**Sea level rise acceleration**

**Sea level rise is a generally accepted fact in the scientific community. And insights gained by analyzing satellite observations now show that the sea level is rising even faster than expected. At a Symposium marking «25 years of progress in Satellite Altimetry» in Ponta Delgada on the Island of Sao Miguel in the Azores, expert scientists exchanged and discussed on the latest developments in our understanding of Earth’s surface variations observed by altimetry.**

**This A&B Roll shows latest animations on sea level rise, images of Sao Miguel in the Azores.**

**It includes interviews with Altimetry experts in English, French, Italian and German.**

|  |  |
| --- | --- |
| 10:00:00 | ESA leader |
| 10:00:10 | Title: **Sea level rise acceleration** |
| 10:00:10   * Aerial of the Atlantic ocean, San Miguel Island, The Azores – September 2018 – ESA * Mean sea level altimetry animation – 2018 – ESA * Animated with sea level rise data – 2018 – ESA * Animations of sentinel-3 using altimeter – 2018 - ESA * EXT. cove on San Miguel Island, The Azores – September 2018 - ESA * Mean sea level altimetry animation with satellites – 2018 - ESA * EXT. coast on San Miguel Island, The Azores – September 2018 - ESA | Satellites can see it and the red arrow shows it, sea level has been steadily rising but now it is accelerating. There is no doubt after 25 years of radar altimetry and Scientist have the necessary long term data to confirm it. Radar altimeters record the earths surface along the satellite’s track. They measure the height of water, land and ice by timing the interval between transmission and reception of very short radar pulses. Continuous data sets on radar altimetry go as far back as the 1990’s when ESA launched its Europe Remote Sensing satellites, ERS, measuring for instance sea height and ice and the NASA/CNES Topex Poseidon mission which measured ocean surface topography. These long-term data series proved by satellites are crucial to understand how sea levels have risen. |
| 10:01:04:09   * EXT. Theatre roof, San Miguel Island, The Azores – Sept 2018 - ESA | **Itw Anny Cazenave Senoir Advisor Laboratoire d’Etudes en Géophysique et Ocanographie Spatiales – LEGOS/CNES**  *With this 25 year records of satellite altimetry we have learned that sea level is rising. It is even accelerating. We have also discovered that it is not rising uniformly. In some regions, in the tropics in particular the rate of sea level rise is three times larger, faster than the global mean. We also know that it is due to global warming, that it is anthropogenic greenhouse gases emissions. And we know that sea level will continue to rise in the future. First of all because of continuing land ice melt and because of the heat that is already stored inside the ocean.* |
| 10:01:45:02   * Animated Globe with sea level rise data from 1993 to 2017 – 2018 – ESA * EXT. Mediterranean Beach, Sabaudia, Italy – September 2018 – ESA * Sea Level rise infographics the rise and acceleration * Ext. Ifremer reseachers at sea - Northsea, France – 03/04/2018 – EURONEWS * Animated Globe with sea temperature data– 2018 – ESA * Animated Globe with gravity data– 2018 – ESA * Sea level rise from Greenland – 2018 – Planetary vission/CPOM/ESA * Ext Iceberg – unknown date – ESA/NASA IMBIE Project * Sea level rise contribution animated infographics – 2018 – ESA * EXT. Mediterranean Beach, Sabaudia, Italy – September 2018 – ESA | The satellite radar altimetry data shows that in the past sea levels rose at an average of 3 mm/year and in the last 5 years the rise is near 5 mm/year. This is complemented with findings from other sources such as in situ measurements, information on sea temperature and data provided by satellite gravity missions which weigh the oceans.  Satellites also provide us with an insight on how climate change is responsible for melting glaciers and land ice around the globe. This process also contributes to the general rise.  But the rise is not equal around the globe and altimetry can be used to protect coastal zones where the risk is obviously higher. |
