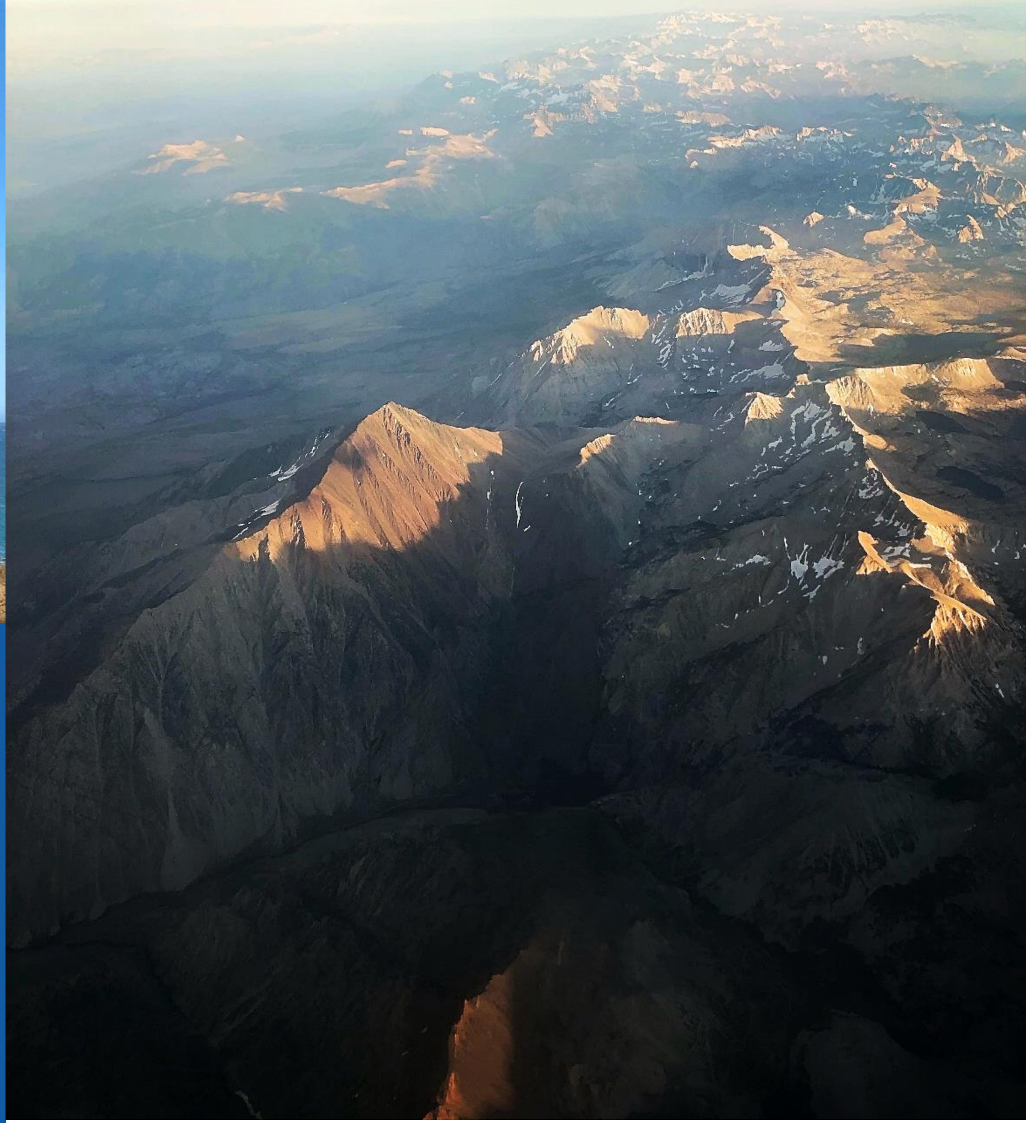

Abatement

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Top Priorities - Abatement

1. Water treatment

2. Early / ease of detection systems

3. Determining source / scale / scope of problem

4. Thresholds / risk assessment on crop / alt crops

5. Research toolbox

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Additional Considerations - Abatement

