

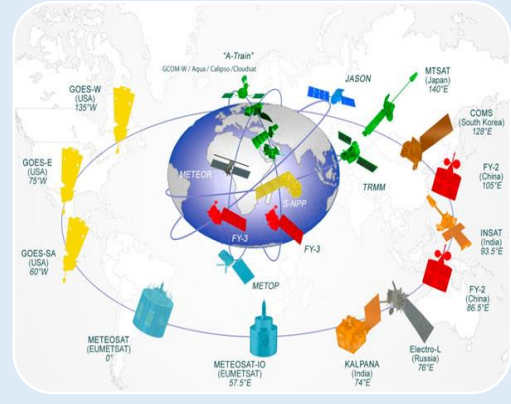


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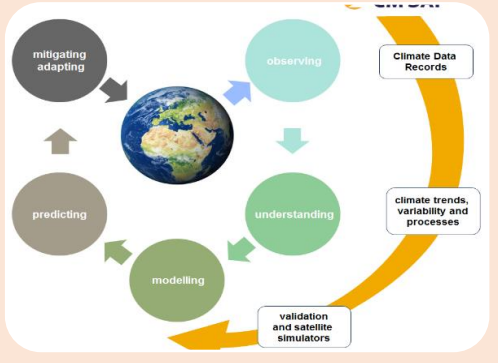
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Climate services require data from observing and monitoring systems such as ground-based weather stations, ocean buoys, and Earth observation satellites.



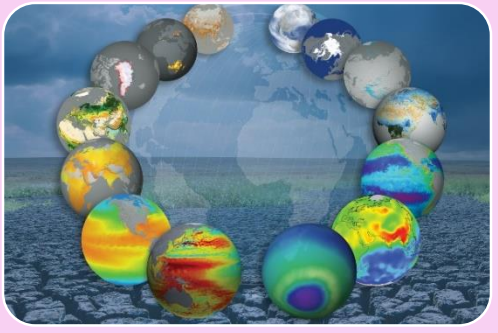
- Satellite measurements of Earth’s temperature, greenhouse gas emissions, sea levels, atmospheric gases, dwindling ice and forest cover etc., are essential for improving the understanding of climate change and predicting future of the Earth. Currently, there are around 170 satellites of different operators in-orbit that measure the various indicators related to climate change.
- The Global Climate Observation System (GCOS) provides principles and guidelines to satellite operators for acquiring and storing observations from satellites and other sources that are helpful for monitoring climate and produce Climate Data Records (CDRs).

Climate Data Records for Essential Climate Variables (ECVs) are generally derived from a combination of satellite and in-situ observations, with satellite observations making a significant contribution for a majority of ECVs.

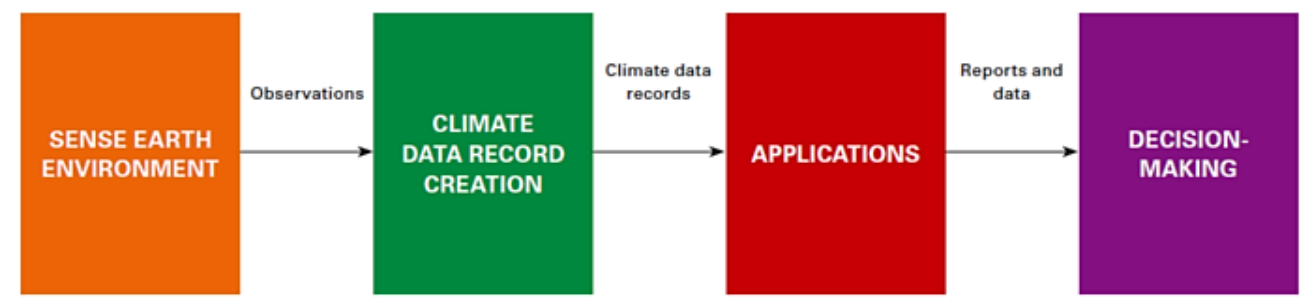


- The European Space Agency (ESA) has undertaken the Climate Change Initiative program that exploits archived and emerging satellite observations to develop long-term, global data records that describe the evolution of key components of the Earth system, known as Essential Climate Variables (ECVs).
- The Satellite Application Facility on Climate Monitoring (CM SAF) from EUMETSAT generates and archives high-quality datasets for specific climate application areas, through the exploitation of satellite measurements with state-of-the-art algorithms, to derive information about the climate variables of the Earth system.

Since the creation of the World Weather Watch (WWW) in 1963, some 240 environmental satellite missions have taken place as a major component of the global observing system.



- The emerged necessity for a coordinated approach for observing climate and generating climate data from space resulted to the creation of Architecture for Climate Monitoring from Space (ACMS).
- The strategy report describes the ACMS in terms of information flow and logical dependencies, which includes: measuring relevant quantities from satellites; the production of climate data records; and the application of those records by various end users, often for policy and decision making purposes.



Architecture for Climate Monitoring from Space

References

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3. Monitoring Climate — EUMETSAT. URL: <https://www.eumetsat.int/>
4. Satellites for climate services. Case studies for establishing an Architecture for climate monitoring from space. 2015: Bulletin WMO, No.1162, pp. 65.