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Using Micro Satellites to Assess the Impact of Algae Growth on Global Warming

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USING MICRO SATELLITES TO ASSESS THE IMPACT OF ALGAE GROWTH ON GLOBAL WARMING

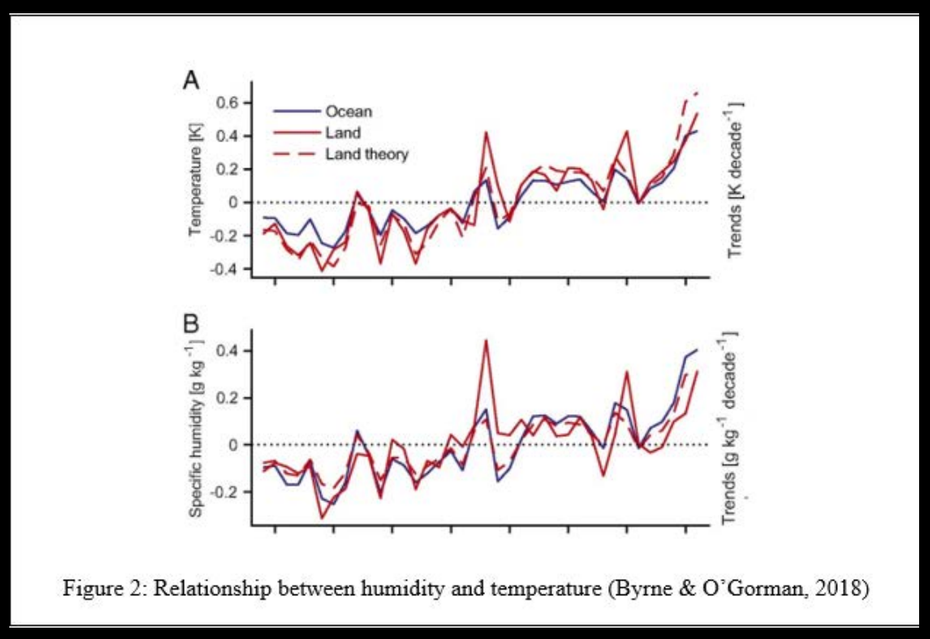


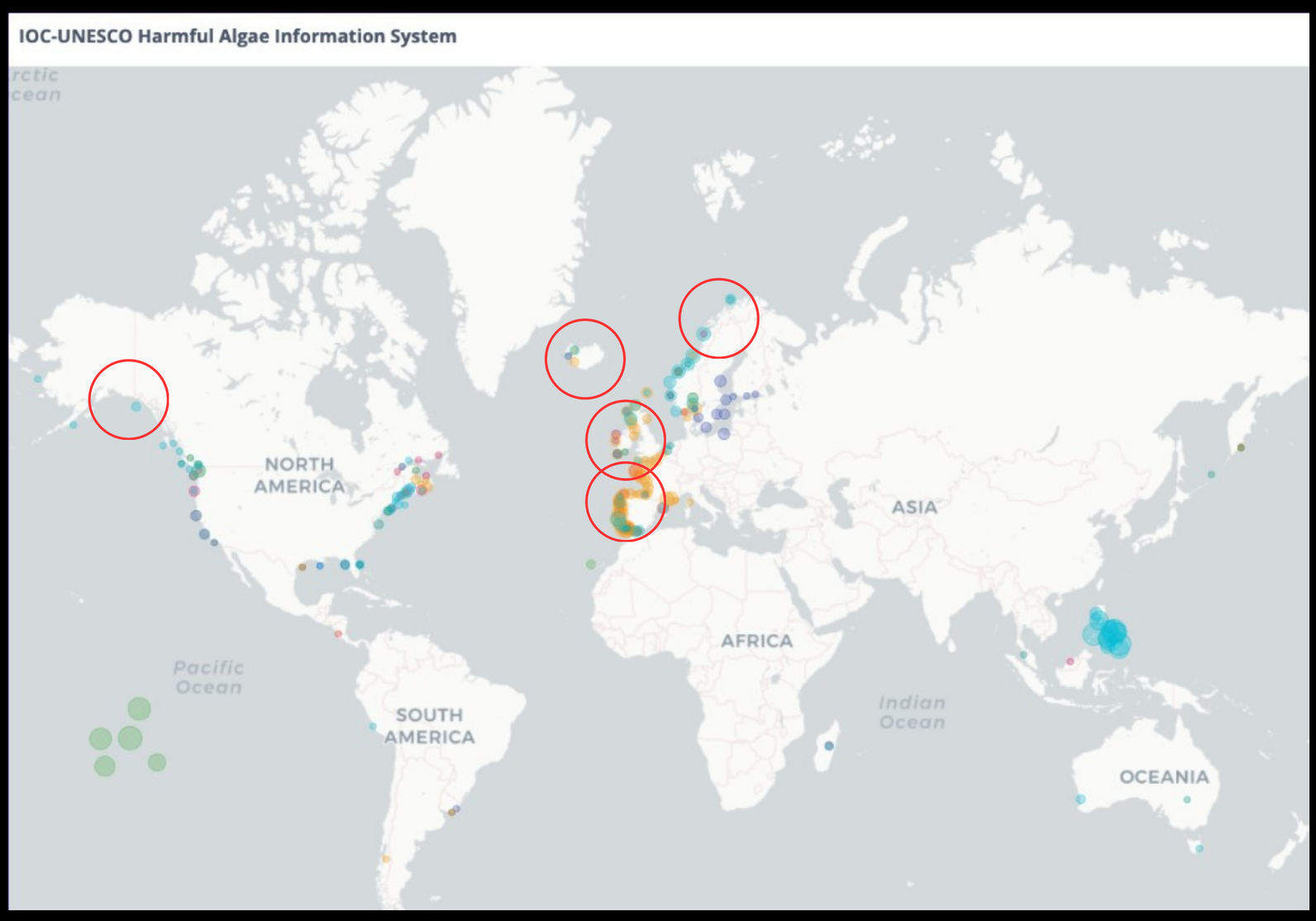
Figure 2: Relationship between humidity and temperature (Byrne & O'Gorman, 2018)

HUMIDITY AND TEMPERATURE ARE POSITIVELY CORELATED

ALGAL BLOOM

Algal bloom is made up of freshwater algae called chlamydomonas nivalis. These genus of algae are strong enough to live on the snowflakes that make up ice fields in polar regions.

Polar ice caps that consist of algal blooms were found to melt 17% more than those without algal blooms. The melting of the ice caps also created a more suitable environment for the algae to grow, thus creating a loop that heavily increased the melting rate of the ice caps.

