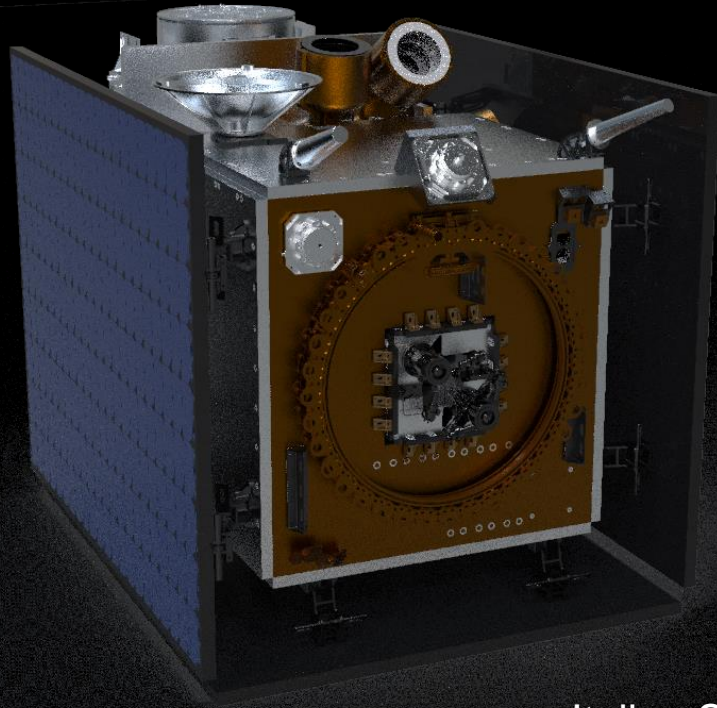




Jet Propulsion Laboratory
California Institute of Technology



Italian Space Agency

MAIA Updates

Abbey Nastan

MAIA Deputy Program Applications Lead

HAQ annual meeting, March 2023

MAIA was selected in March 2016 as part of **NASA's Earth Venture Instrument** program.

MAIA's science objectives are to study the effects of various **types** of particulate matter (PM) air pollution on:

- ✓ Acute illness and premature death
- ✓ Adverse birth outcomes
- ✓ Chronic disease

- ✓ Launch: **Late 2024**
- ✓ Mission length: 3 years*
- ✓ Instrument: 14 spectral bands, multi-angular, polarimetric
- ✓ Targeted: 10+ urban areas where health studies will be done*

*baseline requirements

Mission update #1: **The MAIA instrument was delivered** (AKA finished) on October 31, 2022.



Camera assembly



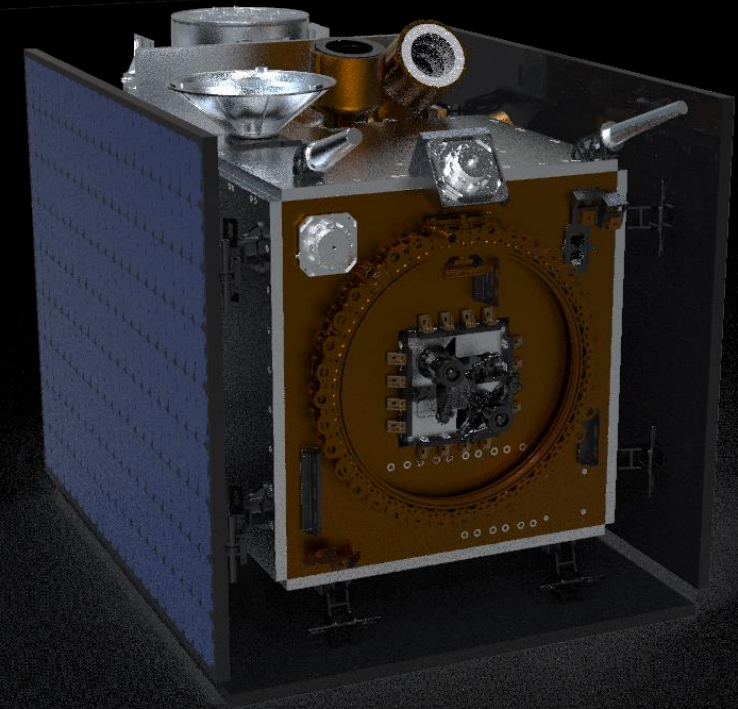
Finished MAIA instrument, Sep '22



Raw image taken by MAIA camera

Mission update #2: **NASA signed a hosting agreement with the Italian Space Agency (ASI)** in January.

