PARANAQUE SCIENCE HIGH SCHOOL

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The Philippine Low-Earth Ozone and Atmospheric Detection Satellite (LOADS)

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The Problem

AIR POLLUTION

In 2018, the World Health Organization has found 45.3 air pollution-related deaths for every 100,000 people in the Philippines. Greenpeace estimated the number of air pollution-related deaths for this year at about 11,000 to 27,000.

In 2021, IQAir ranked the Philippines as 64th among 118 measured countries in air quality, with an average PM2.5 concentration of 3.1 times the WHO's annual air quality guideline value.

The Problem

OZONE LAYER DEPLETION

The ozone layer protects humans and living things from harmful UV radiation. Its depletion, which will increase UV radiation levels at tropospheric zones, can affect growth and ecosystems.

Despite continuous decrease of the consumption of ozone-depleting substance and hydrochlorofluorocarbon in the Philippines, it is still of note that the presence of these may still contribute to the depletion of the ozone layer.

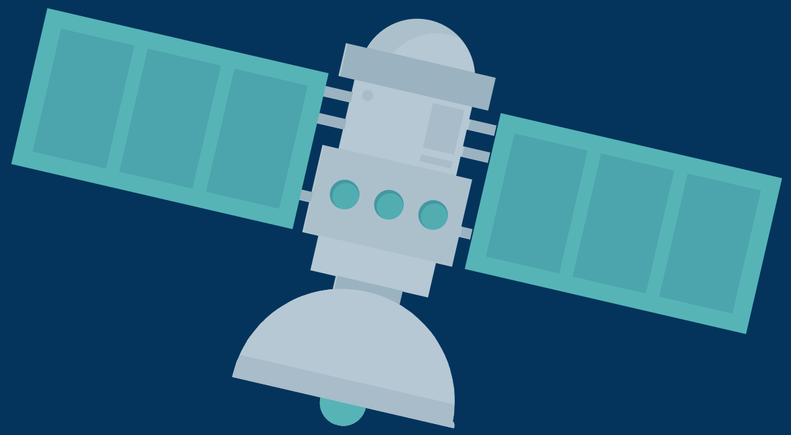
OBJECTIVES

Continuous monitoring of the ozone layer above the Philippines

Identifying areas of concern for air pollution throughout the country

Continuous monitoring of air pollutants and particulate matter in the atmospheric area encompassing the Philippines

IMPORTANCE OF THE MISSION



Ever since, the Philippines has been focused on phasing out the supposed last batch of ozone-depleting substances (ODS) – the hydrochlorofluorocarbons or HCFCs – ahead of the 27-year schedule from 2013 to 2040.

- With the help of continuous air pollutant and particulate matter detection, we could immediately assess chlorofluorocarbons or even other factors that have an impact to the ozone, which is crucial to continuous monitoring of its status.
- We could specify areas in the Philippines at greatest risks of ozone layer depletion & those with highest concentrations of air pollution, and tabulate them with corresponding chemical levels.

KEY FEATURES OF THE MISSION

Synthetic aperture radar

This is for efficient employment of expanding the flexibility of monitoring periods since it is self-illuminating and its wavelength can see through clouds, fog, smog, darkness, and smoke.

Multispectral spectrophotometer

This will allow for the mission to identify various aerosols, particulate matter, etc. within the atmosphere in various spectral ranges, as has been done in various satellites, such as Terra & Aura (through its Moderate Resolution Imaging Spectroradiometer), the pioneering Nimbus, EnviSat, and MetOp, among others.

Middle field camera

As it had been used in the previous Diwata missions, the middle field camera will allow for the mission to geolocate or pinpoint the locations in the Philippines where the images were captured and detected.

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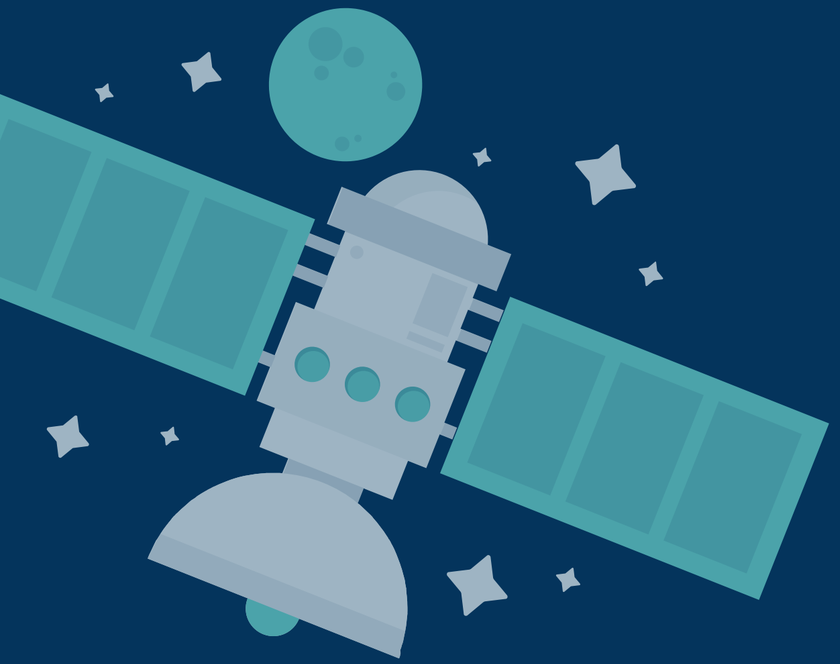

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