- Validation of toolbox techniques

  Animal vs. rowcrop differences / challenges

  Human health (farm workers) – dust exposure

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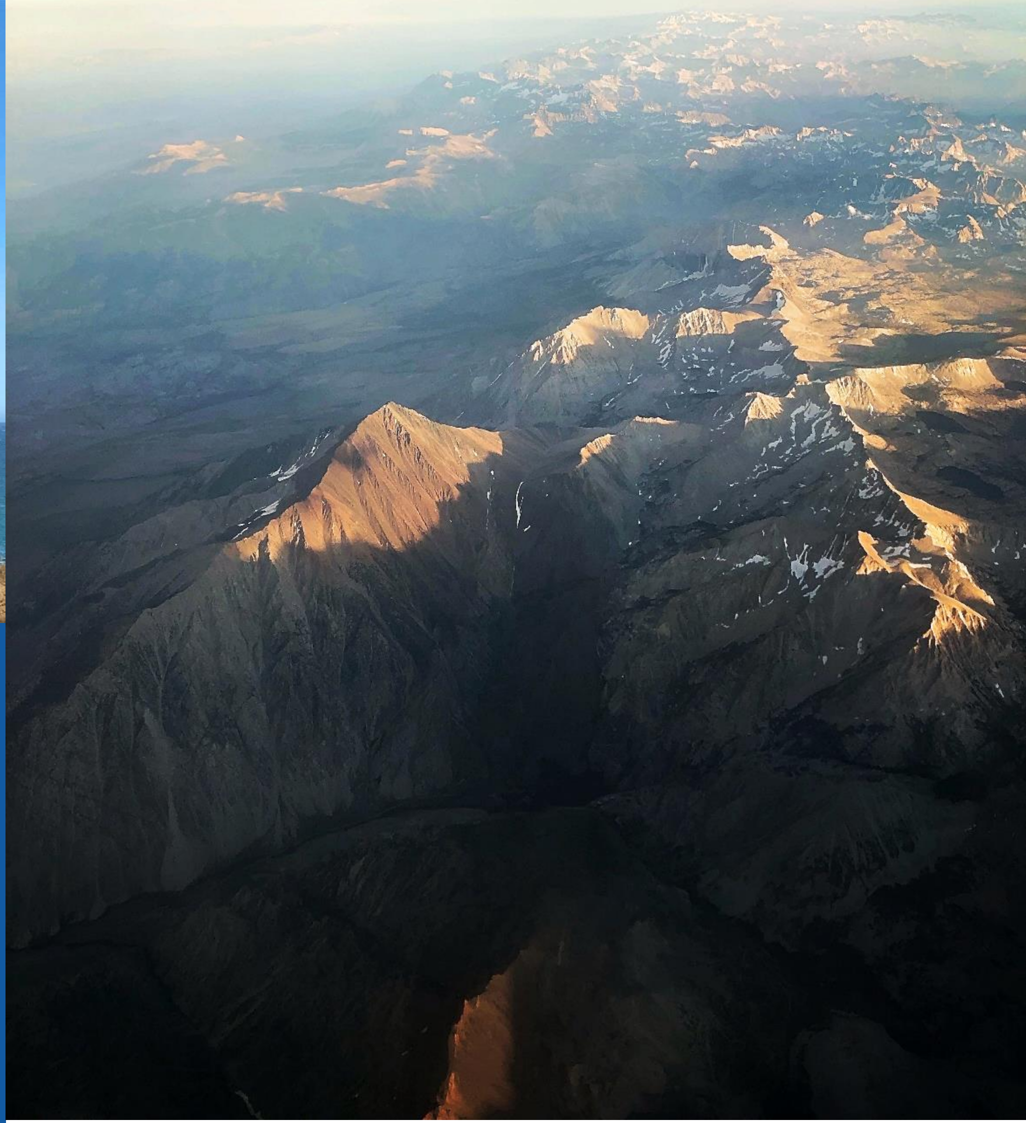

Data

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Top Priorities – Data
Low-hanging Fruit

1. Collect questions from other working groups to develop case studies/dashboards teams – to aid in defining data queries/needs

2. Create example case studies
   - Highlight the role/need of a shared data depository –
     "To lead by example"
   - Encourage other scientists to join data collection – by example, carrot or hammer
   - Sharing data through bulletins/uniform communications
   - How to keep anonymous?

3. Development of data catalog of existing PFAS data sources identify gaps ("wish list")

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Additional Considerations – Data Longer-term marathon

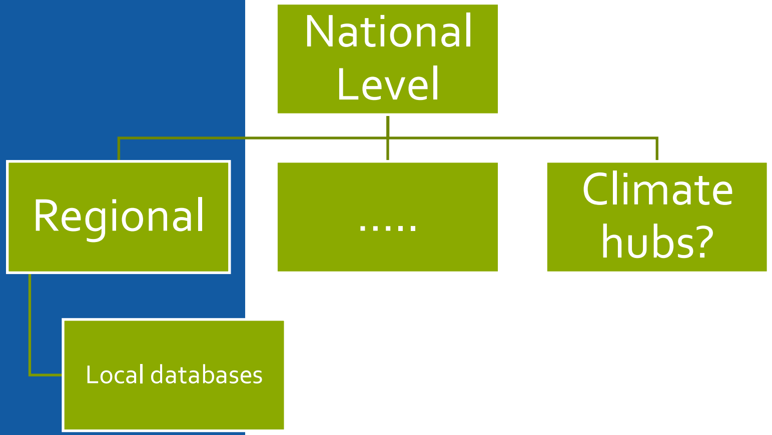
1. Establishment of data advisory board with national, regional, and local levels. Need for "use cases" to lead by example/communication plan/stakeholder inputs.

