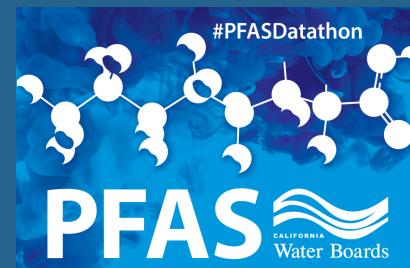


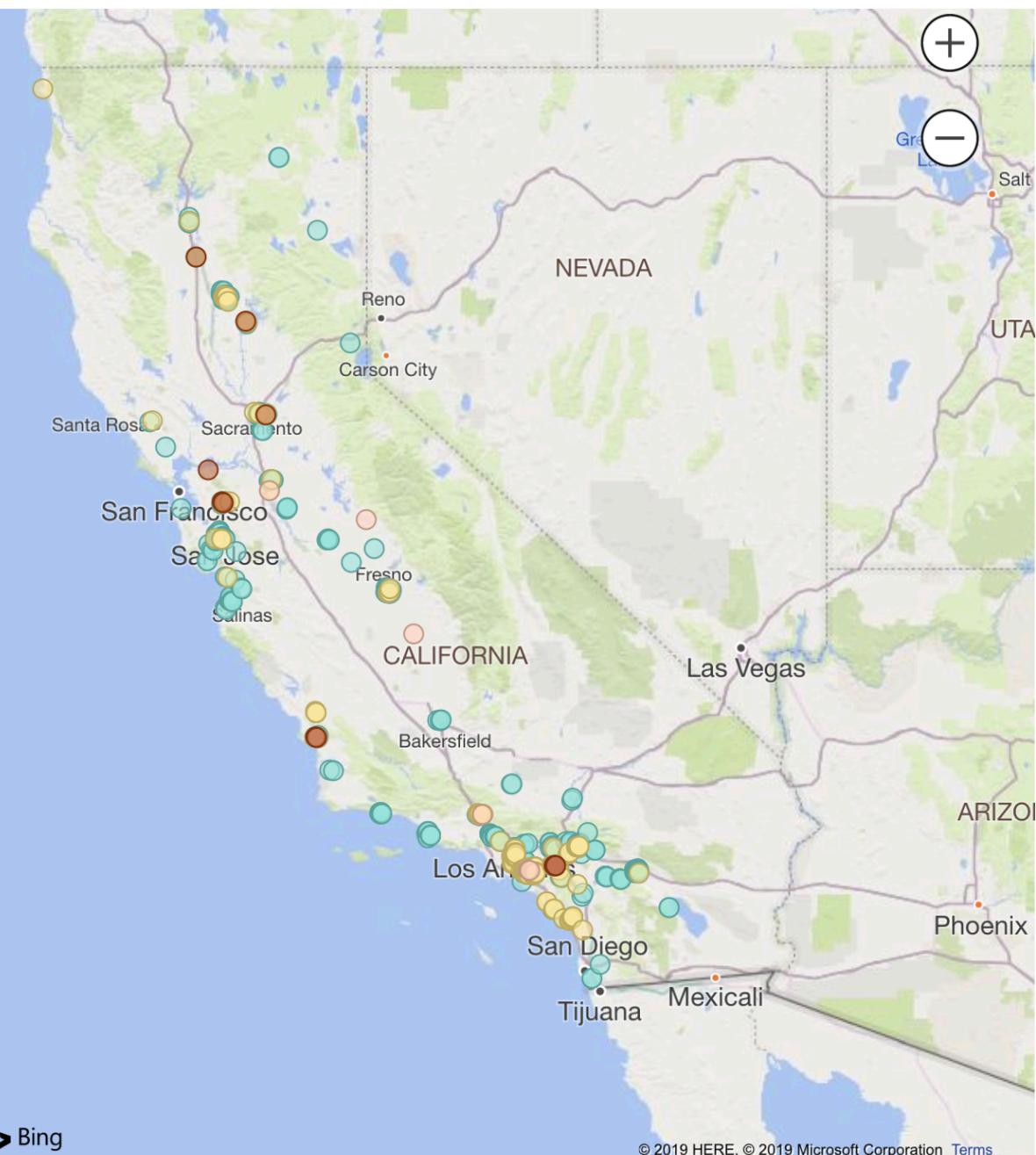
PFAS Source Identification and Prediction Through Fingerprinting

Sarabeth George



Advisory Levels: ● Less than Notificatio... ● Between the Notifi... ● Between the R... ● >100 ppt

One part per trillion (**ppt**) denotes one part per 1,000,000,000 parts, and a value of 1×10^{-12} . This is equivalent to about thirty seconds out of a million years.



