EUCASS – 3AF 2022

ESA Keynote
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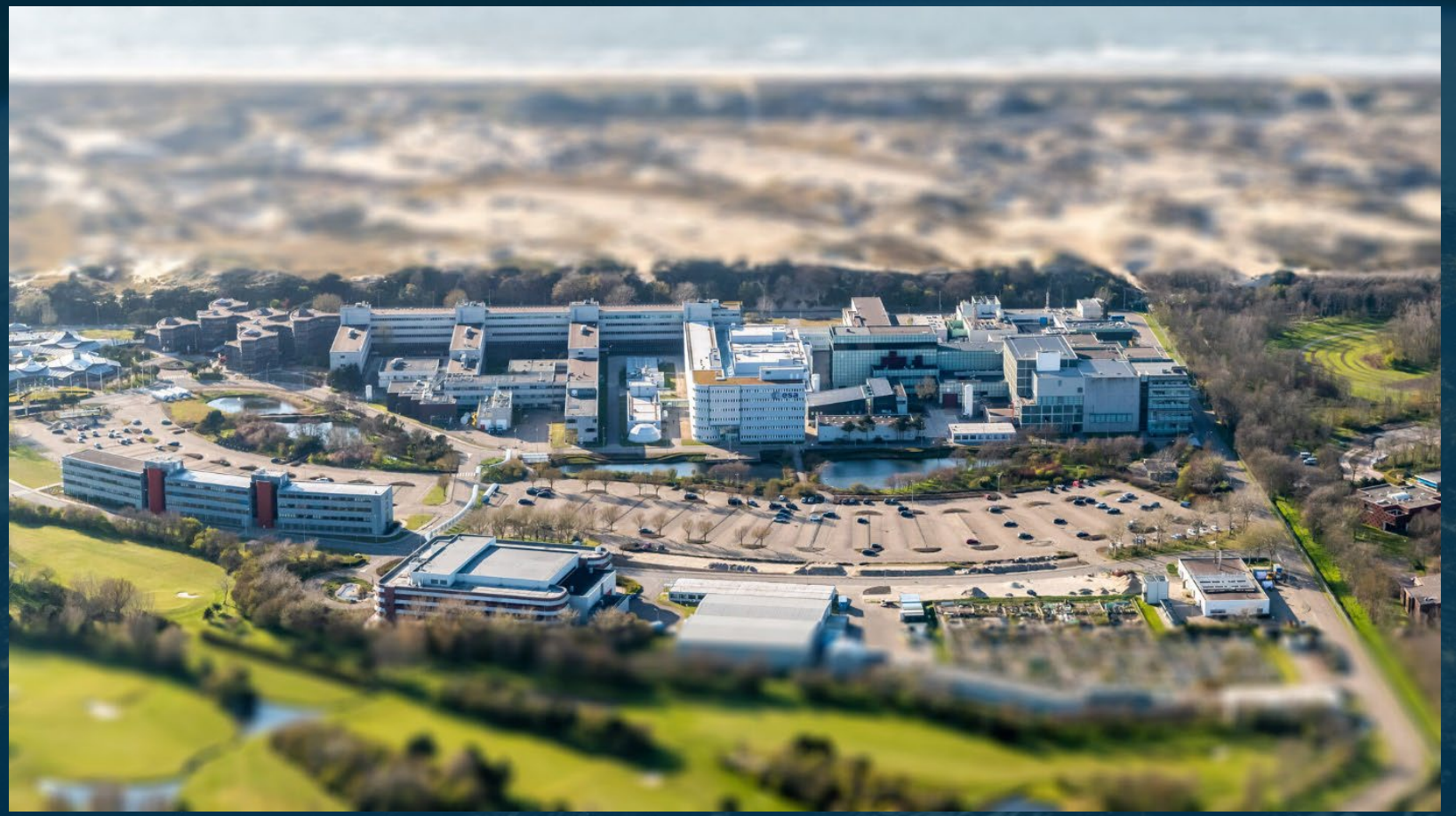
Who is ESA?

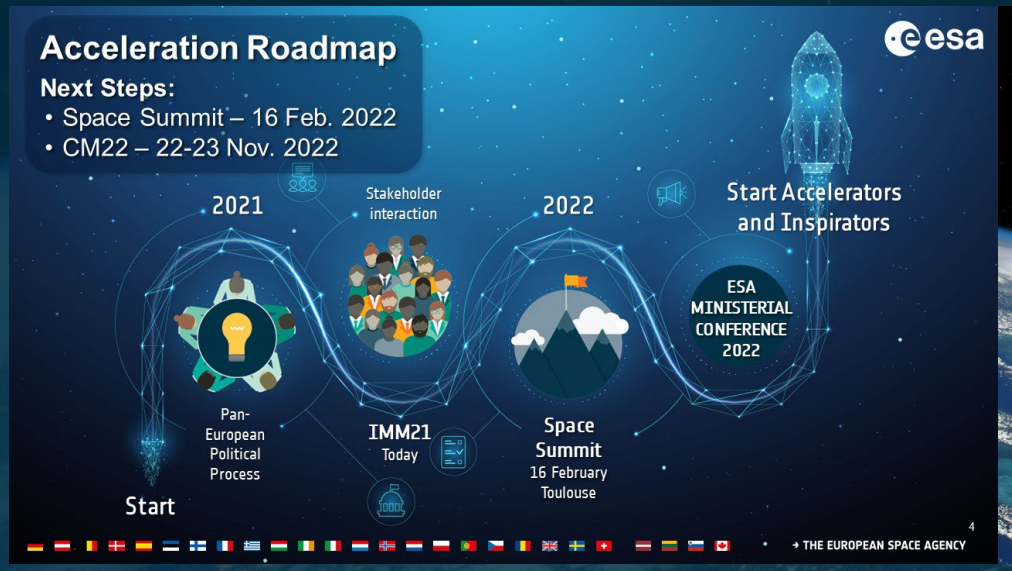
- The European Space Agency (ESA) has 22 Member States.
- We are developing and managing all types of ESA missions in Science, Exploration, Human Spaceflight, Telecommunication, Satellite Navigation, and Earth Observation. In addition we are developing space transportation systems to maintain a European access to space.
- Our workforce is 5500+ people across all sites .
- We are working in close cooperation with industry and partners all over the world.

