

Research Topics & Ideas: Environmental Science

About this document

This PDF contains 52 **environmental science research topics** for dissertations and theses, organized into 10 areas of environmental science, from air quality and atmospheric science to wildlife ecology and conservation. Each topic is written as a researchable question and linked to a completed dissertation (2022–2026, 25 universities), so you can see how it was studied in practice. Use it to shortlist environmental science dissertation topics and thesis ideas, then narrow one down to your own population, setting and timeframe.

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Air quality and atmospheric science

1. How much does a single drive-through contribute to local air quality?

See it in a real dissertation: [The Effects of Restaurant Drive-Through Vehicle Mobile Emissions on Air Quality](#) · Tryston Nychol Sellers Calder · Boise State University · 2023

2. Which weather patterns produce a high ozone day in a given city?

See it in a real dissertation: [The Relationship Between High Ozone Days and Atmospheric Patterns in Atlanta, Georgia](#) · E. E. Unger · Georgia State University · 2022

3. Can ultrafine particulate exposure be measured cheaply enough to do at scale?

See it in a real dissertation: [Developing a Simplified Method of Measuring Ultrafine Particulate Matter Dose Concentrations for Diesel Emissions](#) · Nafisat Ohunene Isa · West Virginia University · 2025

4. Which components of fine particulate pollution track lung disease?

See it in a real dissertation: [State of fine particulate matter \(PM2.5\) and its chemical constituents with morbidity due to pulmonary diseases in an urban city of Southern Asia](#) · Fatim Sannoh · University at Albany, State University of New York · 2023

5. Do indoor air interventions cut ozone without driving up energy use?

See it in a real dissertation: [Effectiveness of Air Pollution Mitigation Systems: Transport, Transformation, and Control of Ozone in the Indoor Environment](#) · Pradeep Ramasubramanian · Portland State University · 2022

Climate change impacts and adaptation

6. Which regions lose most from climate impacts on crops, and which adaptations actually help?

See it in a real dissertation: [Spatial Disparities in Climate Impacts on Agricultural Production: A Global Assessment of Some Adaptation Strategies and Applied Nutrient Impacts](#) · James Allen Franke · University of Chicago · 2023

7. Can drone imagery identify which crop varieties hold up under climate stress?

See it in a real dissertation: [Integrating UAV-Based Phenotyping With Process-Based Crop Modeling To Evaluate Soybean Cultivar Resilience Under Climate Change](#) · Bilal Jamal Abughali · Purdue University · 2026

8. What does satellite land cover data reveal about climate change that local records miss?

See it in a real dissertation: [Climate Change in Gilgit-Baltistan: Satellite-Based Land Use/land Cover Change Detection, Socio-Economic Dimensions, and Adaptation Strategies](#) · Ali Muhammad · Missouri State University · 2026

9. How do you build a power grid that survives worsening wildfire risk?

See it in a real dissertation: [Building power grid resilience to extreme wildfire risks with distributed energy resources](#) · Weijia Yang · University of Oxford · 2024

10. Can a keystone shrub adapt to drought fast enough on its own?

See it in a real dissertation: [Genomic Underpinning of Drought-Associated Phenotypes in a Keystone Shrub Species of Western North America](#) · Carlos Dave C. Dumaguit · Boise State University · 2023

Environmental communication, policy and behavior

11. Do students in different disciplines value carbon damage differently?

See it in a real dissertation: [Assessing Undergraduate Perceptions of the Social Cost of Carbon \(SCC\): Attitudes Across Academic Disciplines](#) · Adeline Beckert · University of Massachusetts Amherst · 2026

12. What actually drives electric vehicle adoption, preference or policy?

See it in a real dissertation: [Electric Vehicle Adoption: An Investigation into Public Perceptions, Market Preferences, and Policies](#) · Bruno Cesar Krause Moras · Purdue University · 2026

13. Does worrying about climate change deepen commitment, or does mindfulness do that work?

See it in a real dissertation: [Emerging Adults' Risk Perception and Mindfulness Strategies Concerning Climate Change and Environmental Commitment](#) · Danieli M. Mercado Ramos · Illinois State University · 2022

14. What do volunteers actually learn from a citizen science project?

See it in a real dissertation: [Confluence: Evaluating the Individual Learning Outcomes of a Combined Citizen Science and Environmental Education Project](#) · Evan A Harms · West Virginia University · 2023

15. How well does health communication keep up with an ecological risk that is moving?

See it in a real dissertation: [Vibriosis: An Integrated Study of Ecology, State Policy, and Health Communication](#) · Ruth Akintoye · Louisiana State University · 2023

Fire, disturbance and ecosystem recovery

16. Does a salamander return to a burned site, and does the severity decide?

See it in a real dissertation: [Occupancy of a New Mexico Endemic Salamander Across a Wildfire Burn Severity Gradient](#) · Marissa Ardovino · University of Rhode Island · 2024