Concentration Range:

Notification Level (NL) is set at 5.1 ppt for PFOA, and 6.5 ppt for PFOS.

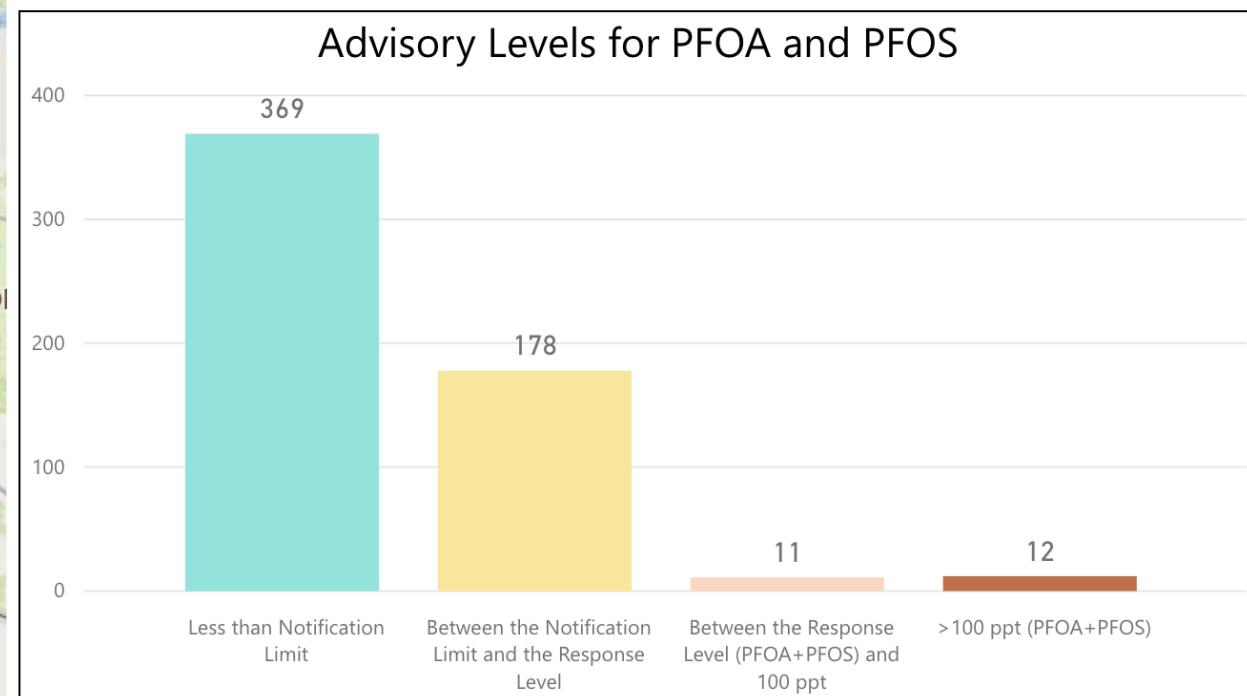
Response Level (RL) is set at 70 ppt for PFOA, PFOS and the sum of PFOA + PFOS

