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Press release

ARIANE 5 GOES DOWN IN HISTORY WITH SUCCESSFUL LAUNCH OF WEBB

- **The Ariane 5 launcher, operated by Arianespace on behalf of the European Space Agency (ESA), has successfully injected NASA's Webb Space Telescope into its transfer orbit towards its final position at the second Lagrange point (L2).**
- **Carrying out its final mission of the year, the Ariane 5 rocket once again proved its exceptional reliability, this time for the benefit of research and space exploration.**
- **After a journey lasting 29 days, the most powerful space telescope ever built will be placed into orbit around the Lagrange 2 point so that it can observe galaxies, planets, stars and even nebulae and help us to unravel the secrets of the Universe.**

On Saturday, December 25, 2021 at 9:20 am local time, an Ariane 5 rocket lifted off from the Guiana Space Center, Europe's Spaceport in Kourou, French Guiana (South America), injecting the Webb Space Telescope, developed by NASA in partnership with ESA and the Canadian Space Agency (CSA), into its transfer orbit. The telescope was successfully separated from the launcher 27 minutes after liftoff.

The telescope now embarks on a voyage lasting 29 days to reach the second Lagrange point.

- On the third day, the heat shield will begin to deploy. On the eleventh day, the secondary mirror will begin positioning.
- Between the 13th and 14th day, the primary mirror, comprising 18 hexagonal segments and measuring 6.5 meters in diameter, will be assembled.
- The telescope is slated to arrive at its final destination, 1.5 million kilometers from Earth, approximately 29 days after launch.

The space agencies of the United States (NASA), Europe (ESA) and Canada (CSA) teamed up to develop this telescope. Europe played an important role in this mission, with ESA providing the launch onboard Ariane 5, as well as the Nirspec spectrometer built by Airbus. The astrophysics department of the Saclay-based CEA (French Alternative Energies and Atomic Energy Commission) and the Paris Observatory designed the MIRI camera. This is the most ambitious telescope ever sent into space.

"Today's launch is the mission of the decade," said Stephane Israël, Chief Executive Officer of Arianespace, "one that demonstrates the reliability of Arianespace's launch services in the eyes of the international space community. It's a great honor for us to have been chosen for this launch, which will enable humanity to take a giant step forward in its knowledge of the Universe. The mission demanded 20 years of preparation hand in hand with NASA. It's the third launch we have performed for the American space agency, clearly illustrating the advantage of large-scale international collaboration in space. I would like to thank ESA, NASA and CSA for entrusting us with their invaluable payload. To launch on Christmas morning 42 years after the takeoff of the first Ariane from this same Kourou site... What a great end of year present for the space community gathered today for this launch."

I would also like to thank the teams of Arianespace, ArianeGroup, Cnes and ESA who worked without letup to ensure this success, all motivated by the same passion."

Intended as the successor to the Hubble Space Telescope, the Webb Space Telescope will be 100 times more powerful. It will incorporate improved and different technologies to capture 70% more light. Because of these innovations, astronomers will be able to make unprecedented observations that show the first stars and galaxies to be formed after the Big Bang.

"This latest success is undoubtedly one of the most iconic space exploration launches performed by Ariane 5, following the Rosetta comet mission and Europe's ATV resupply vessels for the International Space Station," said André-Hubert Roussel, CEO of ArianeGroup. "Ariane 5 is known as the world's most reliable launch vehicle, but, like everybody who contributed to the success of this mission, we were holding our breath when our launcher lifted off with this scientific jewel, one protected by a special fairing tailored for its sophisticated instruments. All previous launches also prepared this one, because we knew that the eyes of the world would be on us. There are just five more Ariane 5 launches scheduled before this legendary launcher bows out. Everybody at ArianeGroup is fully committed to making Ariane 6, scheduled for a first launch from Kourou in 2022, Europe's next great achievement in space. I would like to thank ESA, NASA and CSA for placing their trust in us, and also all of our Ariane 5 partners in Europe, who are surely as proud as I am today."

The engineers from ArianeGroup, Arianespace and their European industrial partners developed specific solutions for this mission to ensure the perfect compatibility between Ariane 5 and its passenger.

