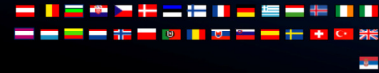
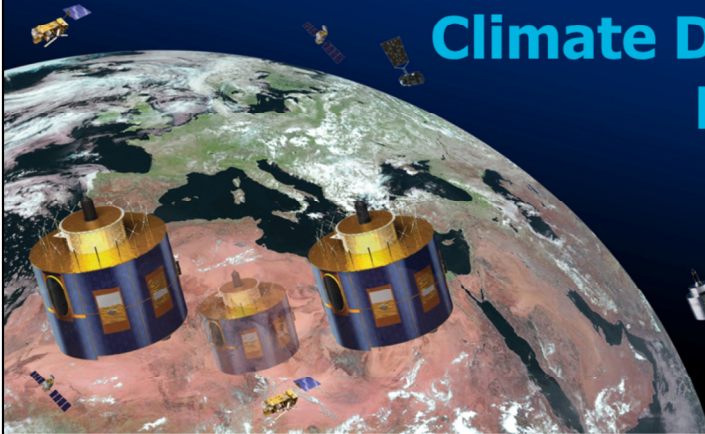
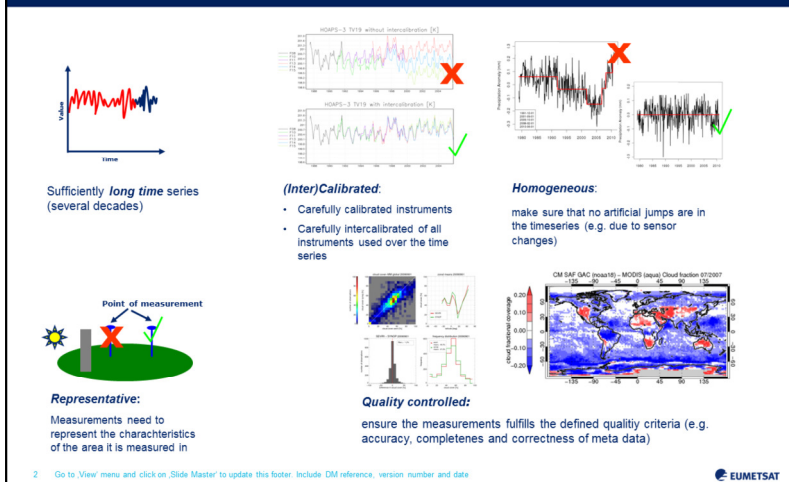


Climate Data Records - Requirements

Christine Träger-Chatterjee



Requirements to Climate Data

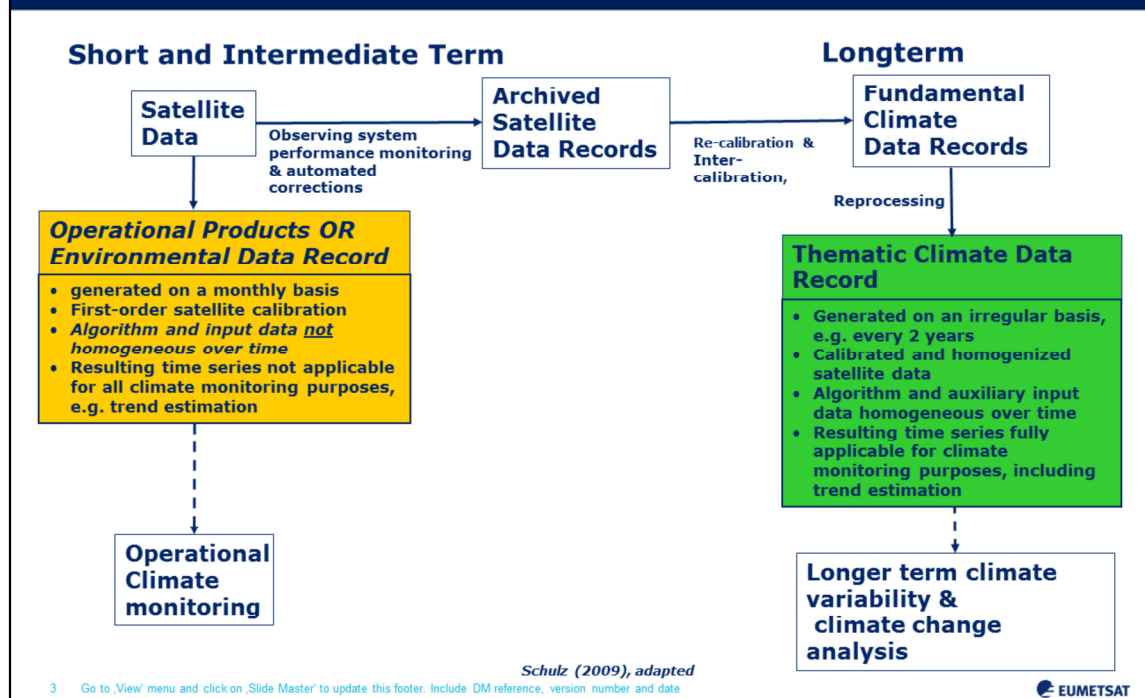


- Sufficiently long time series: for climate monitoring the time series should cover several decades of observations.
- Homogenisation
 - Calibrated instruments: the sensitivity of measuring instrument changes over time. This needs to be accounted for when creating a climate data record, to avoid trends introduced by the instrument (artificial trend versus natural trend).
 - Intercalibrated instruments: when collecting observations over several decades it usually means that one has to deal with changing instruments (instruments being replaced by new ones). Different instruments always behave slightly differently. This needs to be accounted for when creating a climate

