



NOAA Activities:

Volcanic Ash Greenhouse Gases Ozone CDRs NOAA Program for CDRs

Mitch Goldberg, Chris Barnet, Larry Flynn (NESDIS/STAR)
John Bates, Jeff Privette (NCDC CDR Program)



NESDIS Satellite Activities for Ozone Climate Data Records

Climate Data Records for the SBUV(/2) measurement retrievals

The SBUV and SBUV/2 data since 1979 have been used to generate a climate data record more than 30 years in length - reaching true climatology (30 years).

Now we are planning to continue the time series with OMPS.

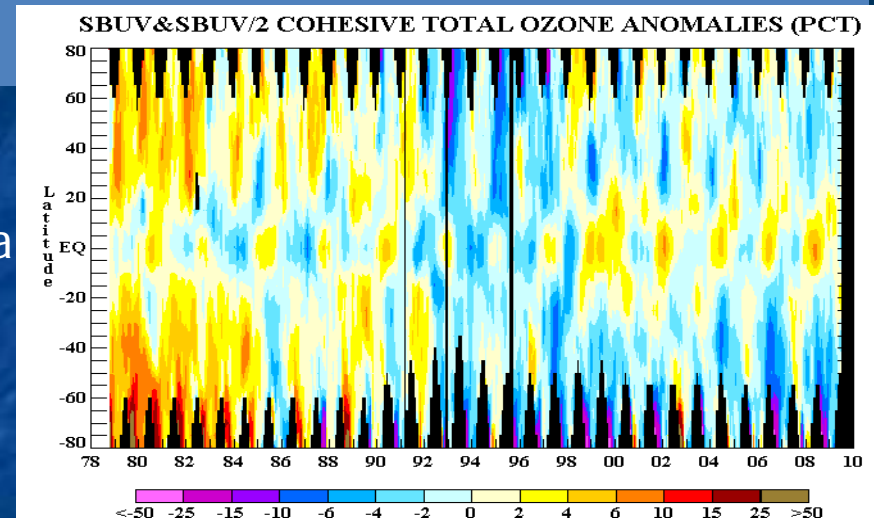


Figure from C. Long *et al.*, http://www.cpc.noaa.gov/products/stratosphere/sbuv2to/sbuv2to_cohesive.shtml

Significance: The SBUV(/2) ozone CDR's are used to determine and monitor **atmospheric ozone trends and variations**. These are compared to models and other results in creating the international ozone assessments.

The latest report is available at:

www.esrl.noaa.gov/csd/assessments/2006/

This new data set is being used in the preparing the next assessment due out in 2010.

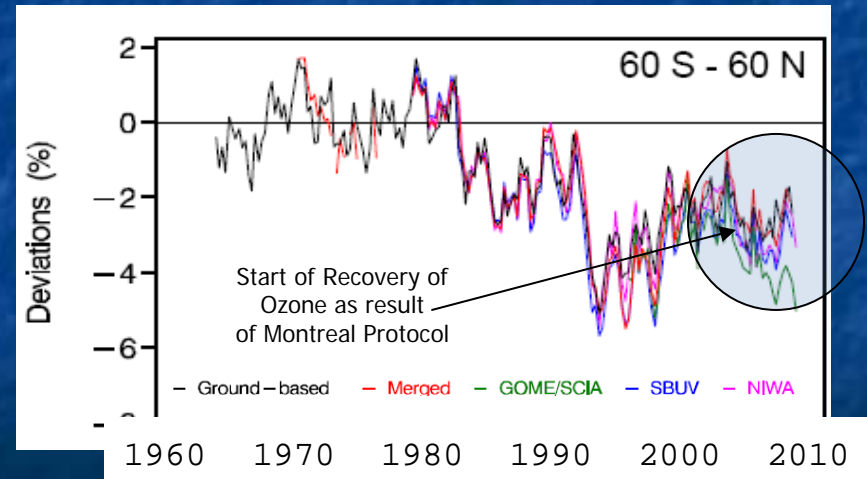


Figure from V. Fioletov *et al.* at the 2008 Quadrennial Ozone Symposium in Tromso Norway showing deseasonalized global mean ozone time series from SBUV(/2) and other sources.



Extending Ozone Climate Data Records (CDRs) into the Ozone Mapping and Profiler Suite (OMPS) Era

- Source Data
 - OMPS RDRs (Level 0) and SDRs (Level 1) for NPP (L2011), JPSS J1 (L2015), and JPSS J2 (L2021)
- Deliverables
 - Algorithms and systems to reprocess OMPS SDRs and EDRs
 - Product validation and evaluation tools
 - Long-term monitoring of OMPS calibration and characterization
- ECVs addressed
 - Total Column Ozone ECV (+UV reflectivity)
 - Ozone Vertical Profile ECV (Nadir profile and Limb profile)
- Current/expected user communities
 - WMO Assessment, NOAA, EPA, NASA