2. Open national PFAS data "node" : Maybe not a depository, but a central access point to reginal data sources.

3. Flexible data structure to allow database to match key questions

4. Data Harmonization/Need for standardization/Accounting for anonymous

5. Cross disciplinary story-telling groups



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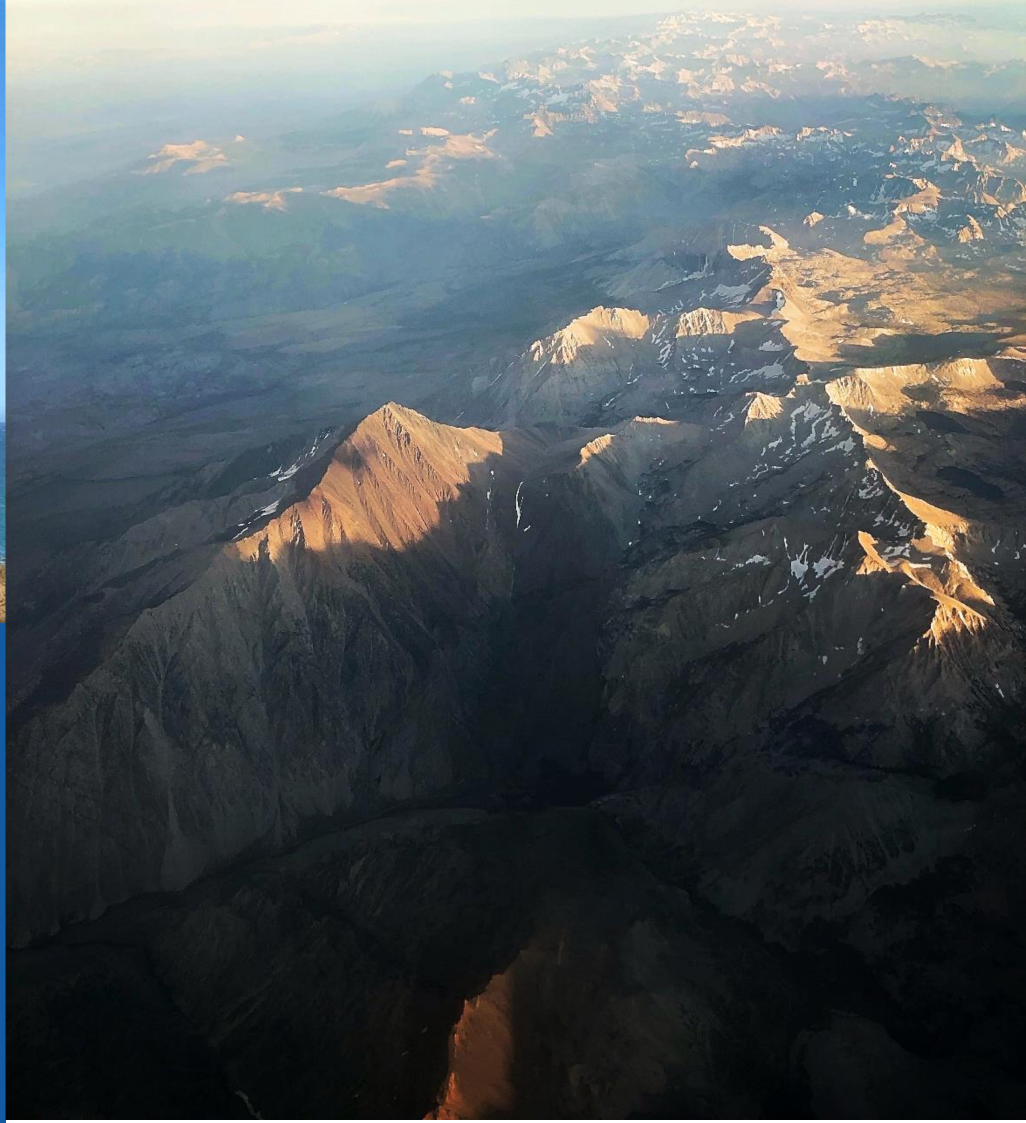

Environment

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1. Top Priorities

1. Develop authoritative spatial maps of PFAS using existing and new data (i.e., surface water, groundwater, sediment, soil)

2. Improved testing methods that include precursors that inform and develop regulatory thresholds and recommendations.

3. Develop fate-transport models utilizing localized source identification research.

4. Evaluate current best management practices for applicability to PFAS remediation and explore new option.

5. Develop decision trees and tools for risk communication for impacted and non-impacted producers and public.

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Additional Data Considerations

- Code of conduct for responsible research with PFAS
  Additional research to understand PFAS transport in different soil types

- What are treatments, processes to clean environmental PFAS

- Additional research on bioavailability for producer options in the long-term and short-term

- Occupational safety guidelines for farm workers, researchers, others.

