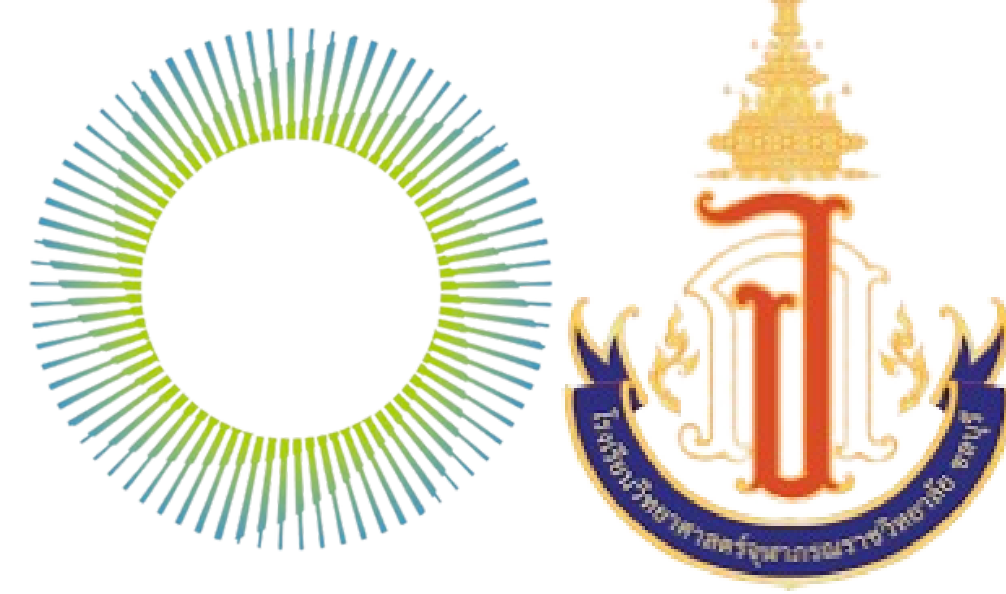
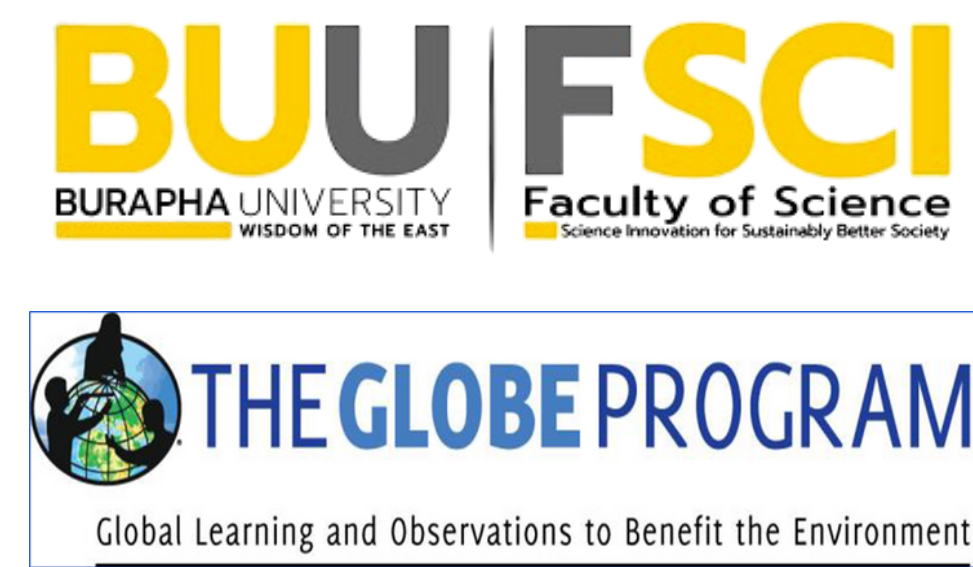


The Study of Water Quality and Application of Synchrotron Light to Investigate Elemental Accumulation in Plants from Water Sources in Chon Buri Province



Researchers: Mr. Theerathach warabamrungskul, Ms. Patananya Wongdechsakul
Advisor : Mr. Vichien Donram, Ms. Patcharaporn Boonkitti, Ms. Orawan Sritrirat
School: Princess Chulabhorn Science Highschool Chonburi, Thailand

Introduction

This project studied water quality in Ban Bueng, Nong Kho, and Map Phrachan Reservoirs using synchrotron light technology. Water quality was measured twice, in May and August, focusing on temperature, dissolved oxygen, pH, and turbidity. Results showed moderate water quality in May (CCME WQI 67.97-75.42) and good quality in August (CCME WQI 79.23-88.18). The project also analyzed elements in water and aquatic plants using the TXRF technique, with results showing consistency between plant and water samples.