data record, to avoid jumps in the time series that are due to the change of instruments (artificial jumps)

- Representative: Looking at one and the same situation, the same instruments need to measure the same values. I.e. the data need to be representative for the area/region they are measured in.
- Quality controlle: the measurements need to fulfill defined accuracy requirements and come with a complete set of metadata.

Environmental Data Records and Climate Data Records - currently

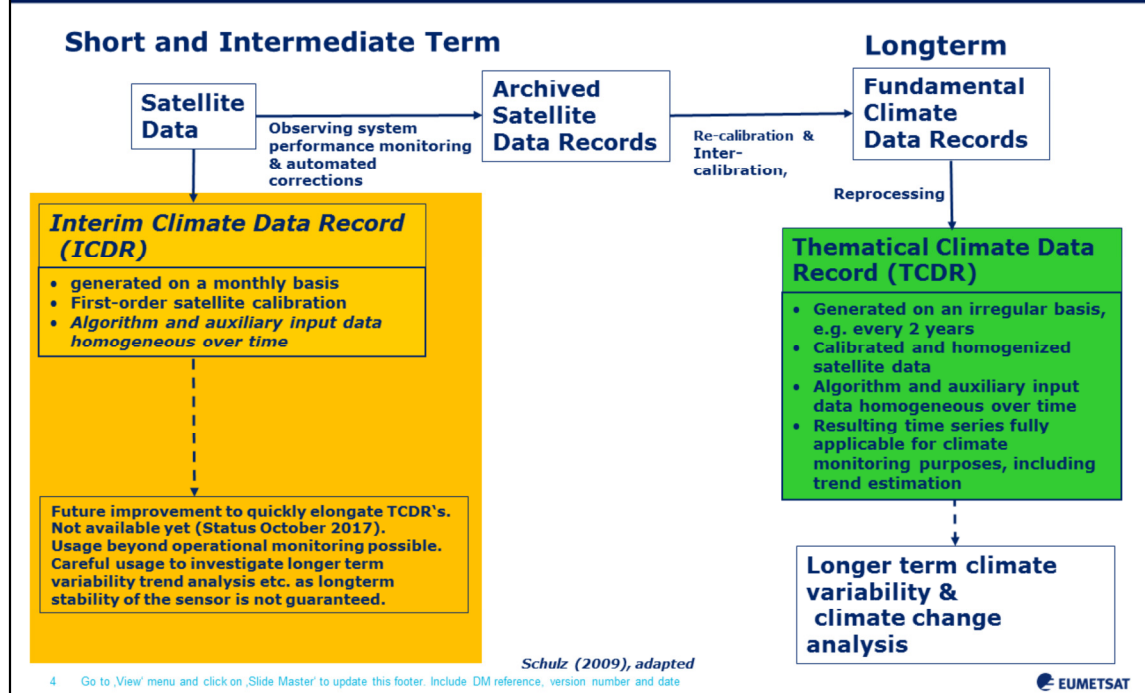


Environmental Data Record (EDR): Satellite Data are collected, a first order calibration and retrieval algorithms to derive geophysical variables are applied (operational satellite data). The retrieval algorithms develop over time and the sources for auxiliary input data might change. I.e. the value of months x might be retrieved with a (slightly) different retrieval than month y.

Fundamental Climate Data Record (FCDR): Homogenized time series (of satellite data). The sensors used during the entire time series are carefully calibrated and intercalibrated. I.e. it is ensured (as far as possible) that no artificial jumps and no artificial trends are in the time series. An FCDR is updated irregularly, i.e. every few years with no fixed update cycle.

Thematic Climate Data Record (TCDR): A stable retrieval algorithm with the same source of auxiliary input data is applied to the a Fundamental Climate Data Record. It ensures (as far as possible) that trends and variabilities are due to actual changes in the environment and not due to changes in sensor characteristics nor due to changes in the retrieval. A TCDR is updated irregularly, i.e. every few years with no fixed update cycle.

Climate Data Records and Interim Climate Data Records in the future



Interim Climate Data Record: The same retrieval algorithm with the same source of auxiliary data is applied to operational satellite data to elongate to TCDR to recent times. ICDR's are not yet available from the CM SAF, but will replace ECDR's in the future.