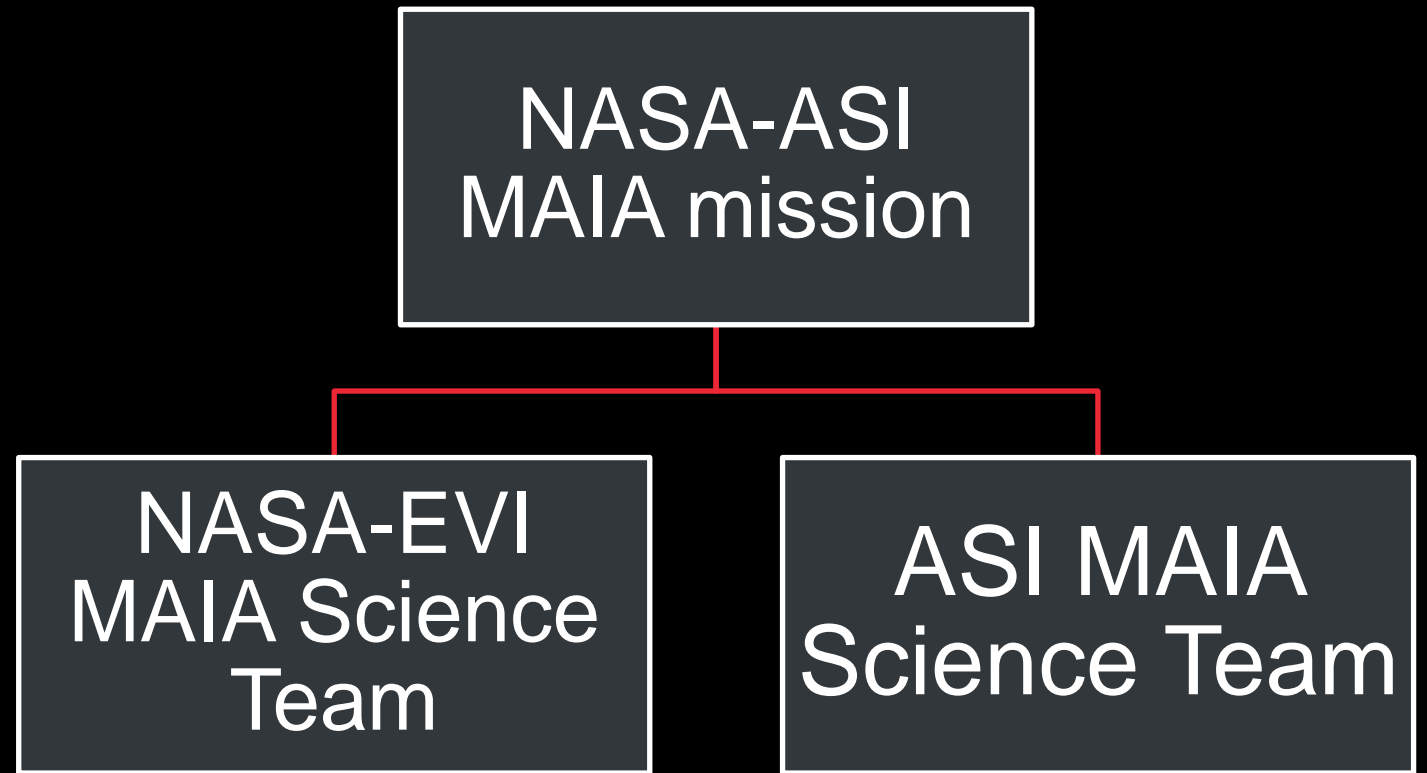
- ✓ ASI will provide the bus (satellite), launch, and mission operations center, Italy data archive
- ✓ NASA provides the MAIA instrument, uplink/downlink, instrument operations center, NASA data archive
- ✓ Bus name: PLATiNO-2
- ✓ **Launch date: Late 2024**



Initial rendering of PLATiNO-2 with MAIA aboard (solar panel stowed configuration). Credit: ASI

Mission update #2: **NASA signed a hosting agreement with the Italian Space Agency (ASI)** in January.

