



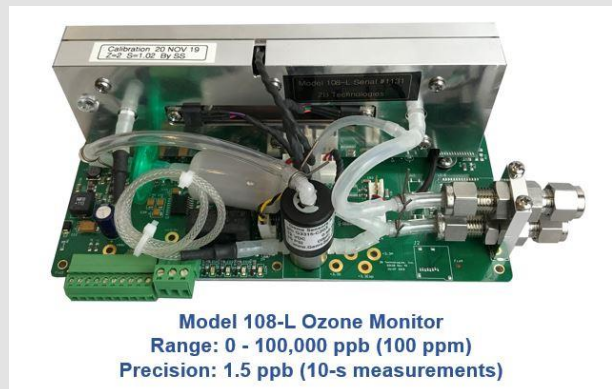
Spring Promotional Offer

10% Off Our Versatile Model 108-L Ozone Monitor

Order by June 1 and receive 10% off our Model 108-L Ozone Monitor.

The Model 108-L offers Federal Equivalent Method (FEM) ozone measurements in a stripped down package that enables you to incorporate it in your own sampling and flow system. This lightweight and efficient package weighs in at only 2 pounds (900 grams) and draws only 2 watts of power.

As an option, the Model 108-L can be ordered with an enclosure and small pump, shown below:



And an exciting new product just launched is our AQLite shown below, which offers the 108-L in a rugged weather-resistant outdoor enclosure ideal for ambient ozone monitoring. A Personal Air Monitor can be added to the package, so that the measurement suite includes not only ozone but also temperature, relative humidity, CO, CO₂, and particle measurements (PM1 and PM2.5). The AQLite has compact dimensions of 10.12 x 8.12 x 4.38 in (25.7 x 20.6 x 11.1 cm).



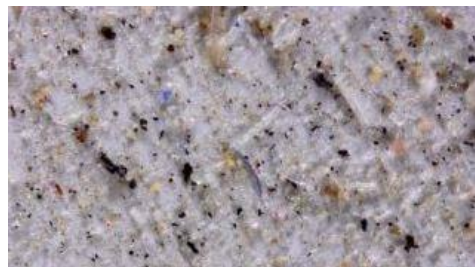
Regardless of the configuration, the Model 108-L provides FEM-quality ozone measurements in the range of 0-100,000 ppb (100 ppm) with a precision of 1.5 ppb for 10-second measurements.

The Model 108-L Ozone Monitor

Air Pollution News

Microplastics: A Newcomer to the Air Pollution Mix

Study Explains How Plastics Become Airborne



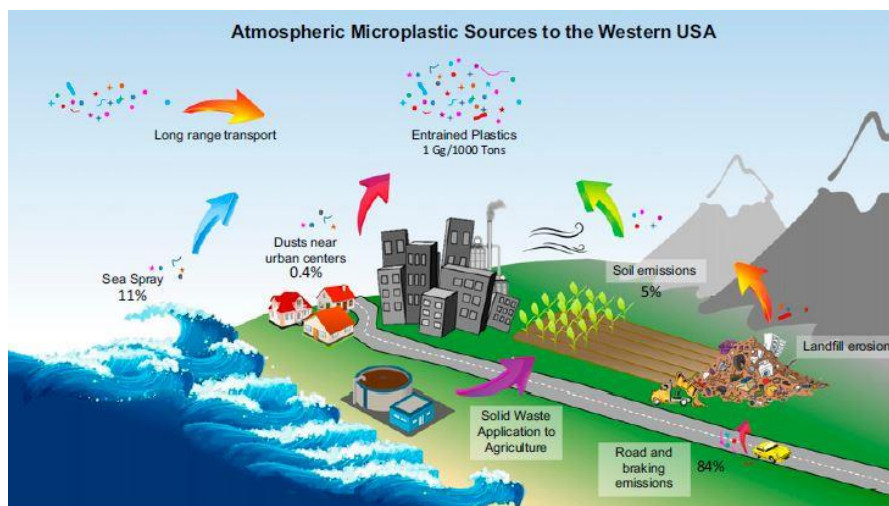
It's well recognized that plastics are a growing environmental issue - they're in the oceans, other waterways, soil, and even appear in human waste. Relatively recently, though, studies have shown that microplastics are also in the atmosphere. But how does something that starts out as a water bottle or a child's toy wind up in the air?

