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|  | **ESA Highlights 2020**December 2020A-RollDuration: 5mins 4secsText intro: 2020 has been another year of progress for ESA. The launch and commissioning of Solar Orbiter heralded a new era of space science, whilst Eutelsat Konnect revolutionised telecommunications. The new Vega SSMS began a cost-effective new launch system for small satellites, deploying exciting new technologies such as PhiSat and ESAIL. ESA’s Earth Observation activities were also showcased, with the launch of Sentinel-6 and an international effort to monitor the environmental and economic impact of COVID-19. Gaia and Cheops yielded new findings about our universe; ESA astronaut Luca Parmitano returned successfully from orbit. With a lunar programme agreement signed and new steps being taken to control debris, ESA is set to begin 2021 at the forefront of space exploration. |

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| **Timecode** | **Footage** | **Voiceover** |
| **10:00:00** | Opening titles |  |
| **10:00:08** | -GVs Solar Orbiter in cleanroom-GVs Solar Orbiter launch | **2020 has been a productive year for ESA, despite the challenges of a global pandemic.****The much-anticipated Solar Orbiter was launched in February, and its ten instruments were tested in situ for the first time. With unrivalled protection against heat and light, it can get closer to the Sun than any previous spacecraft. Its observations of solar activity have already exceeded all expectations.**  |
| **10:00:35** | -Eutelsat Konnect launch-Graphic: Eutelsat Konnect | **The beginning of the year also saw the launch of Eutelsat Konnect. Built by Thales Alenia Space as an ESA Partnership Project, this high-throughput satellite will increase broadband coverage, bridging the digital divide between Africa and Europe.**  |
| **10:00:52** | -GVs SSMS dispenser in cleanroom-Animation: SSMS deployment -ESAIL in cleanroom-Animation: ESAIL-Still: PhiSat | **After grounding due to a failure in July, ESA’s Vega launcher returned in September with the first deployment of SSMS – a new modular dispenser, designed to provide affordable launch opportunities for multiple small satellites.** **Amongst the 53 satellites onboard was ESAIL, a high-performance instrument for tracking ships worldwide.****Also onboard was PhiSat, ESA’s first demonstration of how artificial intelligence can be used to enhance Earth Observation technology.** |
| **10:01:26** | -GVs Vega-C development-Animation: Space Rider deployment-Animation: Ariane 6 | **Meanwhile development continued on the new Vega-C launcher, which will be able to return hardware to Earth using the integrated Space Rider re-entry vehicle.****Work also continued on Ariane-6, which will be available in both 2 and 4 booster configurations.** |
| **10:01:46** | -GVs Sentinel-6 in cleanroom-Animations: Sentinel-6 | **ESA’s Earth Observation capabilities were showcased throughout 2020, with Sentinel-6 launched in November. Using the latest radar altimetry technology, this will continue a four-decade programme of sea level measurements - essential to help mitigate the effects of climate change and protect vulnerable communities.** |
| **10:02:08** | -Sentinel-1 iceberg images-SMOS results at VanderSat offices -SMOS results-Screengrab: COVID-19 Earth Observation Dashboard-Screengrab: RACE Dashboard | **As the older Sentinel-1 tracked a huge iceberg off the coast of Georgia, the Soil Moisture and Ocean Salinity mission continued to provide crucial data for agriculture – more than a decade after its launch****ESA responded to the global pandemic by co-operating with NASA and JAXA on the COVID-19 Earth Observation Dashboard, and with the European Commission on the Rapid Action Coronavirus Earth Observation dashboard.****These use satellite data to monitor the impact and recovery from environmental changes caused by the Coronavirus lockdown.** |
