Welcome to DEQ's Laboratory and Environmental Assessment Division

Oregon Department of Environmental Quality

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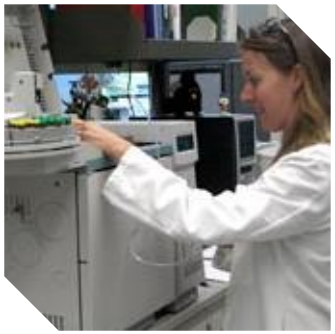
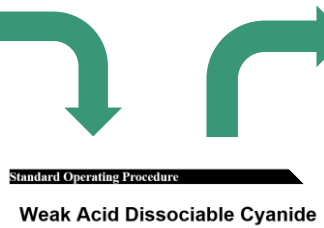
LEAD Workflow

Air Quality and Water Quality Monitoring Sections

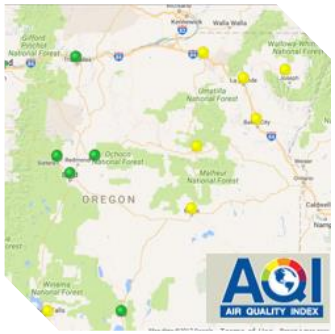
Resource Assessment and Technical Support Section



Organic and Inorganic Chemistry Sections



Quality Assurance



Resource Assessment and Technical Support Section

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Air Quality Monitoring

- EPA Criteria Pollutant Monitoring
  - CO, NO_x, SO_2, O_3, PM
- Air Toxics Community Assessments and Trends
  - e.g., Arsenic, Benzene, Formaldehyde, Naphthalene
- Air Quality Index
  - Real-time public information and air advisories

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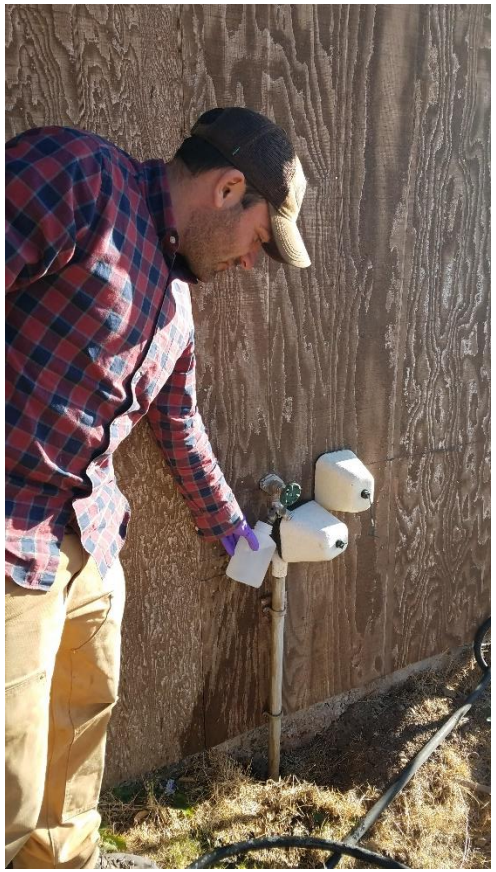
Water Quality Monitoring



- Objective

  Assess water quality trends and conditions for compliance with water quality standards to support water quality modelling and development of watershed management plans

- Projects
  - Ambient Monitoring
  - Pesticide Stewardship Partnership
  - Toxics Monitoring Network
  - Total Maximum Daily Load
  - Volunteer Monitoring
  - Statewide Groundwater
  - Biomonitoring
  - Beach Monitoring

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Analytical Chemistry

Study and use of instruments and methods to separate, identify, and quantify matter

Organic Chemistry	VS	Inorganic Chemistry
Concerned with organic compounds, which contain carbon in covalent bonding		Concerned with substances that contain little or no carbon

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Analytical Chemistry

Parameters

Sample Type	Organic	Inorganic
Water	WQ Indicators – TOC, DOC, chlorophyll Pesticides – current use, legacy Herbicides – glyphosate, phenoxy Toxics – industrial, pharmaceutical Drinking water – primacy, cyanotoxins	Conventional – pH, turbidity Minerals – calcium, sodium Trace metals – copper, lead, zinc Nutrients – ammonia, nitrates, phosphates Ions – chloride, sulfate
Air	TO-11 – Carbonyls TO-13 – PAHs TO-15 – Volatiles	Fine Particulate Mass – $PM_{2.5}$, PM_{10} Toxic Metals – arsenic, cadmium, lead Asbestos in bulk material