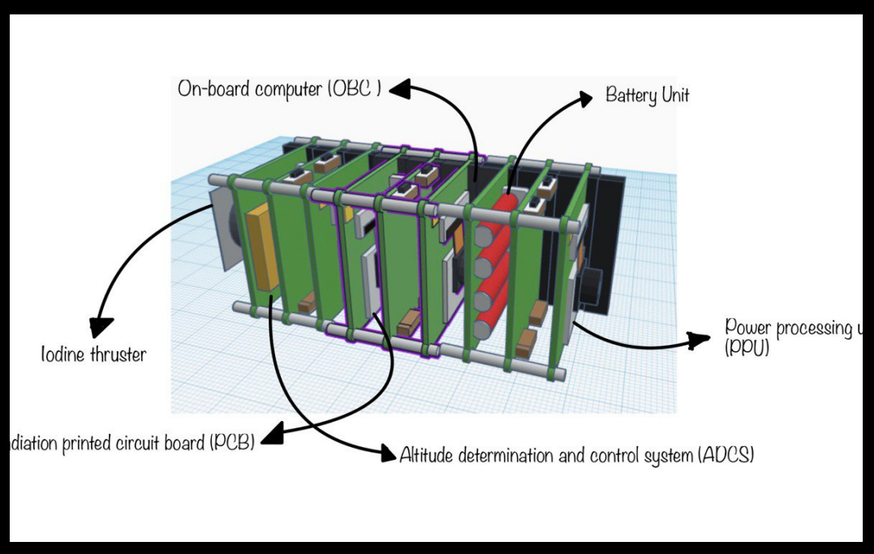


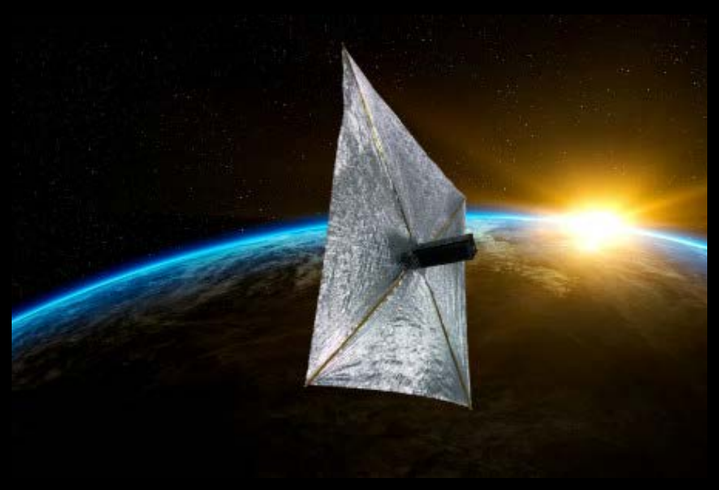
Circled areas are areas in the world with the biggest mass of polar ice caps that have algal blooms. UNESCO has recognised that the algae is harmful however, no continuous monitoring is being done on the melting rates of the polar ice caps that contain algal blooms

