

IG³IS Urban Objective



IG³IS combines atmospheric GHG concentration measurements with human-activity data in a modeling and analysis framework to **help decision-makers take better-informed action** to reduce emissions of greenhouse gases and pollutants that reduce air quality.

The urban objective links urban stakeholders and scientific capabilities. Stakeholders include city governments, NGOs, indigenous groups, national and state governments.

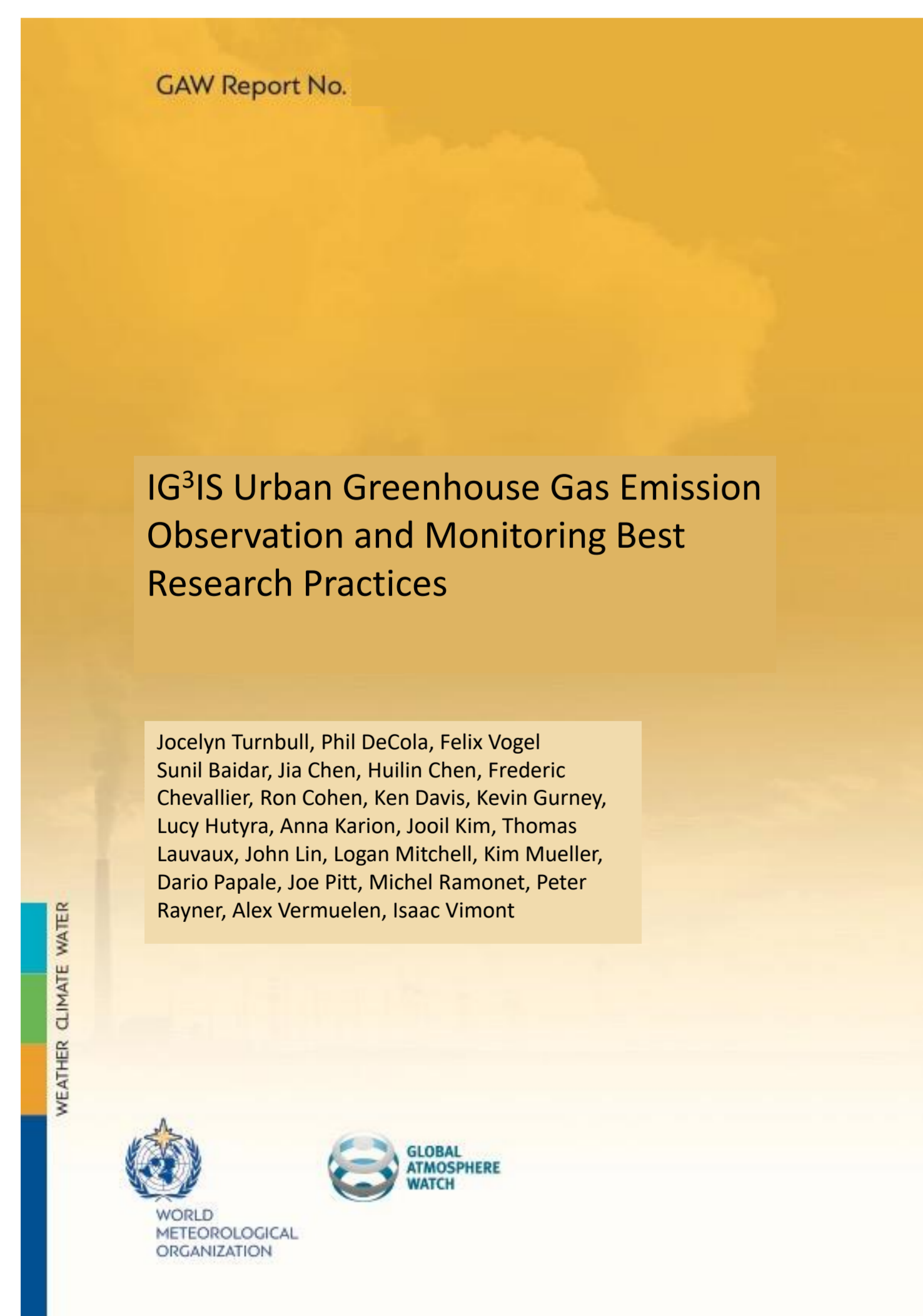
Multiple methodologies are available to address the variety of challenges, **matching the sophistication of the needs with the complexity of solution.**

As a user oriented initiative, IG3IS conduct frequent consultations with critical stakeholders on the path forward to **tailor its capabilities to their needs.**

Matching Scientific Capabilities with Stakeholder Needs

		Level of sophistication of urban stakeholder needs					
		Identify major emitters and anomaly detection	Quantification of total GHG emissions	Assessment of GHG emissions per sector	Tracking annual and long-term emission changes	Understand short-term emission changes and spatial patterns	Process understanding of emissions and tracking of mitigation impacts
Complexity of solution	Inventory validation (A1)	Inventory or emission model (A2)	Sector-specific inventory or emission model (A3)	Continuously updated inventory or emission model (A4)	Temporally and spatially disaggregated inventory or emission model (A5)	Process-based emission model using real-time emission data (A6)	
	Mobile surveys (B1)	Mass-balance (B2) Radon tracer method (B3)	Multi-tracer ratio observations (B4)	Radon tracer method (B5) Multi-tracer observations (B6)	Mobile surveys (B7) Urban flux towers (B8) Repeated mass-balance (B9)	Urban flux towers (B10) Dedicated field campaigns (B11)	
	Remote sensing (C1)	DAS using short-term observations (C2)	DAS using dense observations (C3) DAS using multi-species data (C4)	DAS using long-term observations (C5)	DAS using dense observations (C6)	FFDAS DAS using multi-species (C7)	

IG³IS Guidelines for Urban GHG Observations and Monitoring Best Research Practices



IG³IS is working with world leaders in urban GHG research to **develop best research practice guidelines.**

It is intended to provide technical guidance on current state of the art technologies in urban greenhouse gas information systems. It lays out the **available methodologies and how they can best be implemented**, as well as **guidance on the end user outputs** that might be obtained.

Topics:

- Summary for Users
- Inventory and Emission Flux Models
- Data Analysis Methodologies
- Atmospheric Inversion Methodologies
- Observations
- Data Management
- Collaboration and Cooperation Opportunities

Urban GHG observations and monitoring are an area of active research and methodologies are under continuous development. These guidelines are intended to:

- Allow stakeholders to assess the quality of existing and proposed urban greenhouse gas research.
- Provide clear guidelines against which current and new practitioners can evaluate their research plans and outcomes.
- Consolidate detailed information on particular methodologies, including “tips and tricks”, to guide new researchers.
- Be updated every two years to reflect evolving research understanding.

These guidelines are intended to be the **first step on the pathway to documentary standards**, as the research best practices coalesce into widely accepted methodologies that can be implemented in operational situations.

