Quality Assurance and Quality Control of Data at the WMO World Data Centre for Greenhouse Gases (WDCGG)

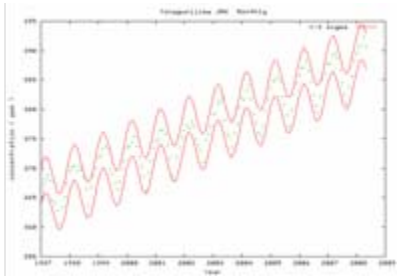
Kazuto Suda, Atsuya Kinoshita, Yukio Kurihara and Rie Nakamura

Japan Meteorological Agency

Quality check and data selection at WDCGG

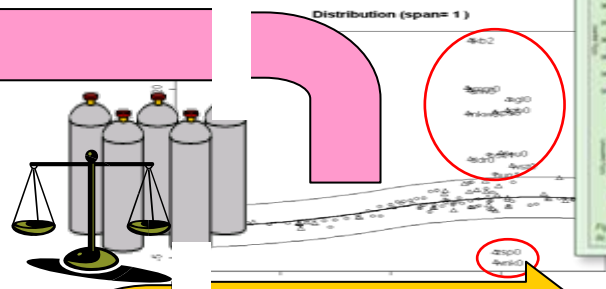
- **Submitted data are quality checked (1) when they are accepted and (2)(3) in the process of global analysis.**

Data submission

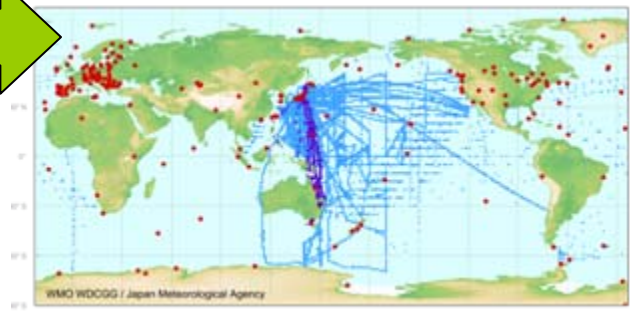


(1) Simple check for acceptance

(2) Quality check and feed back

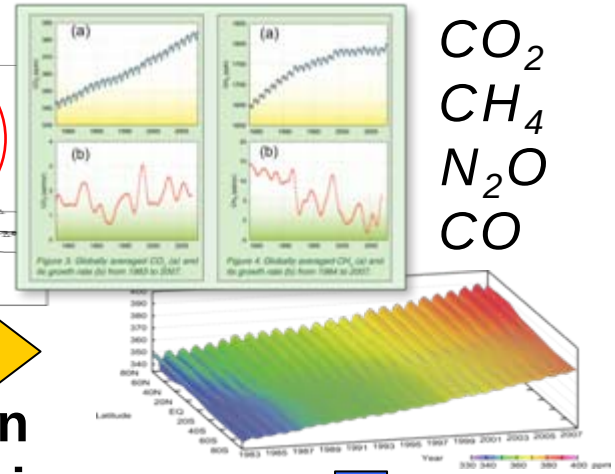


(3) Data selection for global analysis



Archive

Global analysis



CO_2
CH_4
N_2O
CO

Products

Principles of quality check at the WDCGG

- **Quality check is a collaborative work of the data contributors and the WDCGG, which benefits the data users.**

- **Data contributors provide data and all necessary information and take responsibility for data quality. Background conditions and data accuracy are defined by the data contributors.**

- **The WDCGG provides tools for the contributors to control data quality and for the users to select necessary data sets. No selection or correction is made at the WDCGG for the archived data.**

Analysis for WMO Greenhouse Gas Bulletin

- **Submitted data are filtered, integrated and supplemented for the use of global analysis.**