- A special adapter for the satellite was designed and built in compliance with the available space under the fairing: the telescope measures 10.5 meters high and nearly 4.5 meters wide under the fairing, versus 21 x 14 meters once deployed.
- The fairing underwent a special cleaning to ensure that no dust could come in contact with the telescope and its essential mirrors.
- Pistons were placed near the purge vents in the fairing to force their opening and reduce as much as possible any pressure differential between the inside of the fairing where the telescope is located and the vacuum of space;
- To protect the telescope's fragile components from any undesirable thermal effects, the flight software has been set up so that Ariane 5 performed a specific roll maneuver to control its exposure to the Sun once the fairing was jettisoned.
- Following the separation of the telescope from the upper stage of the launcher, in order to avoid any risk of possible collision between the two, a specific maneuver was carried out to move the stage away after the end of its propulsion phase using its propellants and residual gases.
- By drawing on the combined experience of more than 100 Ariane 5 missions, Arianespace provided an exceptionally precise orbital injection towards the second Lagrange point.

ArianeGroup is prime contractor for Ariane 5 and Ariane 6, in charge of development and production, at the head of a vast industrial network of more than 600 companies, including 350 small and medium-size enterprises (SME). ArianeGroup coordinates all industrial activities concerning Ariane 5, from initial design studies and performance upgrades, to production and the supply of the data or software needed for each mission. Its responsibilities include various components, subassemblies and structures, the production of propulsion systems, stage integration and then integration of the launcher itself at the Guiana Space Center. ArianeGroup delivers a flightworthy launcher on the launch pad to its subsidiary Arianespace, which oversees flight operations for its customers, starting with liftoff.

Ariane 5 is a European Space Agency (ESA) program, carried out in collaboration between industry and public institutions. Marketed and operated by Arianespace, Ariane 5 launches are carried out at the Guiana Space Center (CSG) in Kourou, French Guiana, with support from the French space agency CNES (Centre national d'études spatiales).

THE LAUNCH AT A GLANCE

<p>338th Arianespace launch</p>	<p>1,065th satellite launched by Arianespace</p>	<p>112th Ariane 5 launch from CSG</p>	<p>14th Arianespace launch in 2021</p>
<p>The launch was carried out on December 25, 2021 from the Ariane 5 launch complex in Kourou, French Guiana at 9:20 am local time (12:20 UTC).</p>	<p>7:20 to 7:52 am, in Washington, DC 9:20 to 9:52 am, in Kourou, French Guiana 12:20 to 12:52, UTC 1:20 to 1:52 pm, in Paris 9:20 to 9:52 pm, in Tokyo</p>		<p>The launcher carried a total payload of 6,260.4 kg</p>
<p>87th launch in a row with nominal operation of the Vulcain 2 main-stage engine</p>	<p>112th launch in a row with nominal operation of the solid boosters</p>	<p>152nd launch in a row with nominal operation of the HM7B upper-stage engine</p>	

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About Arianespace

Arianespace uses space to make life better on Earth by providing launch services for all types of satellites into all orbits. It has orbited over 1,000 satellites since 1980, using its family of three launchers, Ariane, Soyuz and Vega, from launch sites in French Guiana (South America) and from the Russian cosmodromes in Baikonur and Vostochny. Arianespace is headquartered in Evry, near Paris, and has a technical facility at the Guiana Space Center in French Guiana, plus local offices in Washington, D.C., Tokyo and Singapore. Arianespace is a subsidiary of ArianeGroup, which holds 74% of its share capital, with the balance held by 15 other shareholders from the European launcher industry.

www.arianespace.com

About ArianeGroup

ArianeGroup is lead contractor for Europe's Ariane 5 and Ariane 6 launcher families, responsible for both design and the entire production chain, up to and including marketing by its Arianespace subsidiary, as well as for the missiles of the French oceanic deterrent force. The group is a joint venture equally owned by Airbus and Safran, and employs approximately 7500 highly qualified staff in France and Germany. ArianeGroup develops and supplies innovative and competitive solutions for civil and military space launchers, with expertise in all aspects of state-of-the-art propulsion technologies. ArianeGroup and its subsidiaries enjoy a global reputation as specialists in the field of equipment and propulsion for space applications, while their expertise also benefits other industrial sectors. Its 2020 revenues amounted to 2.7 billion euros.

www.ariane.group