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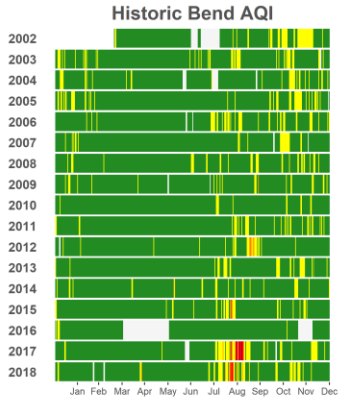
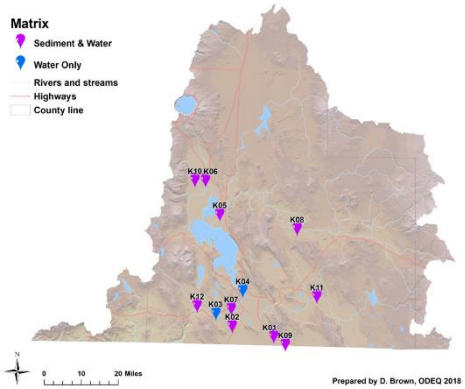
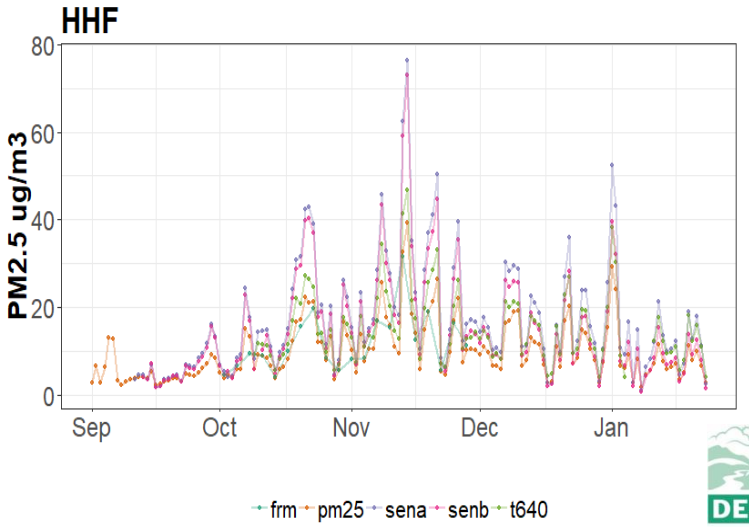
Resource Assessment & Technical Support

- Supports AQ & WQ with data analysis, visualization and reporting
- Hosts lab's core data systems, web sites, directories