What are we doing in ESTEC?



- The European Space Research and Technology Centre (ESTEC) is the largest ESA site.
- It is the technical heart of ESA where we manage and operate all facilities, labs and test centres we need for our missions.
- Today, more than 3000 people from all over the world and with different cultural background are working on-site.

ESA's way ahead



ESA "Accelerators"

- Space for a green future
- Rapid and resilient crisis response
- Protection of space assets

New fleet

- 2022: Vega-C
- 2023: Ariane 6
- 2024: Space Rider

WANTED: new ESA Astronauts

- More than 23.000 applications
- Selection process currently ongoing

Changing Environment

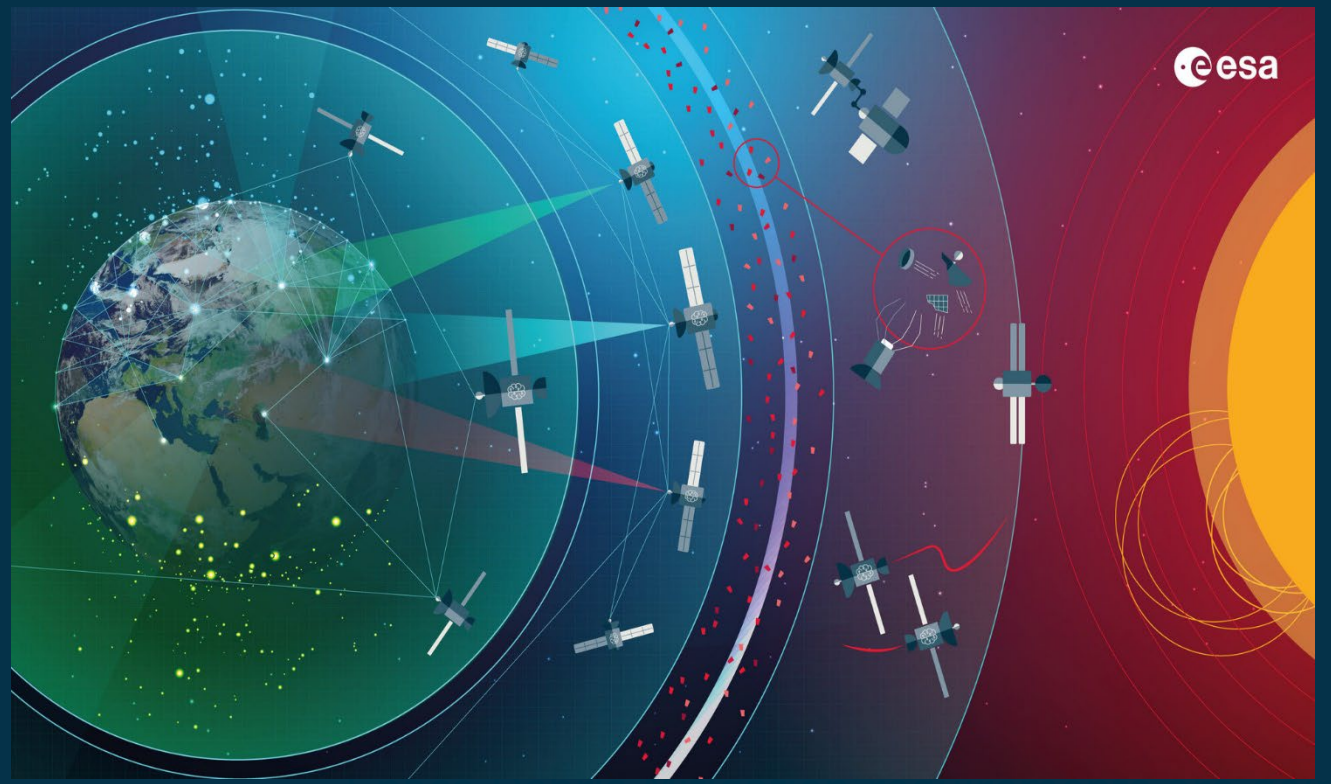
Changing climate, lack of resources, energy shortage, health and safety issues and the request for sustainable development require ESA to discover new ways of thinking and acting.