Note that ASI will establish their own science team and science objectives that will complement/supplement the science objectives of the NASA-EVI science team



Mission update #3: **Two new Secondary Target Areas (STAs)** established relating to ASI partnership



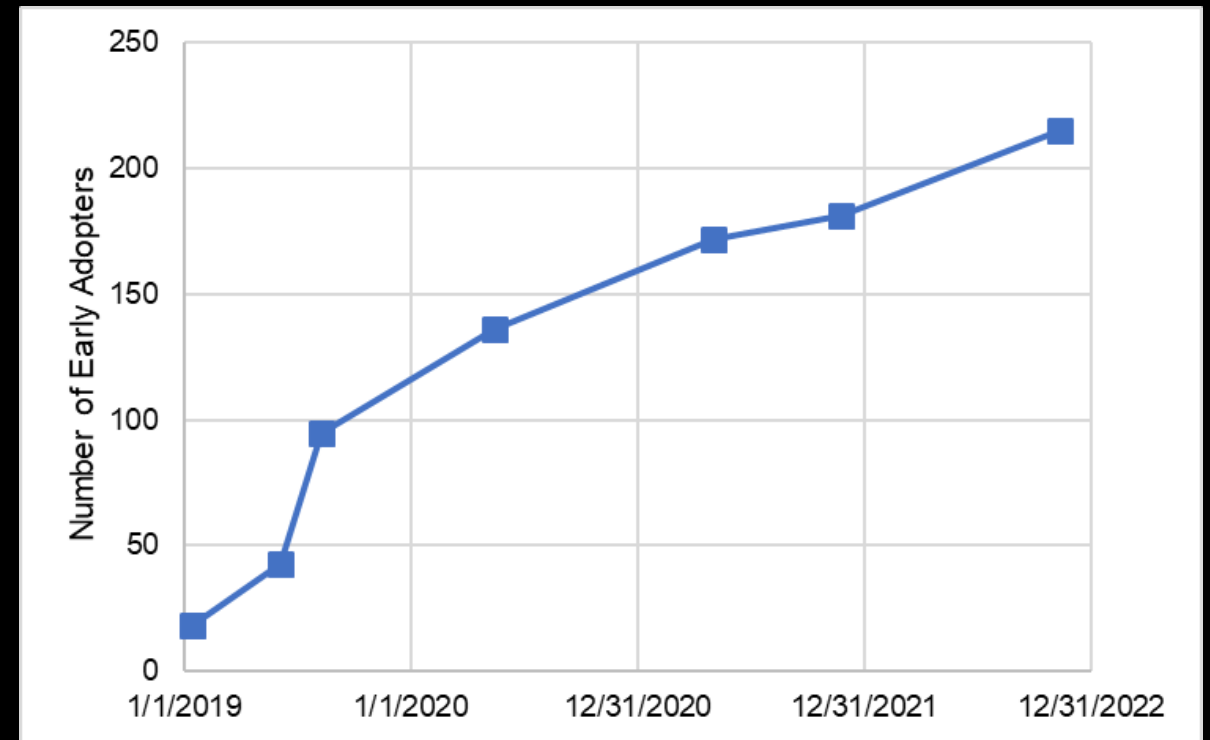
Primary Target Areas	Secondary Target Areas
• USA-LosAngeles	• USA-Hilo
• USA-Atlanta	• PAC-OceanStCu
• USA-Boston	• USA-SanFrancisco
• ESP-Barcelona	• USA-Phoenix
• ITA-Rome	• USA-Denver
• ZAF-Johannesburg	• MEX-MexicoCity
• ISR-TelAviv	• CAN-Toronto
• ETH-AddisAbaba	• PER-Lima
• IND-Delhi	• CHL-Santiago
• CHN-Beijing	• PRI-SanJuan
• TWN-Taipei	• BRA-SãoPaulo
	• SEN-Dakar
	• GHA-Accra
	• ATL-OceanStCu
	• NGA-Lagos
	• ZAF-CapeTown
	• ITA-Milan
	• ITA-Taranto
	• SRB-Belgrade
	• KEN-Nairobi
	• ETH-Harar
	• KWT-KuwaitCity
	• PAK-Karachi
	• IND-Chennai
	• BGD-Dhaka
	• THA-Bangkok
	• VNM-Hanoi
	• MNG-Ulaanbaatar
	• RUS-Yakutsk
	• KOR-Seoul
	• AUS-Sydney