| **10:02:47** | -GVs ESOC-BepiColombo images of Earth-Animation: Cheops-Graphic: WASP-189b-Animation: Gaia-Gaia results | **Throughout the COVID pandemic the European Space Operations Centre managed to keep complex operations going. Despite the challenges of remote working, it was possible to capture these stunning images of Earth during the April flyby of BepiColombo.****Other Space Science projects included exoplanet hunter Cheops, which in September revealed one of the hottest planets ever recorded, WASP-189b.****And on December 3rd results were released from the Gaia space observatory showing the most detailed ever catalogue of stars in our Milky Way.**  |
| **10:03:26** | -GVs Luca Parmitano in orbit-GVs Luca Parmitano returns to Earth-GVs Thomas Pesquet training-Animation: Gateway | **On the human spaceflight front, 2020 saw the return of ESA astronaut Luca Parmitano, who landed on the Kazakhstan Steppes in February after a 201 day mission to the ISS.****The next astronaut to fly will be Thomas Pesquet, who has spent the year preparing for the upcoming Alpha mission - launched by the SpaceX Crew Dragon.****In October, ESA and NASA also signed the historic Memorandum of Understanding which will see Member States contribute elements to Gateway, the first human outpost in lunar orbit.** |
| **10:04:06** | Animation: Space Debris-Graphic: ClearSpace-1 captures Vespa-Animation: Hera-GVs Flyeye telescope-Earth from the ISS | **As Europe continues its exploration, steps are being taken to ensure safety in space.****A contract was signed with Swiss company ClearSpace to remove orbiting debris, with ambitious plans to capture a Vega payload adapter in 2025.** **ESA also gave German company OHB the green light to start development of Hera, ESA’s first planetary defence mission to deflect asteroids. This is complemented by a new Flyeye telescope in Milan, Italy, also developed by OHB.****2020 has been a challenging time for the world. ESA has worked hard to overcome setbacks and achieve its goals- leaving us well-placed to pursue a brighter future in space.** |
| **10:04:53** | **End titles** |  |
| **10:05:04** | **A-Roll ends** |  |
|  | **ESA Highlights 2020**December 2020B-RollDuration: 21mins 40secs |
| **10:05:06:09** | **GVs Solar Orbiter in cleanroom, Cape Canaveral, Florida, January 2020** |
| **10:05:30:05** | **Animation: Solar Orbiter launch and deployment** |
| **10:06:21:01** | **Animation: Solar Orbiter images captured by****the Extreme Ultraviolet Imager (EUI), June 2020** |
| **10:06:58:22** | **GVs Eutelsat Konnect launch, Ariane Spaceport, Kourou, French Guiana, January 2020** |
| **10:07:25:01** | **GVs SSMS dispenser in cleanroom, Interspace, Toulouse, France, May 2019Animation: SSMS launch and flight, June 2020** |
| **10:08:10:03** | **Animation: SSMS launch and flight, June 2020** |
| **10:09:12:19** | **GVs Vega-C P120C firing test, Ariane Spaceport, Kourou, French Guiana** |
| **10:09:31:23** | **Animation: Space Rider**  |
| **10:13:17:22** | **Animation: Ariane-6** |
| **10:15:34:21** | **GVs Sentinel-6 in cleanroom, IAGB, Ottobrun, Germany, November 2019**  |
| **10:16:07:10** | **Animation: Sentinel-6** |
| **10:17:11:04** | **BepiColombo Earth flyby, April 2020** |
| **10:17:40:04** | **Animation: Cheops** |
| **10:19:13:11** | **Animation: Gaia** |
| **10:19:47:00** | **GVs Luca Parmitano onboard the ISS, July 2019 to February 2020** |
| **10:21:03:08** | **GVs Luca Parmitano and Andrew Morgan EVA, 25 January 2020** |
| **10:21:43:20** | **GVs Thomas Pesquet training, Johnson Space Center, Houston, Texas, USA, 2020** |
| **10:23:47:23** | **Animation: Orion docking with Gateway** |
| **10:24:09:10** | **Animation: Hera** |
| **10:26:53:24** | **End titles** |
| **10:27:04:24** | **B-Roll ends** |
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