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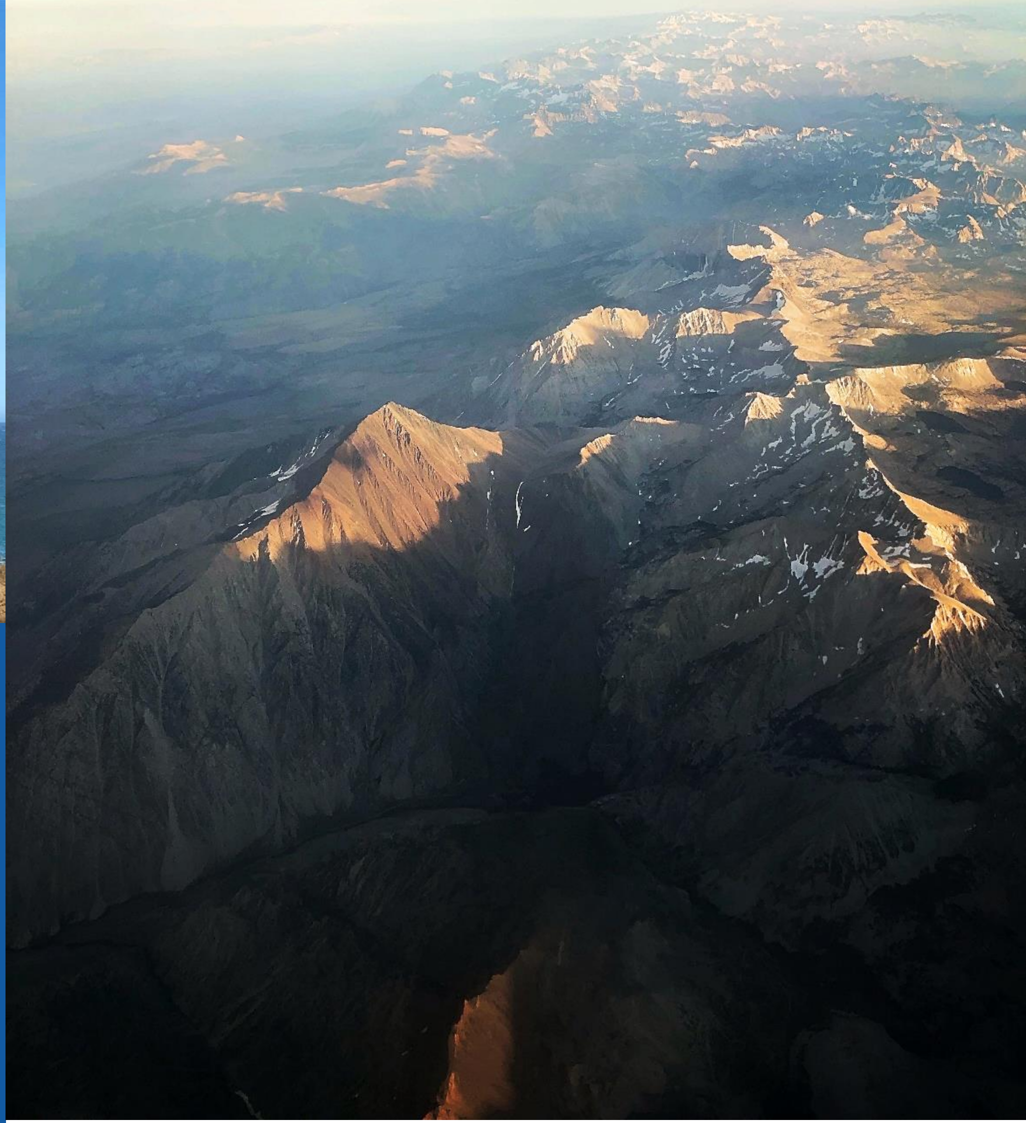

Food

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Top Priorities - Food

1. Rapid screening/standardized analysis methods

2. Regulatory standards/thresholds

3. Uptake data for foods/exposure & risk assessments

4. Consumer/media risk communication

5. Additional PFAS occurrence data in foods

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Additional Considerations - Food

- Post-harvest considerations such as PFAS in processing plants and food contact materials
- Susceptible populations, children subsistence farming, tribal communities
- Waste management – composting food waste
- How do people obtain their food
- What PFAS are we missing, nontarget analysis?