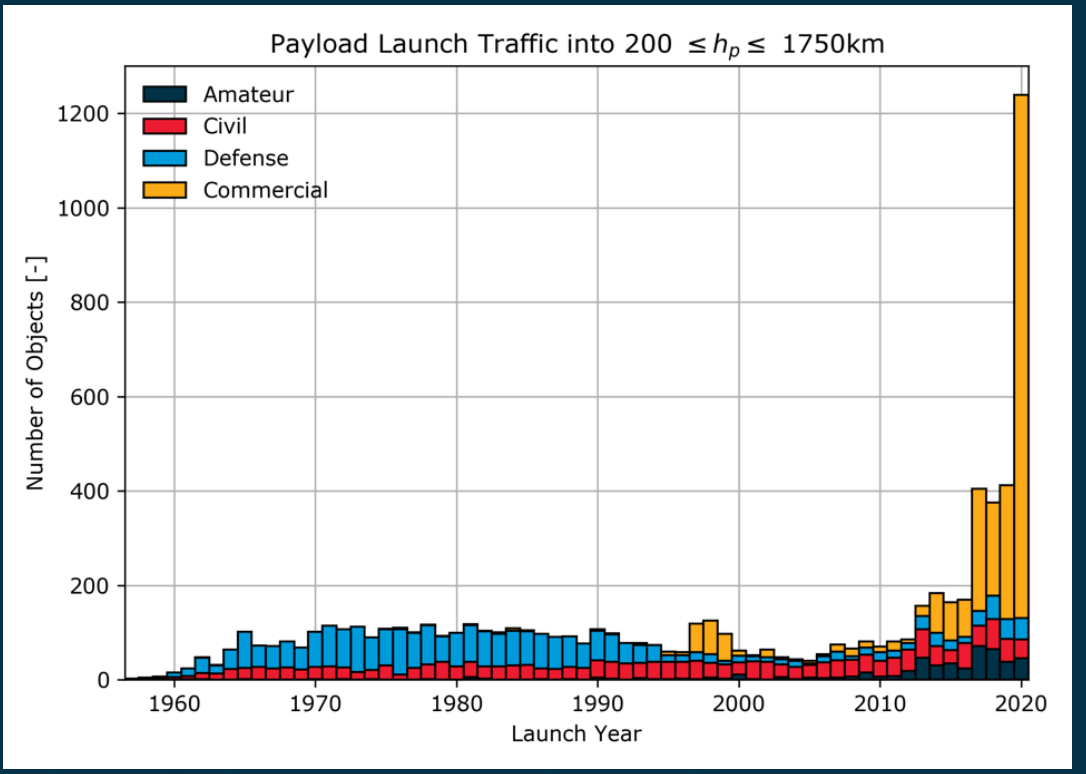
Additional “Space Players” have been entering the global stage.

“New Space” brings new ideas and expectations to the community. This means also a different philosophy in regard to “risk appetite”.

- We have to adapt our tools, methods, and approaches accordingly, taking benefit of recent advancements in technology.
- Despite the success of ESA's missions so far, there is always room for improvement, evolving to meet new needs and learning from other sectors.