Number of data sets: 157

Traceability to the WMO Standard

144

Integration of parallel observations

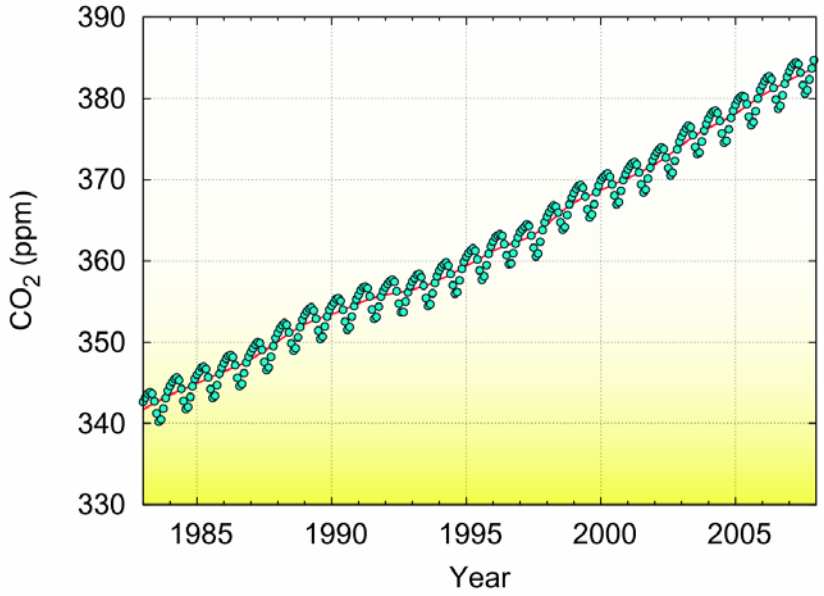
124

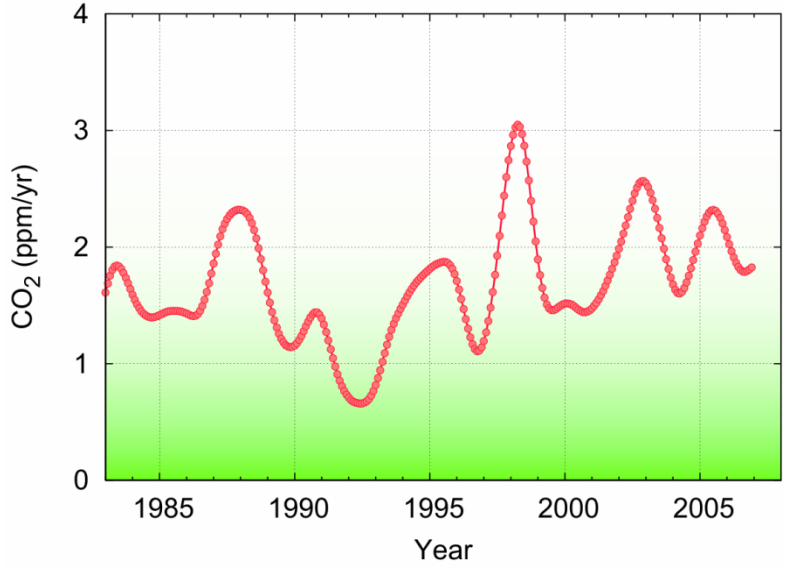
Interpolation and extrapolation to fill data gaps