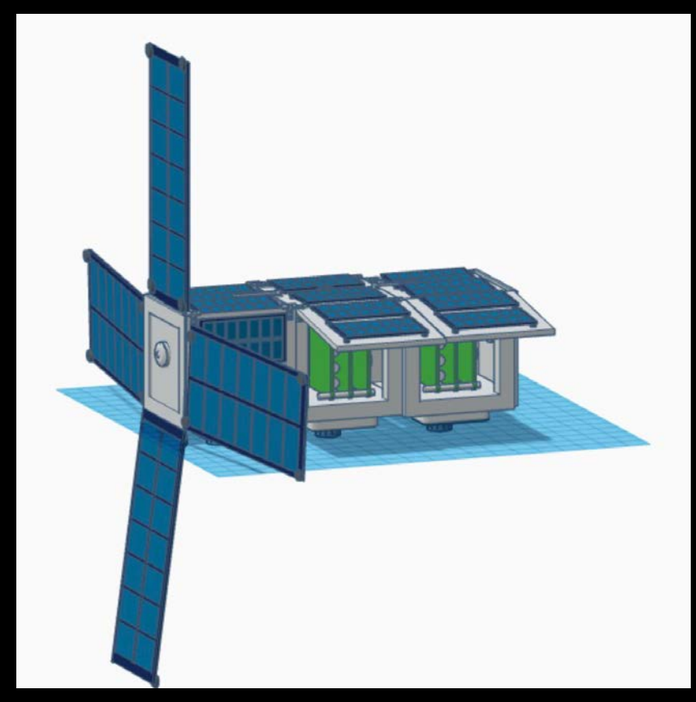
MORPHEUS

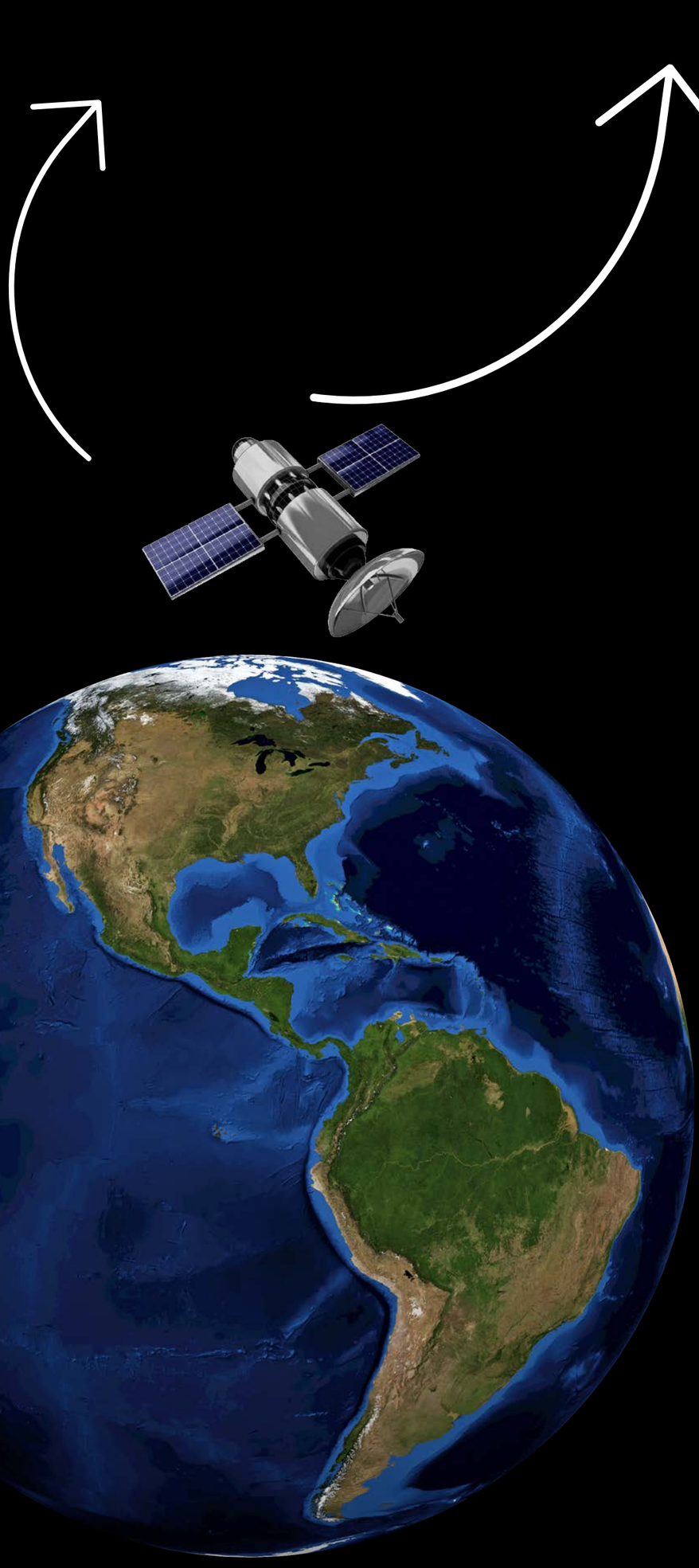
USING MICRO SATELLITES TO ASSESS THE IMPACT OF ALGAE GROWTH ON GLOBAL WARMING

Satellite Components



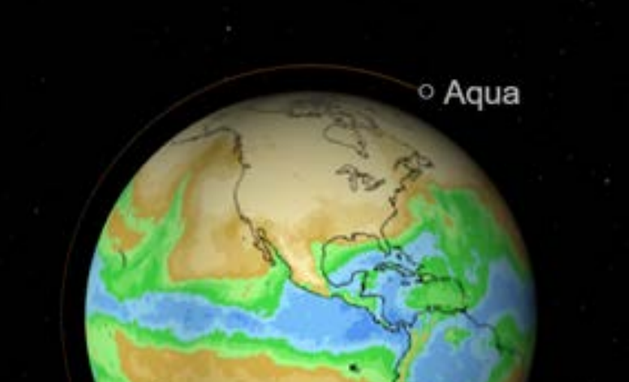






Key Components of satellite

- Ion Thruster
