Patrick H. Zahn

Forecasting Program Lead
Project Manager

Sonoma Technology

Mr. Zahn joined Sonoma Technology in 2007. His primary responsibilities involve air quality forecasting and meteorological data analysis. As Lead Forecaster and a senior meteorologist, he oversees daily ozone and particulate matter forecasting operations for over a dozen regions across the United States. Mr. Zahn regularly directs meteorological analyses of high-pollution events to determine their causes and has developed statistical and conceptual tools to aid forecasting efforts on potential high-pollution days. He has also provided decision support for prescribed burning and geothermal venting operations by forecasting the potential impacts of these activities on regional air quality. Additionally, he has conducted meteorological analyses supporting exceptional events demonstrations due to blowing dust, smoke transport, and stratospheric ozone intrusions.

Since 2014, Mr. Zahn has successfully managed fine particulate matter ($PM_{2.5}$) and ozone air quality forecasting projects across the United States, including forecasting for clients in Louisiana, Kansas, Minnesota, Ohio, Delaware, and California. He has led multiple air quality forecast training workshops for the Nevada Division of Environmental Protection, and a smoke forecasting workshop for the International Smoke Symposium. He also oversaw an analysis of changing air quality conditions in the Sacramento, California, region during the shelter-in-place period in 2020, which demonstrated significant improvements in air quality regionwide. Additionally, he led an analysis of prescribed burn meteorological rules for the Mojave Desert Air Basin. He has worked on a variety of analysis and research projects, including a project funded by Caltrans to determine the effects of diesel particulate retrofit devices on nitrogen oxides emissions. He has also developed techniques for enhancing air quality maps for the public using air quality observations, satellite-based estimates, and air quality forecast model output.

In addition to his forecasting and data analysis activities, Mr. Zahn has led Sonoma Technology's video production efforts since 2008. He has produced short outreach web videos that summarize seasonal air quality and high pollution episodes for specific regions. Mr. Zahn and the other members of the forecasting team also produce the High Pressure Podcast, which analyzes high-pollution events and discusses the challenges of air quality forecasting.

Mr. Zahn has led quality assurance activities on a wide range of Sonoma Technology projects, including AirNow and AirNow-Tech, and several air quality outreach websites and mobile apps. These activities include test planning, test execution, and coordination among developers, subject matter experts, and project managers.

From 2002 to 2006, Mr. Zahn was a research assistant at the University of Washington, where he researched regional climate change in the Pacific Northwest using a mesoscale meteorological model. He also served as a teaching assistant for an introductory class on climate change. In 1999, Mr. Zahn was an intern at the Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey. During his time there, he performed statistical analyses, including wavelet analysis, to determine how the El Niño Southern Oscillation's intensity and frequency have changed over time.

Education

- MS, Atmospheric Science, University of Washington
- BSE, Environmental Engineering, magna cum laude, Princeton University

Certifications

- Certified Tester, Foundation Level (CTFL) by the American Software Testing Qualifications Board (ASTQB)

For a list of publications, see **sonomatech.com/ResPub/PHZpub.pdf**.