Sahil Bhandari, PhD

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EDUCATION

PhD, Chemical Engineering *The University of Texas at Austin* 2021
Research areas: Atmospheric science, aerosols, field measurements, and receptor modeling
Published **12 environmental science & technology peer-reviewed works** at UBC, UT Austin and IIT Delhi

CURRENT ROLE

Atkinson Postdoctoral Science Fellow *Environmental Defense Fund and Cornell University* 2023–present
Research areas: methane emissions, measurements modeling reporting verification (MMRV)

- Studying the **spatial and temporal variations** of **methane emissions** from large oil and gas production basins
- Using **aerial survey data (e.g., MethaneAIR)** to assess source persistence and construct emissions event databases
- Optimizing **sampling strategies (e.g., revisits for MethaneSAT)** to accurately compile annual emission inventories
- Using **dispersion modeling** frameworks to study meteorological impacts on aerial survey-based emission estimation
- Quantifying the **impact of interventions** in the **PermianMAP project** on emissions from the Permian basin

SKILLS & PAST EXPERIENCES

Project Management 2013–present

- **Secured 6 grants** worth $250,000 for conducting independent research on air quality impacts at UT Austin and UBC
- **Supervised** 9 undergraduate researchers in projects involving field monitoring, data mining, and air quality modeling
- Developed and maintained **productive relationships** with key stakeholders across multiple institutions (UT Austin, IIT Delhi, Aerodyne Inc) resulting in successful data collection (2017–2022) in the Delhi Aerosol Supersite study
- **Grant reviewer** for UT Austin Green Fund (USD 1 million) (Grants reviewed = 50) between 2018–2020

Air Quality Assessment & Monitoring 2015–present

- Conducted the first **mass spectrometry-based $PM_{2.5}$** source apportionment study for Delhi, India
- Evaluated the performance of low-cost PM sensors, helping **establish ASTM D8405-21 standard** (study summary)
- Led air pollutant exposure **monitoring and geospatial mapping** in microenvironments in Austin, Texas (press)
- Mapped the smellscape of Metro Vancouver in **SmellVan project** with govt. partners **NCCEH and BC CDC** (pre-print)

Air Quality Modeling 2015–present

- Developed and applied a new **supervised machine learning method** for source attribution of air pollution
- Identified and fixed issues in a US EPA environmental data analysis tool EPA PMF **(work cited on the US EPA website)**
- Built the **latest emission inventory** of VOCs in Metro Vancouver using open-source data streams
- Conducted odour data **(spatial, temporal, and textual)** analysis & visualization in self-built R package **(pre-print)**
- Proficient in geospatial and textual approaches in **R** (tidyverse, ggplot, openair, sf), source apportionment (**EPA PMF**), and dispersion models (**AERMOD, HYSPLIT**), and possess working knowledge of **Python, ArcGIS, and QGIS**

Communication & Knowledge Translation 2021–present

- Created knowledge translation (KT) products—**articles**, **presentations**, and **evidence reviews**—with NCCEH
- Taught Engineering Economics at the UBC Vancouver Dept. of Mechanical Engineering
- Published **literature review on air quality impacts** of cannabis cultivation facilities **(Google Scholar Profile)**
- **Developed SOP** for the UT Austin Office of Sustainability to access and analyze methane data for University Lands
- **Convened session** on citizen and community science at American Geophysical Union Fall Meeting
- Led **media engagement** for SmellVan: Smell something funky?, CBC News; Something smells fishy, Ubyssey
- Gave **invited talks** to policymakers (Govt. of Delhi), businesses (GE Bangalore), and at conferences (AGU)

PROFESSIONAL ORGANIZATIONS

- Member, Association for the Advancement of Sustainability in Higher Education (AASHE) 2017–present
- Member, American Geophysical Union (AGU) 2017–present