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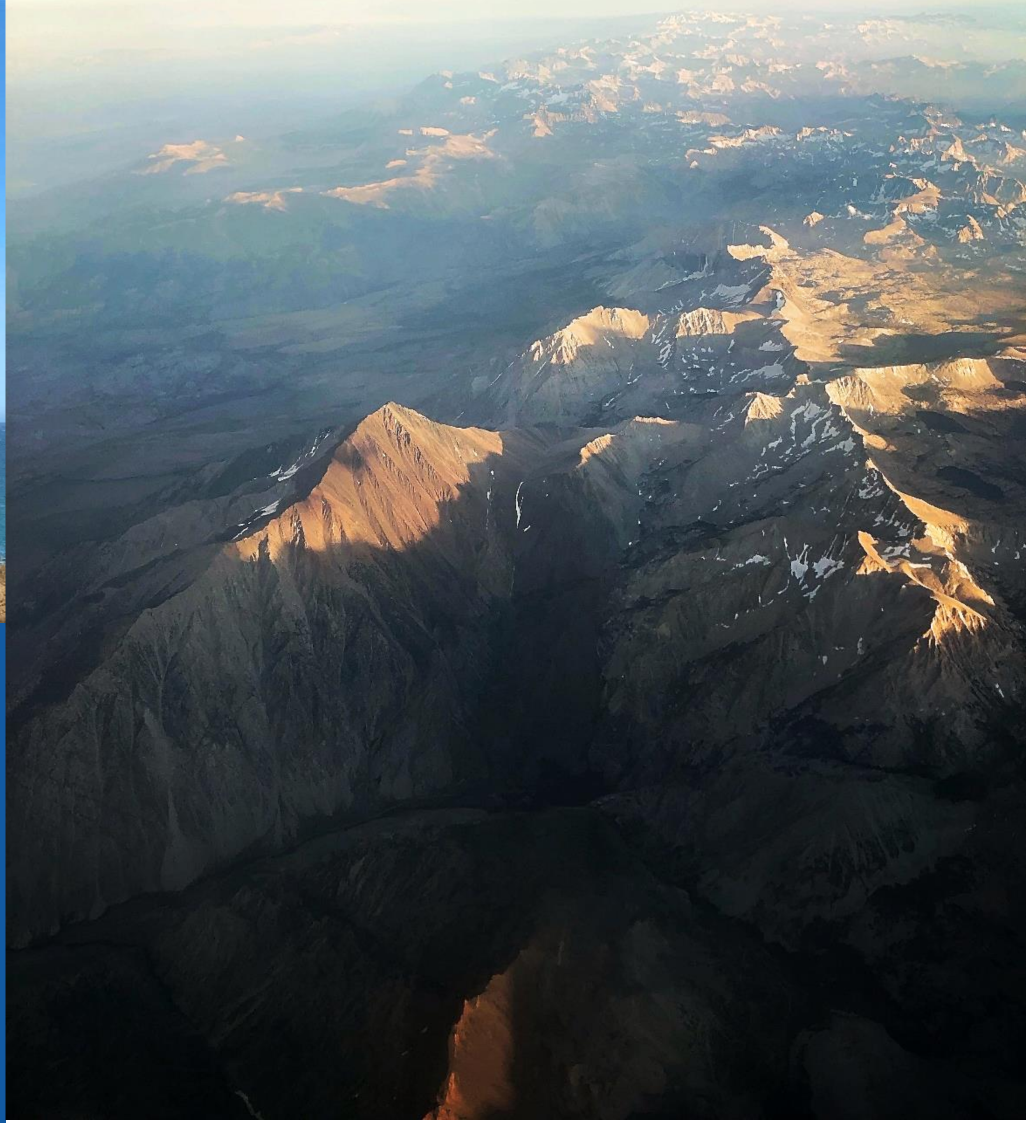

