



Introducing CommunityAQ

Bring air quality monitoring to your community or school

2B Technologies has a long history of developing programs and instruments for use in education, with its GO3 Project (2010) and AQTreks (2017). That history is now being expanded in [CommunityAQ](#), a new program to bring the latest in air quality monitoring technology to communities as well as schools.

CommunityAQ brings the best of two worlds together in one package. It combines the portable CO, CO₂, and particle measurements of our sensor-based Personal Air Monitor ("PAM", the heart of the AQTreks program) with the state-of-the-art FEM ozone measurements of our Model 106-L Ozone Monitor. Or, to put it another way:

PAM + 106-L = CommunityAQ Monitor (CAM)

The new combined CommunityAQ Monitor (CAM) can be used to monitor temperature, pressure, relative humidity, CO, CO₂, PM₁, PM_{2.5}, PM₁₀, and O₃ in one place, in a weather-resistant enclosure. Or, remove the "PAM" part of the package, and use it to measure everything except ozone "on the go." Data are uploaded in real time using either 3G or Wi-Fi, and are displayed on your group's smartphones using our new customized app. We've developed a full curriculum for using the CommunityAQ in schools and public outreach.

The CAM is available for purchase or lease (12 or 24 months). Calibrations are included in the leasing arrangements, giving you an affordable and worry-free option for taking the CAM on a test drive.

[See our pricing](#) and [request a quote](#) today!



[More Info About CommunityAQ](#)

Air Pollution News

Progress - and Challenges - in U.S. Air Pollution

Reports Update the Status of Air Pollution in the U.S.



In assessing progress on air pollution, it's important to define the question, "*Progress compared to what?*"

Over the long term, there's been tremendous progress. From 1970 to 2015, the six criteria pollutants are down 71 percent (despite 50% to 250% increases in all related indicators, including population, energy consumption, vehicle miles traveled, and gross domestic product) [[US EPA, 2016](#)]. But over shorter time frames, there are ups and downs. And, there are many remaining challenges.

This nuanced story is captured in two recent reports that update the status of air pollution in the United States. The Association of Air Pollution Control Agencies (AAPCA) gives some upsides in their 2017 report, [The Greatest Story Seldom Told: Profiles and Success Stories in Air Pollution Control](#). Pulling together information from the EPA and other sources, they find (for example) that the ozone 8-hour average is down nearly a third since 1980. And, the Smoky Mountains are...well...less smoky now (hazy-day visibility in 1998 was about 10 miles, and was over 30 miles in 2015).

Despite significant gains, the [State of the Air 2018](#) report of the American Lung Association finds that more than four in ten Americans are experiencing unhealthy levels of air pollution (ozone or particles). The importance of time frame is well illustrated in this report. The recent 3-year data for ozone/particle pollution (2014-2016) in the 2018 report was worse than for the analogous period covered in the 2017 report, but is still an overall improvement compared to the 2016 report.

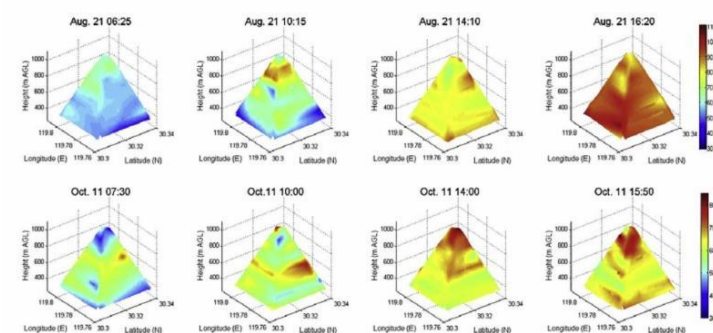
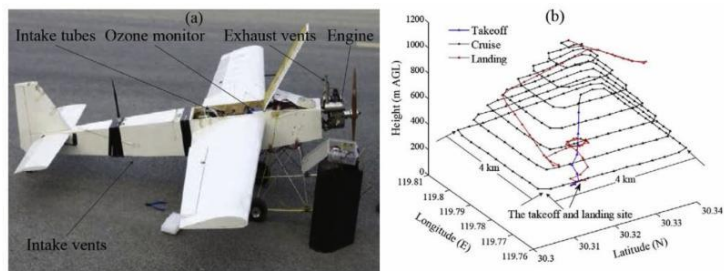
And the good news/bad news theme is reinforced in *State of the Air 2018*. On the one hand, "The best progress came in the continued reduction of year-round particle pollution." But on the other hand, "As climate change continues, cleaning up these pollutants will become ever more challenging."

-
- Association of Air Pollution Control Agencies (AAPCA), [The Greatest Story Seldom Told: Profiles and Success Stories in Air Pollution Control](#), 20 pp., July 2018.
 - American Lung Association, [State of the Air 2018](#), 2018.
 - U.S. Environmental Protection Agency (US EPA), [Our Nation's Air: Status and Trends Through 2015](#), Fall 2016.
-

Case Study

A UAV Study of Ozone Above China with 2B Tech's Personal Ozone Monitor (POM)

The 2B Tech Personal Ozone Monitor (POM) proved to be the perfect match for a study of tropospheric ozone using an unmanned aerial vehicle (UAV) in a rural area of China.



