Forecasting The future : Satellites in WEATHER PREDICTION

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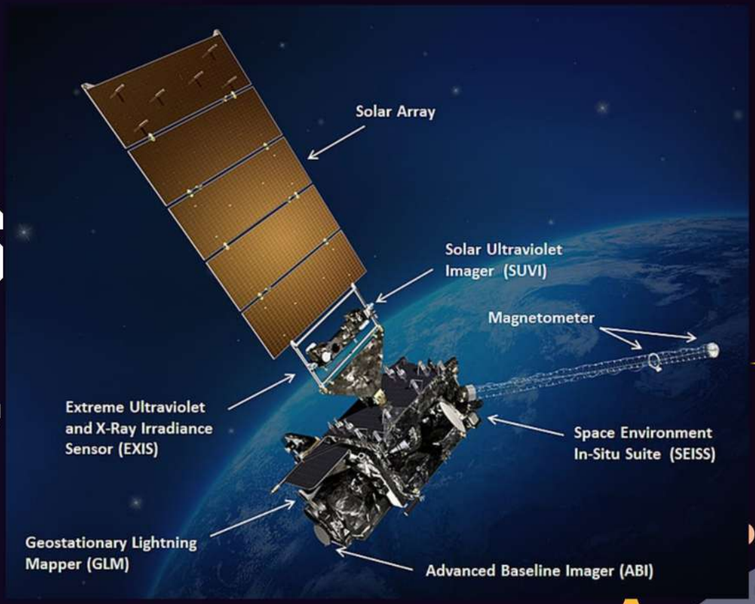
OBJECTIVE:

TO CREATE A SYSTEM THAT USES NASA DATA TO OBSERVE, ANALYZE PREDICT WEATHER



INTRODUCTION

- MY PROJECT FOCUSES ON HOW SATELLITES CAN BE USED TO OBSERVE THE EARTH FROM SPACE AND PREDICT WEATHER CHANGES. SATELLITES HELP US COLLECT INFORMATION ABOUT CLOUDS, STORMS, TEMPERATURE, AND WIND PATTERNS. BY STUDYING THIS DATA, WE CAN MAKE ACCURATE FORECASTS AND GIVE EARLY WARNINGS FOR DISASTERS LIKE FLOODS AND CYCLONES. THIS PROJECT EXPLORES HOW SPACE TECHNOLOGY CAN MAKE OUR WORLD SAFER AND SMARTER.

OUR PLANS

- THESE SATELLITE WILL CAPTURE IMAGES OF SWIRLING CLOUDS, CHANGING OCEAN COLORS, AND SHIFTING WINDS. USING SMART SENSORS, THEY WILL COLLECT DATA ABOUT TEMPERATURE, HUMIDITY, AND STORMS AS THEY FORM.
- THE INFORMATION WILL THEN TRAVEL TO EARTH, WHERE COMPUTERS WILL TURN IT INTO WEATHER STORIES — SHOWING WHERE RAIN WILL FALL, WHEN STORMS MAY GROW, AND HOW THE CLIMATE IS CHANGING.
- MY PLAN COMBINES SPACE TECHNOLOGY WITH CREATIVITY TO MAKE WEATHER FORECASTING FASTER, SMARTER, AND MORE HELPFUL FOR EVERYONE — PROTECTING LIVES BEFORE THE STORM EVEN BEGIN

BENEFITS

- **SEVERE WEATHER WARNINGS: NASA'S GOES SATELLITES PROVIDE CONSTANT, REAL-TIME DATA FOR PREDICTING AND TRACKING SEVERE WEATHER LIKE THUNDERSTORMS, HURRICANES, AND WILDFIRES, ALLOWING FOR CRITICAL PUBLIC SAFETY ALERTS.**
- **DISASTER MANAGEMENT: SATELLITE DATA AIDS IN THE MANAGEMENT OF NATURAL DISASTERS BY PROVIDING DETAILED INSIGHTS INTO HAZARDOUS CONDITIONS AND THEIR EFFECTS, SUPPORTING RESPONSE EFFORTS AND IMPROVING RESOURCE ALLOCATION**
- **AIR QUALITY MONITORING: NASA SATELLITES CONTRIBUTE TO MONITORING AIR QUALITY, ENABLING PUBLIC HEALTH ALERTS TO ADVISE PEOPLE ON LIMITING EXPOSURE TO POLLUTANTS**

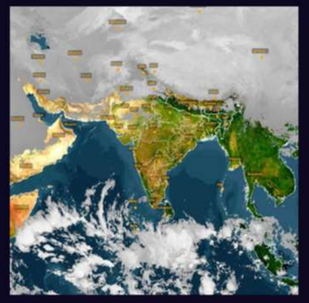
METHODOLOGY

1

Data Collection

NASA’s Earth-observing satellites (like GOES, Aqua, Terra, and Suomi NPP) collect data on temperature, humidity, cloud cover, wind speed, and ocean conditions.

Sensors such as radiometers and spectrometers capture both visible and infrared images of Earth’s atmosphere.



2

Data Transmission

The collected information is transmitted to ground stations for processing.

These stations receive real-time satellite signals and store large volumes of atmospheric data

3

Data Processing and Analysis

Scientists use computer models and algorithms to analyze satellite data.

They detect weather patterns, identify storm systems, and estimate rainfall or temperature variations

4

Forecast Generation and dissemination of information

Based on analyzed data, meteorologists create accurate weather forecasts and early warnings for extreme weather events.

The information is integrated with other global data sources for higher accuracy and then shared to government agencies

FUTURE PLANS

OUR FUTURE PLANS INVOLVE ENHANCING THE SATELLITE'S WEATHER FORECASTING CAPABILITIES BY INTEGRATING ADVANCED AI AND MACHINE LEARNING TO PROCESS ATMOSPHERIC DATA MORE EFFICIENTLY FOR SUPERIOR PREDICTIVE MODELING. WE AIM TO DEVELOP PERSONALIZED, HYPERLOCAL FORECASTS BY COMBINING SATELLITE DATA WITH GROUND-BASED SENSOR NETWORKS AND IOT DEVICES TO BETTER PREDICT LOCALIZED SEVERE WEATHER. LOOKING AHEAD, OUR LONG-TERM VISION INCLUDES LEVERAGING THIS TECHNOLOGY FOR BROADER APPLICATIONS IN DISASTER MANAGEMENT AND AGRICULTURE, ULTIMATELY CONTRIBUTING TO A MORE RESILIENT AND SUSTAINABLE FUTURE FOR COMMUNITIES WORLDWIDE


Thank
You