Livestock

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Top Priorities - Livestock

1. Analytical needs; validation, cost, rapid screening

2. PFAS kinetics in animals; tissues, species, effects of production factors (diets, backyard flocks; homesteads, etc.)

3. Remediation methods

4. Understanding & Identifying source contributions from biosolids (biosolid monitoring program)

5. Establishment of action limits for regulated matrices affecting farms (biosolids, water, animal tissues, etc.)

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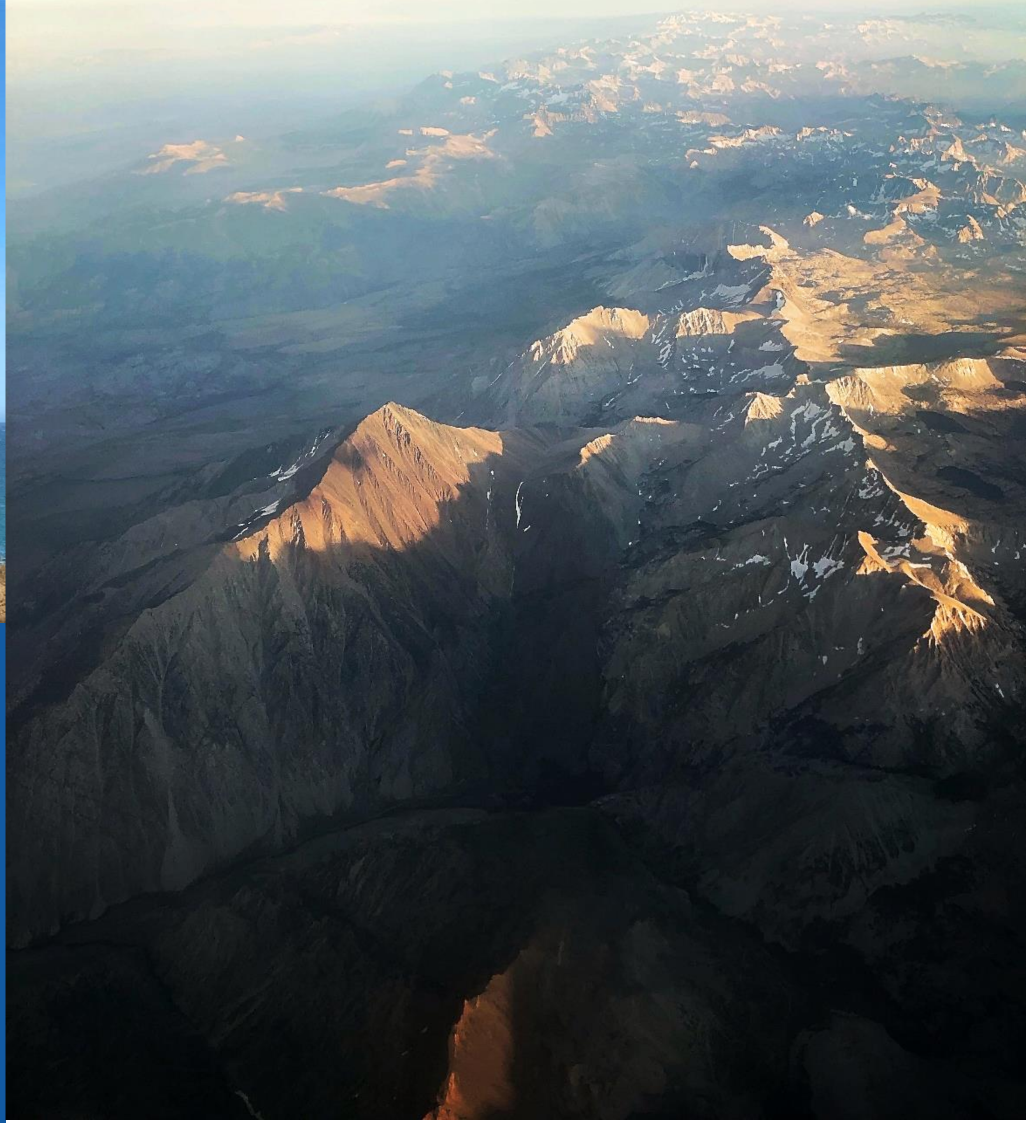
Additional Considerations - Livestock

- Farm surveillance-don’t look for a problem without having a solution
- Money needed for research and to support affected producers
- No completely effective remediation available – combining strategies soil to human continuum
- Involvement of commodity groups/state level government in communication