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Air Quality Networks

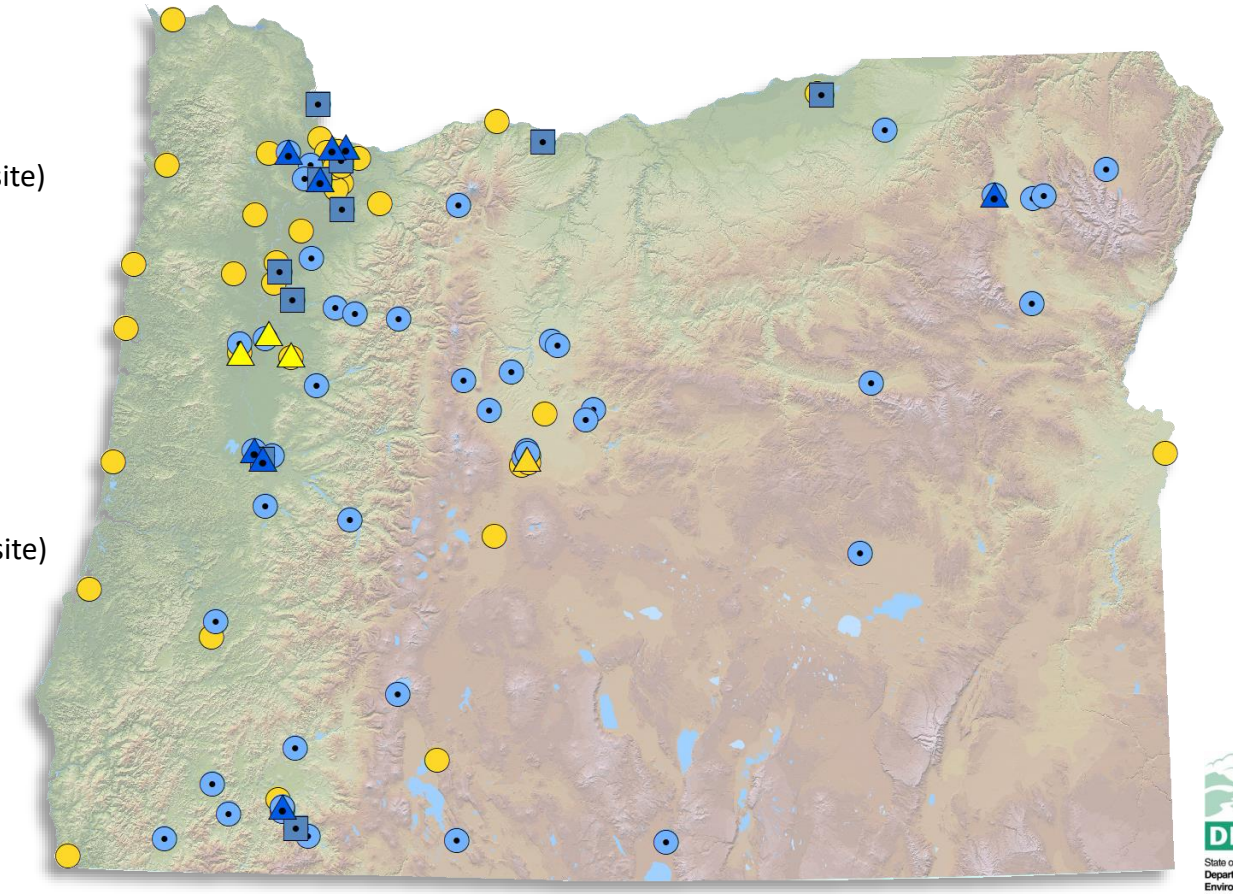
The Lab is increasing air quality monitoring statewide:

Current Sites

- Air Toxics (Long-term Trend site)
- Ozone
- PM 2.5

Planned Sites

- Air Toxics (Long-term Trend site)
- Air Toxics (Annual site)
- PM 2.5 -SensOR™



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Air Quality Reports

- Oregon Air Quality Annual Report
- Air Toxics Reports
- Special Projects
  - e.g., near source fence-line monitoring

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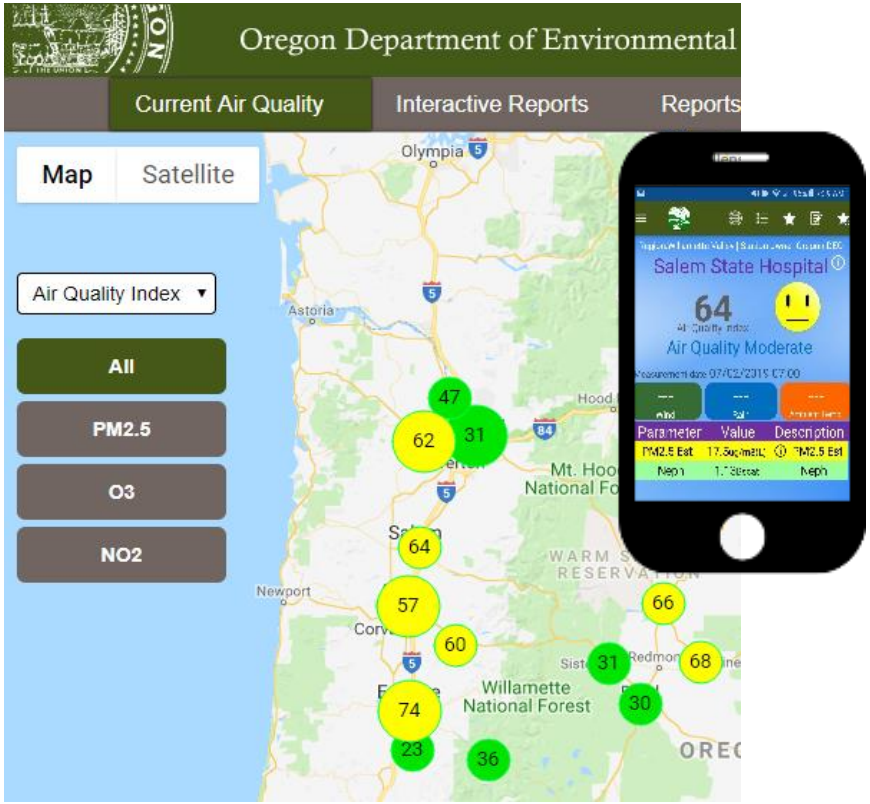
Air Quality Index

