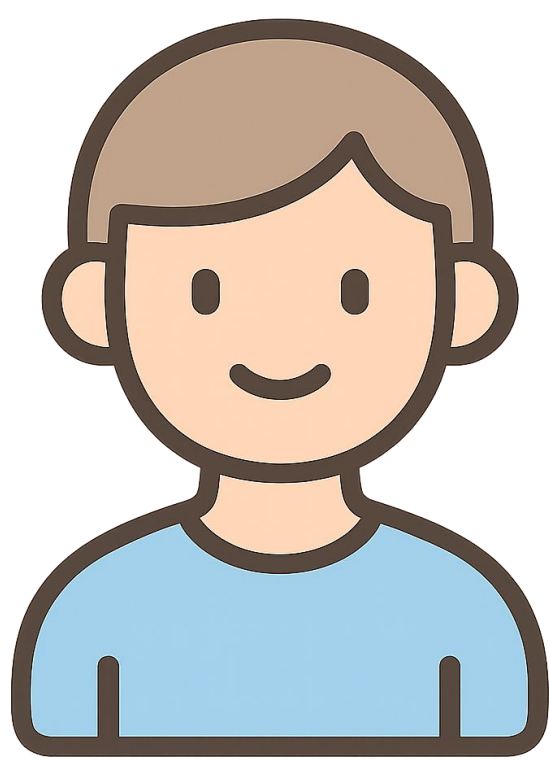


Seg the HAB



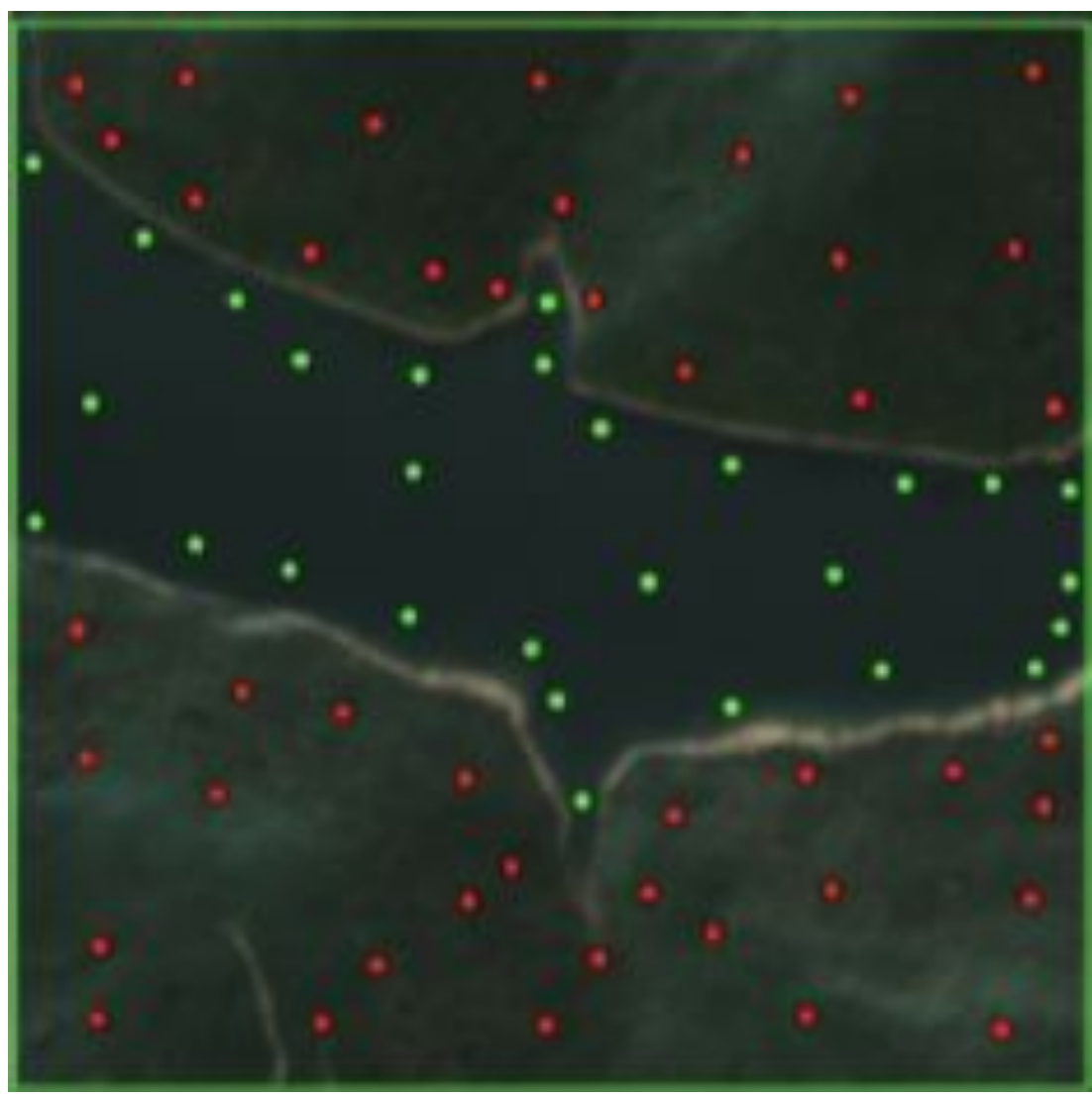
Language-Guided Geospatial Algae Bloom Reasoning and Segmentation

