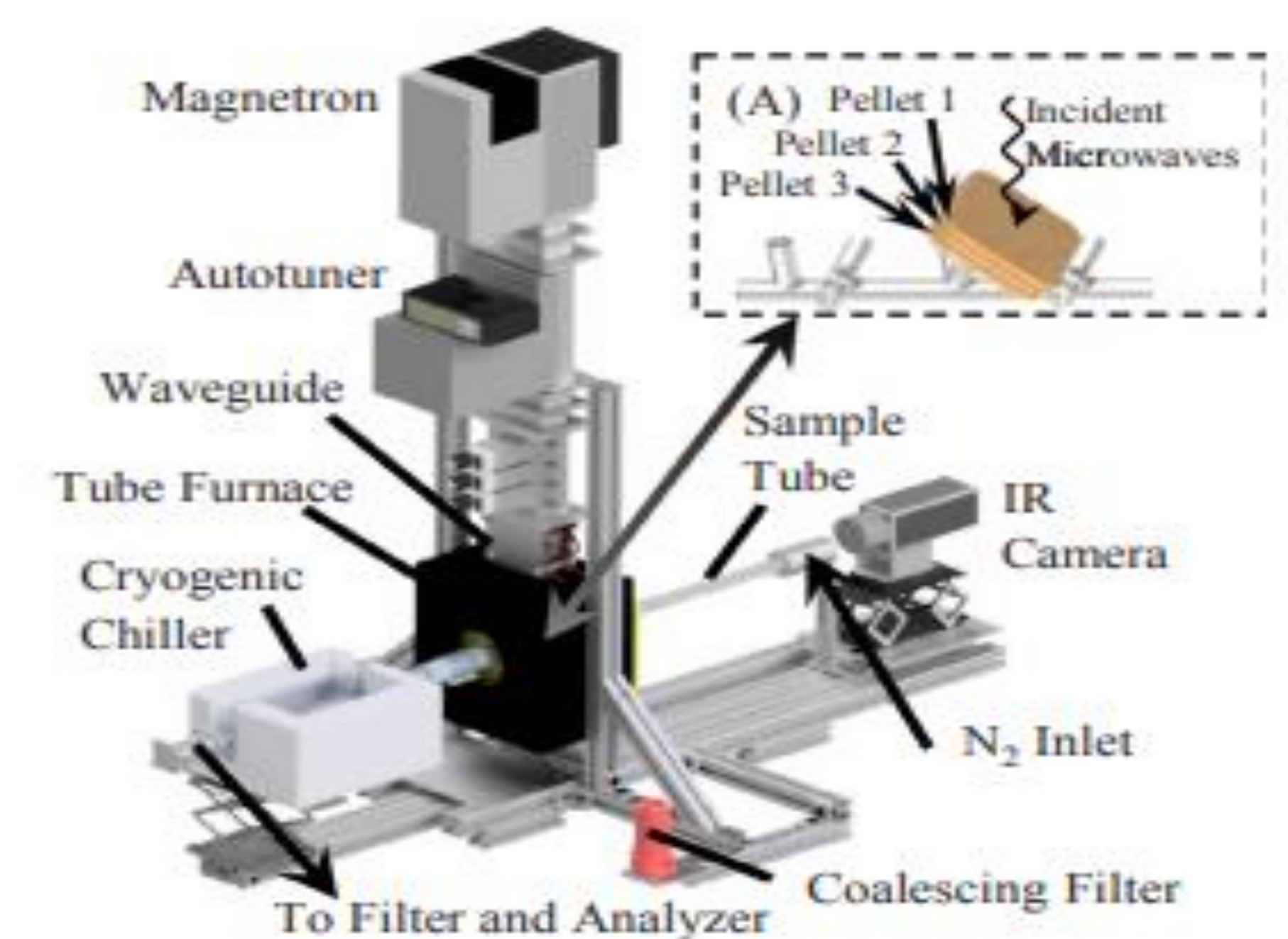
### Spatial Variability Contributors



## What do we do with MSW at INL?

### Fast Pyrolysis

- Pyrolysis performed with a microwave system where samples are rapidly heated with microwaves and temperatures measured with infrared.
- This system allows for the measurement of gasses produced by the MSW and the separation and condensation of bio-oils to assess biofuel conversion efficiency.



Source: Klinger et al

www.inl.gov

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