The UAV platform and a typical flight plan are shown at top. 3-D ozone maps on a summer day and a fall day show the ozone evolution from early morning until dusk.

[From Figures 1 and 6, Li et al., *Environmental Pollution* **224**:107-116 (2017)]

surface diversity that ranged from mountainous to flat, and rural to near-suburban. Data indicated that ozone horizontal and vertical variations were mainly linked to temperature variations in the lower troposphere, with transport of air masses from other regions also playing a role in the vertical ozone variations, and the underlying surface playing only a weak role in horizontal ozone variations.

Interpolation of the UAV measurements was used to create 3-D maps that showed the evolving ozone each day. Maps on the summer day (top row in the figure) show ozone coming down from above in the morning, and transporting up from the near-ground layers in the afternoon as the photochemistry builds. The increases of ozone at higher altitudes during the fall day (lower row in the figure) likely indicate horizontal transport of air masses from nearby source regions.

The study demonstrates the capability of UAV-based ozone measurements by the POMS to achieve high spatial and temporal resolution at (relatively) lower cost than aircraft measurements, and suggests their potential use in assessing air quality models and satellite products.

"[Three-dimensional investigation of ozone pollution in the lower troposphere using an unmanned aerial vehicle platform](#)," Xiao-Bing Li, Dong-Sheng Wang, Qing-Chang Lu, Zhong-Ren Peng, Si-Jia Lu, Bai Li, and Chao Li, *Environmental Pollution*, **224**, 107-116, 2017.

The heavyweight capabilities of the [POM](#) (robust measurements of ozone by 254-nm absorbance every 10 seconds with a 1.5 ppb precision and accuracy) make it well suited for making sensitive measurements at high spatial and temporal resolution. The POM's lightweight demands for weight and power (less than 0.5 kg with battery operation) meant that not only the POM but also a temperature / relative humidity sensor could catch a ride on the UAV's 3.5-kg payload.

Xiao-Bing Li and colleagues at Shanghai Jiao Tong University present data from 11 flights over three days in summer and fall of 2014 in their [paper published in *Environmental Pollution*](#). Multiple flights each day captured the diurnal behavior over the period from morning to dusk. The temperature data enabled the researchers to characterize the roles of horizontal and vertical transport in ozone behavior, and the upward spiraling flight pattern was used to investigate the effects of underlying

[More Info About the 2B Tech Personal Ozone Monitor \(POM\)](#)

Meet the President of 2B Technologies

John Birks

Just what are those "B"s in 2B Technologies? Well, one of them is John Birks.

John founded the company in 1998 with Mark Bollinger (the other "B") and became its sole owner in 2005. Today, he's the President, CEO, idea-generator, researcher, administrator... to say he does it all is not an exaggeration. You're just as likely to find him working on his latest idea in the lab, talking with customers on the phone or at trade shows, sketching out a new design with 2B Tech's engineers and scientists, or poring over sales data with 2B Tech's sales and finance staff.



John brings over 40 years of scientific experience and enthusiasm to work with him every morning. He got his Ph.D. from renowned atmospheric scientist Harold Johnston at the University of California-Berkeley, and embarked on a career as a professor at the University of Illinois and at the University of Colorado, Boulder. More than 45 graduate students launched their careers under John's leadership. Along the way, John developed the nuclear winter theory with Nobel Prize-winner Paul Crutzen, published several papers on gas-phase chemistry important in the stratospheric ozone layer, and innovated new ways of measuring trace gases in the atmosphere using miniaturized instruments onboard high-tech kites, powered parachutes, small aircraft, and balloons. The latter led to the founding of 2B Technologies. John's passion for education has continued after his retirement from CU Boulder in 2002, through his initiation of the nonprofit GO3 Project, AQTreks, and CommunityAQ programs that have reached students, teachers, and the public around the globe.

John lives near Boulder and counts his wife Kathy Rowlen (CEO of our sister company InDevR), 3 daughters and 11 grandchildren among his many blessings.

See Us at These Upcoming Conferences

We'll be at several conferences in the near future -- please be sure to stop by our exhibit booth!

Conference Name	Conference Dates	Conference Location
Indoor Air 2018	July 22-27	Philadelphia, PA
2018 National Ambient Air Monitoring Conference	August 13-16	Portland, OR
International Ozone Association-Pan American Group (IOA-PAG) 2018 Conference and Expo	August 23-26	Las Vegas, NV
International Society of Exposure Science (ISES) 2018 Annual Meeting	August 26-30	Ottawa, Canada
Air Sensors International Conference (ASIC)	September 12-14	Oakland, CA

[2B Tech Website](#)

[Get Quote](#)

[Our Team](#)

[Newsletter Archive](#)

[Helpful Downloads](#)

2B Technologies, Inc.

2100 Central Avenue, Suite 105| [Boulder, Colorado USA](#)
303-273-0559 | sales@twobtech.com