EARTH OBSERVATION SYMPOSIUM (B1)
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TAXONOMY FOR LONG-TERM DATA RECORDS GENERATED FROM EARTH OBSERVATION SATELLITES

Abstract

The proposed taxonomy of data records is intended to support the Earth System science community, the climate science community, those preserving and archiving the unique data sets and records generated by these communities.

The taxonomy is modeled after the biological taxonomy used to describe biological species from phylum to sub-species and can be used to categorize all possible types of data records generated from satellite Earth observation data, such that they can be listed and distinguished from one another. The model considers data sets generated purely from satellite sensor data, those generated using developed and tested algorithms, those blended with in-situ data, and potentially those generated using Earth system model data as well.

Data records, such as the ozone data records generated by the U.S. teams from U.S. sensors (e.g. SBUV, TOMS and OMPS), are distinguished from the ozone data records generated by European teams using European sensors (e.g. POAM, GOMOS, Sciamachy and GOME). Sea Surface Temperature (SST) data records generated from Japanese and U.S. visible sensors, and those generated from microwave sensors, are uniquely identified within this taxonomy. It distinguishes among long-term data records that use different sensor combinations for calibration. For example AVHRR data records dating back to 1981, can be calibrated to the temporally overlapping MODIS instruments, and then the contemporary VIIRS. Another team may choose to calibrate the AVHRR data record, using operational satellite systems only, such that the data record spanning the same time frame might be calibrated using only the AVHRR and VIIRS record. These two long-term data sets must be identified such that current and future users can distinguish one from the other.

Additionally, satellite data products are being combined with in-situ measurement records, new techniques blending visible and microwave sensors are being developed, and new algorithms are creating new pathfinder data records every day. The author's proposed taxonomy is an attempt to consider unique identifiers for the ever-expanding pool of satellite data records; to aid communications within and among differentiating science communities, to facilitate integration of archive and retrieval efforts, and to offer a better understanding of the data records generated, to all user communities.