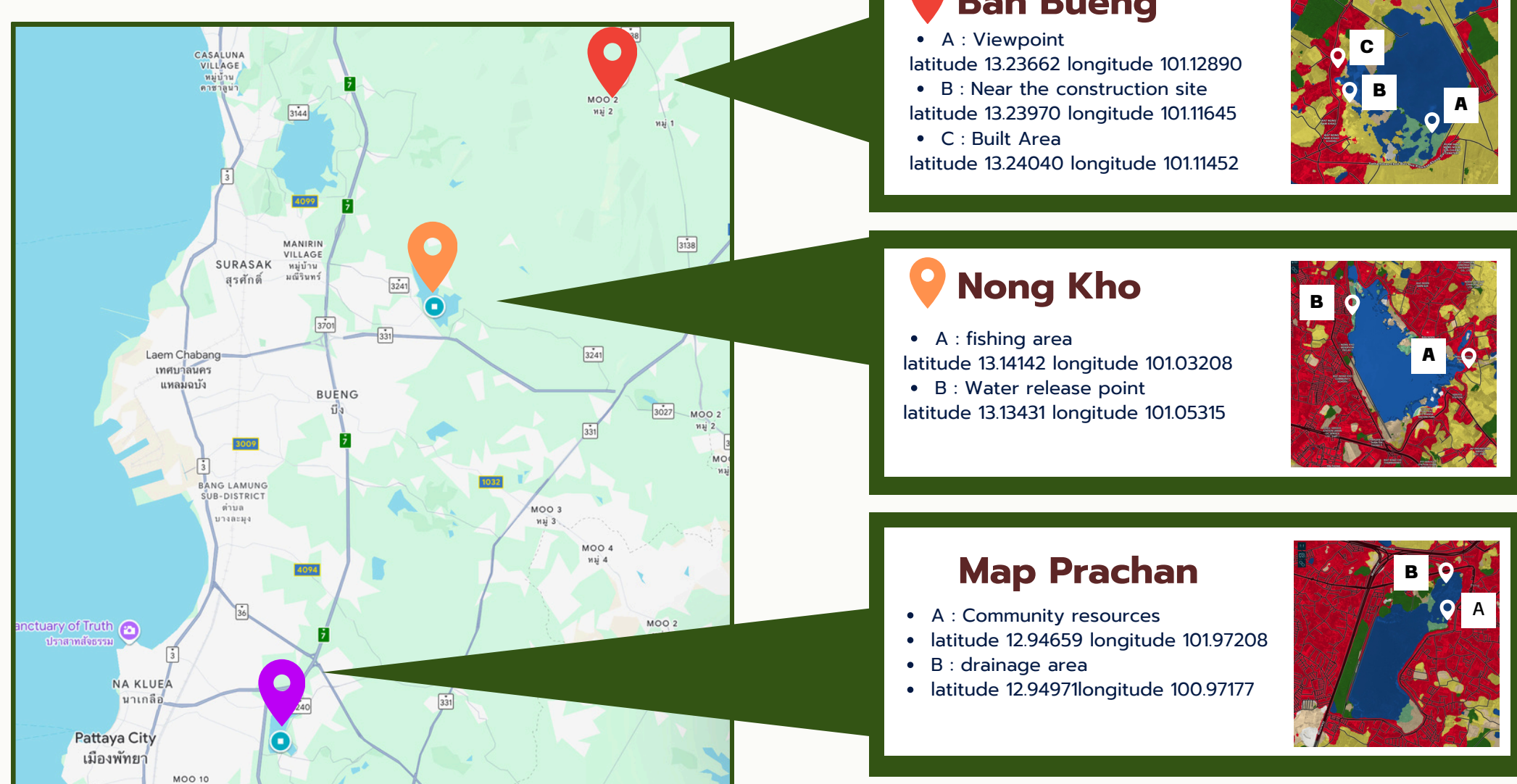
Objectives

1. To study and assess the water quality in sample reservoirs in Chonburi Province.
2. To examine the elements accumulated in aquatic plants and water found in study site water sources using synchrotron light-based analysis.

