

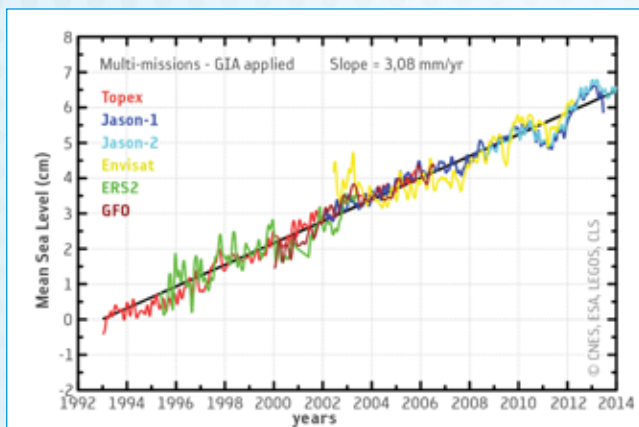
→ HOW DO SATELLITES HELP PROVIDE INFORMATION ON CLIMATE CHANGE?

To detect changes in the climate, a long time series – usually 30 years – of data are needed. From this, changes from year to year and decade to decade can be determined. These changes can be small but critical, such as the rise in sea level, currently measured in millimetres per year. Therefore it's essential that data sets used for climate research are accurate and consistent over a long time period.

Satellites are excellent at providing consistent data over the whole world, sending back vital information to Earth on inaccessible areas. However, they have finite lifespans of a few years to over a decade and there can be gaps between missions. To produce data sets long enough for climate research, the combination and inter-calibration of many different satellite missions is required.

The European Space Agency's **Climate Change Initiative (CCI)** programme does just this, by merging data sets from different missions and sensors in to one continuous series of data. Observations from ESA's 30-year archive, together with currently operating satellites, all contribute to making up these data series. This is done this for key components of climate change, or "Essential Climate Variables" that are measurable from space.





Mean Sea Level changes from 1993 – 2013, as measured by satellites. The time series is composed of different satellite missions (in the different colours), which are then merged to produce a final CCI Sea Level product. The associated trend of the multi-mission Mean Sea Level is 3.08 mm/yr. Credits ESA/CLS/CNES/LEGOS.

The programme then feeds in to a Global Climate Observing System, which coordinates the provision of data for climate studies from the main observation networks – satellites, local measurements, aircraft, ocean buoys, etc. It is this information that help underpin the conclusions made in the reports of the Intergovernmental Panel on Climate Change (IPCC). It is vital that we continue to make these measurements in to the future – the longer the time series, the greater their value to climate science and the world.