17. What does repeated wildfire smoke exposure do to a body over years?

See it in a real dissertation: [Stress as a Biological Variable: Integrating Allostatic Load into Research on Wildfire Smoke Exposure](#) · Aleah Bailey · University of North Carolina at Chapel Hill University · 2025

18. Do fuel treatments change which plants return to the understory?

See it in a real dissertation: [Assembly processes driving understory plant communities in a long-term study of fuel restoration treatments](#) · Isabella G. Smith · University of Montana · 2026

19. What happens to forest species after a fire far larger than any before it?

See it in a real dissertation: [The impact of the 2019–2020 wildfires on terrestrial species in forests of south-eastern Australia](#) · Grant D. Linley · Charles Sturt University · 2024

20. When does a burned forest come back as something else entirely?

See it in a real dissertation: [Altered Disturbance Regimes and Novel Ecosystems: Understanding and Managing Ecosystem State Change in the Forest-Peatland Ecotone of Western Patagonia](#) · Kyla Zaret · Portland State University · 2024

Marine and coastal ecosystems

21. Can satellites track seagrass loss accurately enough to guide restoration?

See it in a real dissertation: [Satellite-based mapping of seagrass habitats and coastal wetlands in the US Gulf of Mexico and Florida: A remote sensing approach for environmental conservation and management](#) · Luis Lizcano-Sandoval · University of South Florida · 2024

22. What role do viruses play in low-oxygen coastal waters?

See it in a real dissertation: [Ecology of Viruses in Marine and Coastal Oxygen-depleted Waters](#) · Sophie Jurgensen · Louisiana State University · 2023

23. How do marine predator distributions shift across coastal systems?

See it in a real dissertation: [Characterizing Marine Predator Distributions Across Coastal Systems: Ecological Patterns and Human Perspectives](#) · Sally Dowd · University of North Carolina at Chapel Hill University · 2026

24. What does opening a coastal pond to the sea do to its water quality?

See it in a real dissertation: [The effect of breaching on coastal pond water quality](#) · Faith K. Brooks · Massachusetts Institute of Technology · 2025

25. How much does a marine microbiome depend on habitat rather than host?

See it in a real dissertation: [Variations in marine microbiomes: from habitat to host](#) · Lei Ma · Woods Hole Oceanographic Institution · 2022

Pollution, microplastics and contaminants

26. Do weathered microplastics carry more contaminants than fresh ones?

See it in a real dissertation: [Environmental Adsorption/Desorption Behavior of Antimicrobial Contaminants and PFAS on Virgin and Weathered Microplastics](#) · Hatice Yildirim · Clemson University · 2026

27. Where do microplastics concentrate in a lake, and does that shift with the season?

See it in a real dissertation: [Linking the Spatial, Temporal, and Compositional Variability of Microplastics in the Nearshore Region of Lake Ontario](#) · Sophie Routenberg · Rochester Institute of Technology · 2025

28. Who do stakeholders think should pay to manage microplastics?

See it in a real dissertation: [Stakeholder Perceptions of Microplastics Management in Oregon](#) · Maya Hurst-Mayr · Portland State University · 2022

29. Can a cheap device reliably separate and identify microplastics in the field?

See it in a real dissertation: [Microfluidic Devices for Microplastics Separation and Identification](#) · Pedro Mesquita · University of Rhode Island · 2023

30. What contaminant burden does living in a megacity actually impose?

See it in a real dissertation: [Megacity: a reservoir of toxic environmental contaminants and health disease burden](#) · Omosehin D. Moyebi · University at Albany, State University of New York · 2022

Soil, land use and agriculture

31. Does regenerative farming build soil carbon without costing yield?

See it in a real dissertation: [Regenerative agriculture practices and their influence on soil organic carbon and farm productivity in temperate regions](#) · Matthew W Jordon · University of Oxford · 2022

32. What does no-till farming do to where phosphorus sits in the soil?

See it in a real dissertation: [Soil phosphorous stratification in long-term no-tillage and cover crops](#) · Reid William Barker · Iowa State University · 2023

33. How does land use change reshape agricultural systems as a city expands?

See it in a real dissertation: [Quantifying the Impacts of Land Use and Land Cover Change on Urbanizing Agricultural Systems](#) · Carli Beisel · Boise State University · 2025

34. Can a cover crop cut nutrient loss enough to matter downstream?

See it in a real dissertation: [Improving Water Quality Through Reducing Agricultural Nutrient Loss: Field Pennycress as a Cover Crop](#) · Mujen Wang · Illinois State University · 2022

35. Who actually benefits from a climate-smart agriculture program?

See it in a real dissertation: [The Political Economy of Climate Smart Agriculture: Implications for Zambian Smallholder Farmers](#) · Valerie Ponder · University of London · 2026

Urban environments and green infrastructure

36. How much does the urban heat island vary street by street?

See it in a real dissertation: [New York city micronet: comprehensive site metadata and classifications and characteristics of the urban heat island](#) · Ashley Williamson · University at Albany, State University of New York · 2022