- Curiosity never stops - the better our technologies and instruments become, the more we would like to discover.

Space Debris





“In ESA we are implementing a policy that by 2030, we have a ‘net zero pollution’ strategy for objects in space, by consistently and reliably removing them from valuable orbits around Earth immediately after they cease operations. We need to lead by example here.”

ESA Director General, Josef Aschbacher

SOLAR SYSTEM EXPLORERS

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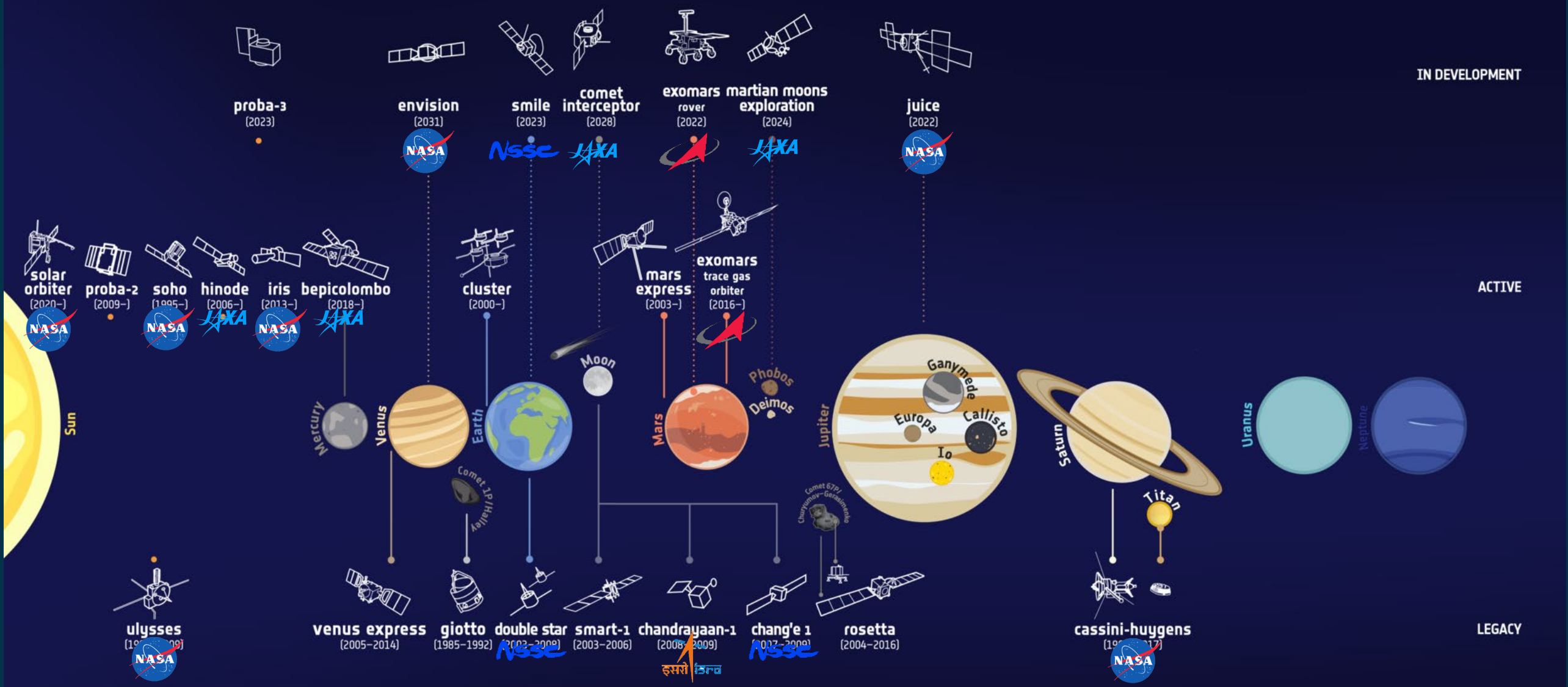
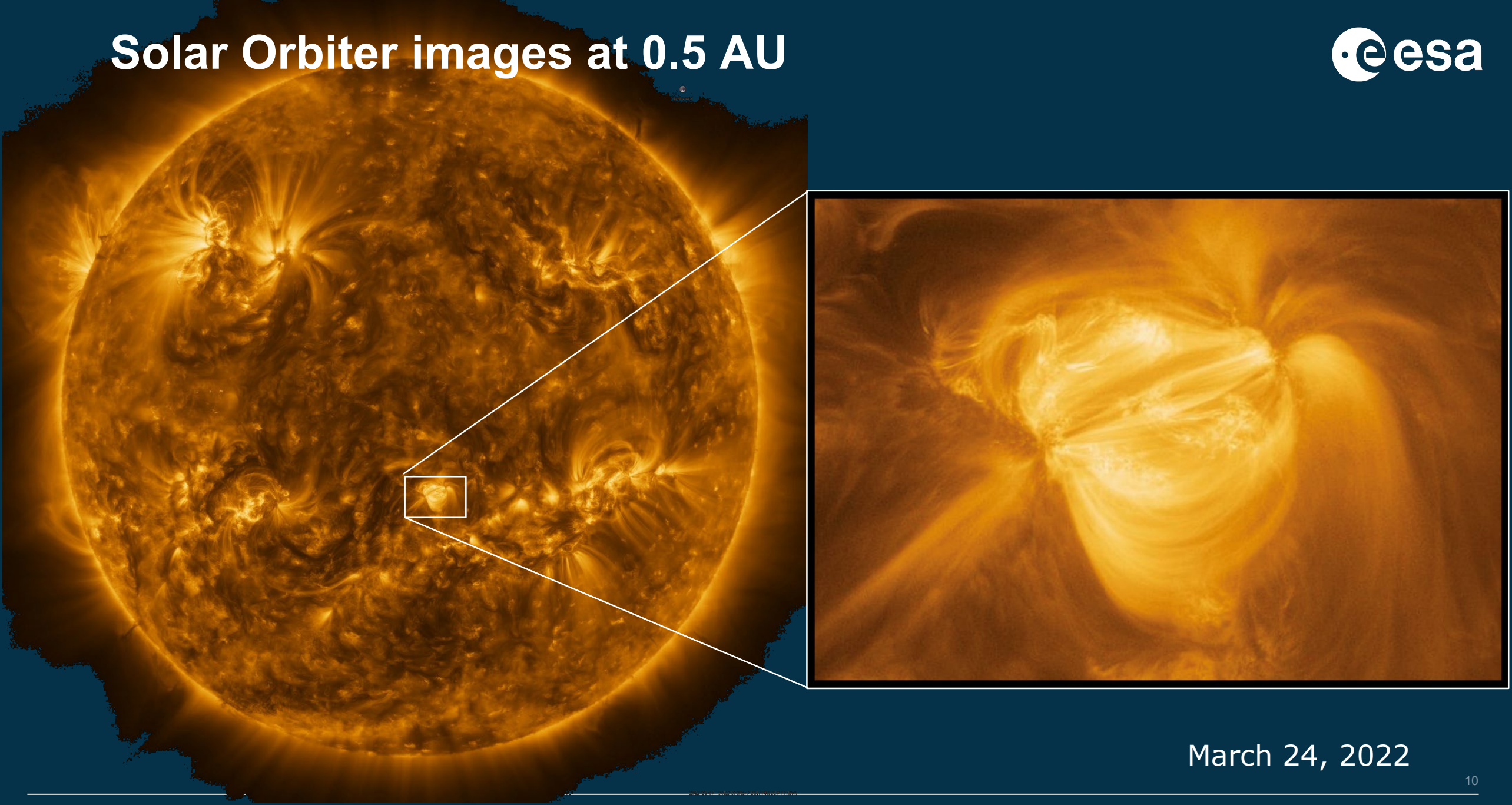


