

BIPM Workshop on Global to Urban Scale Carbon Measurements

Date: 30 June – 1 July 2015

Venue: BIPM, Sèvres France

Steering Committee:

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Nations are setting policies to reduce greenhouse gas emissions including reduction target goals. Although international agreements following on the Kyoto Accords have yet to be concluded, structural needs regarding quantification of nationally appropriate mitigation activities (NAMAs) to mitigate greenhouse gases will likely incorporate the concepts of measurable, reportable, and verifiable (MRV) NAMAs put forth in the Bali Action Plan of COP 13. Greenhouse gas (GHG) inventory data will be the principle metric used to gauge reduction policy performance. The quantification requirements needed must be of the required accuracy and consistent with the reduction targets set by national and international bodies and with MRV requirements. Meeting these needs is a multi-faceted challenge to both the metrology and climate observing communities both for measuring and reporting inventory data and information and for its verification using independent methods.

Following the development of previous large-scale, emission reduction strategies, it is now clear that success requires consistent, independent, scientifically-recognized measurement methodologies and data to support policy decisions (e.g., ozone depletion, acid rain, air quality in large cities and regions). For greenhouse gases, high quality, and coordinated atmospheric observational information is essential to both ensure success and to inform policy-makers implementing GHG reduction policies. Assessing progress towards and the achievement of reduction targets requires scientifically-sound information based on robust GHG measurement systems having accuracy and performance consistent with reduction target values. The verification of inventory values using independent methods is central to demonstrating their scientific validity.

The aims of the workshop are to identify requirements for advanced measurements, standards, reference data, and instrument comparisons for carbon measurement and other related climate variables to enable a complete global monitoring system for greenhouse gases to be operational and useful for validated greenhouse gas flux and emission calculations and for the verification of emission inventories. Furthermore, approaches to be undertaken for the development of an international roadmap for standards, reference data, and instrument comparisons for global greenhouse gas measurements and other related climate variables and greenhouse gas emission inventories will be elaborated.

The workshop is organized around three topic areas:

- Carbon measurement and other related climate variables: Global systems, principals and traceability
- Megacities and Metrology Needs for Supporting Greenhouse Gas Mitigation - Urban Greenhouse Gas Domes
- Standards for greenhouse gas emission inventories

Aims of Topic A: Carbon measurement and other related climate variables: Global systems, principals and traceability

Concentrating on carbon measurement and other related climate variables, the session will:

- provide an overview of the progress and requirements in standards, reference data and instrument comparisons to enable accurate and validated measurements of global carbon and other related climate variables;
- provide examples of global climate variable monitoring programs and their approach to incorporate traceable measurements and links to NMI activities;
- describe novel calibration and standards programs that have been designed to meet the needs of the climate variable measurement community.

Aims of Topic B: Megacities and Metrology Needs for Supporting Greenhouse Gas Mitigation - Urban Greenhouse Gas Domes

Managing emissions, especially CO₂, is central to effective mitigation policies. Reduction targets are being set in a number of nations. Emissions inventories will be the metric by which policy compliance is gauged. Assessing progress toward and achievement of reduction targets requires scientifically-sound and internationally-recognized information based on robust GHG measurement systems. Capability to independently verify inventory values is a significant measurements and standards challenge. Reliable information on greenhouse gas concentration and flux will be required both at national and international levels. Developing the measurements and standards capabilities required is a significant measurement science challenge given likely target levels. Discussion will focus on existing and planned activities in the megacity context and requirements for the development of measurement methods, standards and comparisons to underpin the accuracy of GHG emission data and calculations.

Aims of Topic C: Standards for greenhouse gas emission inventories

- Summarise the existing position of reporting from all levels (installations, projects, cities, countries)
- Highlight the biggest areas where improvement in measurement capabilities are needed, by answering the following questions:
 - Are uncertainties reported? Where are the uncertainties largest?
 - What new project types should inventory development be focussed on?
 - Where are new/more granular/more specific emissions data and factors required?
 - Where is there a need for better consistency?
- Discuss the opportunities and challenges for incorporating forest carbon, soil carbon and land use into inventories of all kinds
- Agree a priority list of Essential Climate Variable (ECVs) based on which could be / are required to cover inventory data needs