

## Dr. Faculty First & Last Name – Faculty Bio & Professional Profile

**Name:** Dr. ABCD XYZ

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### Short Bio

Dr. ABCD.xyz is an atmospheric scientist specializing in lidar remote sensing, coastal boundary layer dynamics, air quality, and climate-resilient infrastructure. His work integrates advanced observing systems (lidar, ceilometers, trace-gas instrumentation) with satellite products and AI/ML analytics to understand how coastal meteorology, wildfire smoke, and urban pollution impact health, energy, and national security. He leads Hampton University's contributions to the Unified Ceilometer Network (UCN) and serves as Campus PI for the NOAA Center for Earth System Sciences and Remote Sensing Technologies II (CESSRST-II), collaborating closely with NASA and other federal partners to build integrated observing networks and workforce pipelines.

### Areas of Expertise

- Atmospheric lidar and active remote sensing
- Coastal boundary layer, ducting, low-level jets & bay-/sea-breeze dynamics
- Air quality, aerosols, trace-gas and smoke measurements
- Integrated observing systems & sensor networks (including UCN)
- AI/ML for environmental and climate applications
- Satellite-ground synergy (e.g., TEMPO, GOES, AERONET, PANDORA)
- Climate resilience for ports, coastal communities, and critical infrastructure

### Research Focus & Active Projects

**Coastal Boundary Layer, Ducting & Mesoscale Flows:** Observational and modeling studies of coastal boundary layer structure, low-level jets, and bay-/sea-breeze circulations, focusing on how these features drive air quality, refractivity gradients, and EM/ducting environments in littoral regions.

**Unified Ceilometer Network (UCN):** Leadership in developing standardized ceilometer-based planetary boundary layer and aerosol products to support air quality management, climate applications, satellite/model evaluation, and early-warning capabilities.

**Wildfire Smoke & Coastal Air Quality:** Multi-sensor characterization of fresh and transported smoke over the Mid-Atlantic, quantifying impacts on ozone, particulate matter,

and visibility, and advancing integrated monitoring approaches for complex coastal environments.

**Integrated Monitoring Systems for Extreme Episodes:** Design of multi-platform systems that fuse surface, aloft, and remote sensing observations to diagnose ozone-exceedance and other high-impact pollution events, supporting regulatory, public-health, and research needs.

**Federal Center & Agency Collaborations (NOAA CESSRST-II, NASA, DoD, US EPA):** Development of data-rich testbeds and student-engaged research projects that align Hampton's capabilities with national priorities in remote sensing, boundary layer science, and operational environmental intelligence.

### Teaching & Mentoring

Dr. XYZ teaches courses in atmospheric measurements, remote sensing, boundary layer processes, and air quality. He mentors undergraduate and graduate students in observational field campaigns, algorithm development, and applied environmental intelligence projects. His mentoring places strong emphasis on supporting first-generation and underrepresented students in atmospheric and climate science, with structured pathways into federal agencies, national laboratories, and advanced graduate programs.

### Selected Publications (2023–2025)

### Collaboration & Opportunities

Dr. XYZ welcomes collaborations with universities, federal agencies, national laboratories, and industry partners on:

- **Coastal boundary layer, ducting, low-level jets & bay-/sea-breeze dynamics** and their impacts on air quality, visibility, and EM propagation.
- **Integrated observing systems and testbeds** (including UCN), combining lidar, ceilometers, trace-gas sensors, and satellites for research-to-operations applications.
- **Wildfire smoke, ozone, and particulate pollution** characterization and forecasting in coastal and urban environments.
- **AI/ML, data fusion, and decision-support tools** for environmental intelligence, climate resilience, and mission planning.

He is especially interested in partnerships that (1) embed Hampton students in mission-driven projects with NASA, NOAA, EPA, DoD, and related organizations, and (2) position HBCUs as core contributors to national capabilities in atmospheric science, remote sensing, and critical infrastructure resilience. Prospective collaborators and students are encouraged to reach out.