L. E. Flynn NOAA/NESDIS/STAR

Lawrence.E.Flynn@noaa.gov



Proposed international cooperation on Ozone CDRs from BUV measurements

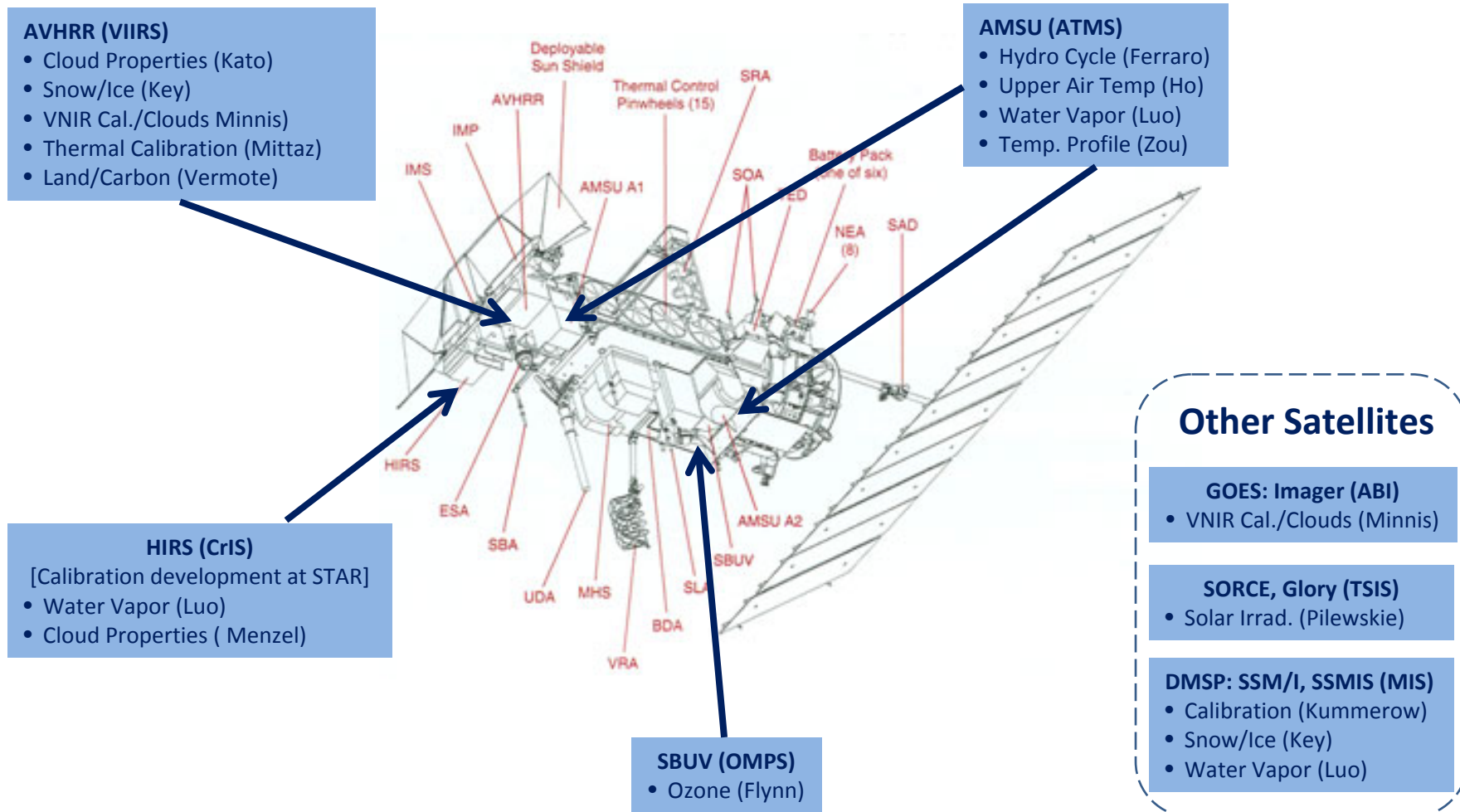
- Comparisons/homogenization of DOAS and TOMS-like total column ozone retrieval products
 - Need to use common sets of standard profiles or provide efficiency factors (column averaging kernels) and profiles
 - Need to revisit forward model comparisons
 - Check performance at high SZAs and large column amounts
- Identification of diurnal variations for profiles
 - Comparisons of profile products (and TOA) at no-local-time-difference latitudes to identify biases
 - Need to use common *a priori* profiles or provide averaging kernels and profiles

NOAA Climate Data Records (CDR) Program

Planned CDRs Supported and Maintained by NOAA's CDR Program

- Current
 - Sea Surface Temperature (Daily Optimum Interpolation)
 - CDR Microwave Imager Temperature Fundamental CDR (SSM/I)
 - Global Cloudiness Record Thematic CDR (POES/GOES ISCCP B1)
 - Shortwave Reflectance, Fundamental CDR (AVHRR, Top-of-Atmosphere)
 - Infrared Brightness Temperature, Fundamental CDR (Geostationary, Top-of-Atmosphere)
 - Thermal Sounder Radiance, Fundamental CDR (HIRS)
- Next set in 2011
 - Sea Ice CDR (Passive Microwave)
 - Surface Albedo, Thematic CDR (Geostationary, SCOPE-CM/Govaerts Alg.)
 - Atmospheric Temperature Profile CDR (Christy [A]MSU)
 - Precipitation Rate CDR (GPCP)
 - Aerosol Optical Depth CDR (GACP AVHRR)
 - Outgoing Longwave Radiation CDR (HIRS)
 - Sea Surface Temperature CDR (Pathfinder AVHRR)

Climate Sensor Coverage CDR Program Grants (future operational CDRs)



Arrows identify key climate instruments

What NOAA's CDR Program Can Offer to Support the Climate Goals of Other Agencies

1. FCDRs from historical NOAA and DMSP instruments
2. TCDRs (including algorithm theoretical basis documents (ATBDs) of selected historical data sets with initial focus on water and energy cycle CDRs
3. Participation in international efforts to improve climate data quality assurance through intercomparison studies.
4. Federation of data centers and standards for sharing of data and metadata

What NOAA Would Welcome from Other Space Agencies for Climate Studies

- Coordinate identification of ECV to CRD mapping and evaluation of maturity
- Federated access to historical FCDRs and TCDRs, including ATBDs which describes the algorithm and uncertainties.