→ THE EUROPEAN SPACE AGENCY

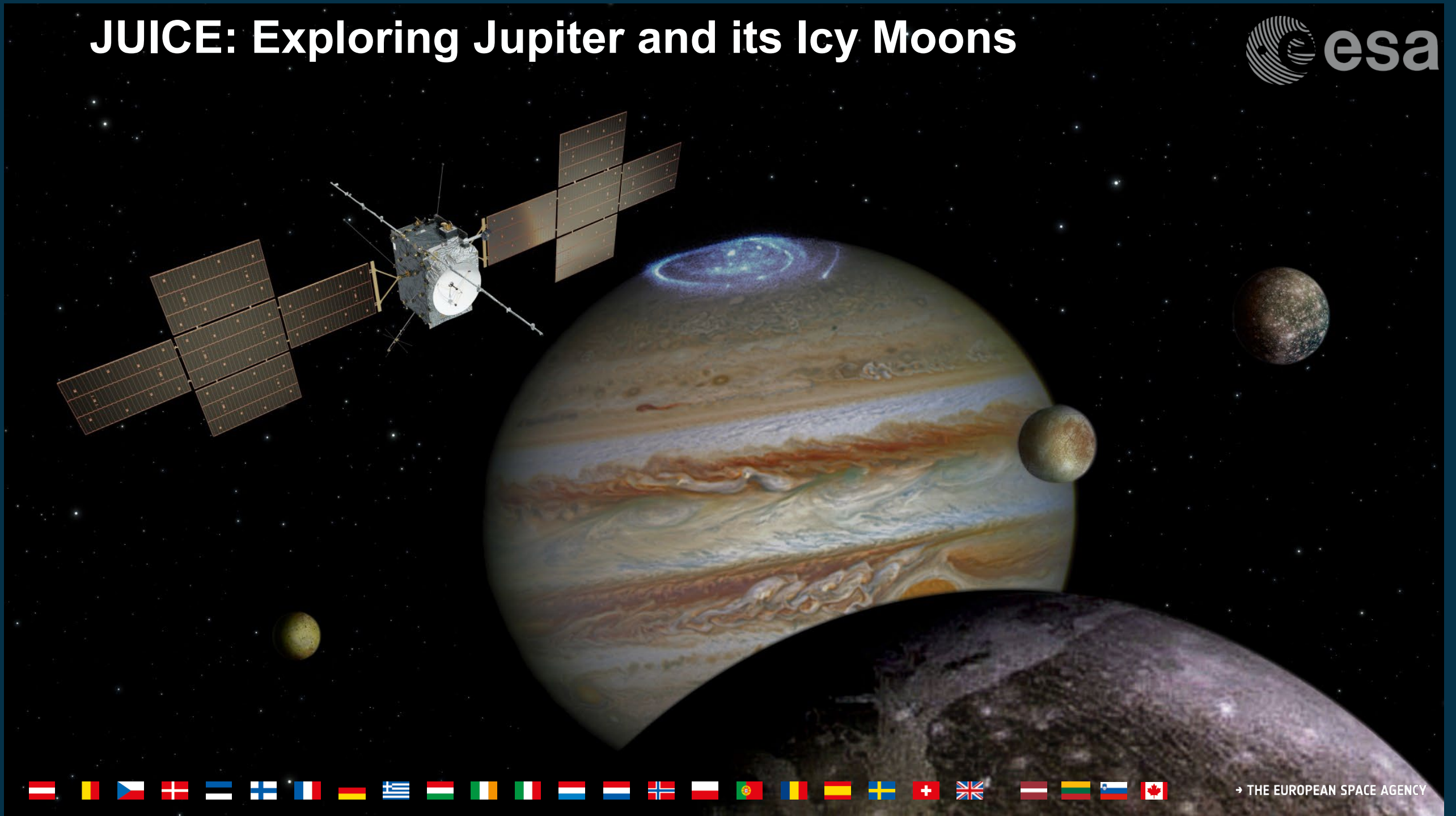

JAXA
esa
BepiColombo on its way to Mercury
→ THE EUROPEAN SPACE AGENCY

Solar Orbiter images at 0.5 AU



March 24, 2022

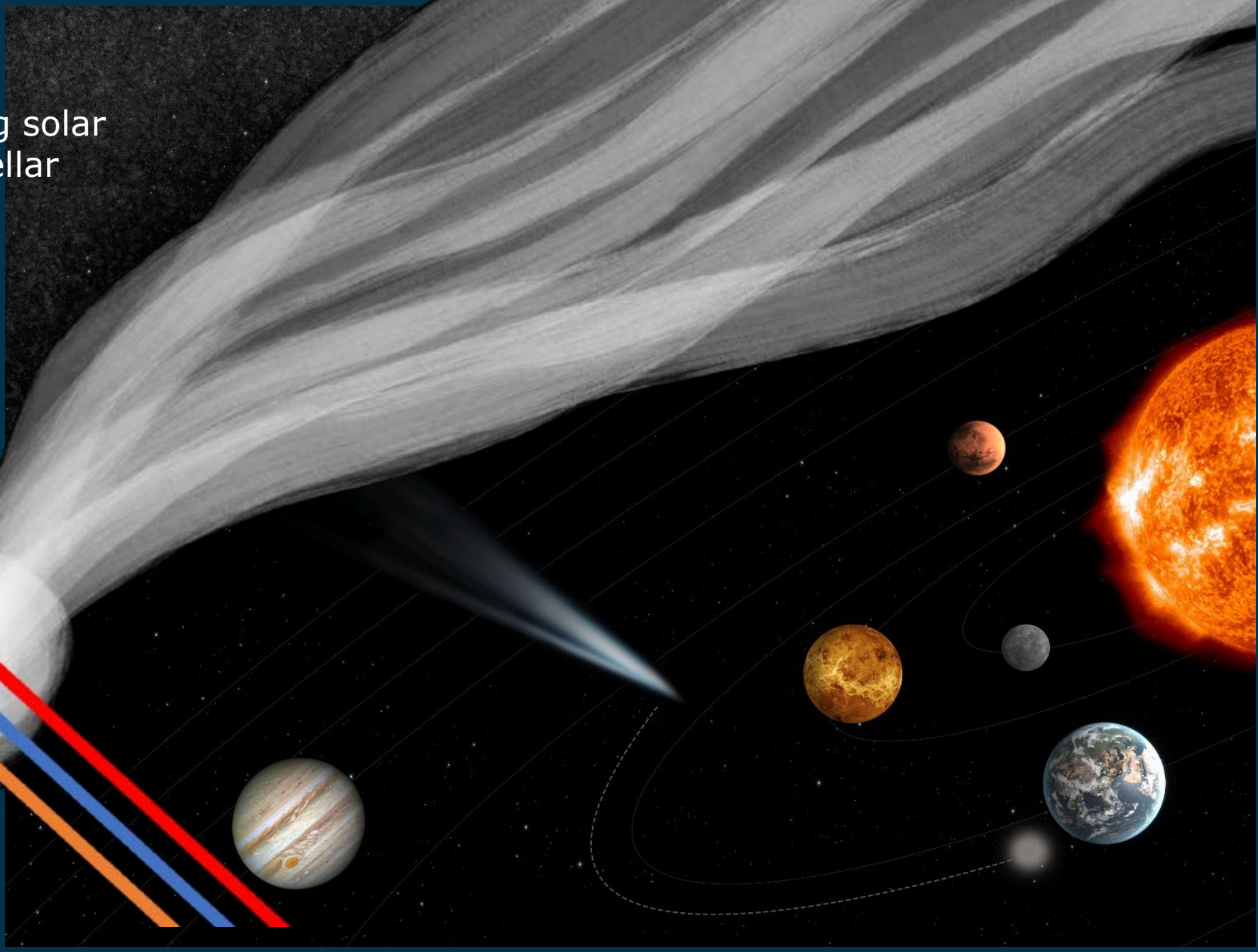
JUICE: Exploring Jupiter and its Icy Moons



→ THE EUROPEAN SPACE AGENCY

Comet Interceptor

Mission to a dynamically young solar system object or to an interstellar "visitor".



