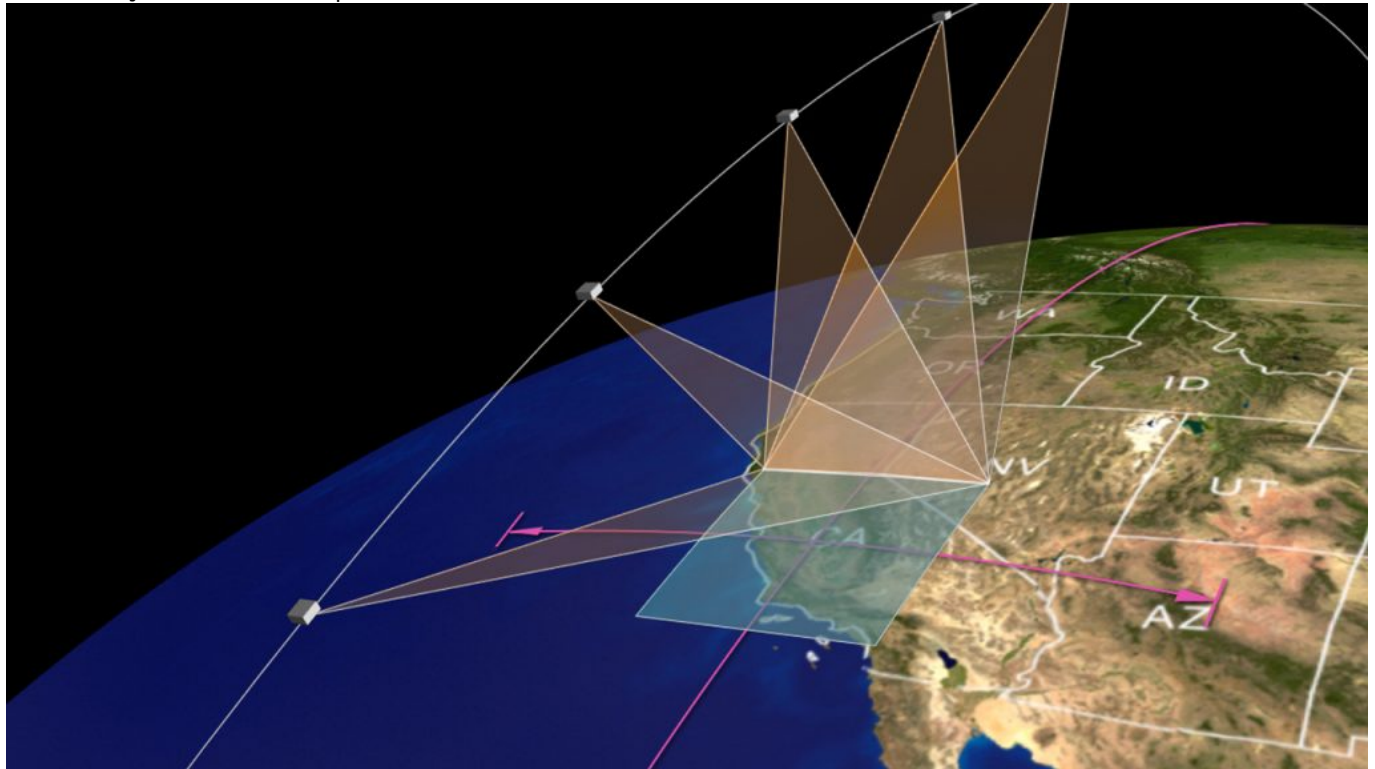


# Multi-Angle Imager for Aerosols missions

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**Context-** The Multi-Angle Imager for Aerosols (MAIA) missions will be built and launched by NASA and the Italian Space Agency ASI (Agenzia Spaziale Italiana).

## Key Highlights

- The health effects of air pollution in the world's most populous cities will be studied on a joint mission by the two national space agencies.
- NASA claims that MAIA is the agency's first mission with the primary objective of improving public health.
- A satellite mission's development will be directly supervised by epidemiologists and public health researchers.
- The MAIA observatory, which is set to send off before the finish of 2024 will comprise of the PLATiNO-2 satellite, which will be given by ASI, and a science instrument that will be worked at NASA's Fly Drive Research center (JPL).
- Over the course of the three-year mission, MAIA will concentrate on eleven primary target areas, including major global urban centers: Beijing, Johannesburg, New Delhi, Taipei, Taiwan, Addis Ababa, Ethiopia, Barcelona, Spain, Los Angeles, Atlanta, Boston, Rome; and Jerusalem.

## Multi-Angle Imager for Aerosols (MAIA)

- The Multi-Angle Imager for Aerosols (MAIA) is an instrument that is currently being

developed to support an investigation that aims to comprehend the connections between various kinds of airborne particles and human health.

- The twin-camera MAIA instrument will make the radiometric and polarimetric measurements that are necessary to characterize the sizes, compositions, and quantities of particulate matter that are present in air pollution.
- In order to better comprehend the connections that exist between aerosol pollutants and health issues such as adverse birth outcomes, cardiovascular and respiratory diseases, and premature deaths, researchers will combine MAIA measurements with population health records as part of the MAIA investigation.
- Ground-level particulate matter (PM) abundance and characteristics are derived from the MAIA instrument's measurements of the radiance and polarization of sunlight scattered by atmospheric aerosols.
- The MAIA instrument is being developed by the Jet Propulsion Laboratory, California Institute of Technology, and the National Aeronautics and Space Administration (NASA) under a contract.
- It includes a pushbroom spectropolarimetric camera on a two-axis gimbal for multi angle viewing, frequent target revisits, and inflight calibration.
- NASA's Earth System Science Pathfinder Program selected MAIA as a Venture-class investigation from the third Earth Venture Instrument competition.
- The observatory, ground-based sensors, and atmospheric models will all be used in the MAIA mission's data collection and analysis.
- A "pointable spectropolarimetric camera" that takes pictures from different angles in the ultraviolet, visible, near-infrared, and shortwave infrared parts of the electromagnetic spectrum will be housed in the science instrument built by JPL.

## Significance

- Although the toxicity of various particle mixtures is less well-known, breathing in air pollution particles has been linked to numerous health issues.
- MAIA, in conjunction with colleagues in Italy and around the world, will assist in comprehending how airborne particle pollution threatens health and may provide insights that will assist public health officials and other policymakers in making decisions.
- The MAIA science team will investigate airborne particle size, distribution, composition, and abundance using this data.
- Additionally, they will investigate the connections between these variables and the patterns and prevalence of health issues brought on by poor air quality.
- In the long history of cooperation between NASA and ASI, MAIA represents the very best that the two organizations have to offer in terms of expertise, knowledge, and Earth-observation technology.
- This collaborative mission's science will benefit humanity for many years to come.