Materials

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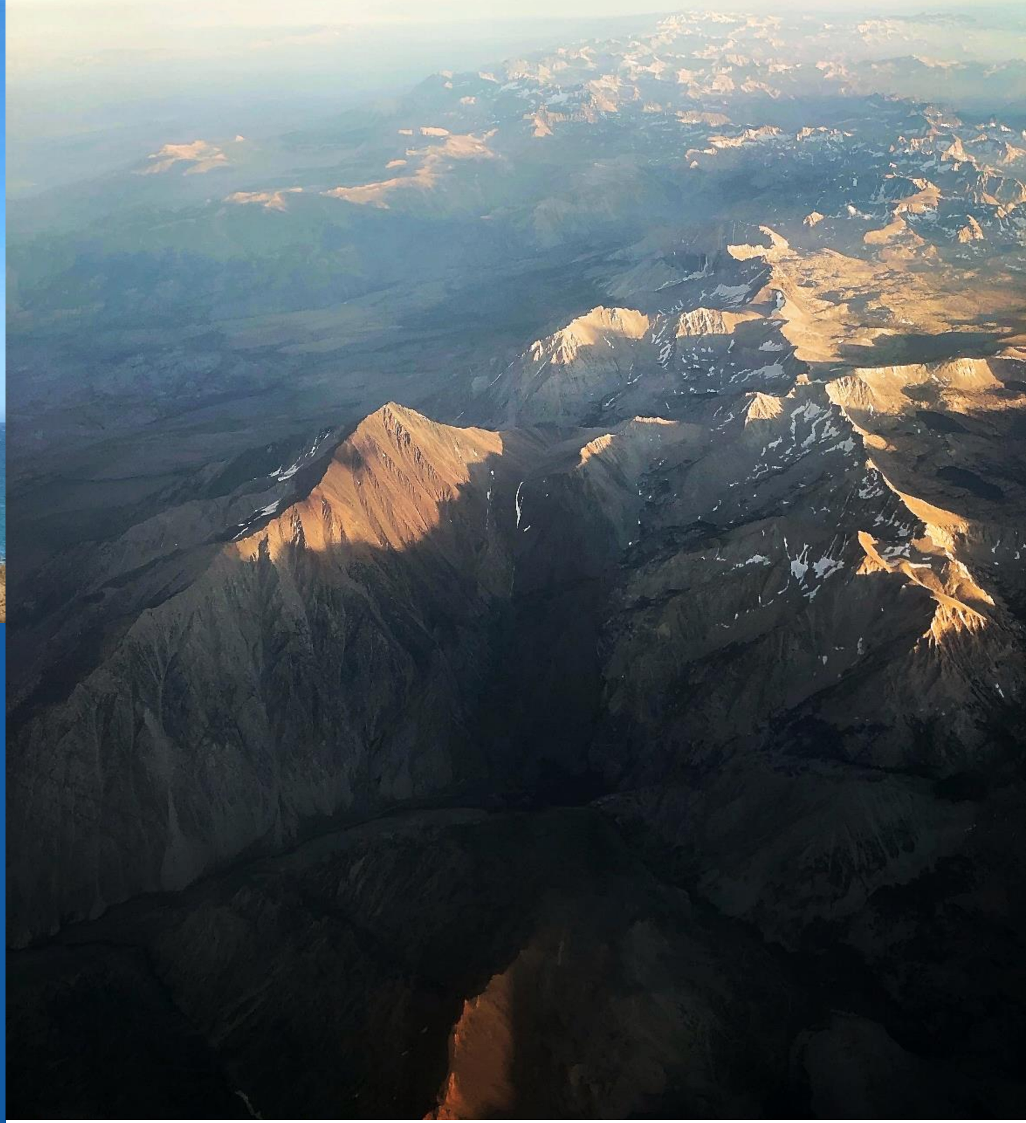
Top Priorities - Materials

1. Developing bio-based alternatives with similar performance
   Easy short term/limited use (i.e., fast food packaging)
   Hard long-term/extended use (i.e., AFFFF, fighfighting, first responder gear
2. Who regulates and who is responsible for studies
   LD50, transfer coefficients

3. Consumer education of materials
   Avoiding contact, how phasing out may impact materials





Plants

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Top Priorities - Plants

Address the gap in knowledge that are hindering determination of federal screening/thresholds levels and effective mitigation strategies.

1. Improve understanding of PFAS uptake, fate and transport in plants by hire teams of scientists that have expert knowledge

2. What are the transfer rates of PFAS from soil – plants. What are the plant, soil and microbiome characteristics that determine transfer rates.