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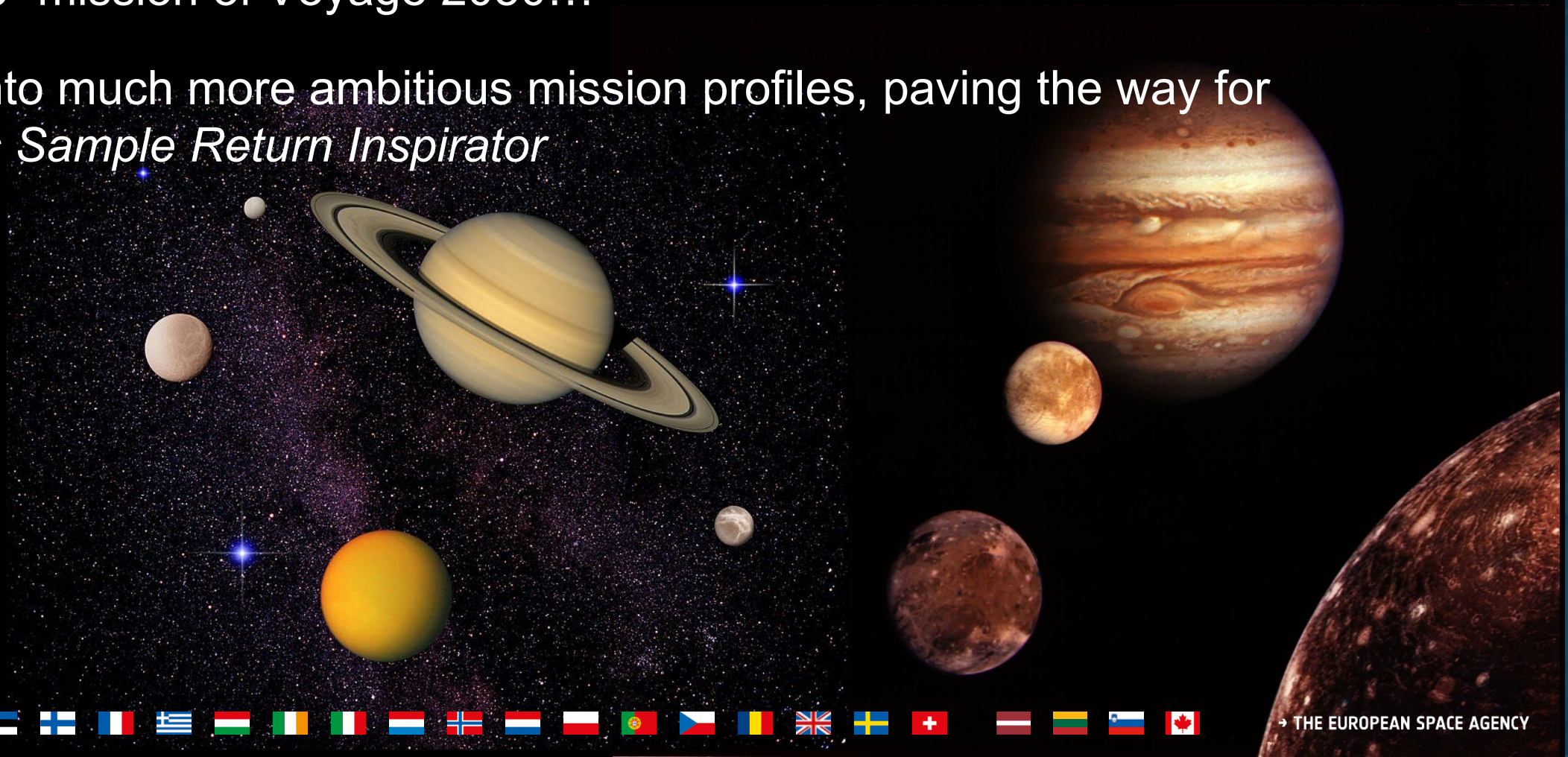
A Mission to the Moons of Jupiter or Saturn

Ambitious next destination of the ESA Science Program

A competitively selected team of European scientists has started to define the first “Large” mission of Voyage 2050…

… also look into much more ambitious mission profiles, paving the way for the *Icy Moons Sample Return Inspirator*



Next Generation

The space sector needs and will need young professionals, no matter your academic background

- Big data, cloud, artificial intelligence, virtual reality, augmented reality, machine learning, robotics, quantum technology, optical communication, additive manufacturing, automation, block-chain technologies, cybersecurity…
- Greener production methods, energy-efficient facilities, and emissions monitoring
- Eco-design, development of reusability, lighter materials, green, reusable launchers
- Space debris mitigation, additional efforts in space surveillance and space traffic management, planetary protection
- Business, law and policies

Tomorrow

YOUR space sector tomorrow will be different

- There has never been a better time to enter a career in the space sector than now.
- We are undergoing a fast and profound change, with many more diverse opportunities.
- Space is expanding and evolving into all parts of our economy with opportunities all over the place.
- We at ESA have an interest and a clear mandate to help Europe taking full benefit of this changing space sector and you are the space engineering generation that will enable and life this change!

Thank you for your attention!

