



# Phytoplankton as a bioindicator for pollution detection



## Abstract

Phytoplankton, contributing 80% of Earth's oxygen, confronts threats from water pollution, impacting their diversity and vitality. This project aims to amalgamate data science and bioinformatics to innovate a pollution detection system using phytoplankton as bioindicators. Leveraging remote sensing and statistical analyses, it seeks to identify pollution-induced changes in phytoplankton and validate impacts through field investigations.

## Introduction

Phytoplankton, crucial for generating Earth's oxygen, faces risks from water pollution, endangering their diversity and ability to survive in changing environments. This project aims to merge data science and bioinformatics to develop a pollution detection system using phytoplankton as pollution indicators. Alongside remote sensing, we'll employ advanced statistical analyses, such as regression and principal component analyses, to detect subtle changes in phytoplankton communities reflecting pollution impacts. Combining these methods seeks to enhance our accuracy in detecting pollution effects in phytoplankton populations. Additionally, field investigations will validate pollution impacts identified through data analysis. This multifaceted approach aims to provide a comprehensive framework for comprehending the effects of pollution on aquatic ecosystems, highlighting the essential role of phytoplankton as indicators in protecting these critical environments.



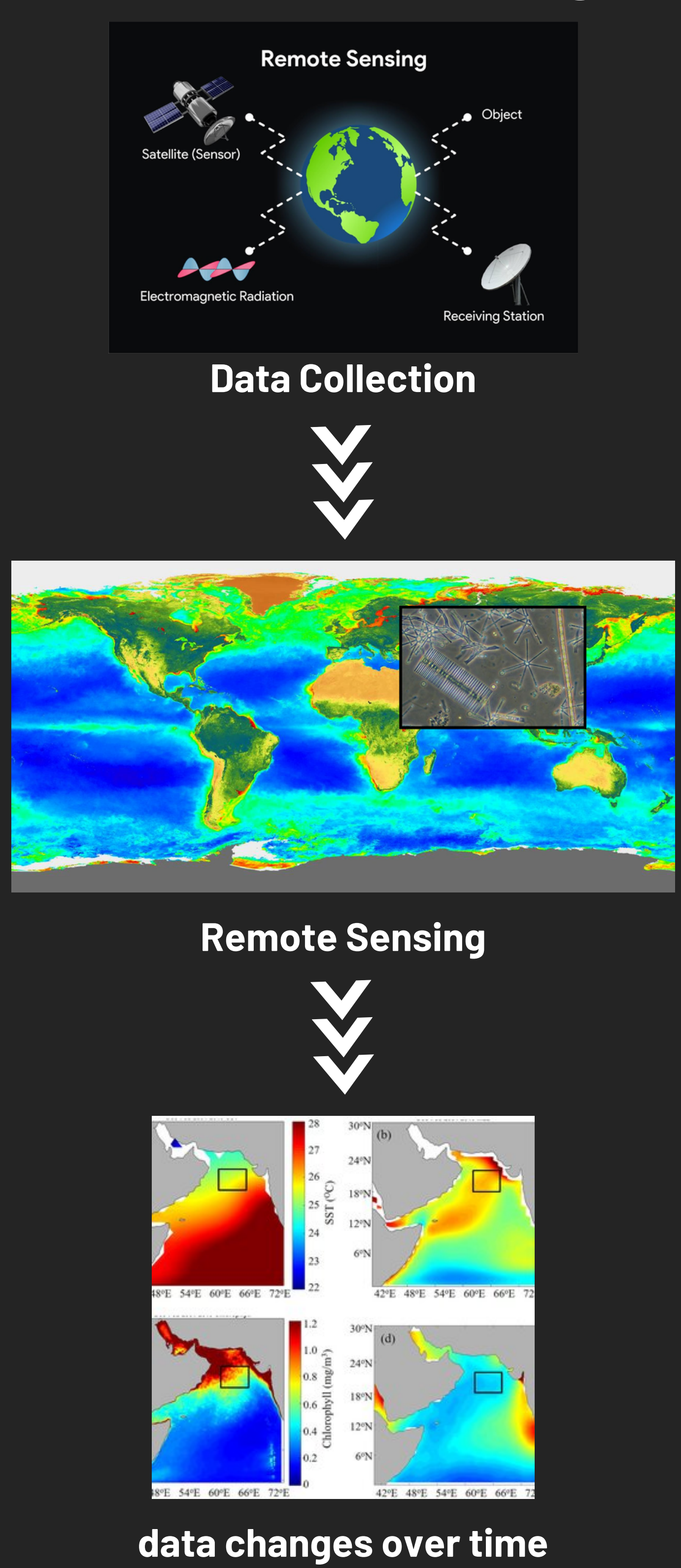
## Goals



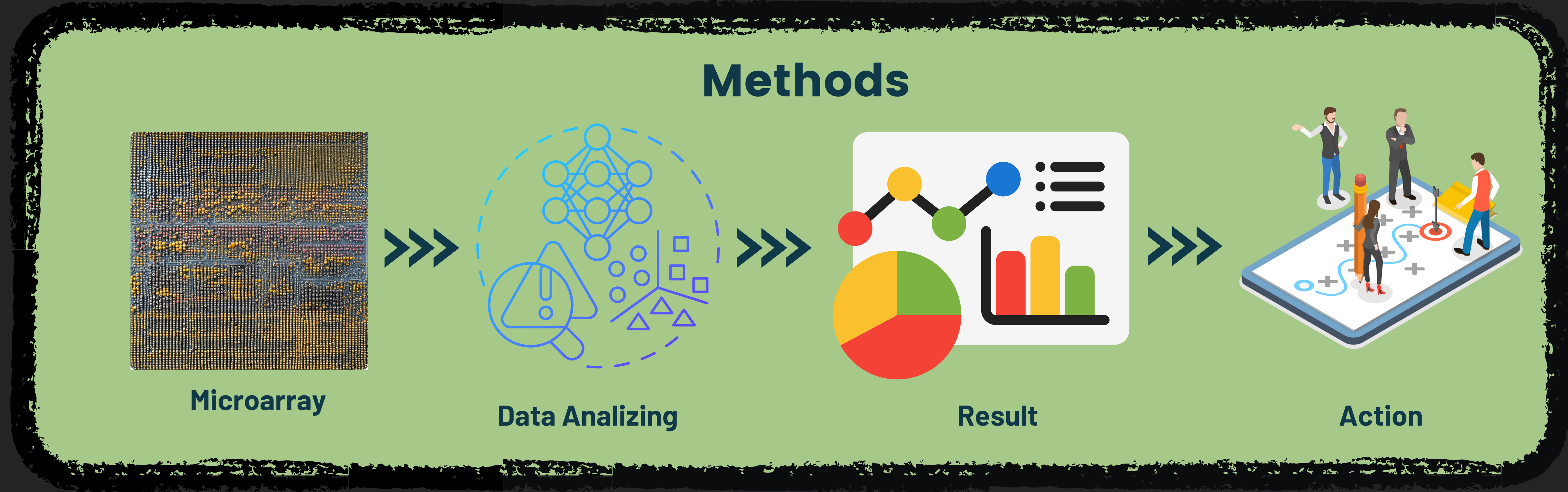
- Integrate data science and bioinformatics for a pollution detection system using phytoplankton.
- Utilize remote sensing and a microarray database for phytoplankton analysis.
- Validate pollution impacts through field investigations.

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## Data Sourcing



## Methods



## Result

The analysis findings will determine whether fluctuations in phytoplankton quantities within a particular region signify water pollution. If so, immediate actions can be taken to initiate cleanup operations in the affected area, thus ensuring the preservation of ecosystem stability in that location.

