**Highlights 2019**

As the year comes to a close it is once again time to look back and reflect on some of the achievements and highlights in the field of European Spaceflight. As always ESA has been at the forefront of science with the launch of CHEOPS and the preparations for Solar Orbiter. The Copernicus programme continues to be the largest earth observation programme in the world and ESA is even preparing more mission. At the ISS Luca Parmitano has undertaken some of the most complicated spacewalks ever, he is also the third European to be given command of the ISS. At the end of 2019 the ESA space19+ ministerial conference allotted ESA its largest budget ever and expressed continued support for ESA to secure Europe’s independent access to space with Ariane 6 and Vega-C

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| 10:00:00 | ESA leader |
| 10:00:10 | Title: ESA 2019 Highlights |
| * Animation. Aeolus in orbit – 2017 – ESA * Animation. Aeolus scanning the winds – 2017 - ESA * Animation. Aeolus in orbit – 2017 – ESA * Animation. Global winds patterns – 2018 - ESA | 2019 was marked by the start of operations for Aeolus, the first ever satellite to analyse global wind patterns using a laser-doppler. Data provided by Aeolus is an invaluable tool for weather forecasting, increasing accuracy and giving insights about winds. |
| 10:00:30:00   * Animation. Sentinel-5P in orbit – 2017 – ESA * Animation. Sentinel-2 in orbit – unknown date – ESA * Animation. Aeolus in orbit – 2017 – ESA * Animation. SMOS in orbit – unknown date – ESA * Aerial. Ice sheet – unknown date- videoblocks * Aerial. Glacier with river – unknown date - videoblocks * Animation. Rotating globe temperature measurements – unknown date- ESA * EXT. Ice sheet breaking of timelapse – 2019 – ESA * INT. Sentinel-6 in IAGB cleanroom, Ottobrunn, Germany – Nov 2019 – ESA (2shots) * Animation. Rotating globe sea surface temperature – unknown date – ESA * INT. Airplane CIMREX mission - Norway – 2019 – ESA * EXT. Airplane CIMREX mission - Norway – 2019 – ESA (2shots) | Earth observation measurements provided by the Sentinel satellites of Europe’s Copernicus programme or by ESA Earth Explorers such as Aeolus or SMOS continued to give interesting and useful data about climate change and the health of our planet. Climate change is one of the biggest challenges today and data from space is key to understand the situation. Another Sentinel satellite, is ready for launch in 2020: Sentinel-6 will study sea level rise on a global scale, one of the key indicators of climate change. ESA is already preparing the next generation of Sentinel for example checking future instruments to fly over the arctic region and analyse the sea ice shield. |
| 10:01:16:05   * EXT. BEAP P120C firing test, Europe Spaceport – Kourou, French Guiana – 2019 – ESA (5 shots) * Aerial. ELA 4, Europe Spaceport – Kourou, French Guiana – Nov 2019 – CNES (2 Shots) | ESA continues to secure an independent access to space for Europe. with the preparation of a more powerful Vega. Earlier this year the new motor common to Vega c and Ariane 6 was tested twice at Europe spaceport in Kourou. Also the Ariane 6 launchpad is clearly taking shape. |
| 10:01:38:05   * EXT. Ariane 5 launch of EDRS-C – 24/07/19 – ESA (2 shots) * Int. EDRS-C at CART Facility, Airbus Defense and Space, Ottobrunn, Germany - 21/03/2019 – ESA * Animation. EDRS in orbit – unknown date - ESA | Last summer an Ariane 5 launched EDRS-C, a telecom satellite from Kourou to complete the European data relay system that uses optical laser connections between satellite for faster data exchange. . |