Site selection based on deviation from the fitting curve

105

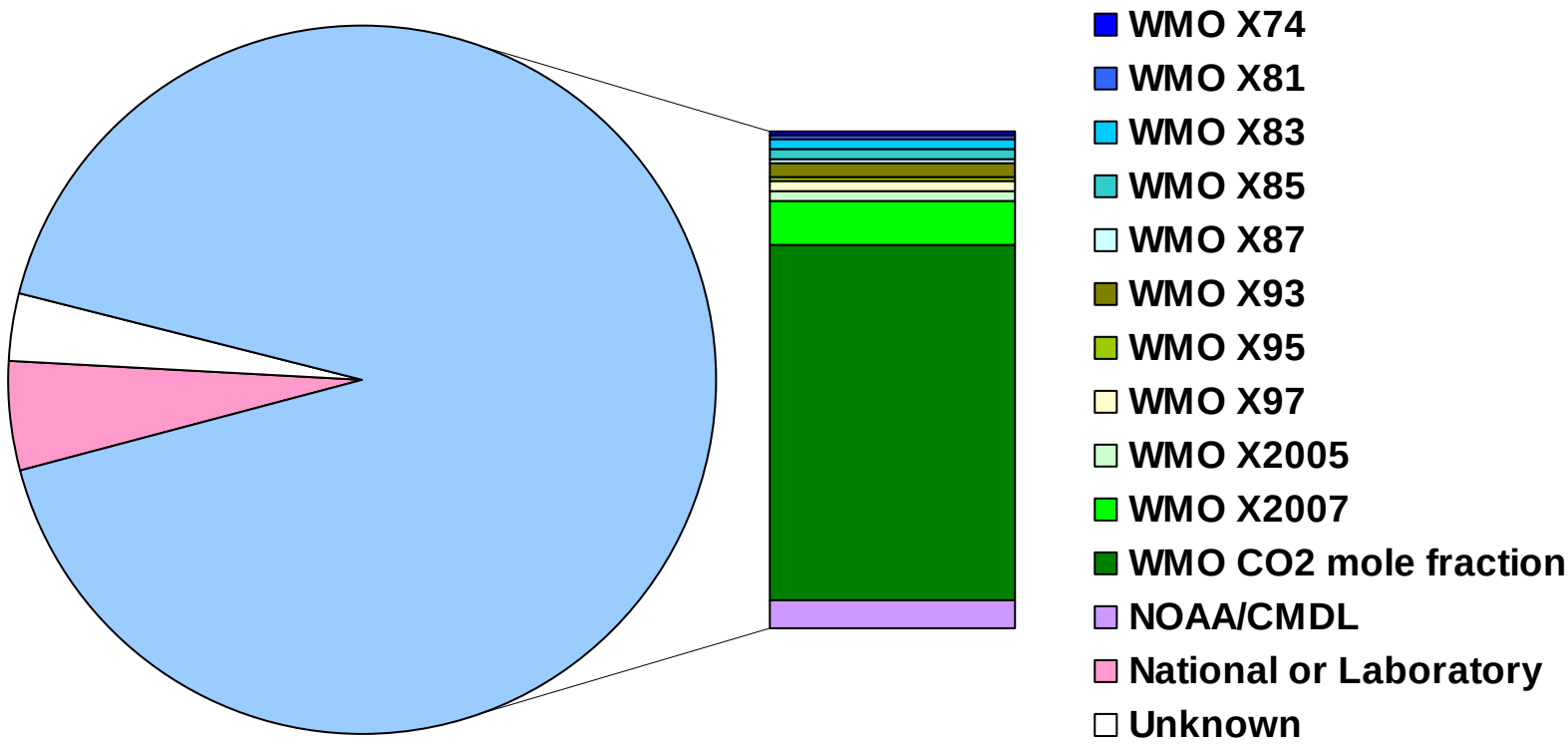
Reference: Technical Report of Global Analysis Method for Major Greenhouse Gases by the WDCGG, GAW Report No. 184





Traceability to the WMO Primary Standard

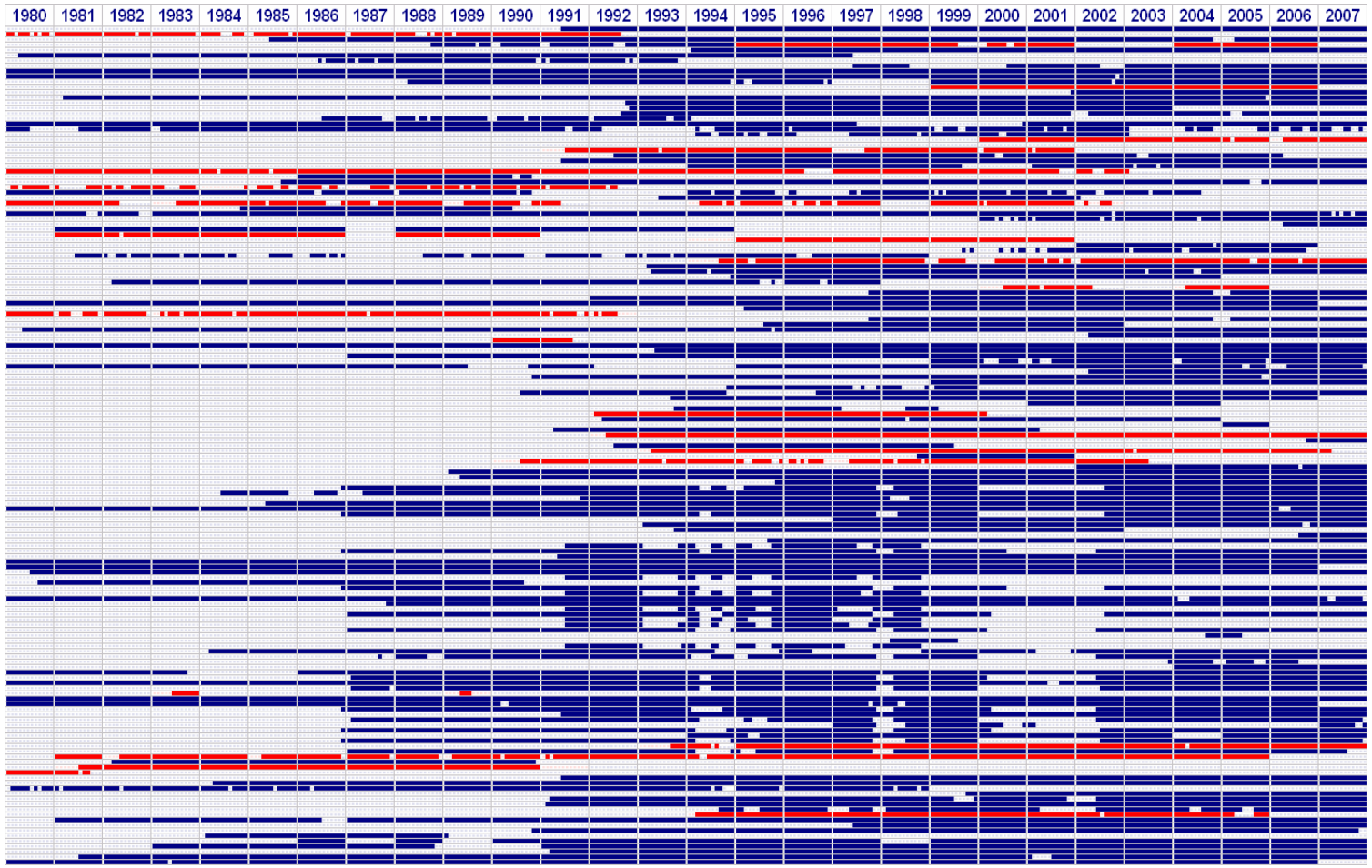
- About 92% of the CO_2 data sets have been reported on the WMO or NOAA scale.