  - Fuel efficiency over 90% compared to 35% fuel efficiency of chemical propulsion
- Uses MODIS, AIRS and CERES to collect data on algae growth and humidity
- Ridesharing space missions to reduce cost of implementation
- ARTICA de-orbiting systems to reduce space debris
- Part of Morpheus constellation to provide real time and accurate data
- Use AI to visualise data
- Lifespan of 3 to 5 years per satellite
- ARTICA Deorbiting System



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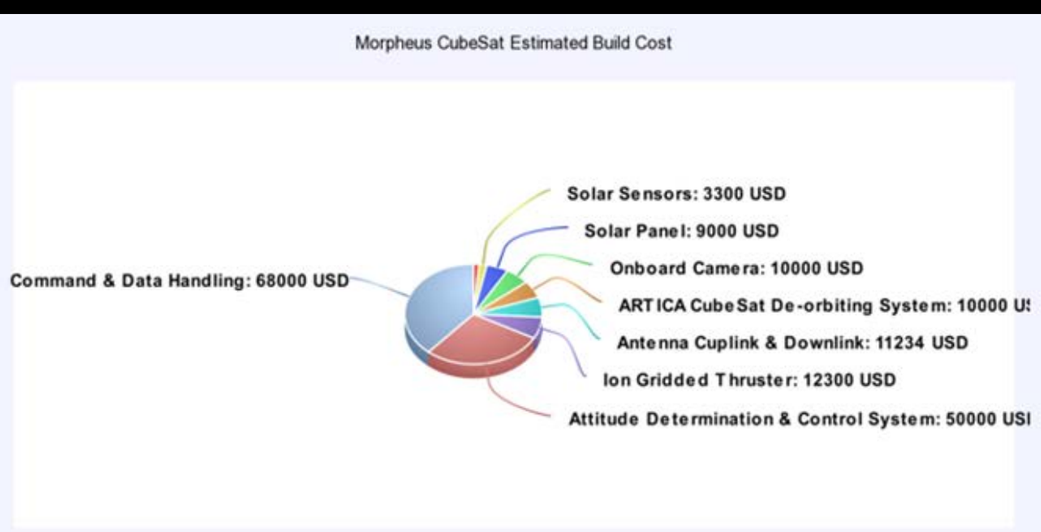
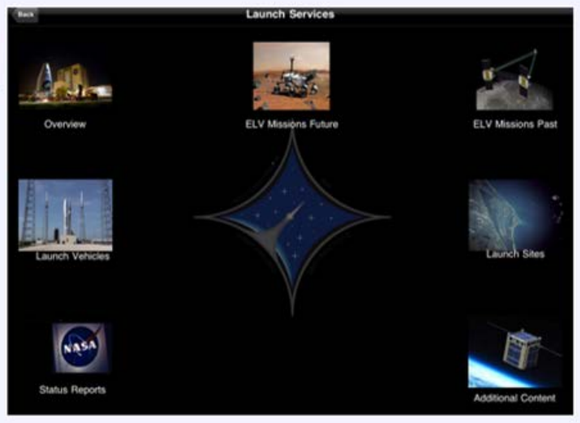
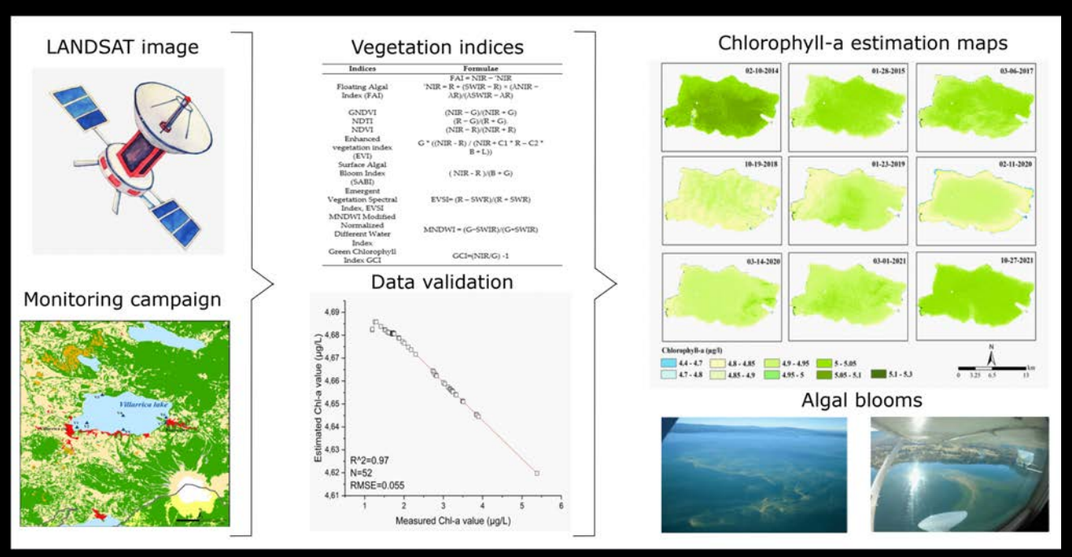
Financial Breakdown



