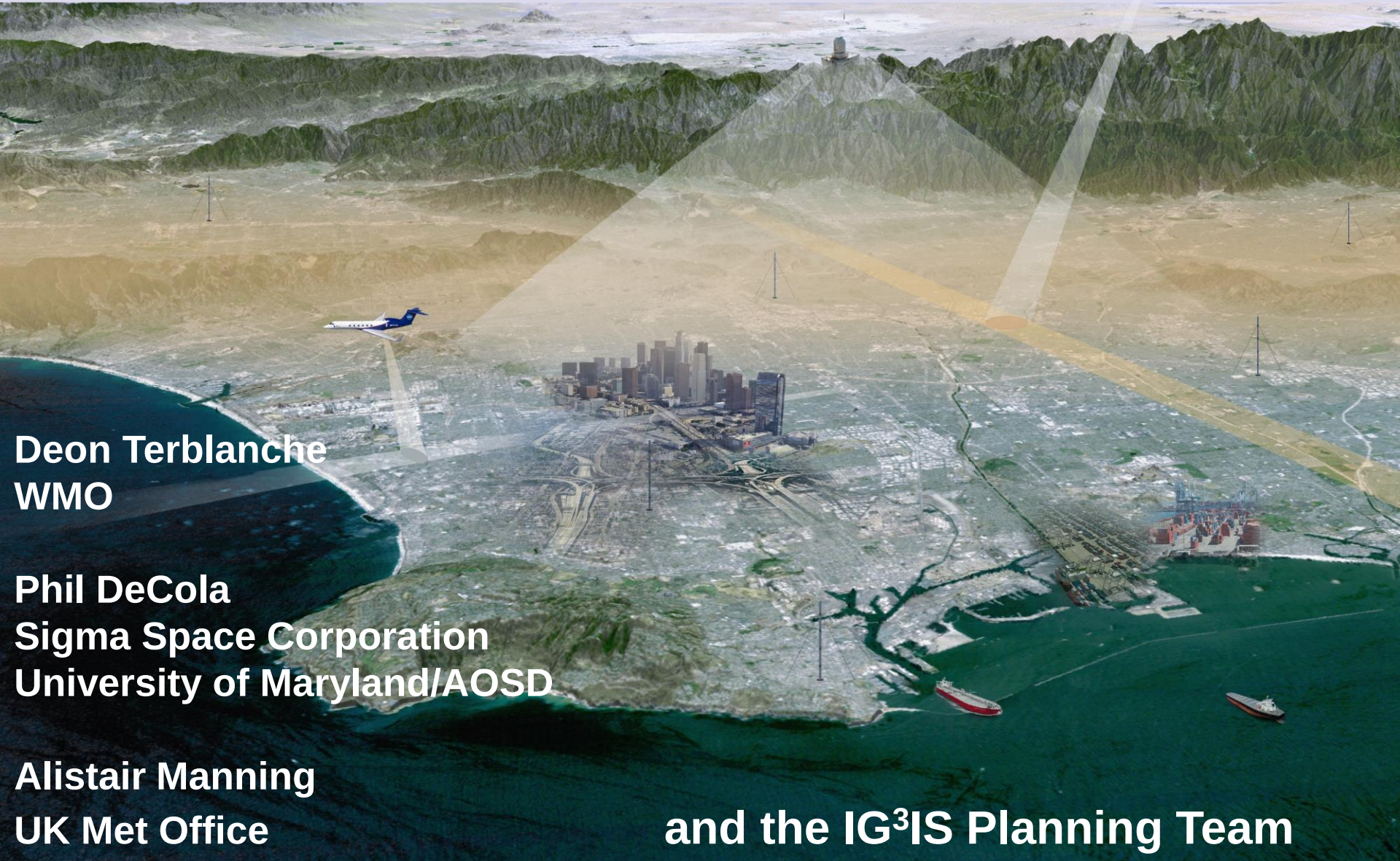
Integrated Global GHG Information System (IG^{3}IS): Evidence Based Policy Support and Evaluation