37. How does stormwater runoff change as land use and climate shift together?

See it in a real dissertation: [Stormwater Runoff Response Under Changing Climate and Land uses Across Gradients of Inland and Coastal Urban-Natural Basin](#) · Mahmood Khan · West Virginia University · 2022

38. Which nature-based cooling techniques actually reduce urban heat?

See it in a real dissertation: [Radical Urban Natures: Mitigating Urban Heat with Nature-Based Techniques in Portland, Oregon](#) · Heather Day-Melgar · Portland State University · 2023

39. Can a city manage its forest for climate and biodiversity at the same time?

See it in a real dissertation: [Urban ecology as a system integrating climate, biodiversity, and urban forest management](#) · Troy Weber · Purdue University · 2026

40. How much can a stormwater treatment device absorb before it stops working?

See it in a real dissertation: [Mass Capacity Analysis of Stormwater Control Measures Using Synthetic Stormwater With Silica, Organic and Hydrocarbon Constituents](#) · Craig Fairbaugh · Portland State University · 2022

Water quality, hydrology and watersheds

41. How does irrigation change water quality downstream in an agricultural basin?

See it in a real dissertation: [Agricultural Irrigation Water Quality in the Lower Boise River Basin](#) · Reed Chasmar · Boise State University · 2024

42. What is actually driving nutrient levels in a river basin over time?

See it in a real dissertation: [Trends in Nutrients Load and Driving Factors in Illinois River Basins](#) · Olaoluwa Oladuji · Illinois State University · 2022

43. Do beaver dams cool a stream or warm it?

See it in a real dissertation: [Thermal Regimes of Beaver Impacted Stream Reaches in the Tualatin River Basin](#) · Michael Mayer · Portland State University · 2024

44. What does a flood-control reservoir do to water quality upstream and downstream?

See it in a real dissertation: [Physical Processes and Water Quality Effects in a Flood-control River-reservoir System](#) · Nhu Hoang Van Pham · Purdue University · 2026

45. Where is groundwater turning saline, and which aquifer is it coming from?

See it in a real dissertation: [A Geospatial Assessment of Groundwater Salinization in a Multi-Aquifer System: Durango, Mexico](#) · Juan Lopez-Sierra · Missouri State University · 2026

46. Can satellites measure river flow well enough to replace gauges?

See it in a real dissertation: [Remote sensing of rivers: applications for streamflow and carbon flux estimations](#) · Jaclyn Gehring · Northeastern University · 2024

Wildlife ecology and conservation

47. Does an urban creek corridor connect bird habitat, or only look as though it does?

See it in a real dissertation: [Assessment of Avian Community Structure and Habitat Connectivity in the Fanno Creek Corridor: Bird Surveys, Habitat Assessment, and Management Recommendations](#) · Grace Hall · Portland State University · 2024

48. What can genomics tell a conservation team that field counts cannot?

See it in a real dissertation: [Advancing genomic approaches for conservation of threatened and endangered species](#) · Jong Yoon Jeon · Purdue University · 2026

49. How are semi-aquatic mammals shifting as the landscape around them changes?

See it in a real dissertation: [The Distribution and Habitat Use of Semi-aquatic Mammals in a Changing New England Landscape](#) · James S. Crockett · University of Rhode Island · 2024

50. Which coastal bird habitat disappears first as sea level rises?

See it in a real dissertation: [The Effects of Sea Level Rise on the Habitat of Coastal Waterbirds in Northwest Mexico](#) · Julian Garcia-Walther · University of Massachusetts Amherst · 2025

51. How much of meadow bird decline is farming practice rather than habitat loss?

See it in a real dissertation: [Complex Interactions in Meadow Bird Conservation: Field and Landscape Dynamics, Shaped by People](#) · Luis Barba Escoto · University of Groningen · 2026

52. Where do endangered sharks and commercial fisheries actually overlap?

See it in a real dissertation: [Investigating the Movements, Behaviors, and Interactions with Fisheries of the Endangered Shortfin Mako Shark in the Western North Atlantic Ocean](#) · Colby D. Kresge · University of Rhode Island · 2024

How to turn a topic into your research question

A topic is a starting point, not something you can research yet. These four steps take you from a topic on this list to a focused question you can actually answer.

1. **Shortlist three, not one.** Pick three topics from this list that genuinely interest you and fit the access you have to people and data.

Recommended reading: [How to find and choose a dissertation topic](#)

2. **Read the dissertation behind each one.** Its literature review and its "recommendations for future research" section show you what is already known and what is still open.

Recommended reading: [How to find a research gap](#)

3. **Narrow it to your setting.** Name one population, one setting and one thing you will measure or explore. That turns a broad topic into a question you can finish.

Recommended reading: [How to write a research question](#)

4. **Line up your aims, objectives and questions.** Your committee will check that they agree.

Recommended reading: [Research aims, objectives and questions](#)

Work through these once and you will have a focused question rather than a broad topic, which is what the rest of your proposal is built on.