

## Europe launches record cargo for space station (Update)

June 5 2013, by Mariette Le Roux

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This handout picture released on January 1, 2013 by Arianespace shows the loading process for ATV Albert Einstein at Europe's Spaceport in Kourou, French Guiana. A European rocket blasted off from French Guiana on Wednesday carrying a record 6.6 tonnes of cargo for the International Space Station (ISS) and its orbiting crew.

A record 6.6 tonnes of cargo were hurtling towards the International Space Station after being blasted into orbit by a European rocket from

French Guiana on Wednesday.

The space freighter with food, water, oxygen, science experiments and special treats for the ISS astronauts was launched on an Ariane 5 rocket from Europe's spaceport in Kourou as planned at 6:52:11 pm (21:52:11 GMT).

The robot craft dubbed Albert Einstein separated from its launcher an hour after liftoff, somewhere over New Zealand, and entered orbit at an altitude of 260 kilometres (160 miles).

Just over half an hour later, it deployed four energy-generating solar panels to start its autonomous navigation, guided by starlight, to the space station.

"This is it. Everything is fine, we have the power, we have the antennas, everything we need to go to the ISS," European Space Agency director general Jean-Jacques Dordain announced at the control centre in Kourou.

The unmanned vessel is set to dock with the ISS on June 15 at an altitude of about 400 kilometres (250 miles) above the planet—at a speed of some 28,000 kilometres (18,000 miles) per hour.

At nearly 20.2 tonnes, ESA's fourth and penultimate cargo delivery to the ISS is the heaviest spacecraft ever lifted by an Ariane rocket.

It also marked the 55th consecutive successful launch by an Ariane 5, according to the Astrium space company which builds the lifeline craft.

The robot space freighter is the size of a double-decker bus—10 metres (33 feet) long and 4.5 metres (15 feet) in diameter.

It boasts the largest assortment of goods yet brought to the ISS by an

Automated Transfer Vehicle (ATV)—a total of 1,400 individual items that include clothes, tools and enough food for several months.

And its dry cargo is the heaviest ever—nearly 2.5 tonnes packed into 209 bags fixed to the vessel's internal shelves.

The vessel is loaded with about 4.8 tonnes of fuel needed to dock with the ISS and perform its additional role as space tug—boosting the orbiter to a higher altitude with onboard engines.

The ISS is in a low-Earth orbit and encounters atmospheric resistance which causes it to fall towards our planet at a rate of about 100 m (300 feet) per day.

The ATV can also push the ISS out of the way of oncoming space debris.

The Albert Einstein carries 860 kg (1,760 pounds) of propellant to be pumped into the ISS itself, more than 500 kilos (1,100 pounds) of water and 100 kilos of oxygen and air.

Its pressurised cabin will also provide welcome extra space for the ISS crew—Americans Chris Cassidy and Karen Nyberg, Russians Fyodor Yurchikhin, Pavel Vinogradov and Alexander Misurkin, and Italian Luca Parmitano.

After completing its mission, the ATV-4 is set to undock from the ISS in October filled with about six tonnes of garbage and human waste, and burn up over the Pacific.

ESA is contracted to provide five ATVs as its contribution to the ISS, a US-led international collaboration.

The previous three missions had performed flawlessly, muting criticism of the billion-euro (\$1.3 billion) development cost.

"Tonight, we can be proud of the European Space industry which has planned and developed this complex mission throughout," Stephane Israel, chief executive of satellite launch firm Arianespace, said after Wednesday's launch.

Europe's ATVs are the largest cargo carriers to the ISS since the retirement of the US space shuttle in 2011.

But increasing competition in the space launch sector has prompted ESA to opt for a different route in future—supplying ATV-derived hardware for NASA's Orion spacecraft which is being designed to take humans to the Moon and beyond, and is scheduled for a test flight in 2017.

The fifth and final ATV, named Georges Lemaitre after the father of the Big Bang theory of the Universe's creation, is scheduled for blastoff next year.

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