Total Estimated Built Cost
= $186, 134.

Estimated launch cost USD $600 000





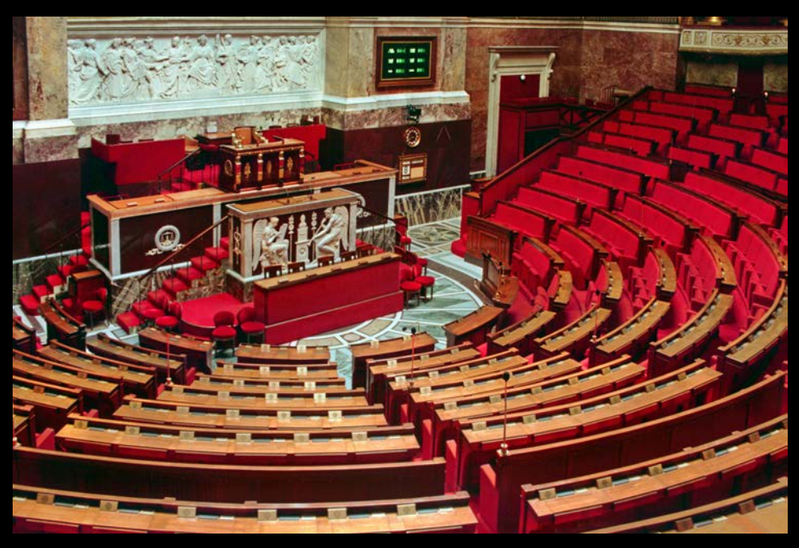
Environment Agency

WORLDWIDE ENVIRONMENTAL AGENCIES

ALGAE BLOOM DATA

Data gathered from microsatellites can inform policymakers and environmental agencies about the impact of algae on global warming. It can guide the development of strategies to mitigate or harness the potential benefits of algae growth.

To further improve our satellite, we can investigate other more environmentally friendly launching methods. Moreover, we can carry out research on how we can gather higher resolution images despite the small size of the CubeSat so that we can better evaluate the problem. Finally, we could work on accommodating other aims such as evaluating the rising sea level or evaluating the precipitation levels into Morpheus so as to increase the efficiency of Morpheus.



GOVERNMENT/POLICYMAKERS