Current Activities of the GHG Scientific Advisory Group

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1. Key objectives of GHG SAG (from GAW Strategic Plan):

a. To provide guidance and advice on assessments relevant to OPAG-EPAC (Open Program Area Group on Environmental Pollution and Atmospheric Chemistry);
b. To develop scientific priorities based on user requirements;
c. To contribute to the GAW Strategic Plan, taking into account the IGACO strategy and regional needs;
d. To implement recommendations, tasks and projects as defined in the GAW Strategic Plan;
e. To monitor operations at sites and recommend the development of networks, observation methodologies and techniques;
f. To develop measurement procedures and guidelines, data quality objectives and, when applicable, standard operating procedures;
g. To report to the JSSC OPAG-EPAC on progress and critical problems;
h. To interact with the OPAG for the World Weather Research Programme.

2.1 Completed Documents

- Measurement Guidelines for N_2O and CH_4 and their quality assurance (GAW Report No. 185).
- WMO/GAW Glossary of QA/QC-Related Terminology available from GAW web site.
- Questionnaire and SOP for GHG audits.
- WDCGG data submission and dissemination guide.
- Technical Report of Global Analysis Method for Major GHGs by the WDCGG (Report No. 184).

2.2 Documents in Progress

- Guidelines for measurements of CO_2 and their quality assurance .
  Authors: Andrew Crotwell and Andrew Manning
  For submission to Atmospheric Measurement Techniques:
  (www.atmospheric-measurement-techniques.net/)
  Issues to be addressed:
  Analyzers NDIR and laser-based optical
  How isotopic composition affects measurements of mole fraction
  Drying
  Gas handling
  Data management

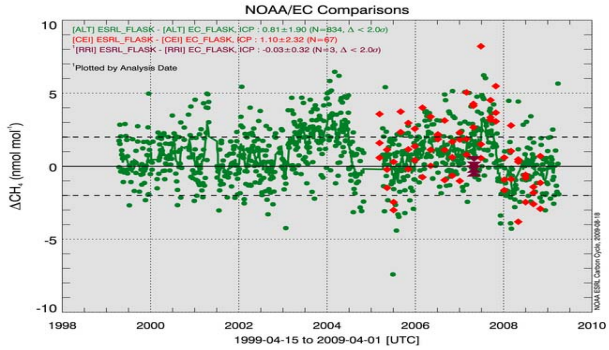
3. International GHG Comparisons

Currently, our international (round robin) GHG comparisons progress slowly and they are refereed by one of the participants. The following proposals aim to improve efficiency and transparency of this important activity. Comments from GAW participants are encouraged.

Proposal by NOAA to create web site to track progress of comparisons
Goals:
- Improve usability of round robin comparison results.
- Allow better merging of data sets for use in inversions.

Implementation:
- Results will be reported by PI, who can also edit their results.
- If approved by PIs, results can be plotted in ICPs.
- Cylinders will be tracked – reminder messages sent automatically.

Do we want an independent referee for GHG comparisons?
Goal:
- Improve credibility.



4. Role of NMIs* in GAW GHG Measurements

WMO to sign CIPM† Mutual Recognition Agreement

What does this mean for CCLs?:
- Must develop quality system (QS) that meets requirements of ISO 17025 and ISO 34.
- Note: ESRL committed to preparing QS for CO_2, CH_4, N_2O and CO
- QS must be approved by Inter-American Metrology System (SIM).
- Must take part in "key comparisons" organized by CIPM.
- CCL standards will be internationally recognized by MRA signatories.
- Collaboration with NMIs should result in improved accuracy of standards (e.g., more accurate T and P measurements for CO_2 manometric calibrations).

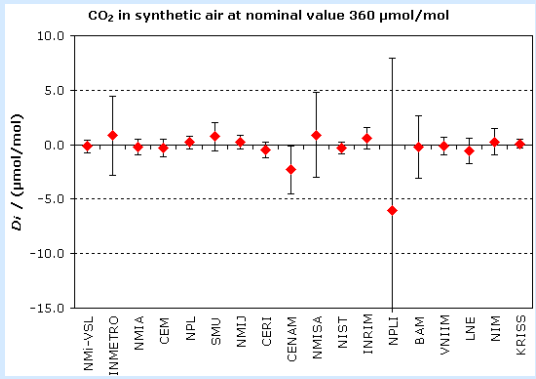
What does this mean for GAW participants?:
- Standards obtained from CCLs will be SI traceable.
- Standards used in emission reduction verification will withstand legal challenges.

GAW still recommends that participants:
- Maintain as short a link as possible to the standards maintained by the CCLs.
- Calculate uncertainties for measurements that include the propagation of the scale.
- Participate in comparisons of standards and measurements – do not use these to correct measurements.

GHG standard scales maintained by CCLs are relative – they can be propagated with much less uncertainty than they can be prepared.

*National Metrology Institutes; †Comité International des Poids et Mesures

Key Comparison for CO_2 by NMIs



5. Common Standard for Halocarbon Compounds

Motivation
- High GWP gases
- Valuable in emissions trading
- Network of measurements likely to expand
- Discrepancies among labs exist

6. CO_2 Audits at GAW Stations

- Proposed by EMPA – already auditing CO and CH_4
- Strong support from GHG SAG

Issues raised:
- Worthwhile to visit main laboratory too, if possible.
- How does this impact international GHG standards comparisons and frequency of calibrations?

7. Conclusions

The GHG SAG is composed of members of the GAW GHG measurement community. We are working on issues, e.g., participation in the CIPM MRA, that will improve the reliability and credibility of GAW GHG measurements. This may be important as our observations are used to verify emission inventories under GHG emissions trading schemes. We also prepare documents that can be used by developing countries to assess their willingness to participate in the GAW GHG measurement program. Please let a SAG member know your comments and suggestions on how the SAG can better serve our community.

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