Can data on different WMO scales be converted on a single scale to facilitate data use? By whom?

Availability of CO_2 monthly averages

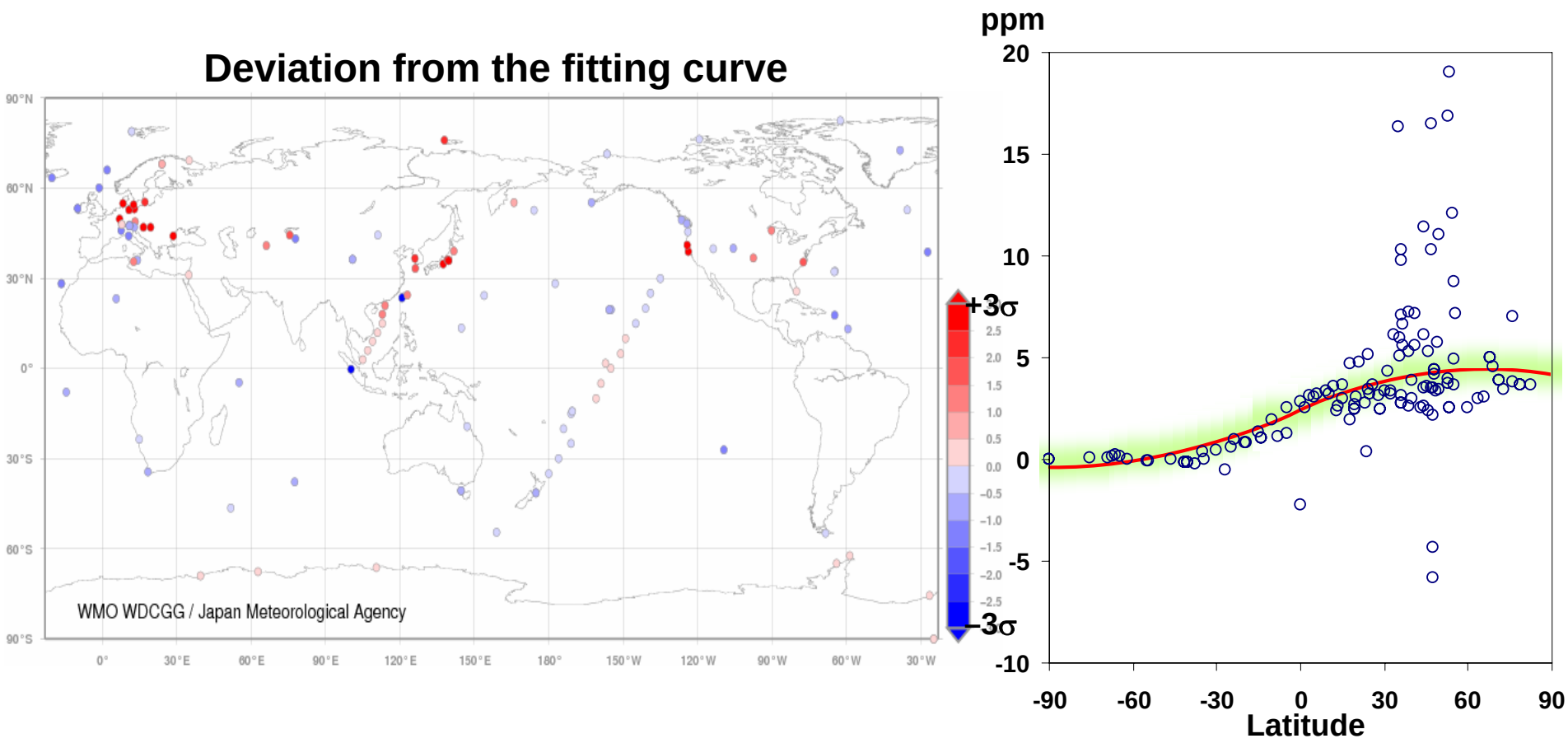
- Many data sets have significant gaps in observation.
- Monthly averages are not submitted in some cases.