| 10:02:29:03   * EXT. San Miguel Island, The Azores – Sept 2018 - ESA | **ITW Marcello PASSARO, Researcher, Technical University of Munich**  *The coastal zones are in danger but we have to look at it in a scientific way. We don’t just have to be scared we have to watch and understand what happens. So altimetry is a way to understand in which areas we have to focus for example our coastal defences. Not everywhere the sea level is rising, not at the same pace. So we might want to know if we have to build a high wall somewhere and maybe a wall that is not that high somewhere else.* |
| 10:02:51:20   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA * EXT. San Miguel Island symposium venue, The Azores – Sept 2018 – ESA * INT. San Miguel Island symposium venue, The Azores – Sept 2018 - ESA | On the Island of San Miguel in the Azores over 420 scientists have gathered to share their results at the « 25 years of progress in radar altimetry» symposium. One of the main topics is sea level rise. 90 of them, representing 50 different institutes around the world have signed a joint article confirming their findings and their common understanding of the situation. For them it is clear that sea level rise is an urgent problem caused by global warming. |
| 10:03:22:21   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **ITW Eric Leuliette, Jason Program Scientist - NOAA**  *We’re very confident in our results that we are seeing 25 years of sea level rise at about 3mm per year. Which doesn’t sound like a lot but as we see it is starting to increase year after year. We know that acceleration will be very devastating for coastal communities all over the world.* |
| 10:03:40:16   * Animated Globe with ocean currents– 2018 – ESA * EXT. Mediterranean Beach, Sabaudia, Italy – September 2018 – ESA * Sentinel-3 animation focus on radar altimeter – 2017 – ESA * Sentinel-6 / JASON CS animation – 2018 – ESA * Mean sea level altimetry animation with satellites – 2018 - ESA * Mean sea level rse map for 1993-2017 – 2018 – ESA * EXT shots of the ocean, San Miguel Island, The Azores – 2018 -ESA | To systematically measure and understand global changes in sea level rise we need long-term altimetry records. The radar altimeter is a unique instrument in space and the only technology that can monitor sea level rise and warn us about what is happening. Today ESA is preparing future missions like Copernicus Sentinel 6 to continue these observations. This data proves undeniably that sea levels are rising. Policy makers can use this tool to take decisions and protect millions of people affected by sea level rise and climate change. |
|  | **B-ROLL** |
| 10:04:18:22   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **ITW Marcello PASSARO, Researcher, Technical University of Munich – ENGLISH**   * Monitoring the coastal zones thanks to Radar Altimetry |
| 10:04:49:20   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **ITW Marcello PASSARO, Researcher, Technical University of Munich – ITALIAN**   * Monitoring the coastal zones thanks to Radar Altimetry * Importance of monitoring coastal zones |
| 10:05:54:08   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **ITW Marcello PASSARO, Researcher, Technical University of Munich – German**   * Monitoring the coastal zones thanks to Radar Altimetry * Regional changes in sea level |
| 10:06:45:22   * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **ITW Eric Leuliette, Jason Program Scientist – NOAA – ENGLISH**   * 25 years of measurements and the results * Cause of sea level rise * Future plans on sea level monitoring |
| 10:08:59:05   * INT. San Miguel Island symposium venue, The Azores – Sept 2018 – ESA * EXT. San Miguel Island symposium venue, The Azores – Sept 2018 – ESA * EXT. San Miguel Island, The Azores – Sept 2018 – ESA | **GV’s Symposium at San Miguel**  **San Miguel The Azores**  **September 2018**  **ESA** |
| 10:11:14:18   * Animations of sentinel-3 – 2018 - ESA | **Animations Sentinel-3**   * Scanning radar altimeter * Measuring sea surface temperature * Inside view |
| 10:13:20:06   * Animation of sentinel-6 – 2018 - ESA | **Sentinel-6 Animation**   * 360° vieuw |
| 10:13:48:22   * infographics sea level rise – 2018 - ESA | **Animated infographics** |
| **10:14:44:01** | **END** |