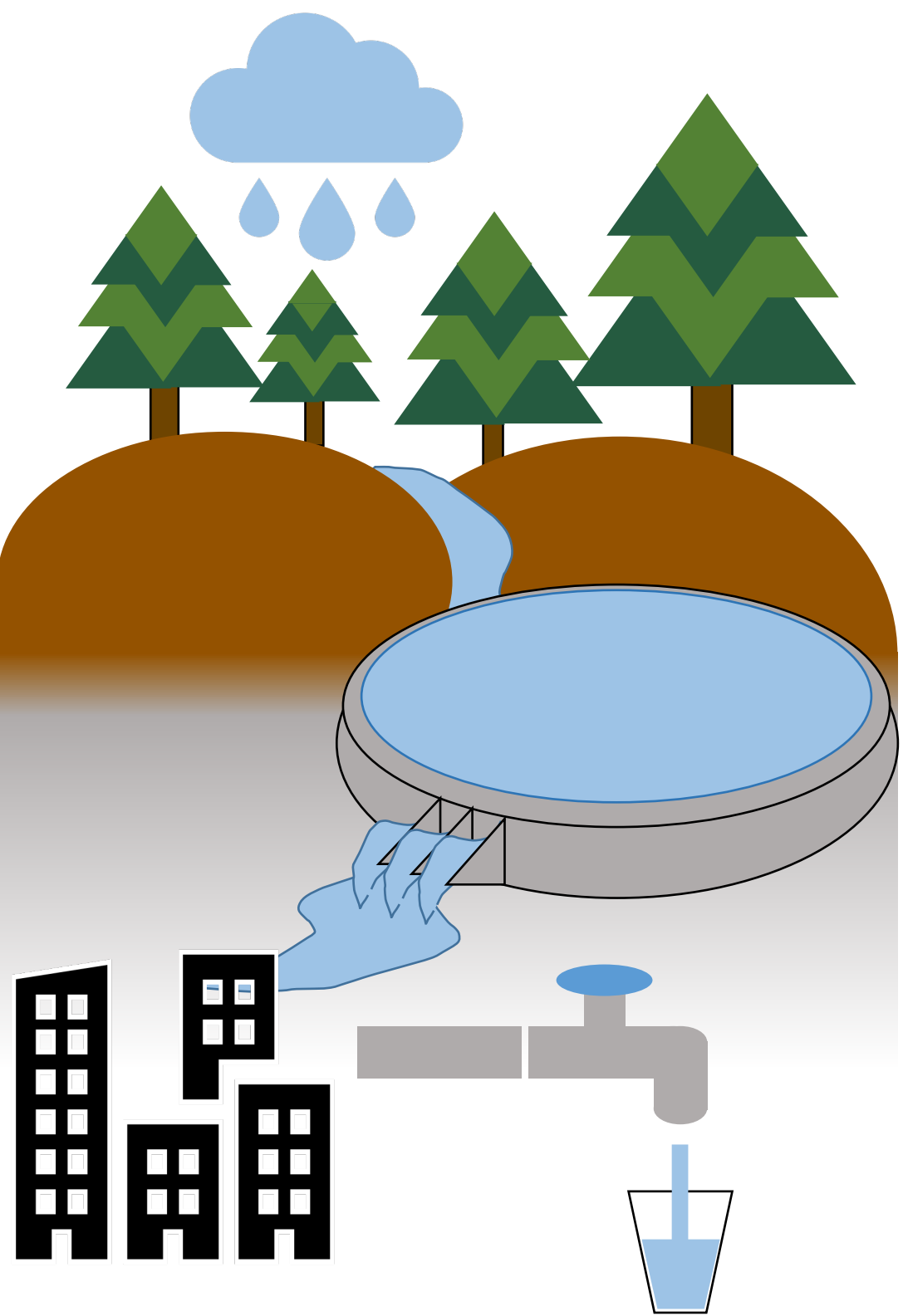


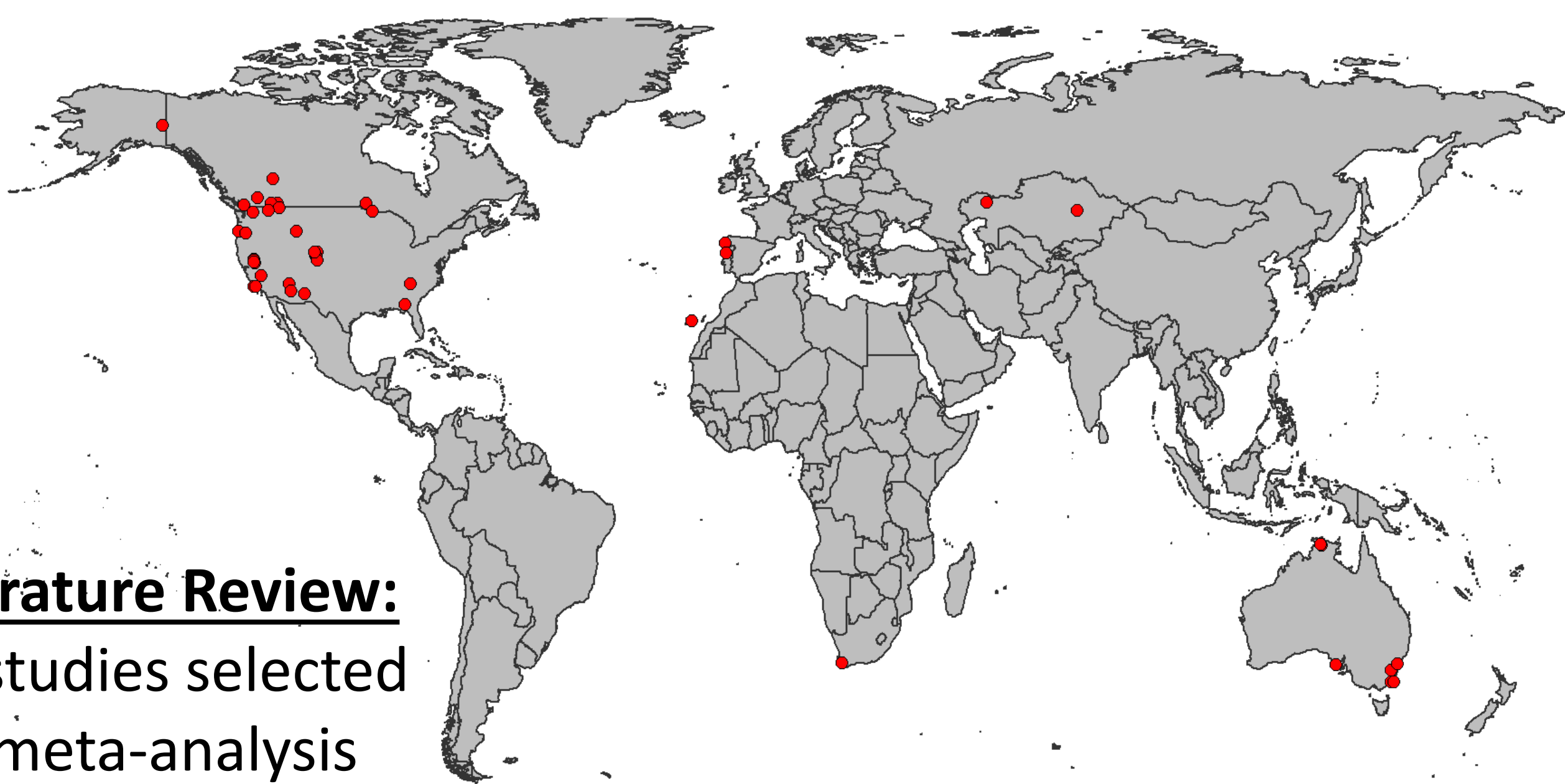


1. Gaps In Threat of Fire



- Forests supply high quality drinking water to many major cities
- Wildfires are becoming more common due to climate warming trends and historical fire suppression activities in managed forests
- Changes in water quality after forest fires are poorly characterized