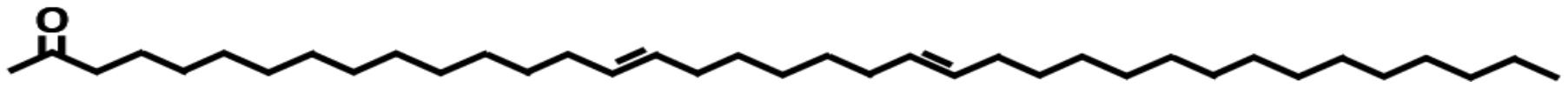
Reset

Advisory Levels

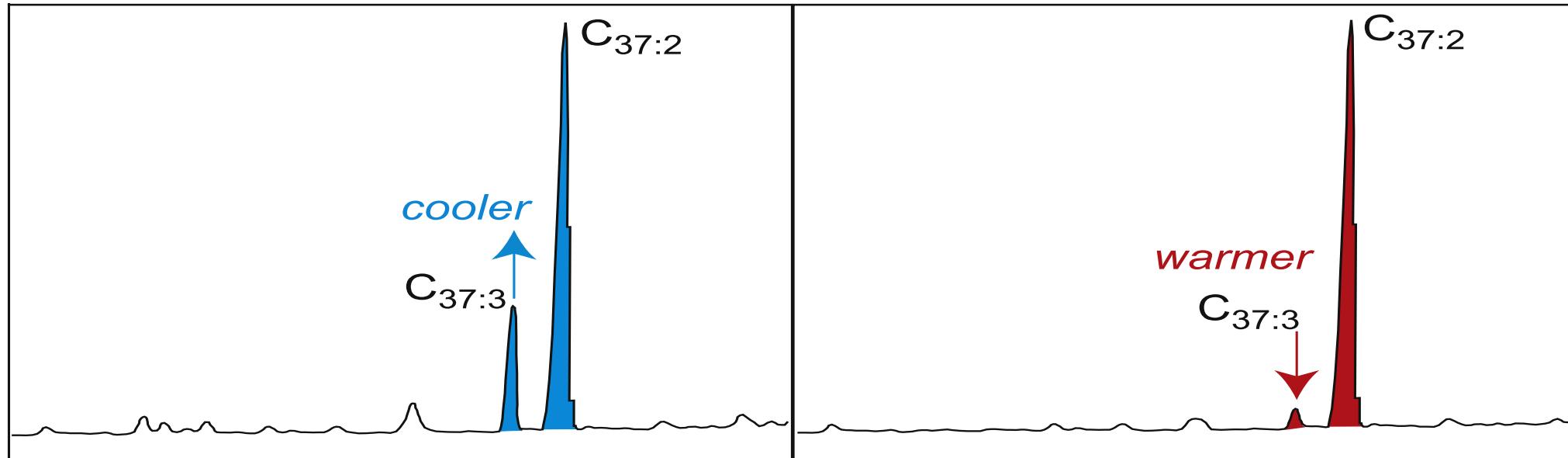
- Select all
- Less than Notification Limit
- Between the Notification Limit and the Response Level
- Between the Response Level (PFOA+PFOS) and 100 ppt
- >100 ppt (PFOA+PFOS)

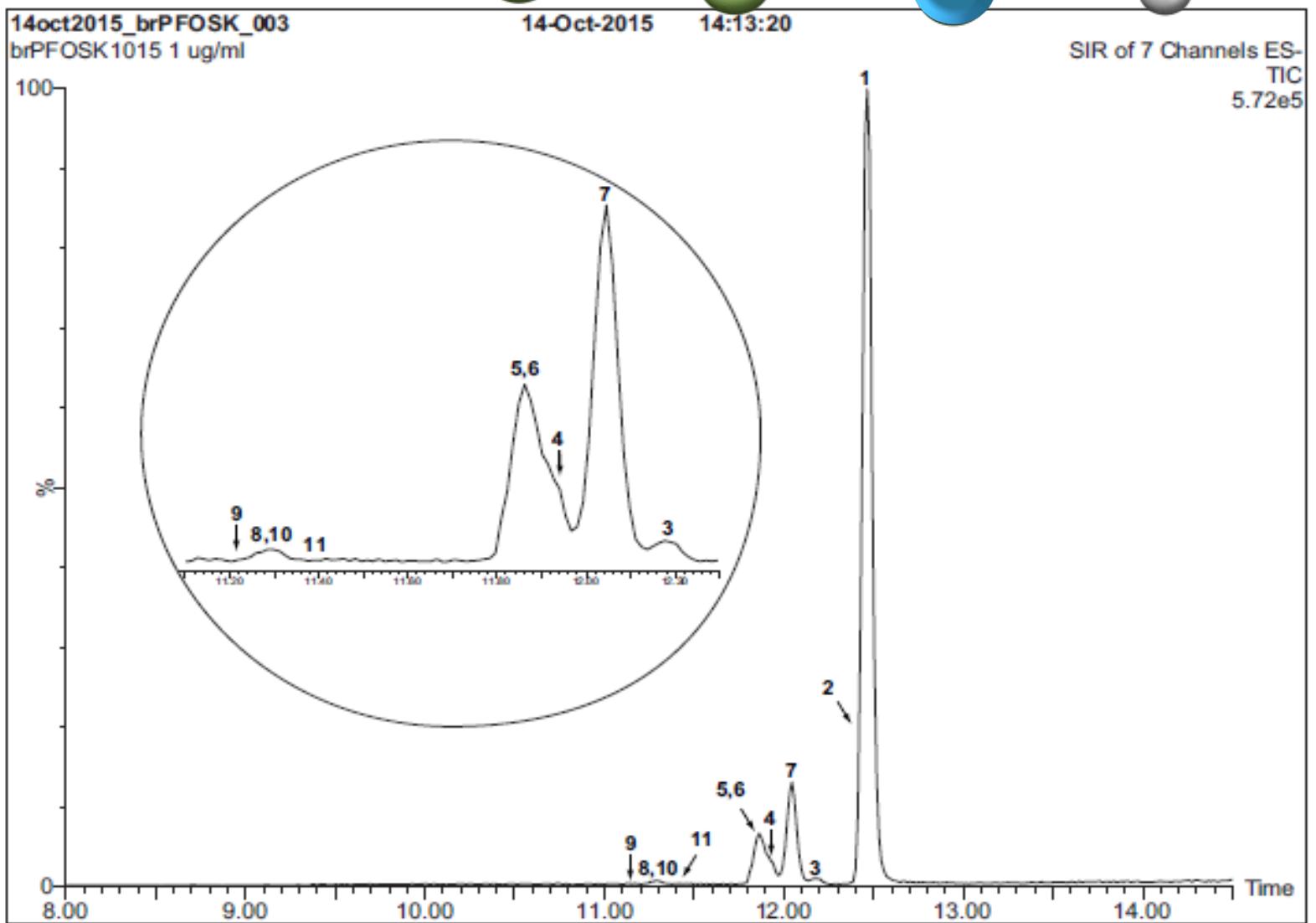
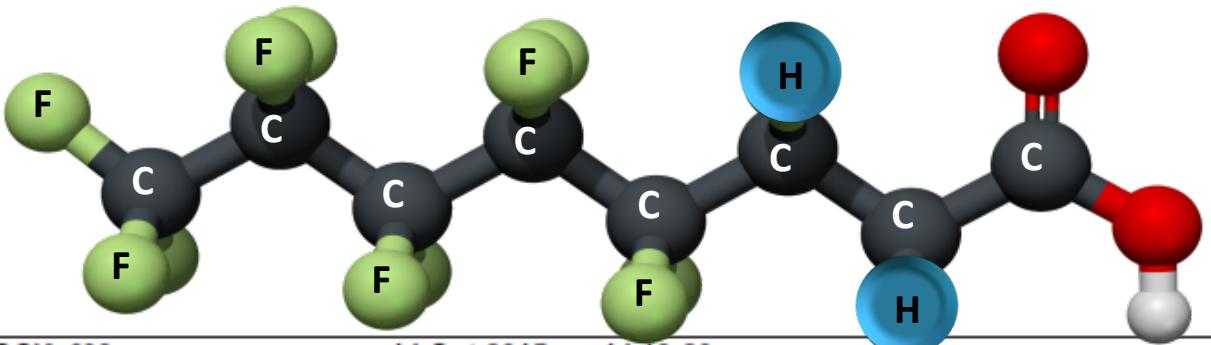
Hold down the "CTRL" key to select multiple Concentrations.

