Investigation of the Spectra and Eight Analytical Parameters of the Tamsui River

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Introduction

We learned about GLOBE's through the school, and actually participated in it, and carried out field collection according to the nine water quality tests mentioned in GLOBE, and finally we also wanted to compare the satellite image with the field collection, how the measured satellite image light band will be related to the field collected data, and explore more ways to monitor water bodies.

Reserch purposes

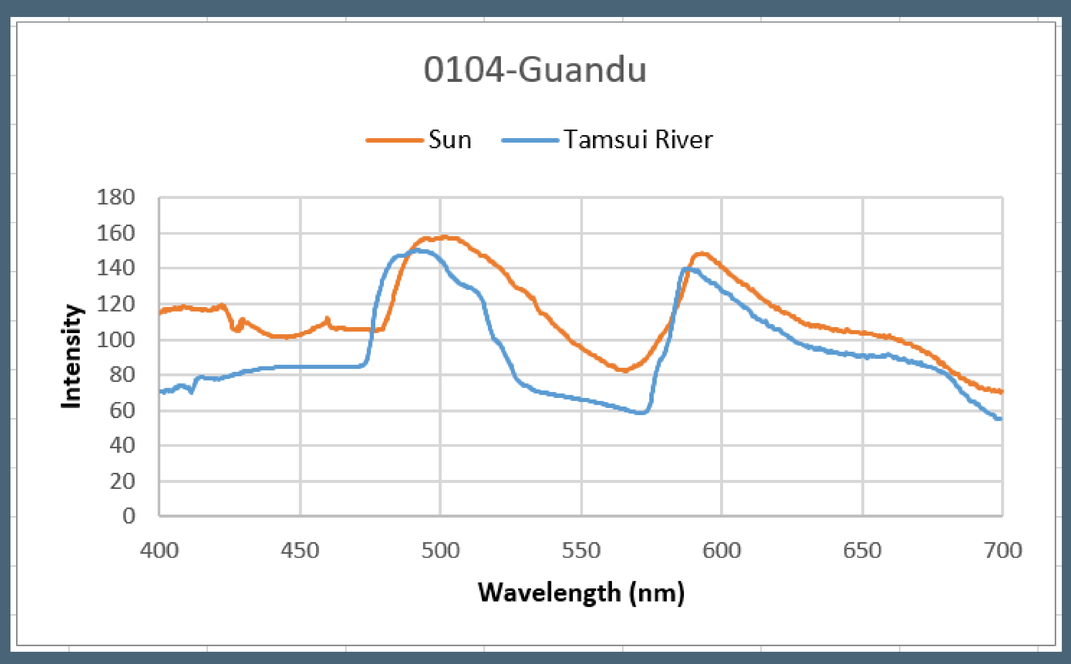
1.Identify the types and concentrations of water ions through on-site water collection.

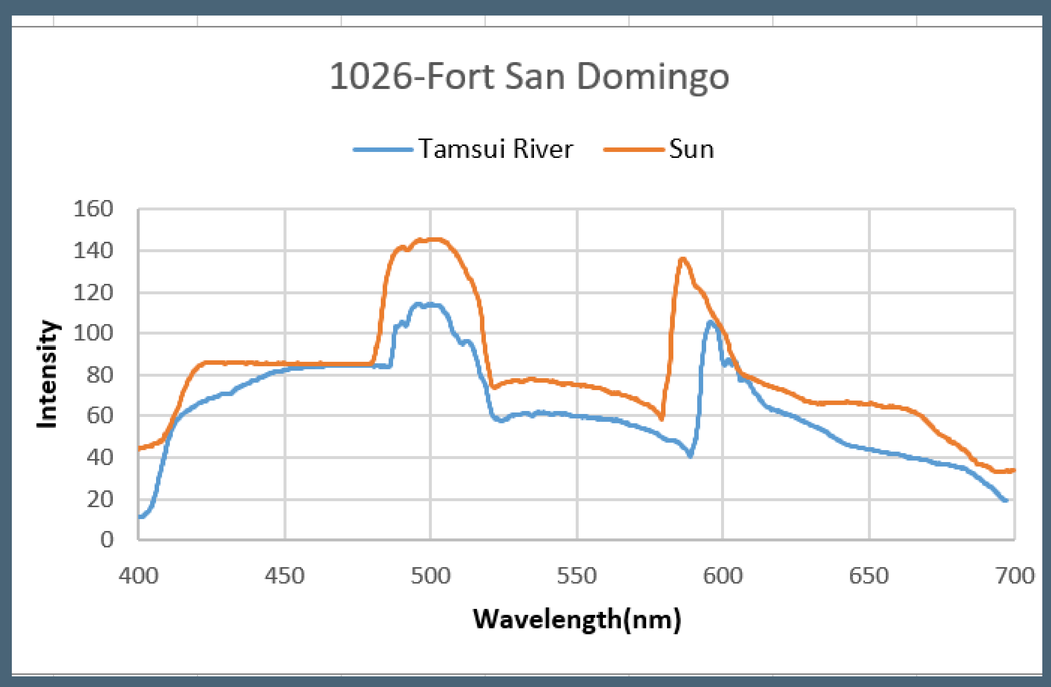
2.To explore whether the types of water ions in the surface water surface band. reflected by sunlight are related to on-site water extraction

Results

Sampling location	Sampling time	Analyze the project	Dissolved Oxygen	Alkalinity	Low phosphate	Conductivity
		unit	ppm	dkh	-	μS/cm
Fort San Domingo	2025.01.04 Start:12:04 End:14:00	numerical value	5.8	88× 0.056	0.2	8~9
Guandu Nature Park	2025.01.04 Start:16:40 End:17:35	numerical value	5.6	80× 0.056	0	12~69
Fort San Domingo	2024.12.21 Start:16:35 End:17:52	numerical value	6	128× 0.056	0.4	0.03187

Sampling location	Sampling time	Analyze the project	pH	Water Temperature	Water Transparency	Nitrates
		unit	-	℃	Jackson	ppm
Fort San Domingo	2025.01.04 Start:12:04 End:14:00	numerical value	8.5	20.7	0	0
Guandu Nature Park	2025.01.04 Start:16:40 End:17:35	numerical value	21.5	21.5	70	0
Fort San Domingo	2024.12.21 Start:16:35 End:17:52	numerical value	8.5	-	0	0





Conclusion and Suggestions

1. When we use a simple spectrometer to photograph sunlight, the distribution of the sunlight spectrum is significantly different from the theoretical value. It may be more obvious when shooting sunlight reflected by water.

2. We tested the pH value of the river water to be alkaline, which showed that although the water body we collected was located in the river area, it was affected by the composition of seawater.

3. In the future, if we can find a specific band for ion absorption on the surface of the river, we can also allow satellites to monitor specific ions through the improved operation technology of NDWI.

4. A simple spectrometer comparing the spectral spectrum of the sun and the surface of the river showed that the intensity between 500-570nm was significantly reduced. In the future, it will be possible to continue to compare the substances that will be absorbed in this band.