2. Meta-Analysis

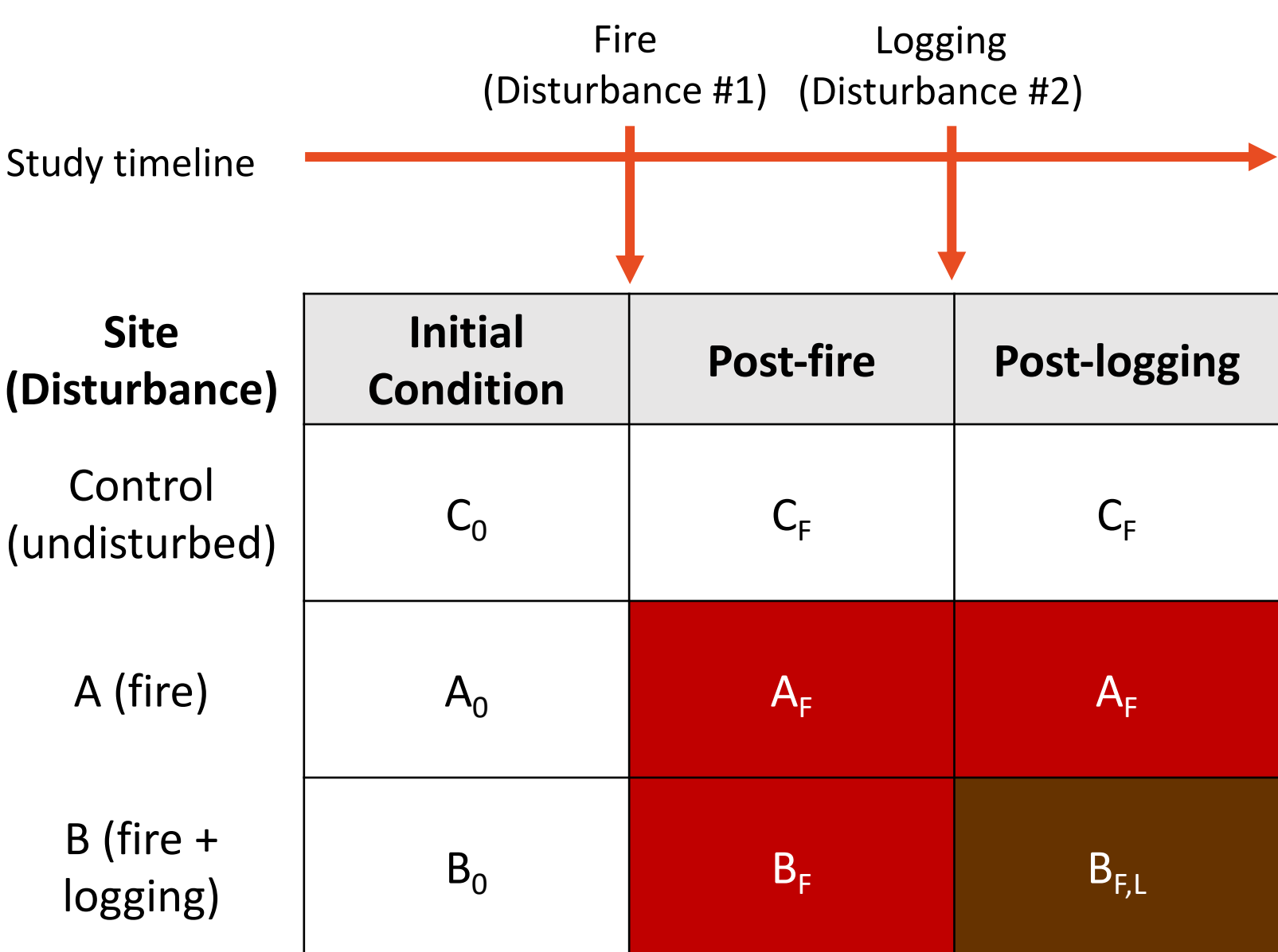


Literature Review:
45 studies selected
for meta-analysis

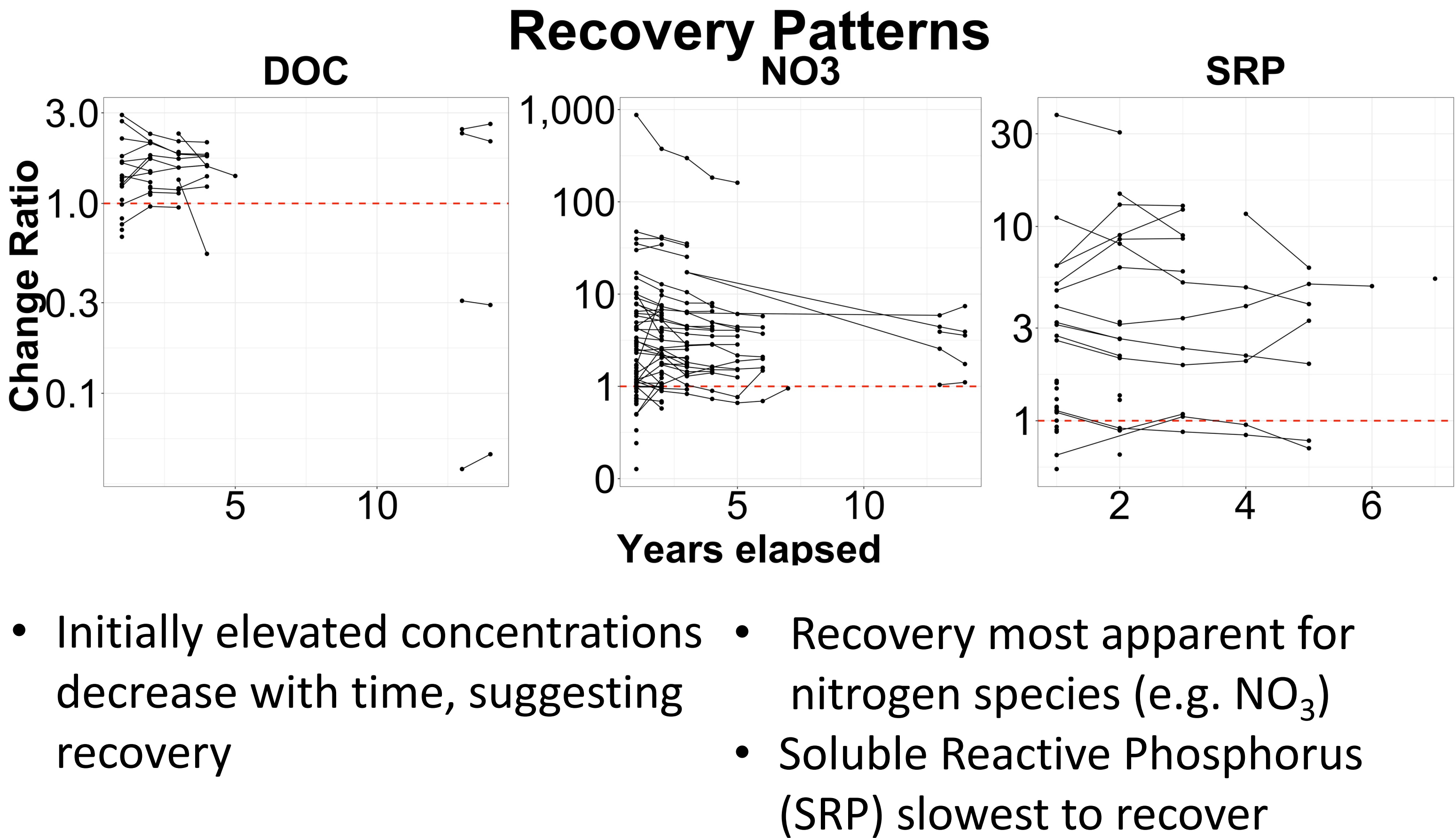