3. Develop platform for knowledge sharing of plant data. Define a Minimum Metadata dataset- Data Entry Template

4. Understanding fate of precursors and breakdown products in soils and plants

5. Improving and standardization of analytical methods for detecting PFAS in plants (including cost.)

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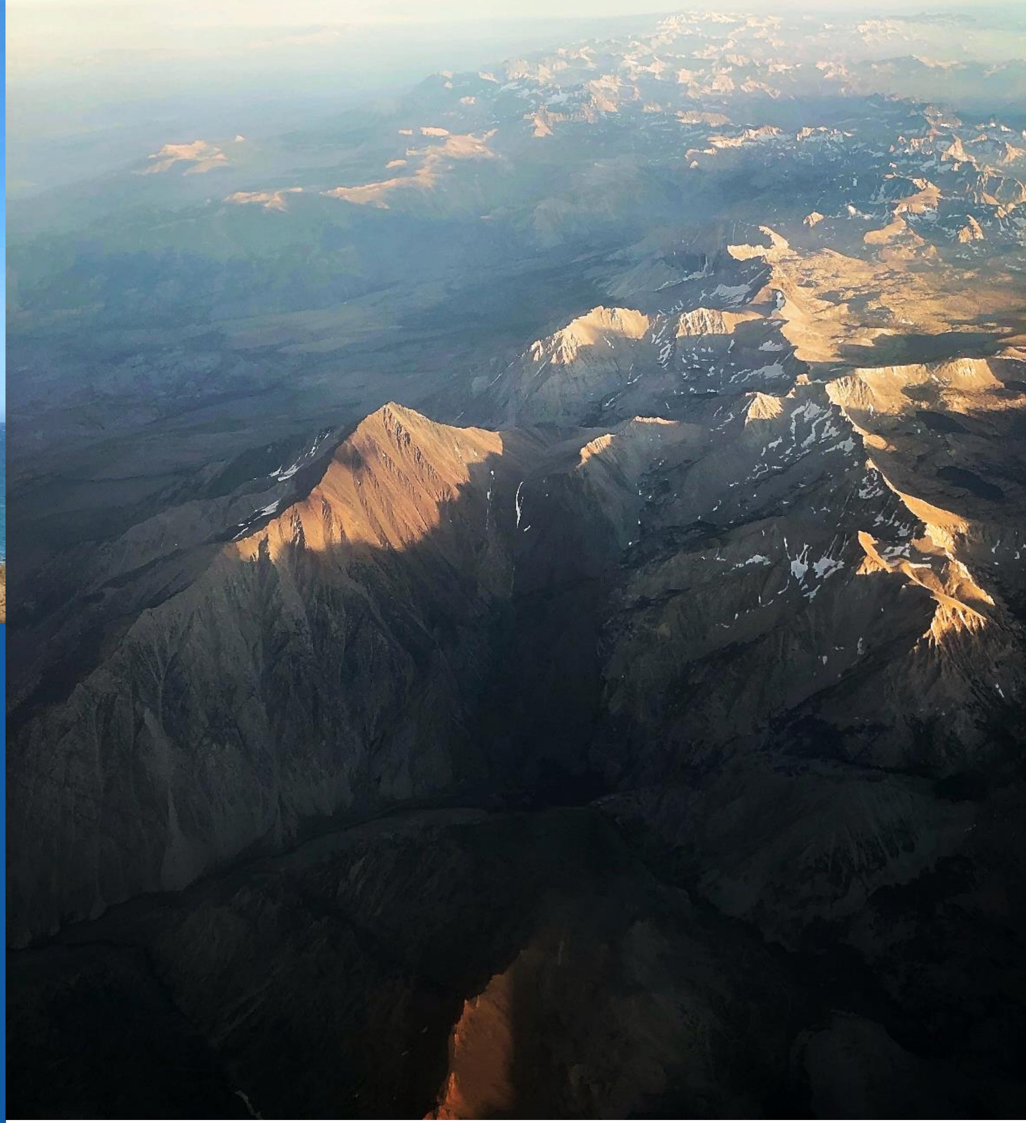

Socio-Economic

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Top Socio-Economic Research Priorities

Communication: Research is needed to develop effective messaging around PFAS that helps farmer communities (and their neighbors, consumers) to understand PFAS risk and then to use their understanding to be able to take actions that are protective. These will enable them to implement “now” improvements, determine best intervening land use practices, long-term solutions, and provide clarity about their future capability to farm their land and for them and their neighbors to grow and consume safe food. Such communication must be grounded in transparency of constantly improving science.

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Top Socio-Economic Research Priorities

Playbook Development: Research is needed to develop PFAS playbooks for small, medium, large farms, tribal groups, hobby farms, other producers. Playbooks should be written for implantation by state agencies to assist farmers in navigating their own PFAS challenges.

State agencies will work with farmers to develop their own playbooks with input and support from federal agencies.

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Top Socio-Economic Research Priorities

State Farm Program research and development research is needed to explore and develop funding and programmatic support for all types of farm operations impacted by PFAS. The vision for these Farm Programs is that they will financial technical assistance, land acquisition and stewardship, research, and health.

It is expected that federal support will be provided that include grant funds and broad federal guidance for state program implementation. Such support will formally enable support for these Farm Programs.

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Top Socio-Economic Research Priorities

<ins>National Agronomic and Farming PFAS Screening Ranges</ins> research is needed so that farmers and land managers can understand the status of their farm, their wells, their surroundings, human health and entire socio-economic status. Such PFAS screening ranges for soils, water, wells, crops, and their landscapes will enable farmers and state agencies to understand potential risks, next steps, and develop future plans for sustainable and safe farming production.

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Top Socio-Economic Research Priorities

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