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Picarro Reveals Carbon Emissions in Davos from the World Economic Forum Annual Meeting 2012

Results Show Direct Emissions 35 Percent Higher Than Inventory-Based GHG Estimates Pre-WEF, Emissions Drop During the Event

Santa Clara, Calif.& Davos, Switzerland (World Economic Forum) — January 27, 2012 — Picarro, the world's leading provider of instruments for carbon and water cycle measurements, today announced results from its City Carbon project, demonstrating measurements of near real-time carbon emission estimates from the city of Davos, Switzerland before and during the World Economic Forum (WEF) Annual Meeting. Analysis of the project data shows direct CO2 emissions from Davos to be, on average, 330 tons of carbon per day in the month prior to the start of the meeting, which is 35 percent higher than the annual average rate of emissions inferred from inventory-based greenhouse gas (GHG) estimates. Surprisingly, emissions during the meeting appear to have dropped to roughly 35 percent below the pre-WEF rate of emissions, or only 210 tons of carbon per day. Ongoing monitoring of "urban breathing" such as this would be impossible without high-quality, continuous atmospheric GHG measurements.

The findings of the project, led by Dr. Kenneth Davis of Penn State University, show that urban GHG emissions can be monitored in near real-time, providing up-to-date feedback on the impacts of economic activity and pollution reduction efforts. The measurements also provide invaluable independent validation of inventory estimates, protecting against potential systematic errors that can be embedded in accounting-based approaches. Picarro, which is being honored as a Technology Pioneer at the World Economic Forum, invented and manufactures the greenhouse gas sensors that were critical for the study, with data analysis and modeling work led by Penn State University and Climmod teams.

“The City Carbon experiment demonstrates that it is feasible to continuously monitor the carbon emissions from a city. The changes in emissions observed during the WEF can be thought of as changes any city might experience as a result of changing economic activity, or efforts to reduce greenhouse gas emissions,” said Dr. Davis, Professor of Meteorology at Penn State. “Picarro's analyzers combine the precision, accuracy and reliability needed to make a continuous measurement program like this possible. While inventories are a valuable tool, they rapidly become out of date, are prone to systematic errors, and cannot provide insight into the evolution of emissions caused by the changing metabolism of cities. Atmospheric measurements provide a powerful complement to more traditional inventory methods.”

Using its Cavity Ring-Down Spectroscopy (CRDS) analyzers, Picarro is measuring the carbon emissions released throughout the city before, during and after the WEF. This measurement will act as a baseline to which Davos can compare in forthcoming years as it continues to implement eco-friendly initiatives at future WEF Annual Meetings. The project emphasizes the need for CO2 measurement, and is a call to action for leaders of the world's greenest cities that have set emission reduction goals or claim to have reduced emissions, yet lack independent measurements to evaluate their progress.

"The City of Davos and the World Economic Forum should be congratulated for the leadership they continue to demonstrate on the topic of greenhouse gases, and we thank them for their cooperation in this project," said Michael Woelk, chief executive officer of Picarro. "The City Carbon project is not about exposing municipalities, governments or businesses that are being proactive on carbon-emission reduction, but rather a way to scientifically and objectively test what is a commonly used metric for calculating direct carbon emissions and setting emission reduction goals. The results from Davos are a clear signal to governments, industry and the scientific community that relying only on inventory estimates is risky, and that we need to remove the guesswork and start comprehensive, ongoing and real measurement of carbon."

Results/Summary

By measuring levels of carbon dioxide (CO2) prior to and during the WEF meeting in the atmosphere above Davos, Picarro has uncovered that:

- Prior to the WEF, direct CO2 emissions from Davos were estimated to be 330 tons of carbon per day, 35 percent higher than the annual average rate of emissions inferred from inventory-based greenhouse gas (GHG) estimates. This value represents an average over one month (December 23, 2011 through January 23, 2012).
- Emissions during the WEF meeting (January 24 - 26) appear to have dropped significantly, with a best estimate of 210 tons of carbon per day emitted from Davos, a decrease of approximately 35 percent below the pre-WEF values. The method for deriving these emissions estimates is experimental and may be biased. Ongoing evaluation of the simulation of weather used to derive these emissions will refine the estimate. There is also considerable random variability in the day-to-day estimates.

The pre-WEF average (based on a month of observations) is more reliable in this respect than the value derived during the WEF. The emissions rate during the WEF might be considerably different than the 210 tons of carbon per day estimate, but the fact that emissions appear to have dropped during the WEF appears to be a robust result, and a real surprise to investigators that expected this meeting to cause carbon emissions to rise.

The emissions prior to the WEF were not unexpected, as winter emissions should be greater than the annual average; however, the drop in emissions during the conference was startling. The decrease in emissions during the event may be due to local residents moving out during the meeting, and reduced traffic due to high security during the meeting. The WEF has also actively pursued efforts to reduce its carbon footprint, and these efforts may be responsible, at least in part, for the observed

reduction in GHG emissions. These continuous measurements of urban metabolism present a powerful new approach for evaluating clean air policies.

“Davos is just the first in what will be a series of City Carbon projects, as all major cities should have a near real-time understanding of their per capita, run-rate carbon emissions and the impact of large events,” said Woelk. “Davos is a relatively isolated city of 12,000 inhabitants in the pristine Swiss alps, so to extrapolate the results to municipalities with GHG programs like London, New York, San Francisco, Los Angeles, Tokyo or Boston is mind boggling. Now that accurate greenhouse gas measurement is possible at this scale, it’s time for the world’s ‘greenest’ leaders to find out if their eco-initiatives are truly working.”

Individuals interested in observing Picarro’s live CO2 measurements as they take place in Davos, as well as a summary of the data analysis and results, can visit http://www.citycarbon.picarro.com/.

About Picarro

Picarro, Inc. is the world leader in greenhouse gas and optical stable isotope measurement instruments for a variety of scientific and industrial applications including environmental, atmospheric, energy, life science and food testing. The company’s products are based on more than two-dozen patents related to Cavity Ring-Down Spectroscopy (CRDS) technology. Investors include Benchmark Capital, Greylock Partners, and DAG Ventures.