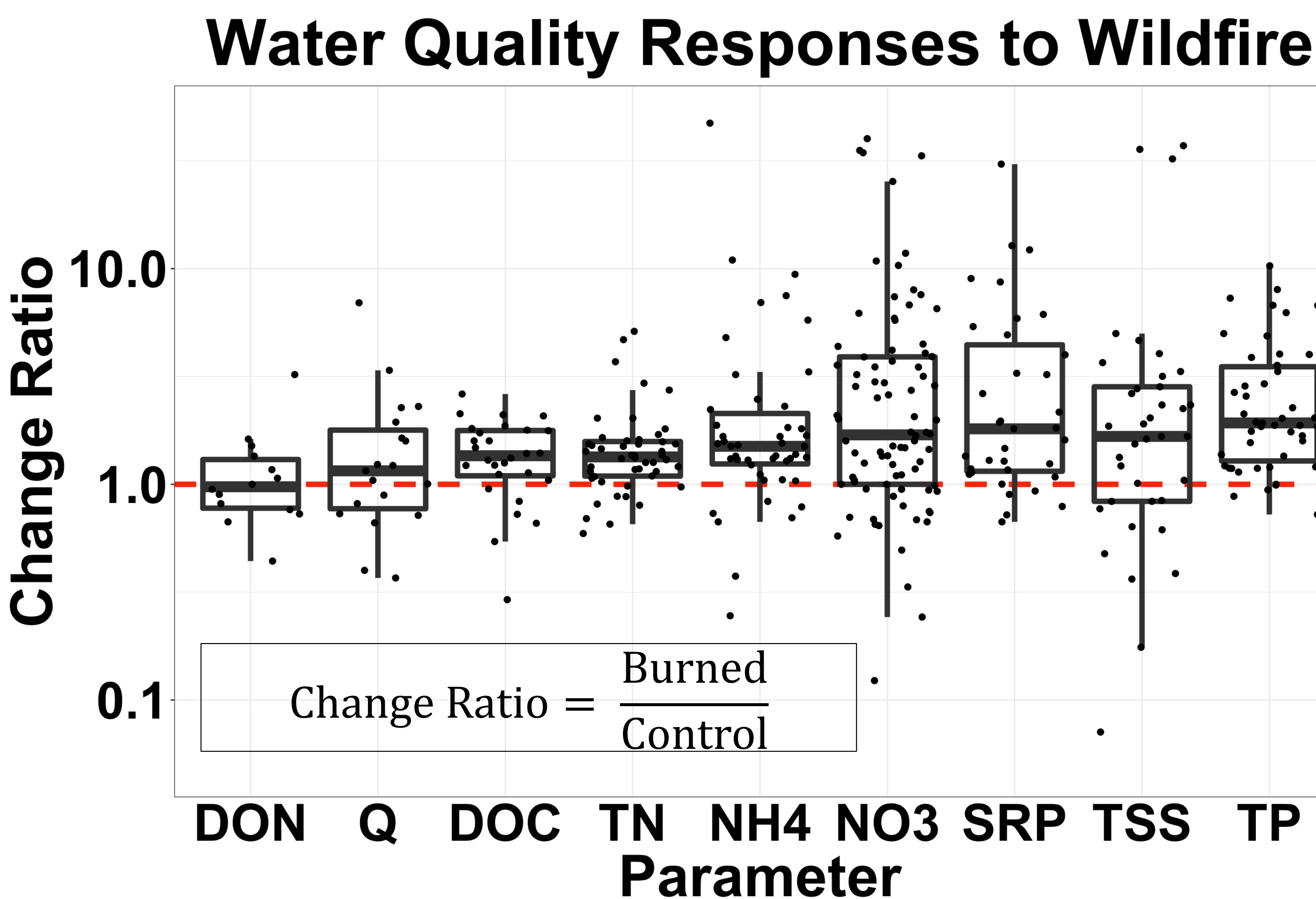
Meta-analysis:
Comparison of mean
concentrations between
burned and unburned areas