■: Monthly averages provided by the contributors, ■: Monthly averages calculated by the WDCGG

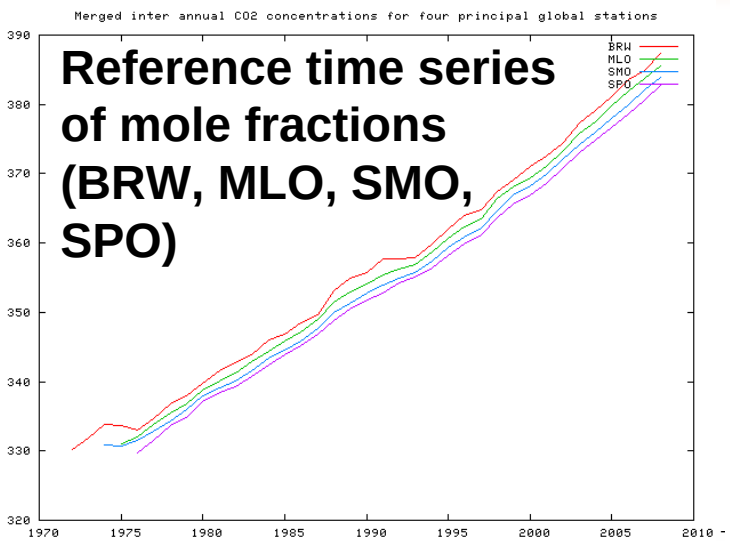
Deviation from the fitting curve

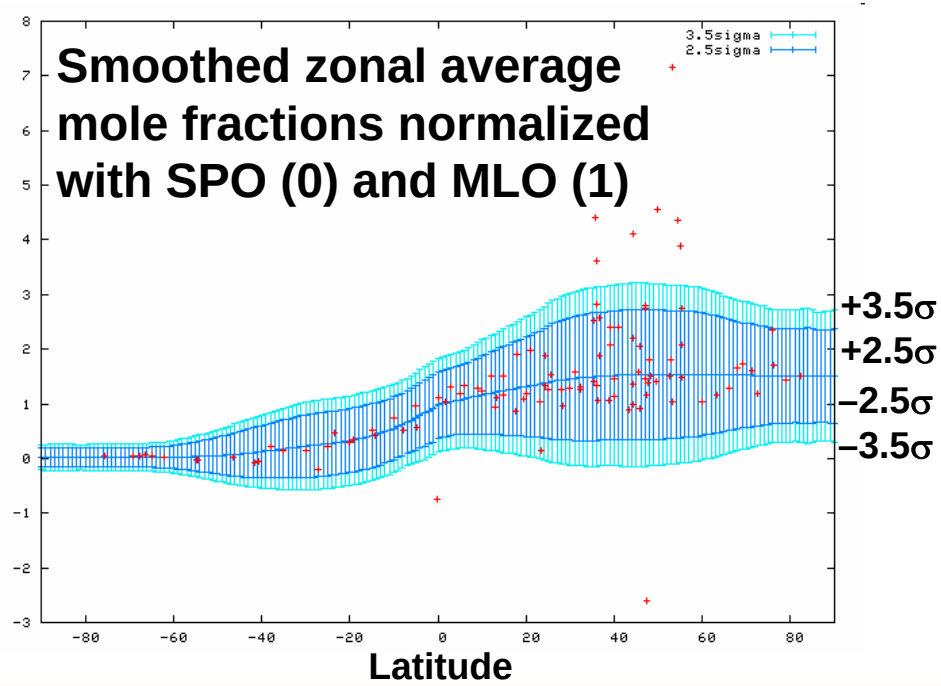
- Some stations in the northern hemisphere submit data at significantly higher or lower mole fractions. Such data are not used for the global analysis.