- Real-time Monitoring Information
  - Updated hourly, available via OregonAir app and online
- Air Pollution Advisories
  - Ozone
  - Wildfire season
  - Winter air stagnation events



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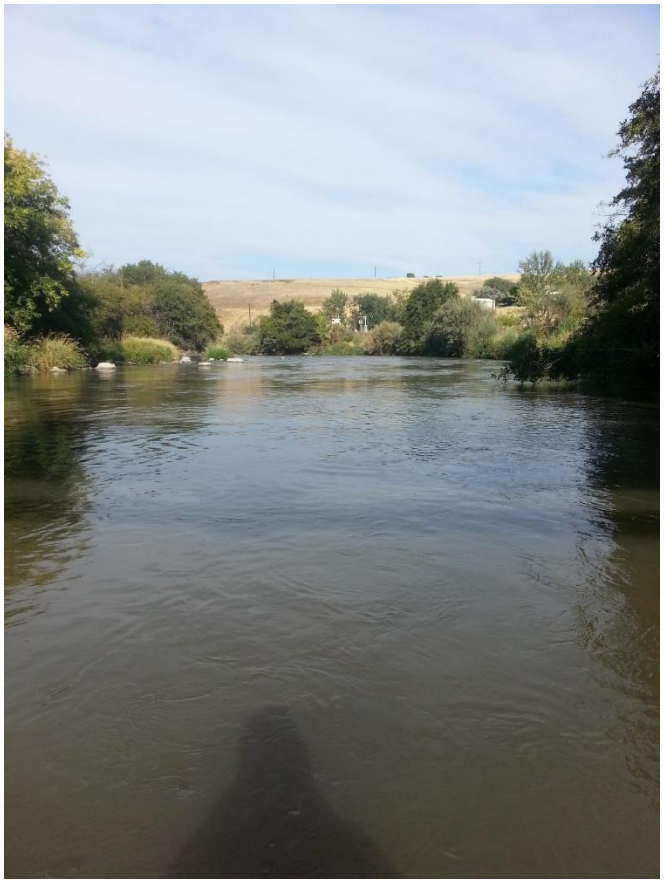
Integrated Report



- Process revised in 2018
- Report Cycle (2 years)
  - Solicit data
  - Develop data policy and listing methodology
  - Assemble and evaluate all available data
  - Assess data using listing methodologies
  - Report status of all waters including 303(d) list
- Data sources include:
  - DEQ laboratory, Volunteer groups, Outside agencies, Public databases