Back-up Slides

ECSS

European Cooperation for Space Standardization ECSS

ECSS purpose

- → develop and maintain a single set of consistent space standards
- → recognized and applied for use by the entire European Space Community
- → the European way of procuring space systems

AIRBUS
ariane GROUP
OHB
ThalesAlenia Space
SME4Space

ECSS way of working

- → capitalizes on more than 40 years of experience in space projects
- → developed through a partnership between the European Space Agency, National Space Agencies, and the European space industry
- → liaison with European Committee for Standardization ensures all ECSS standards become European Norms

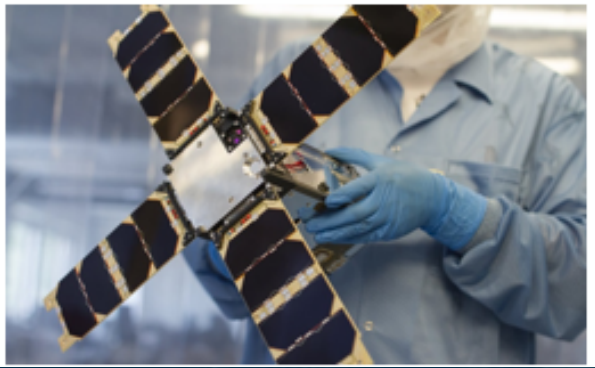
esa + ASD-EUROSPACE The Space group in ASD | agenzia spaziale italiana | cnes | DLR | Netherlands Space Office | Norsk Romsenter Norwegian Space Agency | UK SPACE AGENCY

ECSS and Agenda 2025

Boost Commercialisation for a Green and Digital Europe

ECSS 4.0

- → simplification
  - → identifying core requirements
  - → increasing usability
  - → adapting to New Space
  - → providing flexibility for more agile developments
- → involving more stakeholders
  - → New Space actors
  - → SMEs



Commercial Off The Shelf (EEE) Components (COTS)

- → making the best use of terrestrial technologies for space applications
- → reducing the cost of large volume procurements
- → ECSS is providing a standard on EEE COTS
- → defining the vision and means to manage the challenges of COTS utilisation.

ESCC 9000P

- → new ESCC quality class (based on ESCC9000) for EEE components
- → address future needs of highly demanding applications
- → open a new competitive product category for European space component manufacturers on the global market

ESA MISSION CLASSIFICATION & NEW SPACE

A number of ESA projects started using the Mission Classification:

Class type	Class I	Class II	Class III	Class IV	Class V
Mission Examples	ERO JUICE MTG	PROBA III FLEX	FORUM CHEOPS Comet-I	AWS SCOUTS Probe B2 on COMET-I GOMX-5 M-ARGO GX-5	

Class IV can be considered as “New Space”.

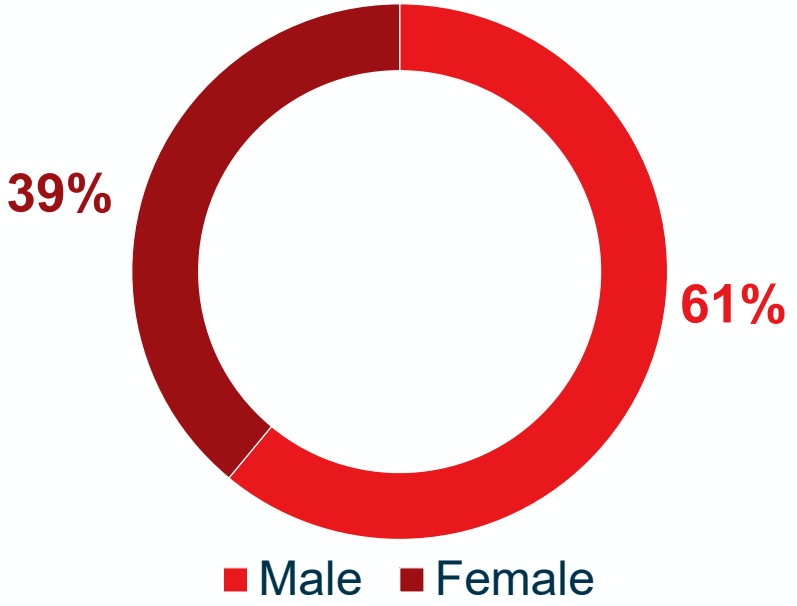
Class V represents CubeSats and IOV/IOD activities.