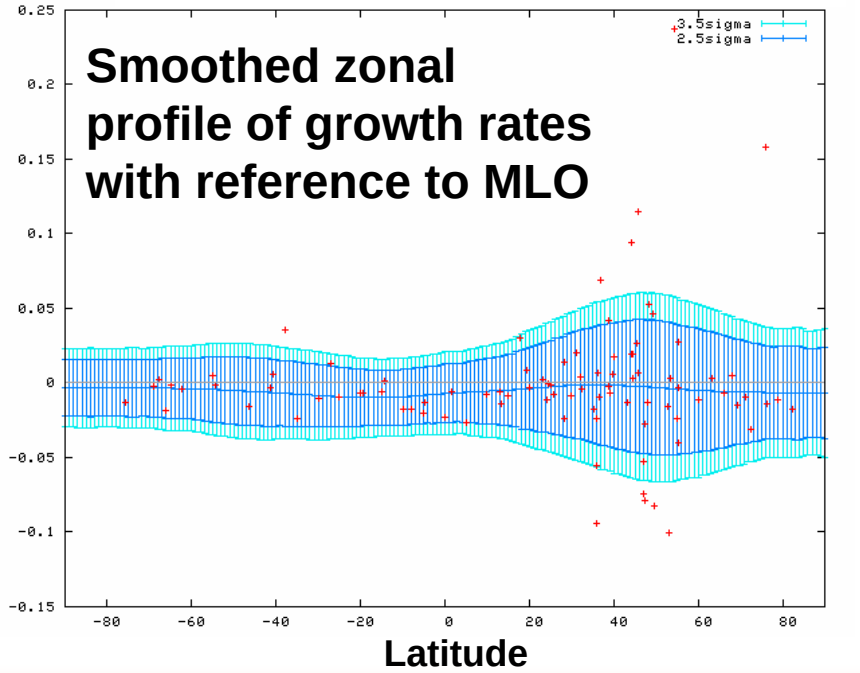


Objective QC information for submitted data

- Submitted data sets are plotted on the basis of deviation from the zonally averaged mole fractions and growth rates