Water parameters of interest:

DOC	Dissolved Organic Carbon	
NO ₃	Nitrate	
NH ₄	Ammonia	
DON	Dissolved Organic Nitrogen	
TN	Total Nitrogen	
TP	Total Phosphorus	
SRP	Soluble Reactive Phosphorus	
TSS	Total Suspended Solids	
Q	Streamflow	



3. Water Quality Worsens after Fire



4. Conclusions

NO₃ ↑ TSS
SRP

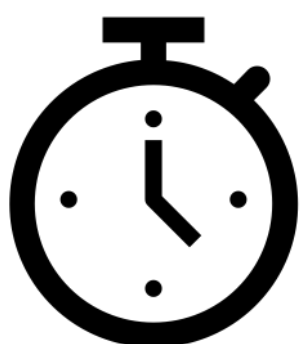
Wildfires increase nitrate, phosphorus, and sediment concentrations in affected streams



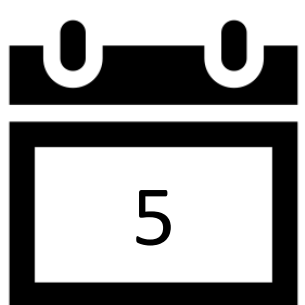
Few decreases in concentration observed



SRP:TP ratio elevated after fire
(Increased bioavailability)



