**Space 19+ Protecting our Planet**

The ESA Council at Ministerial level, Space 19+, will take place on 27 and 28 November in Sevilla, Spain.

Ministers from the ESA Member States will gather to discuss future space activities for Europe and the budget of Europe’s space agency for the next three years.

ESA is seeking an increase in funding for the mandatory programme supported by all Member States, and for an ambitious portfolio of optional programmes. These are structured along four main pillars: science and exploration, space safety and security, applications and enabling and support activities.

The proposals carry an overarching motto of Inspiration, Competitiveness and Responsibility.

This video examines how new space technology can protect us from asteroids and solar flares, as well as deal with the growing threat from space debris.

**A-ROLL**

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| **Pictures** | **Script** |
| **10:00:10**  Approach to Earth with Moon in foreground – animation using real images (NASA recreation of Earthrise image from: <https://svs.gsfc.nasa.gov/4593>  And in b-roll) | Locked in a stable orbit, the perfect distance from the nearest star, the Earth is an oasis in the Solar System…and the only place we can be certain that life exists.  But it isn’t entirely safe… |
| **10:00:24**  Drone shots of ESOC (ESA)  ESOC control room interiors (ESA) | Today, ESA is taking a leading role in protecting our planet, through a new effort: Space Safety and Security Applications.  This aims to detect and mitigate threats from space and protect the Earth, society and economically vital infrastructure on the ground and in orbit. |

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| **10:00:43**  Asteroid animation (from Hera animation – ESA) | The first threat is as old as the Solar System: asteroids.  Most will never come close to Earth but, because there are so many, eventually some will intercept our orbit. |
| **10:00:55**  Asteroid hitting Earth animation (ESA)  Chelyabinsk animation from:  <https://svs.gsfc.nasa.gov/11325> | Dangerous rocks regularly hit our planet...  In 2013 some1500 people were hospitalised when an asteroid exploded over Chelyabinsk in Russia. |
| **10:01:06**  Hera animations (ESA) | At Space 19+, Ministers from ESA member states will be asked to support a new planetary defence mission…Hera. |
| **10:01:15**  Hera animations showing asteroid Didymos and the mission (ESA) | Hera will be part of the first mission to rendezvous with a double asteroid, Didymos.  It will investigate effects of the kinetic impact conducted by NASA’s DART mission, obtaining critical science data and determining if deflection is a robust and reliable planetary defence technique.  This has never been done before.  In addition to making scientific observations, Hera’s unique role will include measuring the asteroid’s mass with extreme precision and delivering two cubesats to conduct risky, near-surface observations before they touch down on the surface. |

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| **10:01:53**  Solar imagery (all real images) – ESA/NASA | The next threat to our way of life comes from the star that keeps us alive…the Sun.  Violent solar activity such as flares and coronal mass ejections can damage satellites, disrupt communications and knock out power grids.  An extreme solar storm could cause 15 billion Euros worth of economic damage in Europe alone. |
| **10:02:17**  Lagrange mission animations (ESA) | ESA is working on Lagrange, a mission to a unique point in space known as L5.  By taking a ‘side view’ of the Sun Lagrange will monitor solar activity like Sun spots before they are visible from Earth, and warn us of any impending risks. |
| **10:02:30**  Space debris animations (not to scale) - ESA | The third threat is space debris, a growing concern that places our vital satellites and the daily services they provide at risk.  There are more than 900,000 pieces of debris in orbit with a size larger than 1 cm; any impact with a functioning satellite could mean end of mission.  Several companies are beginning deployments of large constellations of satellites and ESA must develop an automated collision avoidance system in order to protect spacecraft in these busy space highways, as the current manual avoidance processes will be overwhelmed. |
| **10:03:08**  Lab demonstration at ESTEC of robotic satellite capture technology (ESA) From: <https://www.esa.int/esatv/Videos/2018/01/Space_debris_-_efforts_to_clean_up_space> | New, in-orbit servicing technologies would demonstrate that Europe can remove space junk from orbit. |

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| **10:03:15**  Aircraft and air traffic control GVs (ESA)  Into IRIS animation (ESA) | Closer to home, another ESA  project will increase safety in the skies.  ESA’s IRIS partnership will provide  improved, secure data links between aircraft and air traffic control using satellites. It will improve air traffic management – saving fuel and easing congestion. |
| **10:03:33**  GVs of ground stations and GVs of the Redu ground station (ESA) | ESA is also working to boost cyber security, not only within the Agency but across Europe’s space sector, helping make spaceflight more resilient to attack and accelerating the integration of space systems and services on the ground. |
| **10:03:48**  Europe from ISS (real footage) – ESA/NASA | By protecting our infrastructure on Earth and in space, ESA is safeguarding the assets that secure Europe’s economic future. |

**B-ROLL**

**10:04:05**

**Earthrise animation**

Animation using real imagery to recreate the 1968 Earthrise image (NASA)

**10:05:41**

**ESOC drone footage**

Drone footage shot at ESOC in Darmstadt (ESA)

**10:06:52**

**ESOC main control room**

Interior shots of the main control room at ESOC (ESA)

**10:07:26**

**Hera animations**

Animations of Didymos, asteroid hitting Earth and the proposed DART and Hera missions (ESA)

**10:11:25**

**Solar images**

Real images and video of the Sun (ESA/NASA)

**10:12:39**

**Lagrange mission animation**

Animation of the Lagrange mission to L5 (ESA)

**10:13:02**

**Space debris animations**

Animations of objects and space debris in orbit (not to scale) – ESA

More available here: <https://www.esa.int/esatv/Videos/2018/07/Iris_flight_trials_for_safer_air_traffic>

**10:15:55**

**Aviation GVs**

Aircraft landing and air traffic control from IRIS flight trials (ESA)

<https://www.esa.int/esatv/Videos/2018/07/Iris_flight_trials_for_safer_air_traffic>

**10:16:33**

**IRIS animation (ESA)**

Animation of the IRIS system

**10:16:58**

**Ground station GVs**

Views of ESA satellite ground stations. Apart from the first shot, all the others are Redu in Belgium (ESA)

10:19:11

**Europe from the ISS**

ESA/NASA footage of Europe shot from an exterior camera on the ISS

10:19:50:13

**[Ends]**