ESA Astronaut Selection: Zoom in on… numbers

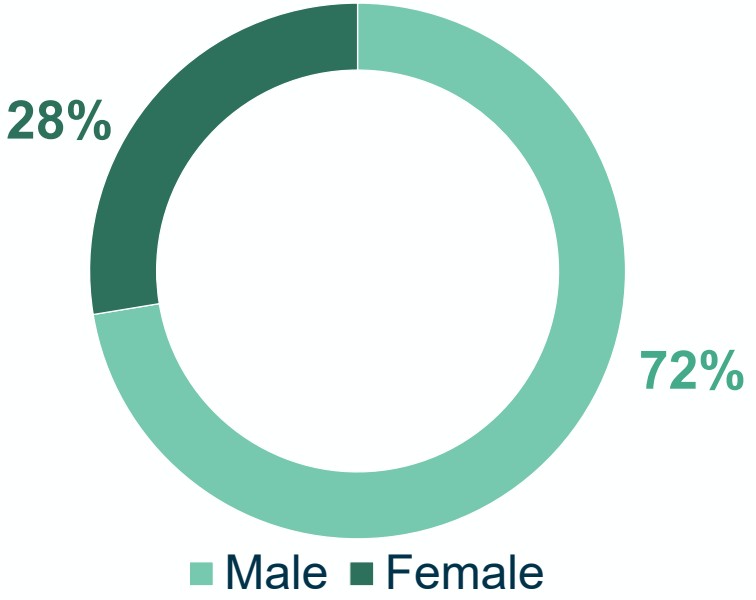
Total applications:	23307	287

Applicants invited to **stage 2**: initial tests

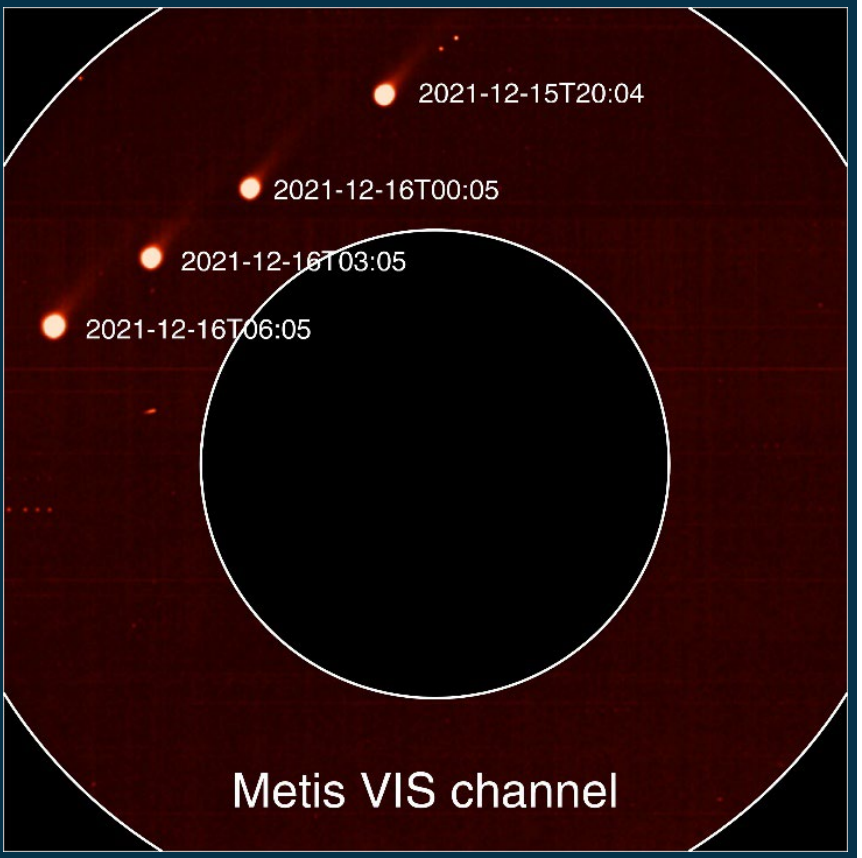
Astronauts



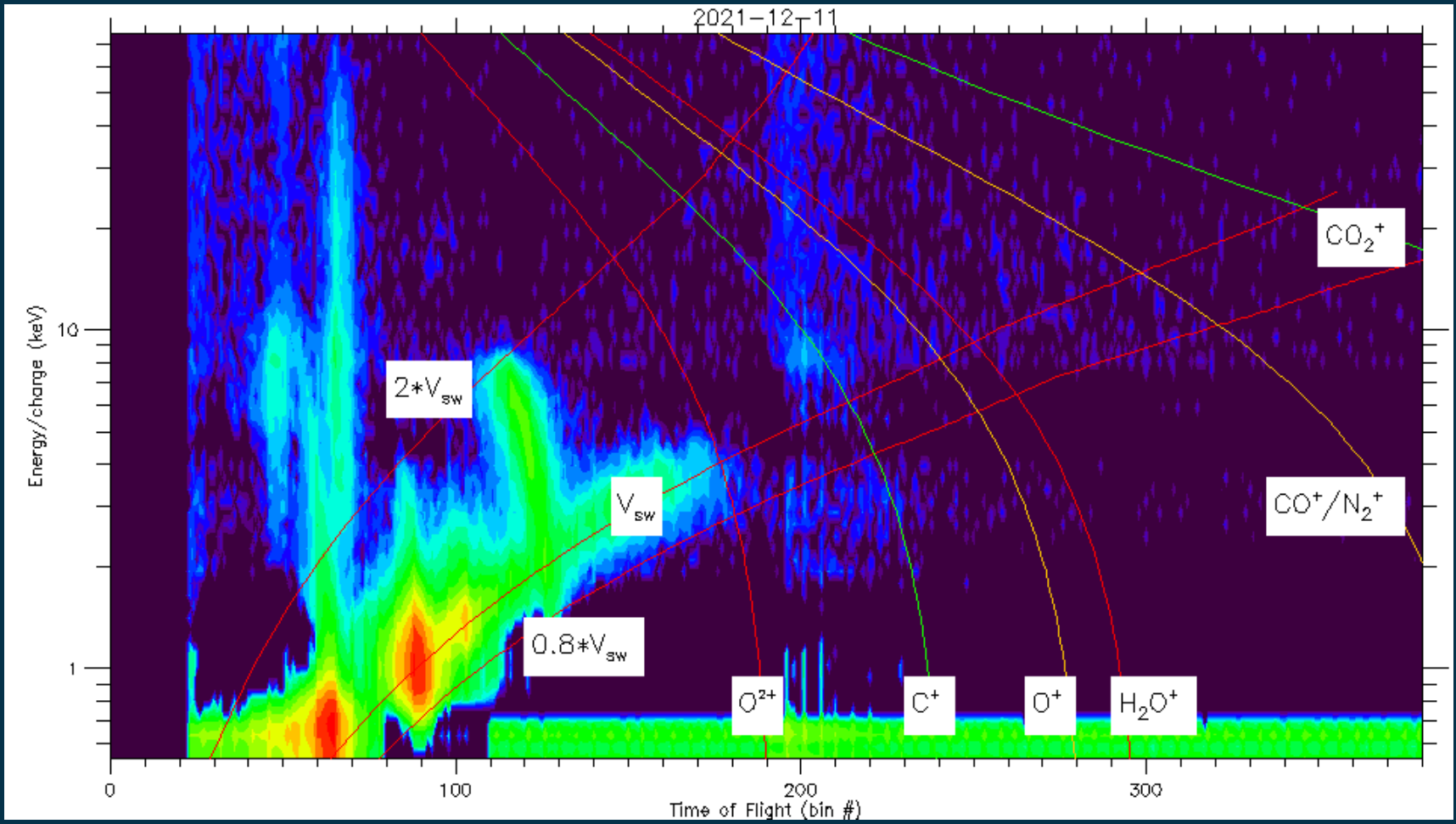
Parastronauts



Solar Orbiter samples cometary tail material



Solar Wind Analyzer Heavy Ion Sensor



Carbon, Oxygen, Nitrogen etc. discovered!