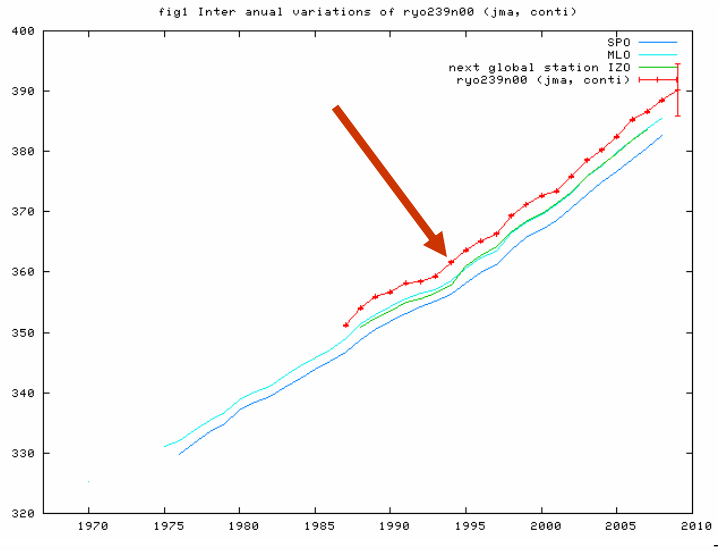


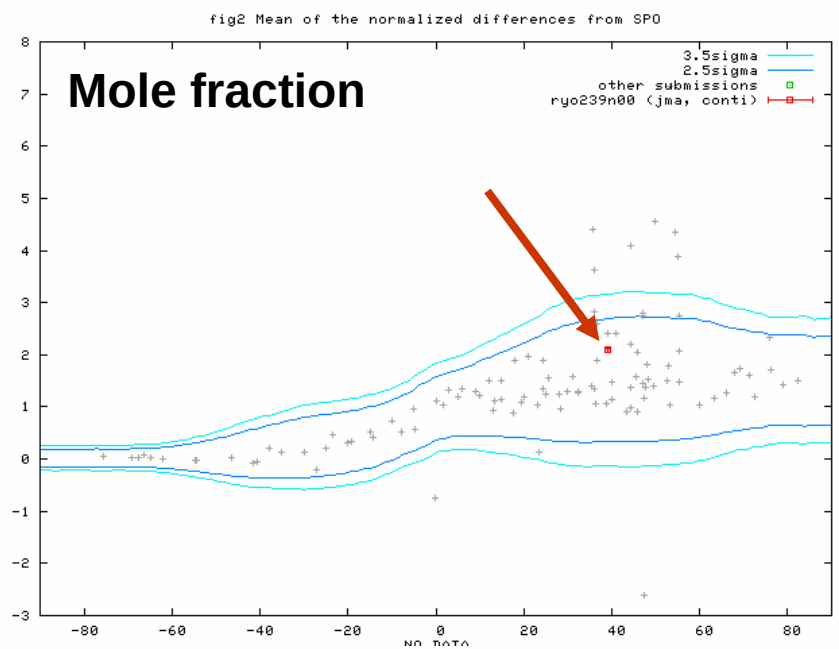


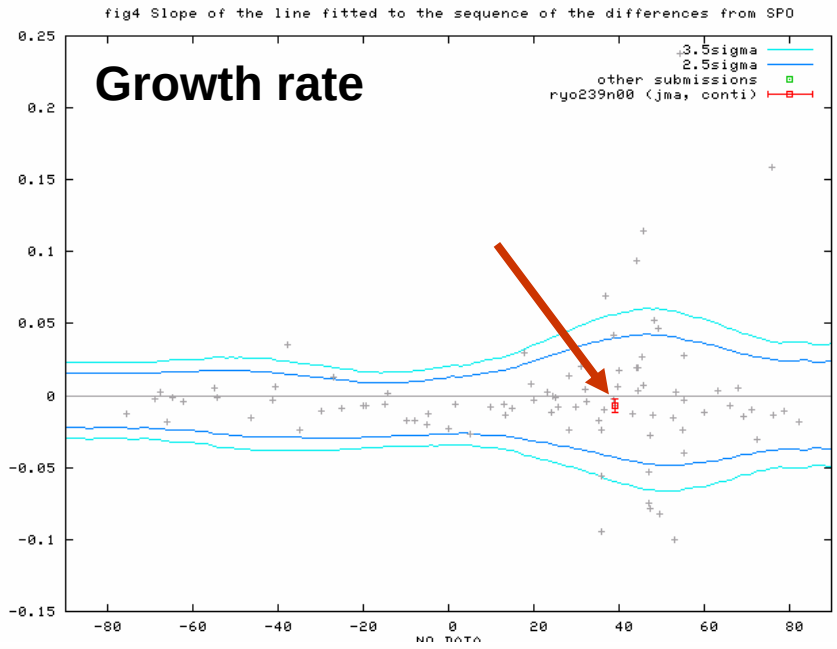


Example of objective QC information

- In the case of Ryori, Japan, deviations from the average mole fraction and growth rates are shown.
- No significant bias or drift is found for this site.