Step1: Semi-Supervised Curation Loop



Human

Users provide **positive** points on bloom areas, **negative** points on background regions, and a region-of-interest (ROI) box to guide the model's attention.

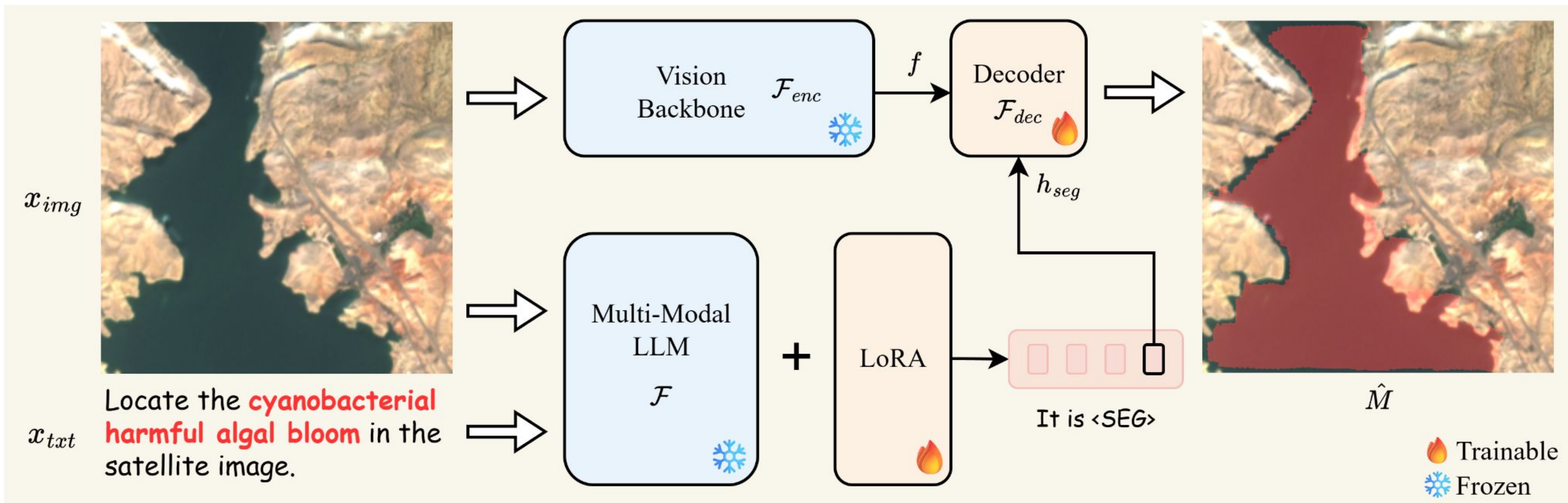


Input Scene



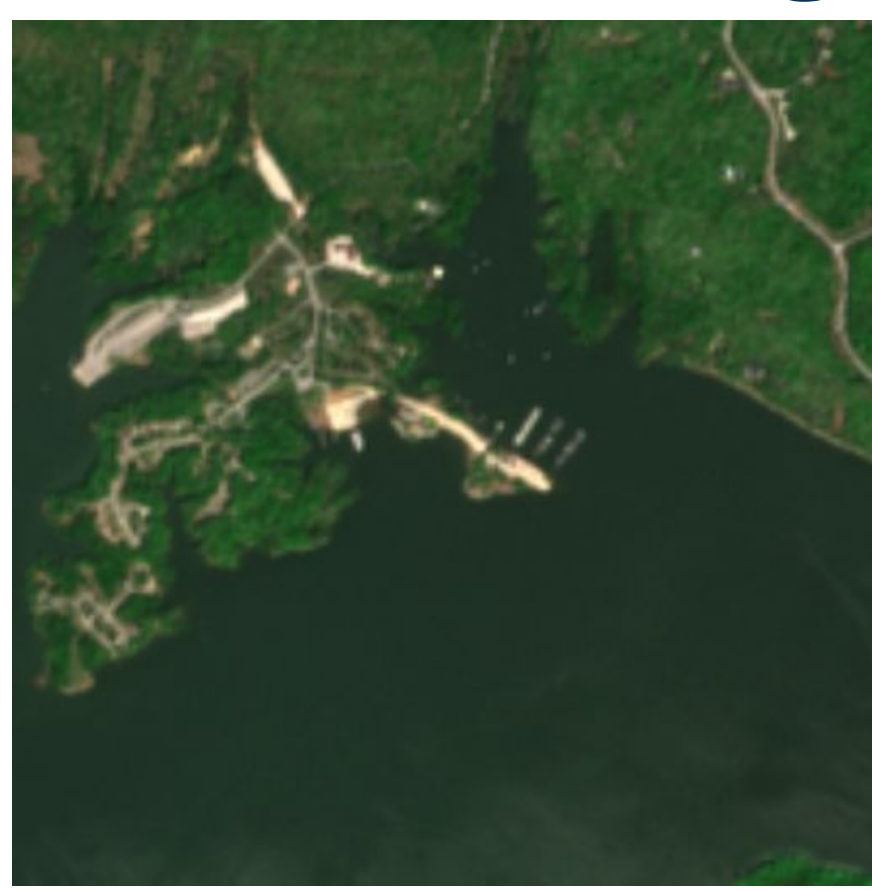
Output Scene

Step2: ALGOS



Instruction-Image-Answer Triplet

Satellite Image



Query Prompt

Analyze the provided satellite image of algae-specific conditions. Determine the severity level, where:
1 = Very low, 2 = Low, 3 = Moderate, 4 = High, 5 = Very high.
Output only a single digit from 1-5 with no other text.
Example output: 3

Query Prompt

Locate the cyanobacterial algal bloom in the satellite image.

Results



Model	cIoU	gIoU
LISAT	0.1083 $\pm$ 0.0124	0.1052 $\pm$ 0.0132
LISA 7B	0.1373 $\pm$ 0.0182	0.1274 $\pm$ 0.0160
ALGOS	0.6493 $\pm$ 0.0301	0.5969 $\pm$ 0.0268



Model	MSE	RMSE	MAE
LLaVA-7B	3.868	1.967	1.587
ALGOS	2.984	1.727	1.365

