**Space 19+ 1: Taking the Pulse of the 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 the importance of satellites for monitoring the effects of climate change and how space technology provides the essential data necessary to curb carbon emissions.

**A-ROLL**

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| **Pictures** | **Script** |
| **10:00:10**  Earth filmed from the ISS (ESA, NASA)  Glacier footage – Videoblocks  Ice sheets melting:  <http://www.esa.int/ESA_Multimedia/Transmissions/2019/05/Ice_Coverage_the_global_thaw>  Ocean waves - Videoblocks  Hurricane imagery from the ISS shot by Luca Parmitano (ESA, NASA) | The Earth’s climate is rapidly changing…Temperatures are rising…  The ice sheets are melting…glaciers retreating…  The oceans are warming…and sea levels are rising.  We are also seeing an increased number of extreme weather events… |
| **10:00:27**  ESA TV and Videoblocks stock images of emissions and pollution | The scientific evidence clearly shows that these changes are the result of human activity – caused by our emissions of greenhouse gases – such as carbon dioxide and methane - into the atmosphere. |
| **10:00:45**  Sentinel 1 in space animations (ESA)  Ocean temperatures visualisation (based on real data) (ESA)  Satellite stills from space (ESA)  And change in ice thickness visualisation (ESA) | Satellites give us an independent view of the Earth.  Their instruments enable us to monitor and measure the key elements that effect our climate – the so called “Essential Climate Variables”.  The data clearly shows the effects of climate change across the entire globe – on land, the oceans and at the poles.  …vital information to inform global efforts to reduce carbon emissions. |
| **10:01:13**  Sentinel 5 in space animation (ESA)  Sentinel 3 in space animation (ESA)  Sentinel 1 in space animation (ESA)  Co2 emissions visualisation (ESA) | Together with the European Commission, ESA currently operates seven Sentinel satellites.  Forming part of Copernicus – the largest Earth Observation Programme in the World – the satellites monitor different aspects of our climate…. including measurements of sea surface temperature, air quality and vegetation.  The next generation of Copernicus will – for the first time - provide real-time data of global CO2 emissions. |
| **10:01:42**  Cryosat animation (ESA)  Into SMOS animation (ESA) | ESA has also launched Earth Explorer missions…including Cryosat – fitted with an advanced radar instrument to measure ice thickness…  …and SMOS, which is giving us a new insight into the water cycle. |
| **10:01:58**  Earth animation with FORUM text (ESA)  Video from the ISS (ESA, NASA) | The 9th Earth explorer satellite mission will be FORUM.  Standing for Far-infrared Outgoing Radiation Understanding and Monitoring…the satellite will measure heat energy emitted by Earth.  FORUM will make global measurements of the far infrared part of the electromagnetic spectrum – helping us to understand how heat is emitted into space….data that will be used to build up a more accurate picture of how much heat stays inside the Earth system. |
| **10:02:30**  Landsurface temperature visualisations (ESA) | Other future missions include a satellite to measure land surface temperate  And CHIME, which will monitor the land across a very wide range of different frequencies to reveal hidden changes to land use or vegetation. |
| **10:02:43**  Rotating animated globes showing various satellite measurements of Earth (ESA)  ISS video shots (ESA, NASA) | Together, these multiple ESA Earth Observation missions are helping scientists put together a more complete picture of our changing world…and are providing the facts needed for the political decisions essential to further understand and combat climate change. |

**B-ROLL**

**10:03:06**

**Earth from space**

GVs of Earth from the ISS (ESA, NASA)

**10:05:24**

**Hurricane images from ISS**

Sequence of images of Hurricane Dorian shot by ESA astronaut Luca Parmitano on the ISS (ESA, NASA)

**10:06:02**

**Sentinel-1 animations**

Animations of advanced radar satellite Sentinel 1 (ESA)

**10:08:42**

**Sentinel-5P animations**

Animations of trace gas and aerosol (pollution) monitoring satellite Sentinel-5P

**10:10:12**

**Sentinel-3 animations**

Animations of Sentinel-3 mission measuringsea surface topography, sea and land surface temperature, and ocean and land surface colour

**10:10:52**

**Ocean Temperature visualisation**

ESA visualisation (based on real satellite data) showing global ocean temperatures

**10:11:42**

**Ice thickness visualisation**

ESA visualisation (based on real satellite data) showing changes to ice thickness in Greenland

**10:12:22**

**CO2 emissions visualisation**

Visualisation of global CO2 emissions during 2015 (based on real data)

**10:15:46**

**Land surface temperature visualisation**

Rotating globe animation with visualisation showing land surface temperatures and still image of European land surface temperatures in July 2019

**10:16:33**

**Multiple globes animation**

Rotating Earth animation into multiple globes illustrating satellite measurements

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