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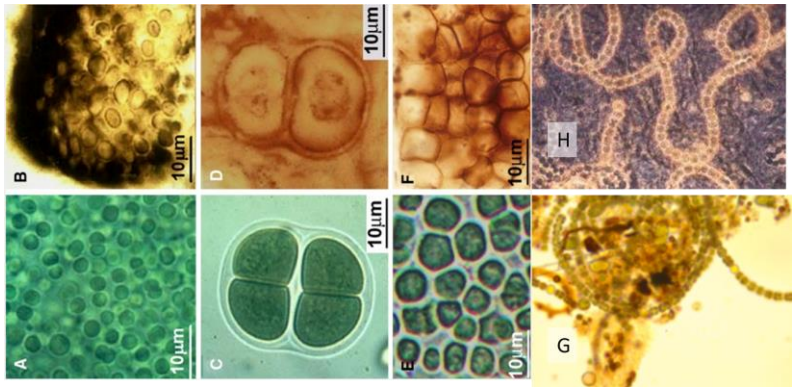
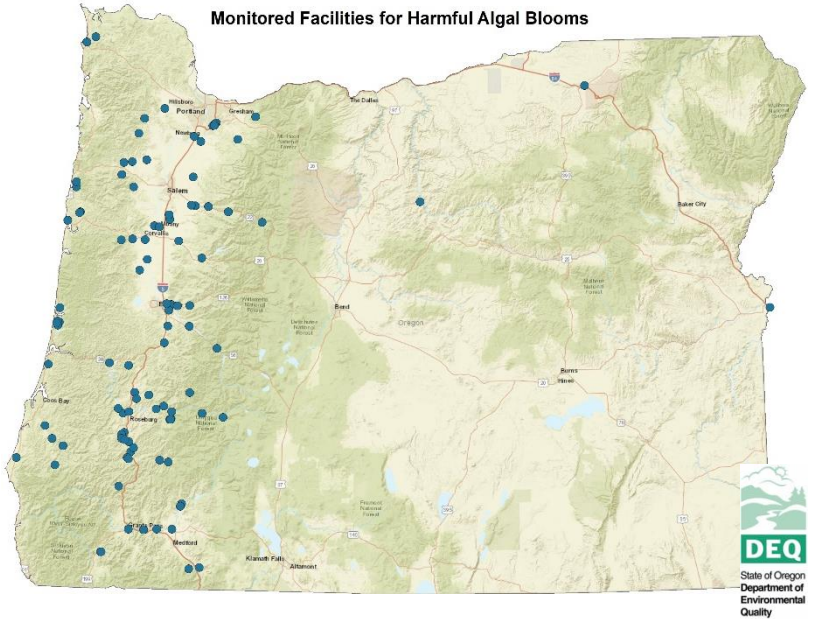
Cyanotoxin Monitoring

- Partnership with OHA
- New rules enacted by OHA in December 2018
- At risk drinking water facilities required to routinely test for cyanotoxins produced by algal blooms

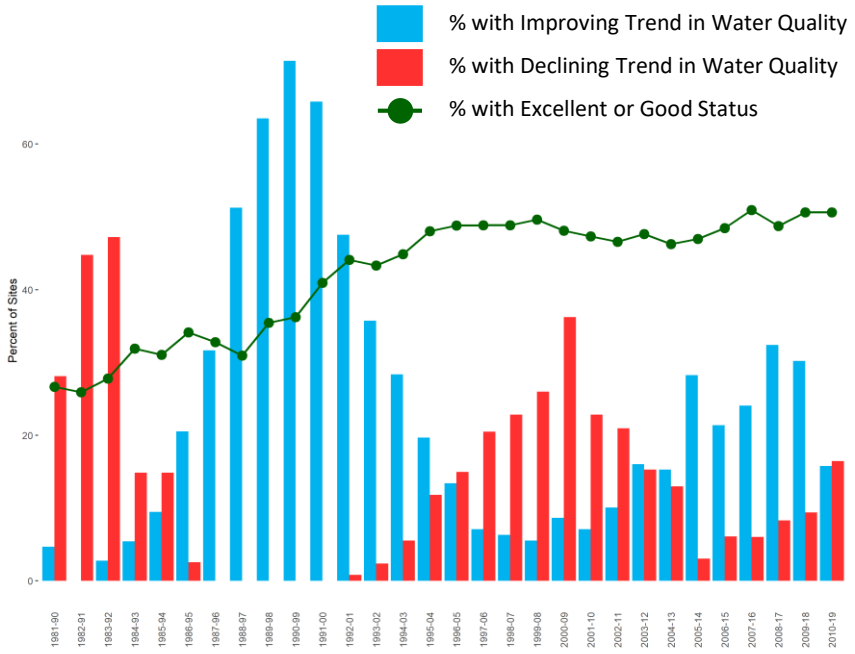




Water Quality Index

- Statewide network of 160 monitoring locations
- Eight ambient water quality variables, sampled six times a year
- Monitoring began in 1981
- Basis for agency WQ KPMs

