Press Release

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EntrySat all set for launch
First CubeSat dedicated to studying atmospheric re-entry of orbital debris

The ISAE-SUPAERO aeronautics and space institute, supported by CNES's JANUS student nanosatellite programme and in partnership with the French national aerospace research ONERA, has designed EntrySat, the first CubeSat[1] dedicated to studying atmospheric re-entry of orbital debris.

The satellite will be launched aboard a Cygnus cargo vehicle to the International Space Station (ISS) by an Antares NG-11 vehicle on 17 April from NASA's Wallops Flight Facility, Virginia, and will separate from the station a few weeks later.

First CubeSat capable of analysing re-entry of orbital debris

Keeping proliferation of orbital debris in check is increasingly focusing attention as it poses a real long-term threat to space activities. To this end, researchers are thus seeking to gain deeper insight into the processes at work when a satellite breaks up on re-entering Earth's atmosphere.

It is with this precise goal in mind that a team of researchers at ISAE-SUPAERO, supported by CNES and ONERA, has designed EntrySat. The CubeSat will use position, pressure, temperature and heat flux sensors to study re-entry of orbital debris. Alongside this prime mission, EntrySat will also enable a range of technology experiments to test communications with the ground and measure the atmosphere's characteristics.

Largest CubeSat ever built by the JANUS programme

Led by the research scientists and engineers in ISAE-SUPAERO's Space Systems for Planetology and its Applications team (SSPA) and involving all of the institute's departments, including the Structural Mechanics and Materials department that supplied test facilities, EntrySat has also received support in expert analysis and testing from CNES. It is the fourth CubeSat developed for the JANUS programme and the **first ever French 3U CubeSat (10 cm x 10 cm x 30 cm) built for a student project**. Since the project got underway in 2014, more than 90 students have followed it and worked with the research teams.

EntrySat will be controlled from Toulouse by ISAE-SUPAERO's ground station and operated by the Toulouse University Space Centre (CSUT) up to its scheduled re-entry between six months and one year after being injected into orbit.

1 Jeunes en Apprentissage pour la réalisation de Nanosatellites au sein des Universités et des écoles de l'enseignement Supérieur

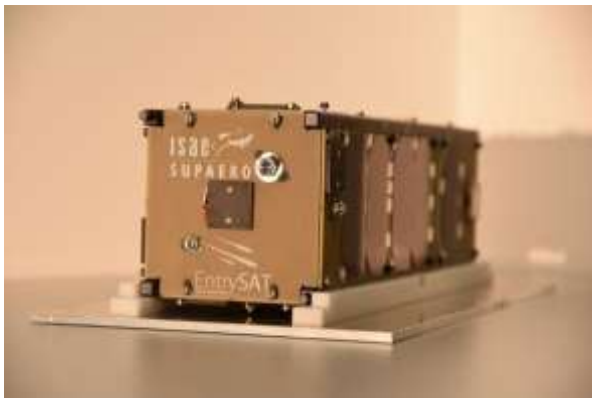
2 A CubeSat is a satellite with a form factor that is a multiple of a 10 cm x 10 cm x 10 cm cube unit or 'U', as defined by Stanford University

About ISAE-SUPAERO

A world leader in higher education and research in aerospace engineering, ISAE-SUPAERO is a research- and innovation-driven institution offering a unique range of advanced higher education programmes including the ISAE-SUPAERO engineer programme and CNAM-ISAE apprenticeship programme, a master's degree in aeronautics and space delivered in English, five research master's degrees, 14 advanced master's degrees and six Doctoral schools.
ISAE-SUPAERO has developed a research policy resolutely focused on answering the future needs of the aerospace industry and other high-tech sectors, with which it has established more than 10 teaching and research chairs.
ISAE-SUPAERO is a founding member of the Université Fédérale de Toulouse, within which it leads the aerospace stream through initiatives like the GIS micro-drones scientific grouping and the Toulouse University Space Centre (CSUT). It is also a founding member of the ISAE Group (ISAE-SUPAERO, ISAE-ENSMA, ESTACA, Ecole de l'Air, Supmeca).
On the international level, ISAE-SUPAERO cooperates with premier European universities (TU Munich, TU Delft, ETSIA Madrid, Politecnico Torino and Milano, KTH Stockholm, Imperial College, Cranfield), North American institutions (CalTech, Stanford, Georgia Tech, UC Berkeley, EP Montreal) and Latin American and Asian universities.
The ISAE-SUPAERO learning community includes more than 100 professors and researchers, 1,800 lecturers from industry and nearly 1,700 undergraduate students. Every year, more than one-third of the Institute's 650 graduates are international students, and the alumni network comprises over 21,500 graduates.

About CNES

CNES (Centre National d'Etudes Spatiales) is the government agency responsible for shaping France's space policy and implementing it in Europe. Its task is to conceive and orbit satellites, invent the space systems of the future and nurture new services to aid us in our daily lives. Founded in 1961, it is the initiator of major space projects, launch vehicles and satellites, and the partner of choice for industry fuelling innovation. CNES comprises some 2,500 men and women with a passion for space working to open up new and infinite fields of applications in five core areas of focus: Ariane, science, Earth observation, telecommunications and defence. It is a key player driving technology innovation, economic development and industrial policy for the nation. It also fosters scientific collaborations and has forged numerous international partnerships. France, represented by CNES, is the leading contributor to the European Space Agency (ESA).



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