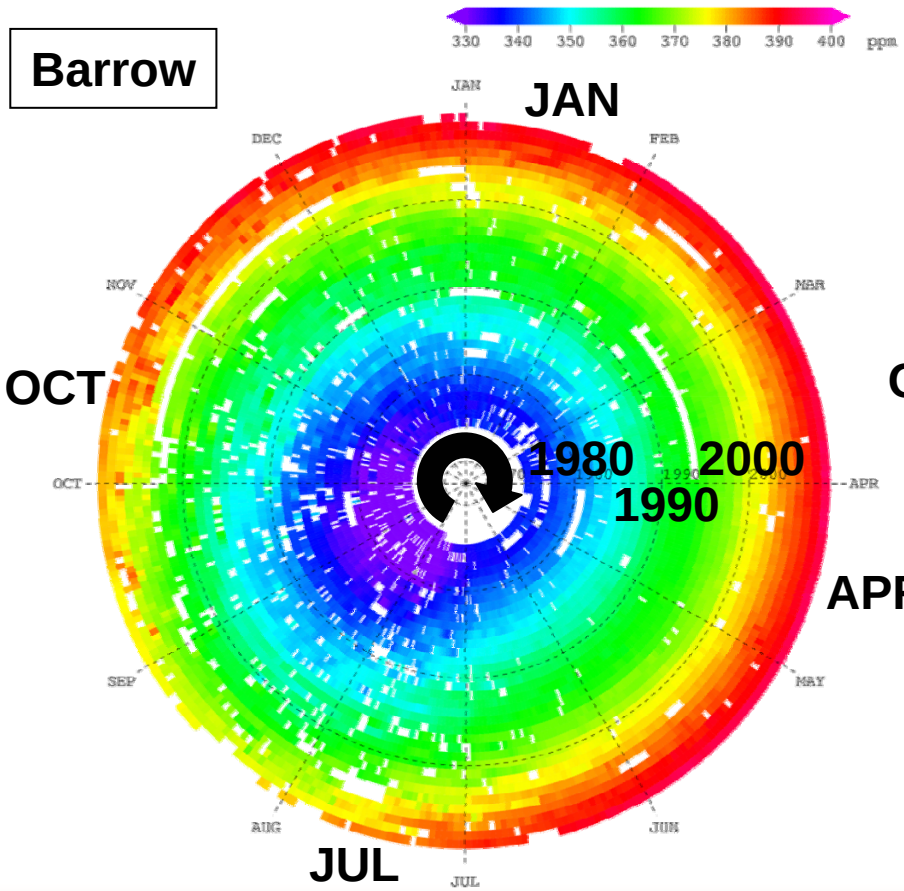




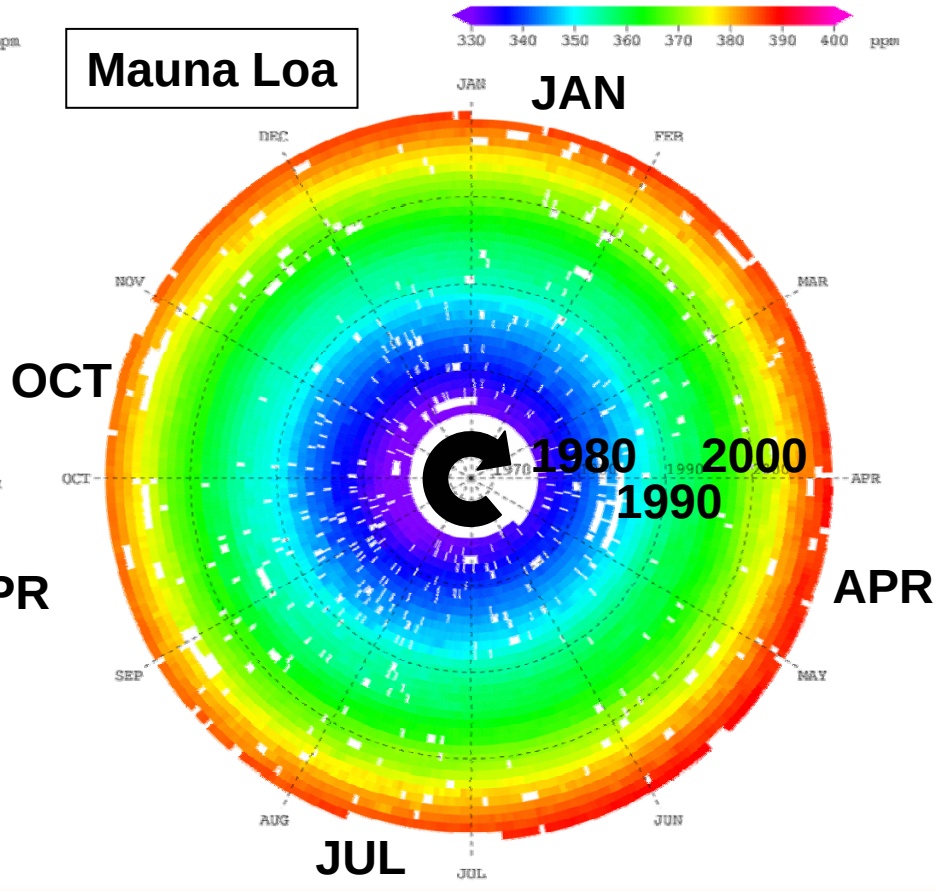
Representation of data

- **Different ways of representing changes in the mole fractions of greenhouse gases may help contributors find regional characteristics and errors.**

brw471n00.noaa.as.cn.co2.nl.da.dat



mlo519n00.noaa.as.cn.co2.nl.da.dat



Future plans and requests

- **Traceability, availability and statistical information for the archived data sets will be listed on the web site for the data contributors and users.**
- **Statistical information will be provided for the data contributors to check errors of reported mole fractions.**
- **The contributors are requested to provide information on background conditions and monthly averages from selected measurements, as well as accuracy of the measurements and time zone which are essential especially for model users.**
- **Information on calibration scales should be reviewed and linked to the past results of calibrations and intercomparisons.**