Recovery from elevated concentrations
observed sometimes by 5 years



Most water quality monitoring programs do
not extend beyond 5 years

Acknowledgements



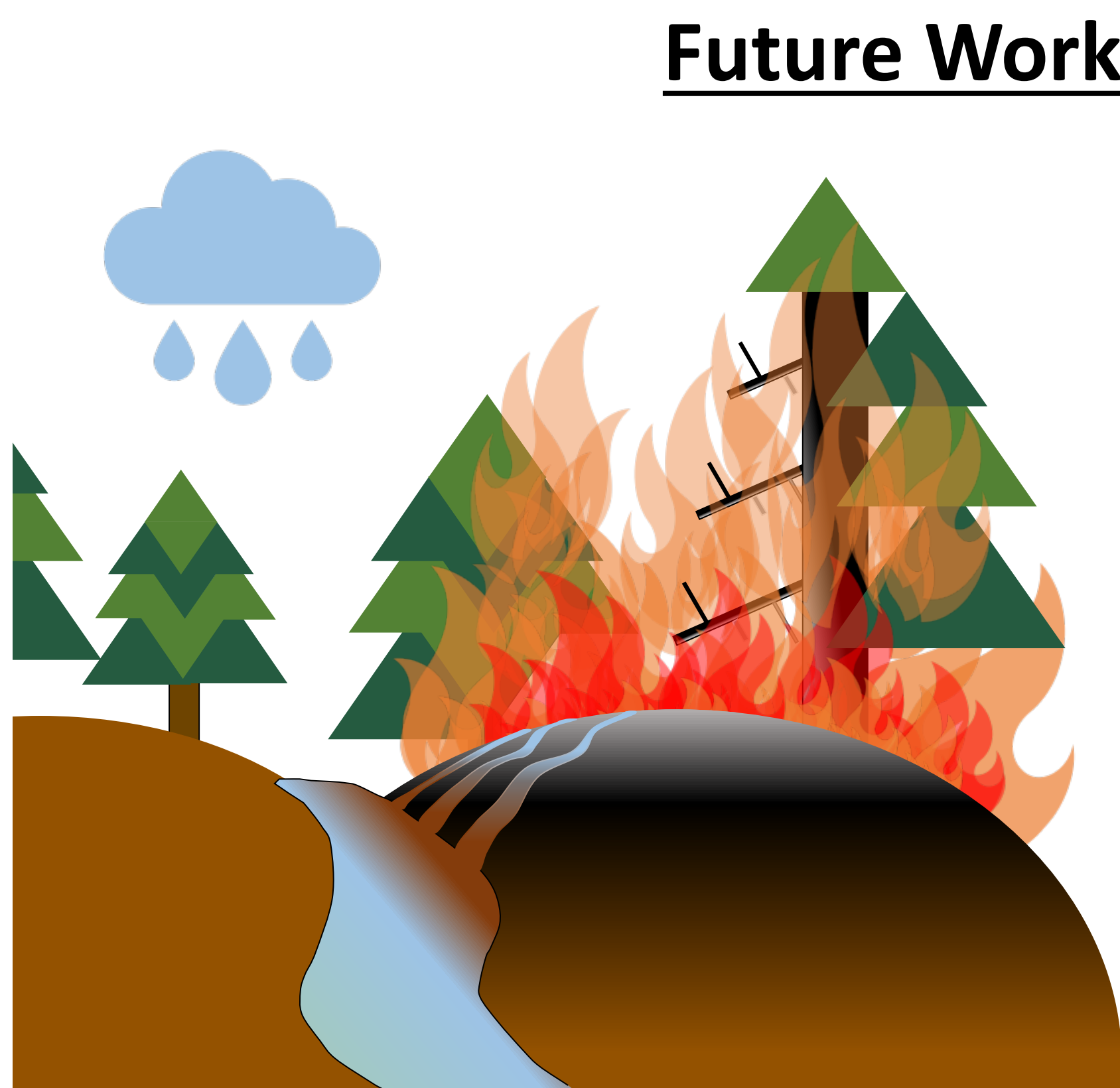
UNIVERSITY OF WATERLOO
FACULTY OF ENGINEERING



NSERC
CRSNG



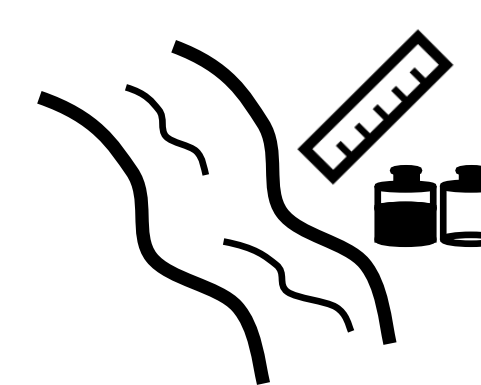
5. Future Work & Recommendations



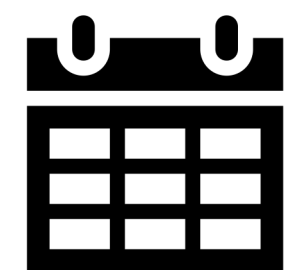
Future Work:

- Assessment of concentration-discharge relationships after fire
- Identification of important environmental variables (e.g. slope, vegetation & soil type)

Recommendations:



Co-sampling of
water quality and
streamflow for
complete analysis



Extended water
quality monitoring
programs



Quantification of
fire characteristics



Investigate
influence of
landscape variables