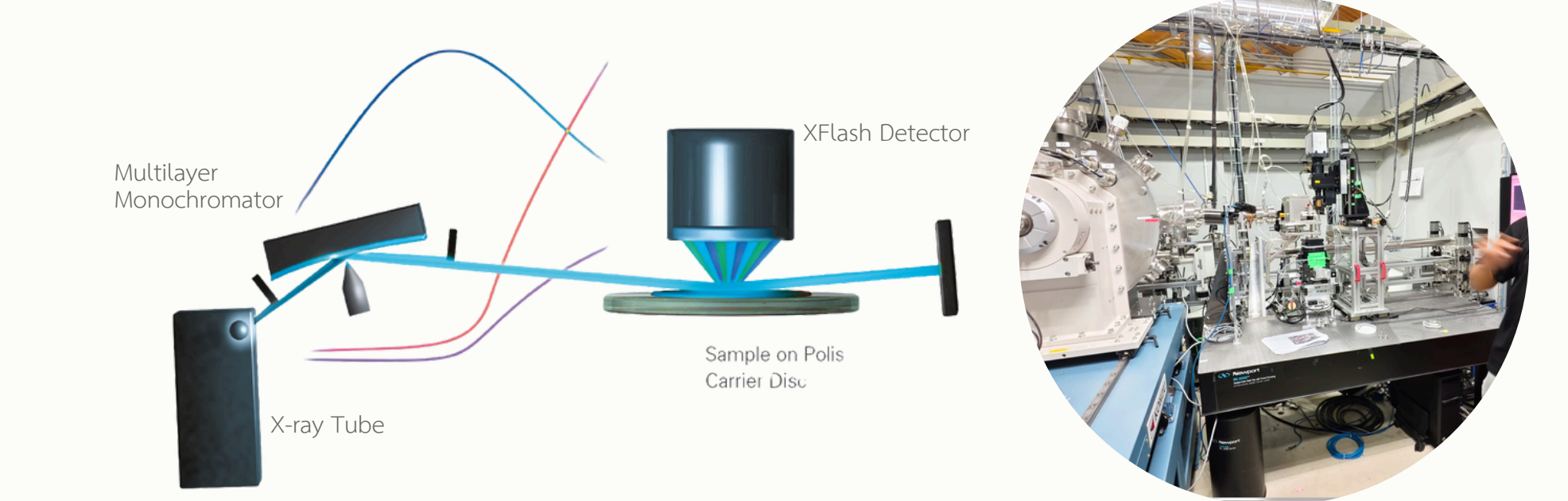
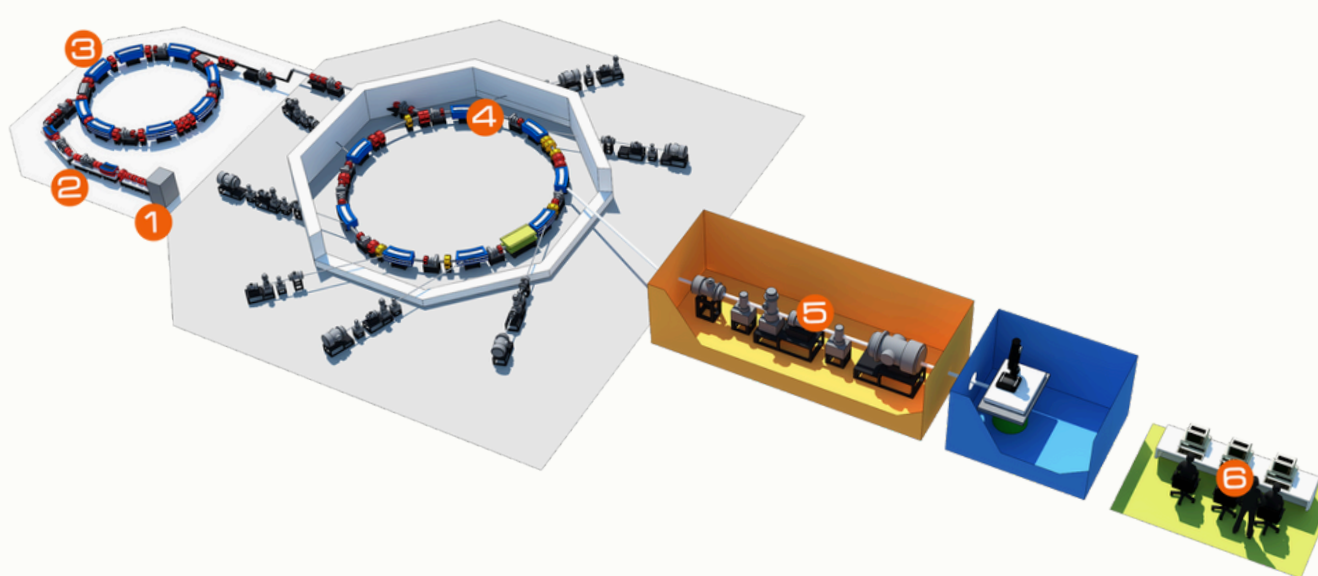


