



The Model 714 NO₂/NO/O₃ Calibration Source™

Calibrate for 3 Gases with One Convenient Instrument

In December 2018 we added the [Model 714 NO₂/NO/O₃ Calibration Source](#) to our product lineup. It combines our Model 408 Nitric Oxide Calibration Source™ with our Model 306 Ozone Calibration Source™ to provide a highly portable transfer standard for three pollutant gases.

Do you have a need to calibrate in the field? The use of our patent-pending portable source of NO, provided with the instrument, means that there's no need for a compressed gas cylinder of nitric oxide when calibrating for NO or NO₂.

Calibrated concentrations of O₃ are produced by photolysis of oxygen, and calibrated concentrations of NO are produced by photolysis of nitrous oxide supplied by a small "Whippit" cartridge. In addition, calibrated concentrations of NO₂ are produced by gas-phase titration of NO with O₃. Calibration sequences can be programmed in internal memory via a user-friendly touch screen interface.

[Request a quote](#) today!

**Mention this article to get a 10% discount on the model 714.
Offer ends 14 March 2019.**



The Model 714 calibrates for three gases (O₃, NO₂, NO) without the need for a compressed gas cylinder.

Take advantage of our limited-time discount offer!

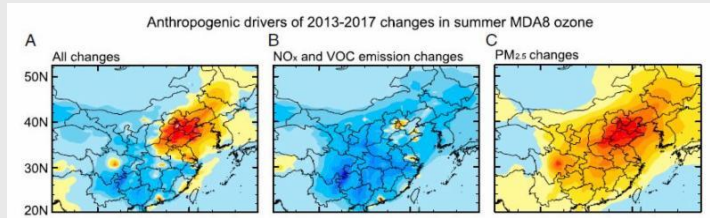
[More Info About the Model 714
NO₂/NO/O₃ Calibration Source](#)

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Air Pollution News

Reducing Particle Pollution Could Cause Ozone to Go Up

Pollution "Tradeoff" Seen as China Makes Bold Moves on PM2.5



Excerpt from Figure 4 of Li et al., 2018. The reductions in PM2.5 lead to modeled ozone increases shown at right; NOx and VOC reductions generally reduce ozone (middle); and the combination of all reductions gives the pattern at left.

There's a good news/bad news air pollution story in the making for air quality managers in China and elsewhere.

China instituted strong measures in 2013 to reduce fine particulate matter (PM2.5), restricting how many

cars could be on the road in various cities, and converting coal-fired power plants to natural gas. PM2.5 concentrations dropped a whopping ~40%. No other country has achieved such dramatic reductions in such a short period of time.

But...

...it seems there's a tradeoff. While PM2.5 has been plummeting, ozone has been increasing, particularly in large cities in China. Researchers at Harvard University and Nanjing University studied the data from the over 1,000 air quality monitoring stations in China. By modeling the data, they've concluded that the particles had been sopping up radicals (especially HO₂) that lead to the production of ozone; removing the particles means that the radicals can once again participate in the reactions that make ozone.

The study was published in [Proceedings of the National Academy of Sciences](#). Author Hong Liao notes, "Results from this study suggest that extra efforts are needed to reduce NOx and VOC emissions in order to stem the tide of ozone pollution."

[Anthropogenic Drivers of 2013-2017 Trends in Summer Surface Ozone in China](#), K. Li, D.J. Jacob, H. Liao, L. Shen, Q. Zhang and K.H. Bates, *Proceedings of the National Academy of Sciences* (2018) **116** (2), 422-427.

Case Study

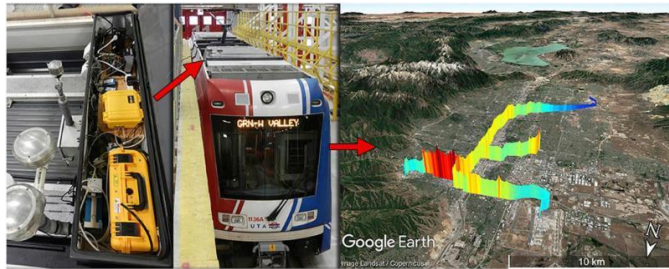
2B Tech Ozone Monitors Catch the Light Rail in Salt Lake City

Public Transit Platform Ideal for Studying Air Pollution, Greenhouse Gases

Urban pollution is highly variable, both in space and time, in any city. But researchers studying air quality and climate chemistry can't go everywhere at all hours of the day and night.