A [new paper in the *Proceedings of the National Academy of Sciences*](#) provides some of the first answers to that question. Janice Brahney (Utah State University) and

colleagues looked at the deposition of plastics from the air for 14 months at sites located across the western U.S. The sheer volume of material was the first shocker for the researchers; from the data and their modeling, they estimate that 1100 tons of plastic are in the air above the western U.S.

A further surprise was that roadways (not cities) are the pathway by which the coarse mode (>2.5 microns in diameter) microplastic particles become airborne. As Brahney explains, "Roads - and more importantly, cars driving on roads - provides the mechanical energy to move particles into the atmosphere."

The plastic particles can stay in the atmosphere for up to 6.5 days, according to the researchers. The atmosphere thus becomes the conduit for transporting plastics to even the most remote areas of the globe. With the human health implications not yet well defined, the atmospheric component of the plastics biogeochemical cycle will no doubt be an increasing focus of research.



[The major sources of atmospheric microplastics in the western United States. Roadways dominate at 84%, followed by 11% from sea spray, 5% from agricultural dust, and 0.4% from dust near population centers. \[Figure Credit: PNAS, Brahney et al., 2021\]](#)

Constraining the Atmospheric Limb of the Plastic Cycle, J. Brahney, N. Mahowald, M. Prank, G. Cornwell, Z. Klimont, H. Matsui, and K.A. Prather, *Proceedings of the National Academy of Sciences*, [doi:10.1073/pnas.2020719118](https://doi.org/10.1073/pnas.2020719118) (2021).

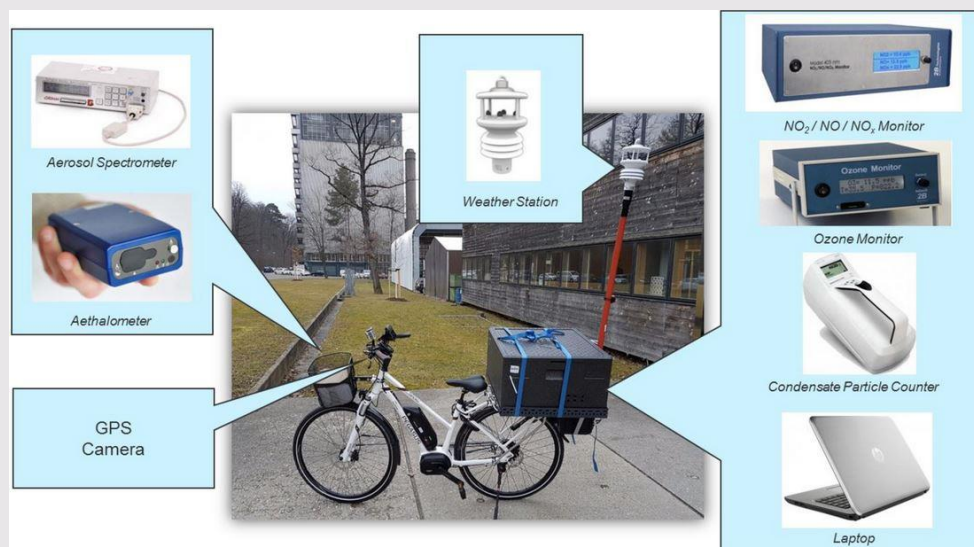
Case Study: Multiple 2B Tech Instruments

Monitoring Air Quality by Bicycle (!)

The Model 405 nm NO₂/NO/NO_x Monitor and Model 202 Ozone Monitor

Over the years, our monitors have been on some interesting platforms-- drones, towers, ships, trains, aircraft, kites, balloons, and even buoys. But this might be the first time we've seen multiple 2B Tech instruments deployed on a bicycle! Especially noteworthy was that the instruments included one of the largest we make, the rack-mount-sized Model 405 nm NO₂/NO/NO_x Monitor.