Methodology

Determination of sampling points



Synchrotron Light Research Institute (Public Organization)



Synchrotron Light

- Close to the speed of light.
- Use in a variety of applications

The TXRF (Total Reflection X-Ray Fluorescence) technique is one method used for analyzing elements and compounds in samples by utilizing the total reflection of X-rays.

Result

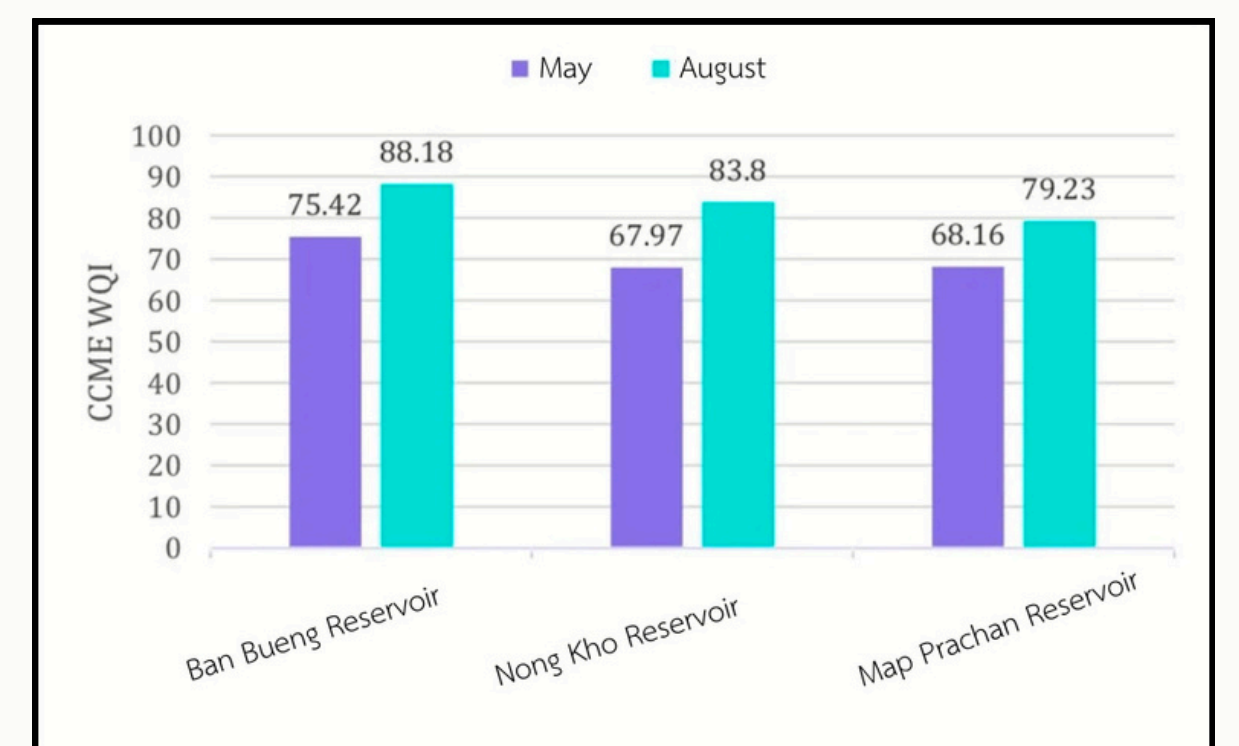
Water Quality Assessment

Parameters tested	unit	Results						
		Ban Bueng Reservoir		Nong Kho Reservoir		Map Phrachan Reservoir		
		A	B	A	B	A	B	
Temperature	°C	30.05	30.02	29.94	30.02	29.94	30.09	29.35
TDS	g/l	0.110	0.115	0.163	0.115	0.163	0.175	0.085
DO	mg/l	3.73	3.53	3.48	3.53	3.48	3.55	3.50
pH	-	7.29	8.05	7.38	8.05	7.38	7.36	7.53

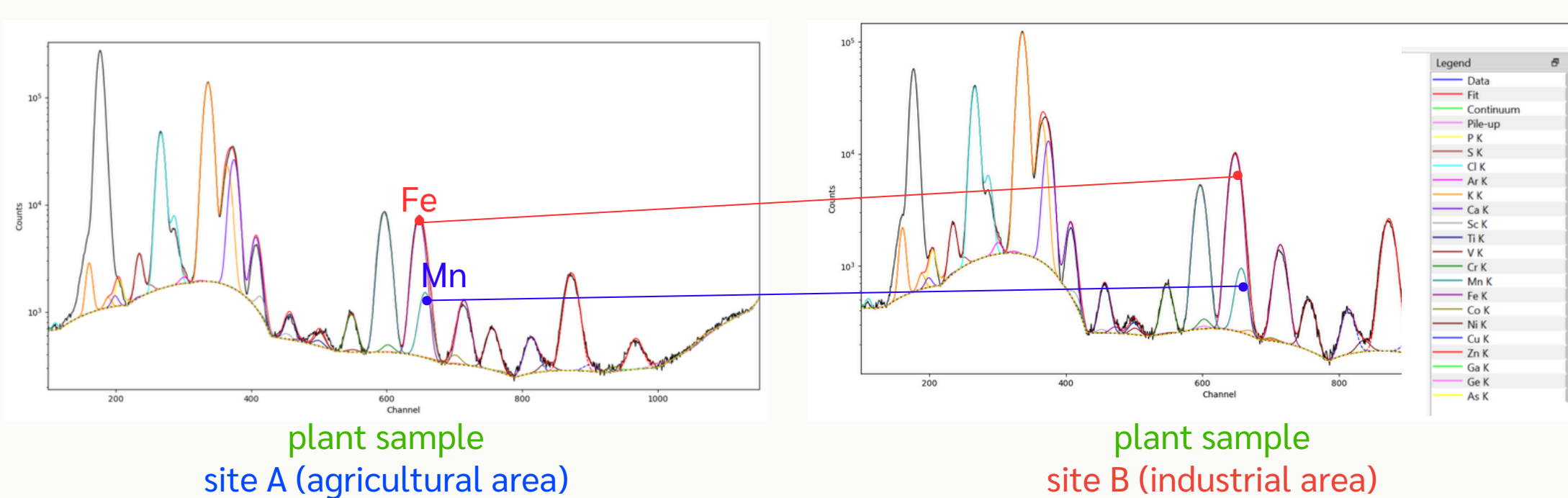
1st round, May

2nd round, August

CCME WQI



Comparison of spectrum samples from aquatic plants in the Ban Bueng reservoir, extending from site A and site B



At study site B, some heavy metals such as Fe and Mn were found to be higher due to rusting of iron structures or the release of industrial waste. Therefore, study sites near industrial areas show higher accumulation of heavy metals.

Conclusion

In May water quality from CCME WQI values ranging from 67.97 to 75.42. However, by August, water quality improved to a good level, with CCME WQI values ranging from 79.23 to 88.18. This indicates an improvement in water quality, Aquatic plants release oxygen into the water, which directly affects the dissolved oxygen (DO) levels. This aligns with the trend observed, where water quality in August was better than in May. Aquatic plants, such as water hyacinth, grow well during the rainy season. As a result, in August (the rainy season), the DO levels increased, and the water temperature decreased.

Acknowledgement

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