Water Quality Status and Trends in the DEQ Ambient Monitoring Network



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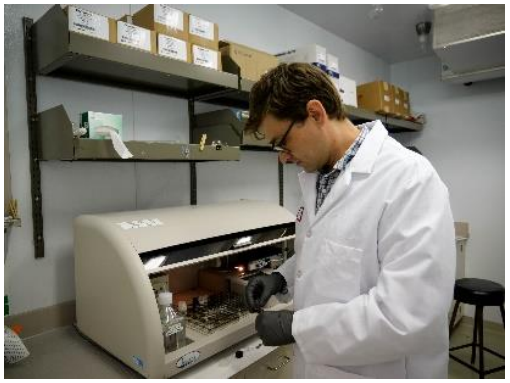
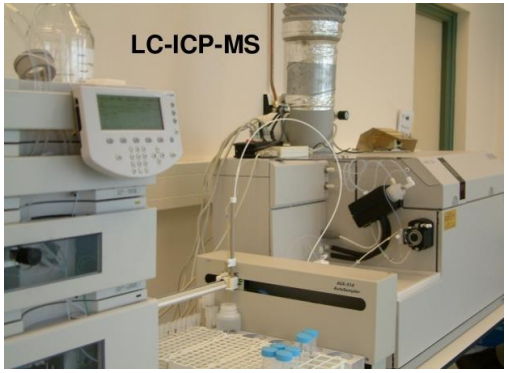
Emerging Methodologies

- Genetic screening for cyanotoxins
  - Uses qPCR to detect algal genes that can produce toxins
  - Would allow for an early warning of potential blooms



- Arsenic speciation
  - Uses LC to separate and ICPMS to quantify the different arsenic species
  - Allows for detection of the most toxic form, inorganic arsenic



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Emerging Methodologies

- Per and polyfluoroalkyl substances (PFAS)
  - Utilize LC-MS/MS technology to identify and measure these substances
  - Analytical method in development, targeted for completion in Spring 2020
- Bioavailable aluminum
  - Extraction method in development, ready in Spring 2020
  - Will help DEQ assess water body impairment

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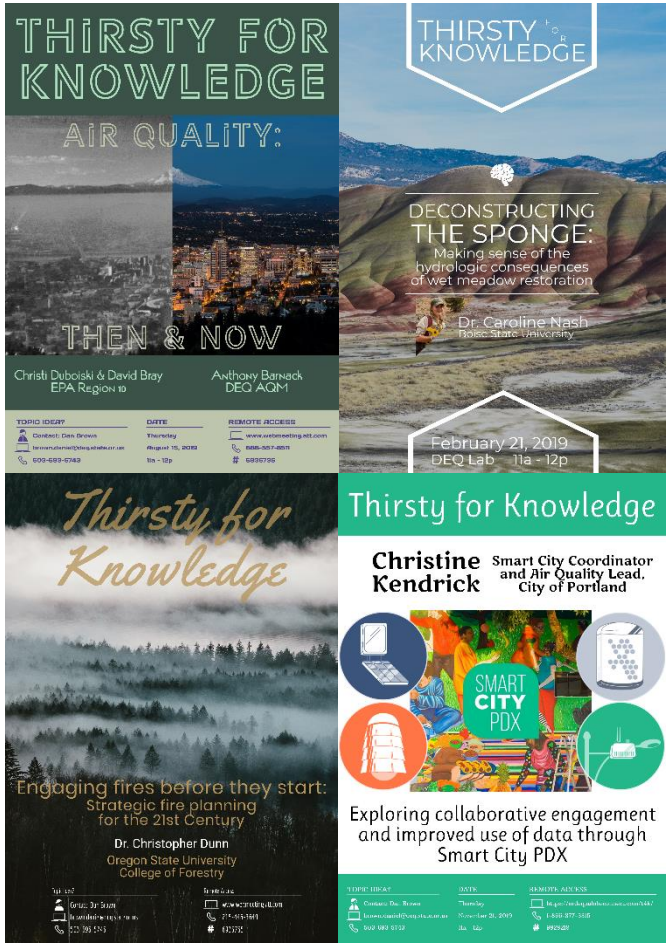
Thirsty for Knowledge

- Monthly seminar series
  - 67 speakers since 2014
- Focus on general science impacting Oregonians and internal projects
- Available for training credit through iLearn



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Questions?

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