

## The community goes high tech for pollution monitoring

By Doug Brugge

An intrepid network of Somerville residents that has collaborated with the Tufts Community Research Center has been concerned about the pollution coming from the major highways in their city for some time. Recently, the Mystic View Task Force (MVTF) contracted with Aerodyne Research, Inc. of Billerica, MA to use



high-end research technology to measure the pollution that they have been complaining about in public hearings. The MVTF is no stranger to public advocacy. They played a critical role in forging a revised plan for the development of Assembly Square in Somerville in 2007. But by bringing in a level of technology that even universities rarely possess, they may have taken community research to a new level.

Wig Zamore, who spearheaded the effort for MVTF, said, "We are fortunate to live in an area whose universities and companies provide health, science and technology solutions to the world. It made sense to tap into a little of that unique expertise to begin to tackle this serious environmental issue right here in our own backyards. MVTF is very excited to be able to support and collaborate with Tufts and Aerodyne in this cutting edge community research."

On a cold morning in mid-January, the "FedEx style" white Aerodyne van went into operation near Assembly Square on streets and in neighborhoods adjacent to I-93 and Rt. 28 (the pictures of the lab are inside and out). Aboard were a crew of Aerodyne scientists under contract to MVTF, including a collaborating researcher from Montana State

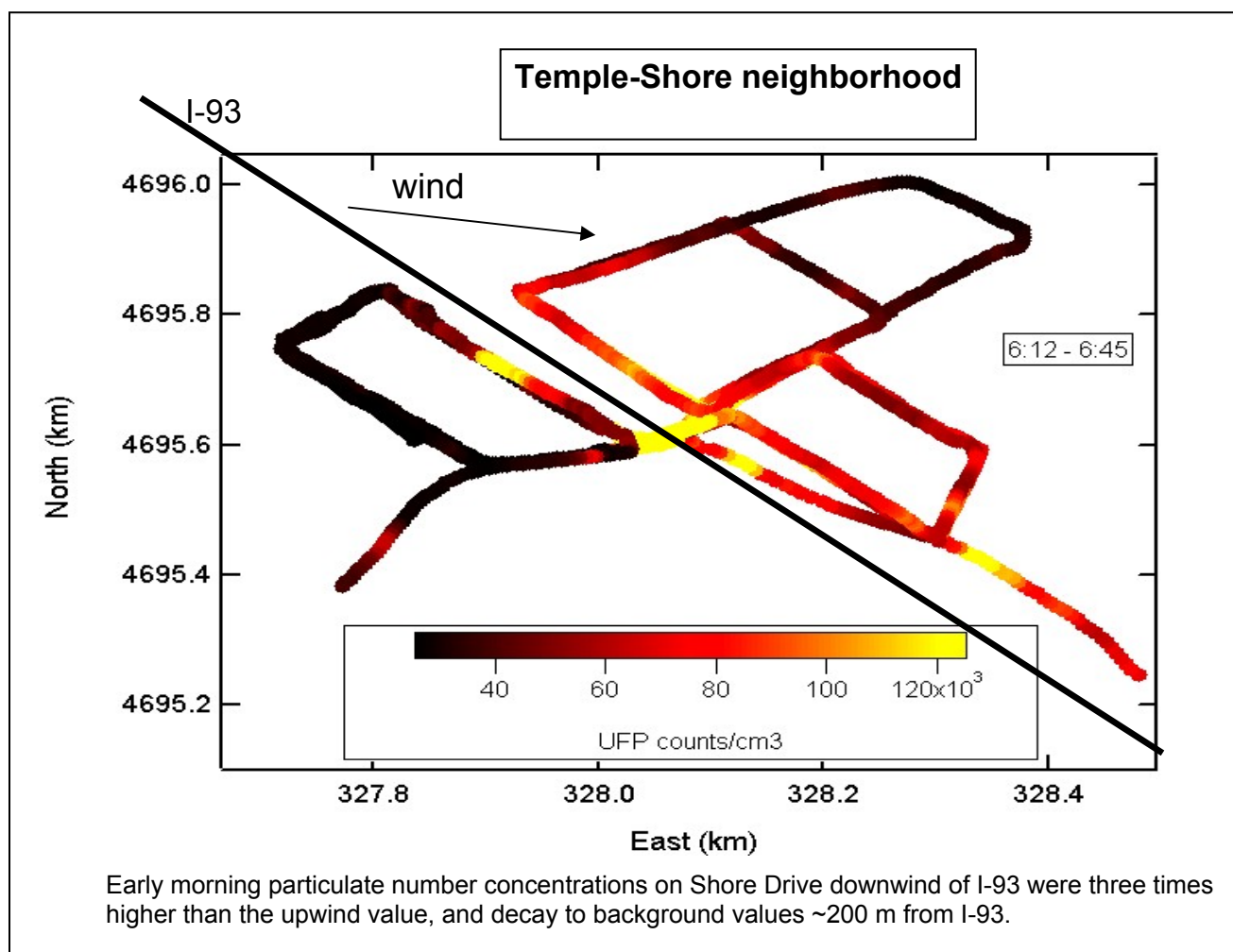


University, a Tufts graduate student and, for part of the time, representing the Tufts Community Research Center, me. The mobile laboratory is equipped with instrumentation that can monitor numerous gas-phase and particulate pollutants simultaneously at 1-second intervals while in motion and preserve the data so that it can later be plotted by geographic location.

"We are pleased to have the opportunity to deploy the advanced trace gas and fine particle characterization instruments in our mobile laboratory that provide real-time maps of the pollutant levels that may impact the health of Boston area residents," said Charles Kolb, Aerodyne's

president. “We hope our collaborators at Tufts and the MVTF can use the resulting data to perform better evaluations of potential health effects.”

The Tufts Community Research Center has joined with the Somerville Transportation Equity Partnership and community partners in Boston on a proposal for a community-based participatory research study of health effects of pollution gradients right next to major highways that is pending at NIH. For participants in the proposal the data gathering that icy morning was particularly exciting as the neighborhoods were among those we hope to include in the full study once it is funded.



Analysis of all those gigabytes of data will take time, (as Wig Zamore was heard to say that morning, “let’s go collect another million data points!”) But Aerodyne has released a couple of preliminary images, one of which is reproduced above. In the image “ultrafine particles,” the number concentration of particles (technically, those between 7 nm and 2.5  $\mu\text{m}$  in diameter) are plotted so that the brighter the color, the higher the number concentration of particulate air pollution. These particles, which are thought to be particularly toxic, are elevated for about 200 meters downwind from the highway. Most of these ultrafine particles are generated by the rush hour traffic. Early on the morning tested, Somerville neighborhood air close to I93 had roughly 120,000 of these extremely tiny particles in each cubic centimeter of air (about a sugar cube).

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