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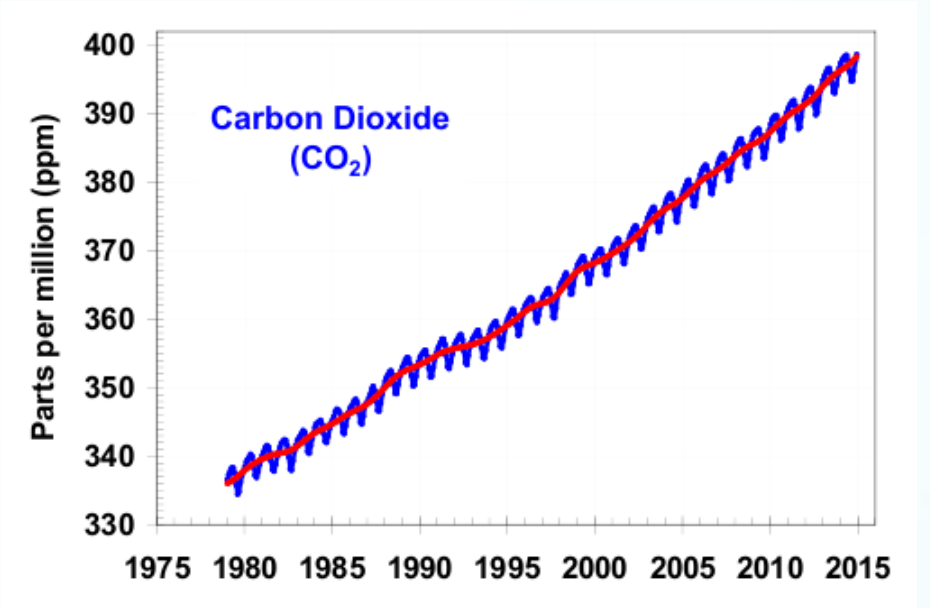
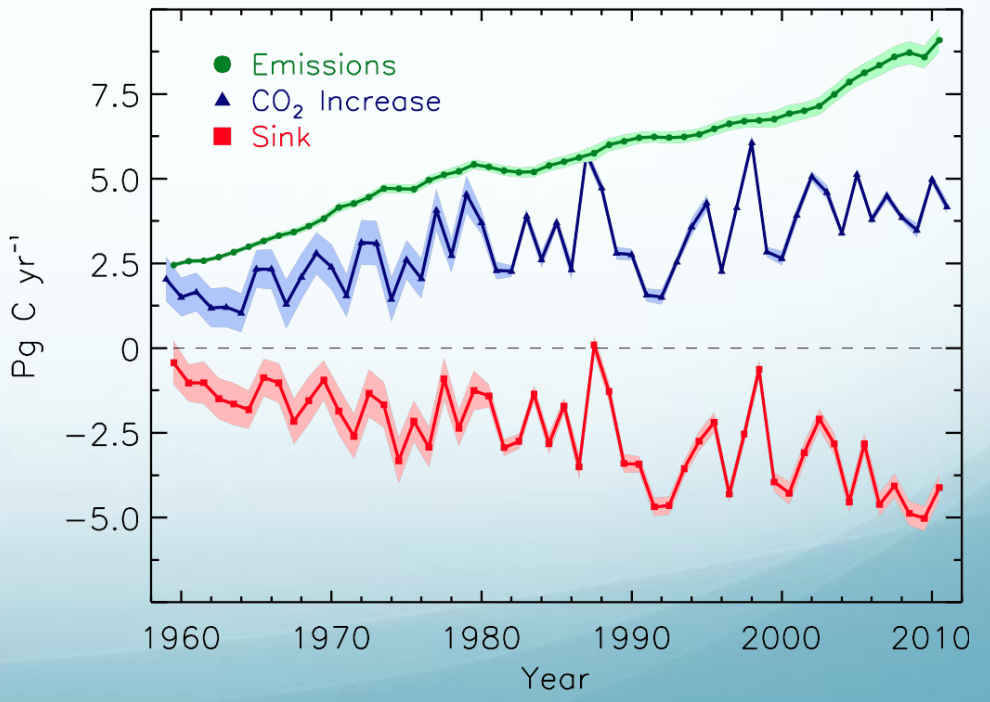
Atmospheric GHGs - The Primary Driver of Climate Change

- Atmospheric CO_2 continues to increase every year
  - The trend is largely driven by fossil fuel emissions
- The growth rate increases every decade
  - Variability is largely driven by the Earth System
- The Earth System continues to capture 50% of emissions
  - Despite the increase in emissions
  - How long can we depend on this “benefit” and how will it change with time?





UNFCCC Process and GHG Monitoring: Both evolving from "Top Down" to "Bottom Up"

Then (2010)

Binding Multi-national Treaty Commitments

"we will <u>verify</u> your reported emissions"

A grand top-down GHG Information System

Advocates: Science Community!!!

Now (2016)

Nationally Determined Contributions

"we will <u>help</u> you <u>improve</u> your data"

Federation of focused monitoring systems

Advocates: WMO (191 countries),UNEP, Cities (eg, C40), NGOs, Industry (eg, Oil Companies)

The IG^{3}IS Overarching Goals

Goal: Support the success of post-COP21 actions of nations, sub-national governments, and the private sector to reduce climate-disrupting GHG emissions through a sound-scientific, measurement-based approach that:

- **reduces uncertainty of national emission inventory reporting**,
- **identifies large and additional emission reduction opportunities**, and
- **provides nations with timely and quantified guidance on progress towards their emission reduction strategies and pledges (e.g., NDCs)**

Near-term IG^{3}IS Objectives (3-year horizon)

Support of Paris Agreement:

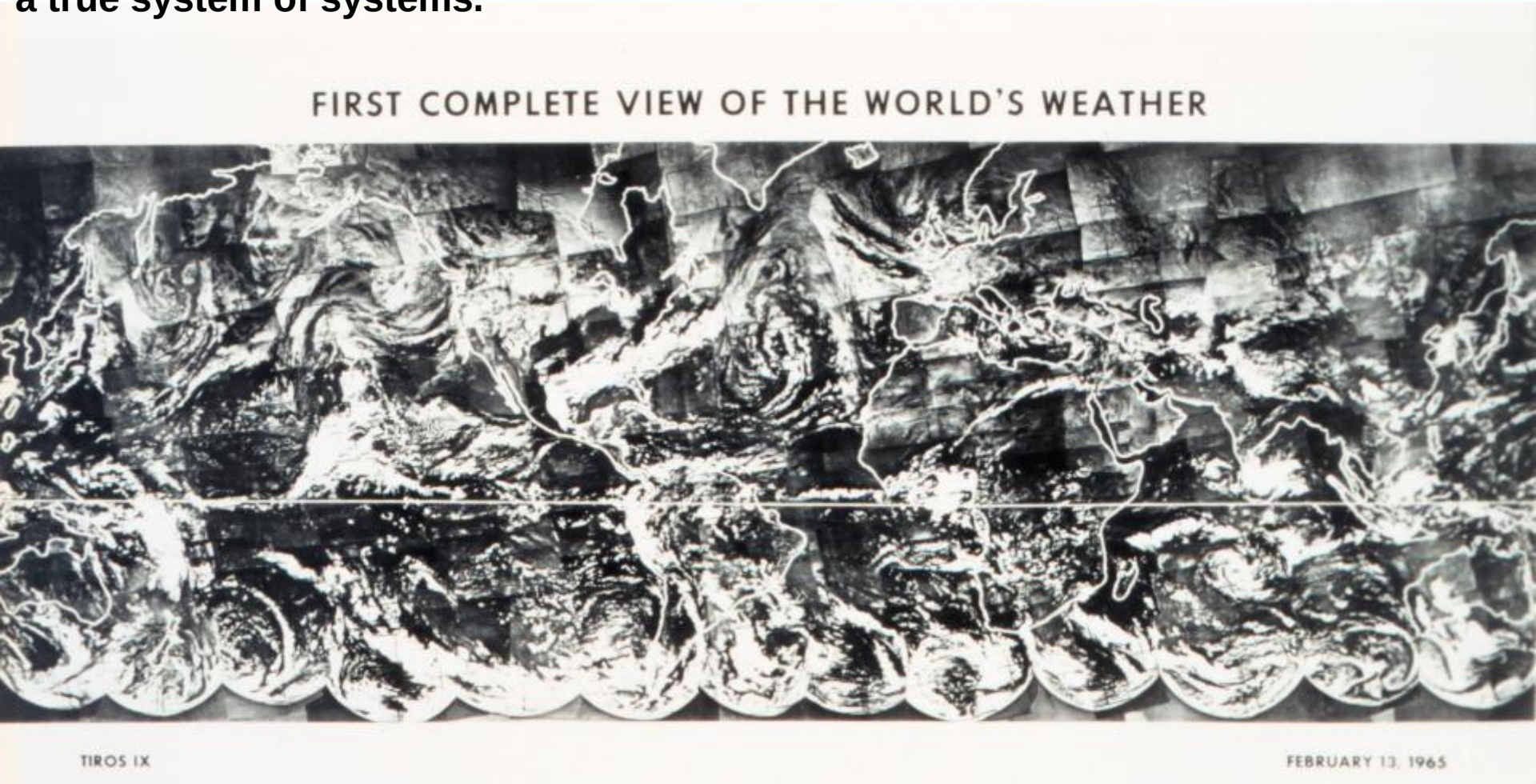
- Timely and quantified trend assessment of NDCs in support of "Global Stocktaking"
- Improved national inventory reporting by making use of atmospheric measurements for all countries

Key sub-national efforts and new mitigation opportunities:

- GHG monitoring in large urban source areas (megacities)
- Detection and quantifying large unknown CH_4 emissions

Analogous to the development of numerical weather prediction and its architecture of observations and models, IG^{3}IS has along-term vision for "GHG weather" analyses and forecasts

The system incorporates multiple coordinated satellites in low Earth orbit (LEO) and geostationary orbit (GEO), aircraft, balloon, and ground observing systems in a true system of systems.



Conclusion

Build systems for future services that will meet society's evolving needs to reduce GHG emissions:

- Define the detailed implementation plan
- Prepare statement of work and budgets
- Actively entrain partners, users, and sponsors through all stages of development
- Coordinate with UNFCCC, IPCC, GCOS, GFCS, GEO Carbon Flagship, WCRP and their constituencies