Applications update #1: **Current EA membership**

✓ Early Adopters: **219**

✓ Tier 2 EAs: 31*

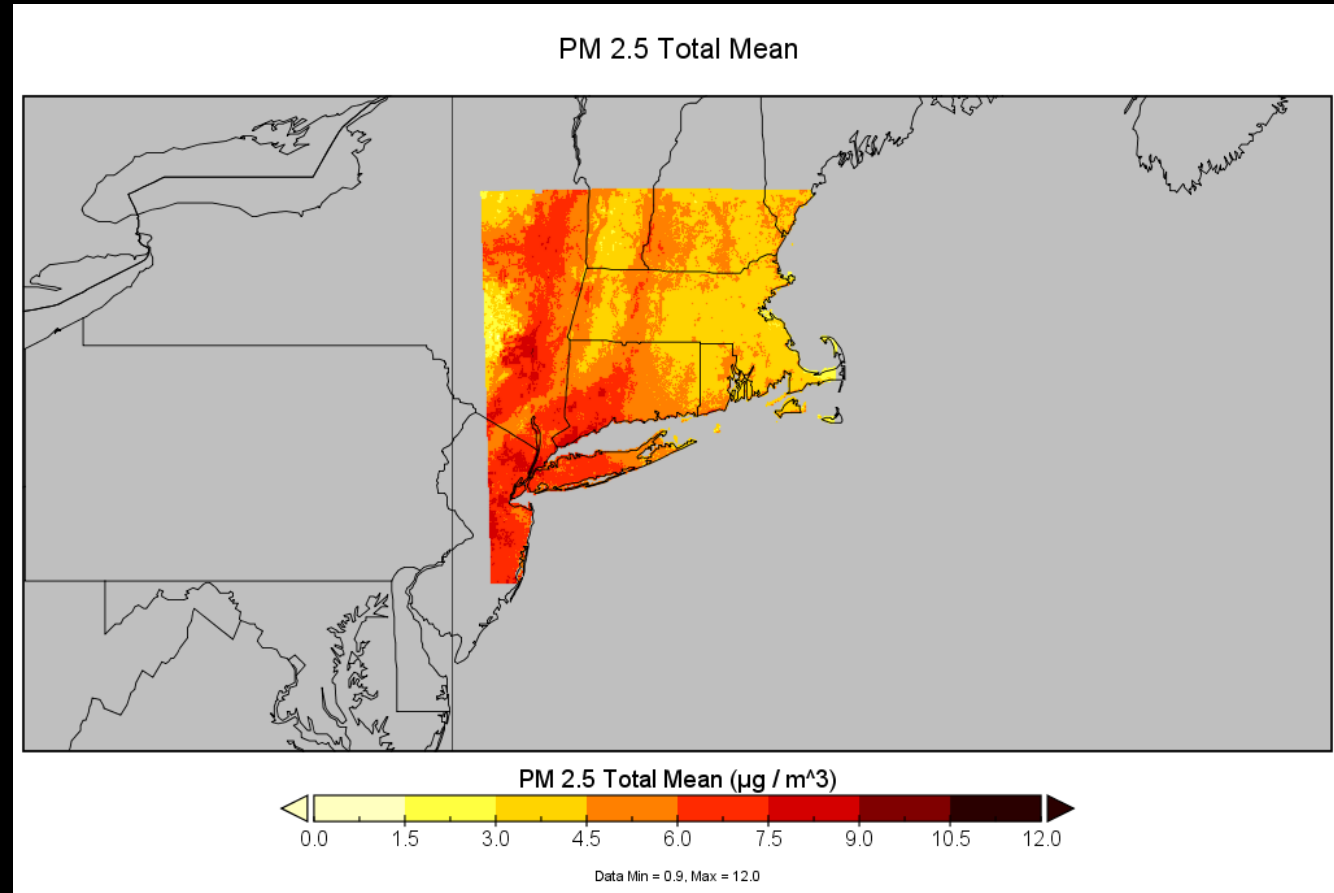
*Tier 2 EAs are those who have signed the Data User Access Agreement for access to the Simulated Data



Applications update #2: **New MAIA Synthetic Data**

- ✓ Spatial coverage: **Boston PTA**
- ✓ Temporal coverage: 2018 (daily)
- ✓ MAIA L4 PM-like product
- ✓ Based on GOES-16 data and WRF-Chem runs

Will be released to MAIA EAs in the next couple weeks!



Applications update #3: **Joint activities with TEMPO and PACE**

- ✓ MAIA-TEMPO NASA Airathon crowdsourcing challenge (Jan-Mar 2022)
- ✓ PACE AQ applications panel: May 2022
- ✓ MAIA-TEMPO Environmental Justice Workshop: August 2022



The NASA Airathon

Funded by: NASA Tournament Labs, after successful proposal

Vendor: DrivenData

Prize money: \$50,000 (spread over six awards)

Two tracks: PM2.5 and NO2

Three areas: Los Angeles, Delhi, and Taipei

Opened to the public: Jan 18, 2022

Final submission deadline: Mar 21, 2022



Airathon conclusions and lessons learned

- There's as much (or more) to be learned from the non-winners as the winners
- Data availability and usability might have the largest impact on the availability of high-performing models
- Reign of tree-based models
- Make sure to collect data along the way!
- Analyze high and not-so-high performers
- Lesson learned! Future NASA crowdsourcing challenges will include survey of all participants built in

Thank you!

Questions? Abigail.M.Nastan@jpl.nasa.gov