Researchers at the University of Utah have solved that dilemma by partnering with the Utah Transit Authority to place instruments on the roofs of two light-rail public transit trains (TRAX). 2B Tech's [Model 205 Ozone Monitor](#) provided the ozone measurements, while other instruments measured PM2.5, CO₂, CH₄, NO₂, and H₂O. The study, carried out from December 2014-April 2017, is described in a [paper published in May 2018 in Atmospheric Environment](#).

The detailed nature of the data set enabled the authors to analyze relationships among the measured species and to look at diurnal, seasonal, and episodic effects along the transects of primarily two TRAX routes in metropolitan Salt Lake City (traversing about 35 miles/60 kilometers). Maps of the measurements were visualized using Google Earth (see figure).



Instruments on Salt Lake City public transit trains have provided measurements for over four years in an ongoing study, yielding visualizations using Google Earth as shown on the right. 2B Tech's Model 205 Ozone Monitor is seen to the left of the yellow suitcase.

Though a public-transit approach to air monitoring is in use in Germany, Italy, and Switzerland, the authors point out their work is a first for North America. They engaged the public by making the real-time data available on the web (<http://meso1.chpc.utah.edu/mesotrax/>). Measurements are still ongoing and available at the website.

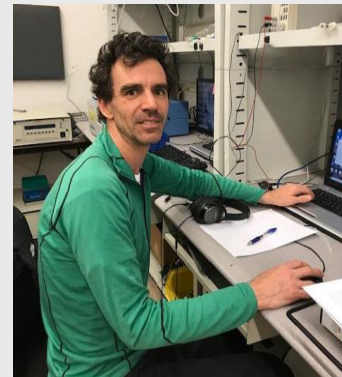
[Monitoring of Greenhouse Gases and Pollutants across an Urban Area Using a Light-Rail Public Transit Platform](#), L.E. Mitchell, E.T. Crosman, A.A. Jacques, B. Fasoli, L. Leclair-Marzolf, J. Horel, D.R. Bowling, J.R. Ehleringer and J.C. Lin, *Atmospheric Environment* (2018), **187**, 9-23.

[More Info About the 2B Tech Model 205 Dual-Beam Ozone Monitor](#)

Meet Our Calibration Specialist **Stanley Strunk**

When 2B Tech instruments are shipped from Boulder, our customers (you!) rely on them to be calibrated and ready to deliver accurate, precise measurements. For all of our ozone air monitors and many of our other instruments, the person making sure this happens is Stanley Strunk.

As 2B Tech's Calibration Specialist, Stanley walks the tightrope of deadlines, multiple instruments, and precise measurement protocols every single day. It's a daunting task; 2B Tech ships more than 700 new instruments every year and recalibrates nearly 300 others as a part of our service and repair department. For those doing the math: that works out to about 20 calibrations a week! Stanley ensures that the calibrations of all Ozone Monitors are traceable to the National Institute of Standards and Technology (NIST) through an unbroken chain of comparisons to our transfer standard. He uses our transfer standard to calibrate our working standards, which in turn are used to calibrate the customers' instruments. All steps in the chain are fully documented. Each of 2B Tech's instruments gets a calibration certificate, and in most cases they are signed by Stanley. Stanley sends our transfer standard to NIST for re-calibration every 2 years, and regularly calibrates our working standards using that instrument.

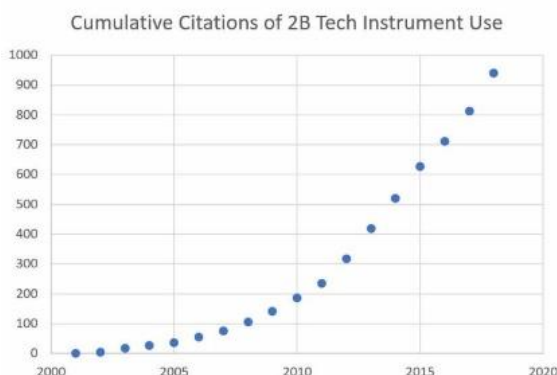


Stanley has a B.S. in Physics from the University of Colorado Boulder. He's been with 2B Technologies for 12 years, providing most of our instrument calibrations for most of that time. Outside of work, you'll find him hiking, camping, and fly fishing Colorado's trout streams, or playing Ultimate Frisbee, whenever he gets the chance. He's coached a youth Ultimate Frisbee team for several years, taking them to national competitions across the U.S.

Papers Citing 2B Tech Instruments

2B Technologies tracks the papers, conference presentations/posters, reports, and other documents that cite the use of 2B Tech instruments in carrying out scientific research. We're proud to see that our instruments have been used in over 900 studies, covering a wide range of topics related to the atmosphere, medicine, biology, engineering, materials science, and more.

You can find the [database of these publications on our website](#).



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