Researchers Abdul Samad and U. Vogt of the University of Stuttgart in Germany developed the innovative mobile air monitoring package, or MOBAIR. Pictured below, the suite of instruments included 2B Tech's Model 405 nm and Model 202 for the gas-phase measurements (NO₂, NO, NO_x, and O₃). Other instruments measured particles, black carbon, and meteorological parameters. A GPS and camera rounded out the package.



The study by Samad and Vogt made use of both the Model 405 nm NO₂/NO/NO_x Monitor and the Model 202 Ozone Monitor made by 2B Tech, shown in the upper right insets. [Figure Credit: *Urban Climate*, Samad and Vogt, 2020.]

Outfitted with the 44 lb (20 kg) MOBAIR package and possibly some energy bars, the researchers pedaled a 12-kilometer route that included busy city streets as well as highway areas, side roads, and park areas. They made 120 trips over 14 days in February, June, and July of 2018, at all hours of the day and night.

The Model 405 on the MOBAIR platform enabled the investigators to identify NO and NO₂ hotspots in the areas near the highways and relatively lower concentrations in park areas, as would be expected, as well as some unexpected hotspots. Ozone measured by the Model 202 varied and the data showed that titration was occurring in the high-NO areas of the route. Seasonal (winter vs. summer) differences were evident in the the data, as was the expected weekday vs. weekend difference. The trapping of pollution in areas of tall buildings and poor ventilation could also be observed.

The bicycle platform provided access to some areas not near roadways that were inaccessible by other mobile platforms. In addition, it enabled spatial and temporal variability to be observed more readily than possible for fixed monitors in the city. We're pleased to see two of our instruments used in this unique mobile monitoring study!

[Link to Published Paper](#)

Investigation of Urban Air Quality by Performing Mobile Measurements Using a Bicycle (MOBAIR),
A. Samad and U. Vogt, *Urban Climate*, **33**, 100650, 2020.

Employee Spotlight

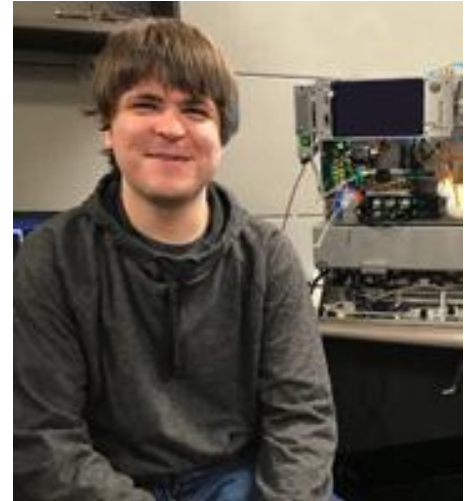
Tommy Kopala: From Intern to Indispensable

He probably didn't realize it at the time, but by high school Tommy Kopala had already begun laying the groundwork for his work in college and at 2B Technologies.

An interest in video games, and a penchant for learning coding and developing his own games, was the basis for his decision to pursue a major in computer science at the University of Colorado Boulder. And it's the underpinning for his work as an intern at 2B Tech, where he has become our company's go-to person for implementing the touch-screen interfaces of some of our newest instruments.

Just a year shy of his graduation from CU-Boulder, Tommy already has 3 years of experience working at 2B Tech. As a junior at Northglenn High School, he began by helping out in manufacturing our ozone monitors. But soon, General Manager Craig Williford realized Tommy had the skills and aptitude to help with the touch-screen interfaces in development for some of our instruments. Tommy has been the lead developer of the touch-screen for the [Model 714 NO₂/NO/O₃ Calibration Source](#) (now on the market) and a touch-screen version of our [Model 405 nm NO₂/NO/NO_x Monitor](#) that will soon be available. He's also working on the touch-screen for the [AQSync](#) (pictured with Tommy above). The AQSync is a newcomer to the 2B Tech lineup that integrates several of our company's innovations in a complete air monitoring package that measures multiple pollutants.

Tommy's intense focus and attentiveness to detail have served him well in his transformation "from intern to indispensable" at 2B Tech. He's a good example of the win-win outcomes of 2B Tech's longstanding commitment to providing intern opportunities that foster the careers of young scientists and engineers.



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