| 10:01:52:19   * EXT. Soyuz launch of Luca Parmitano – July 2019 – ESA * INT. ISS transfer of command to Luca Parmitano – October 2019 – ESA/NASA * INT. ISS Luca Parmitano piloting analog 1 – 2019 – ESA * INT. analog 1 driving at ESTEC - Noordwijk, The Netherlands– 2019 – ESA * INT. ISS Luca Parmitano piloting analog 1 – 2019 – ESA * INT. analog 1 driving at ESTEC - Noordwijk, The Netherlands– 2019 – ESA * EXT. ISS EVA AMS repair – Autumn 2019 – ESA/NASA * STILL. AMS on ISS – unknown date – ESA/NASA * EXT. ISS EVA AMS repair by Luca Parmitano – Autumn 2019 – ESA/NASA * STILL. AMS on ISS – unknown date – ESA/NASA (3 shots) * EXT. ISS EVA AMS repair by Luca Parmitano – Autumn 2019 – ESA/NASA (2 shots) | In July Italian ESA astronaut Luca Parmitano was launched from Baikonur for his second long duration mission to the International Space station. He is the third ESA astronaut who was entrusted as Commander of the space station.  He demonstrated the possibility to control a rover on earth from orbit. This showed the value of human-robotic cooperation in space. Key for many of future exploration projects.  Luca Parmitano is also part of the most complicated series of spacewalks ever: the repair of AMS, the alpha magnetic spectrometer outside ISS, three spacewalks have been performed successfully so far.  AMS looks in particular for dark matter and antimatter measuring cosmic rays. It has exceeded its lifetime and was not designed for any maintenance making it difficult to repair this precious tool that has given ground breaking results to the scientific community. |
| 10:02:56:01   * Animation. Gaia telescope scanning the heavens – unknown date – ESA * STILL. Gaia map – 2019 – ESA | In Science European Space Agency is always at the forefront. A good example is a new release of the Gaia catalogue offering the best mapping of the milky way. |
| 10:03:07:03   * INT. CHEOPS in cleanroom – unknown date – 2018 – ESA (2shots) * Animation. CHEOPS in orbit – 2018 – ESA * Animation. Star with exoplanets – 2018 - ESA | Cheops, the Characterising ExOPlanet Satellite, will study known exoplanets that are orbiting bright stars. This new telescope was launched from Kourou mid-December. |
| 10:03:21:15   * Animation. Solar orbiter in front of sun – 2019 – ESA * Animation. Solar orbiter launch – 2019 – ESA * Animation. Solar orbiter Venus fly-by – 2019 – ESA | ESA is also ready to study our own star, the sun, the source of life on earth. Early 2020 Solar Orbiter will be launched from Florida. This mission will help us understand how our star behaves and interacts with the entirety of our Solar System. |
| 10:03:38:24   * EXT. Philae onboard cam descent to comet – 2016 - ESA * INT. Rosetta control center – 2016 – ESA (2shots) * EXT. Rosetta images of comet – 2016 - ESA (5 shots) | 3 years after its historical landing on a comet Rosetta is still a gold mine for discoveries. Scientists are still using its data to learn more about comet life and how they evolve giving clues about our solar system |
| 10:03:55:02   * INT. Space19+ conference room – Seville, Spain – December 2019 – ESA (5 Shots) * Animation. Hera mission in space – 2019 – ESA * Animation. LISA mission – unknown date – ESA * Animation. Ariane 6 launch – 2019 – ESA (2 shots) | 2019 ended with the success of Space 19+ ESA ministerial conference that took place in Seville. ESA member states supported the agency with its biggest budget ever, allowing for new missions, securing independent access to space and ambitious scientific goals for the future of Europe in Space  As the year ends the future begins. |
| **10:04:22:12** | **B-ROLL** |
| * Aerial. ELA 4, Europe Spaceport – Kourou, French Guiana – Nov 2019 – CNES | **GV’s ELA 4**  **Europe Spaceport**  **Kourou, French Guiana**  **CNES** |
| 10:05:49:19   * Animation. Solar orbiter – 2019 – ESA | **Animation**  **Solar Orbiter**  **ESA** |
| 10:06:23:05   * EXT. Ariane 5 launch of EDRS-C – 24/07/19 – ESA | **EDRS-C Ariane 5 launch**  **Kourou, French Guiana**  **July 24, 2019**  **Arianespace** |
| 10:07:54:21   * EXT. ISS EVA AMS repair by Luca Parmitano – Autumn 2019 – ESA/NASA * INT. ISS EVA AMS repair by Luca Parmitano – Autumn 2019 – ESA/NASA | **GV’s Luca Parmitano EVA repair AMS**  **ISS**  **November 2019**  **ESA/NASA** |
| 10:09:25:00 | **ESA credits** |
| **10:09:50:01** | **END** |