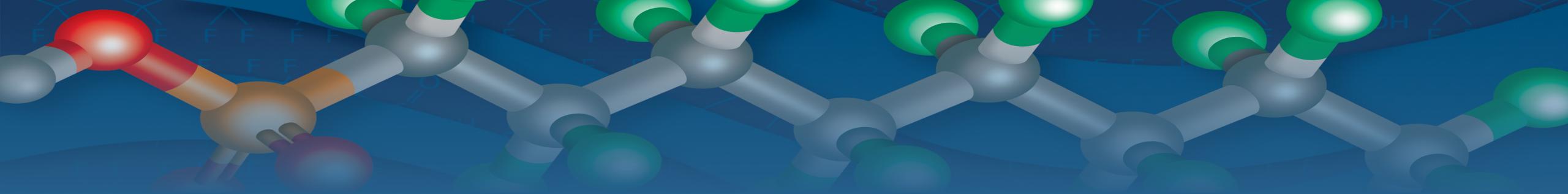




(Paleo)climatology

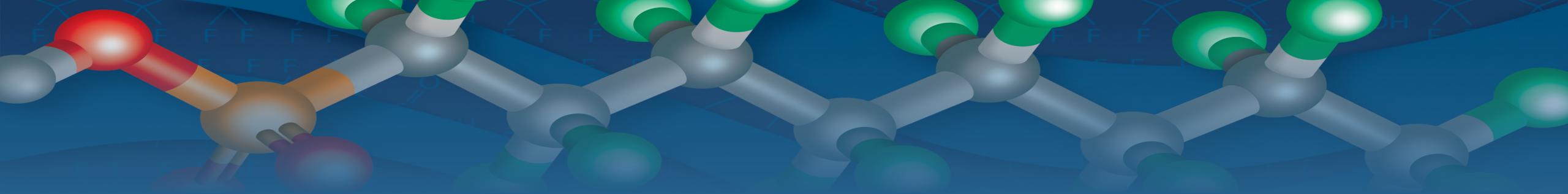




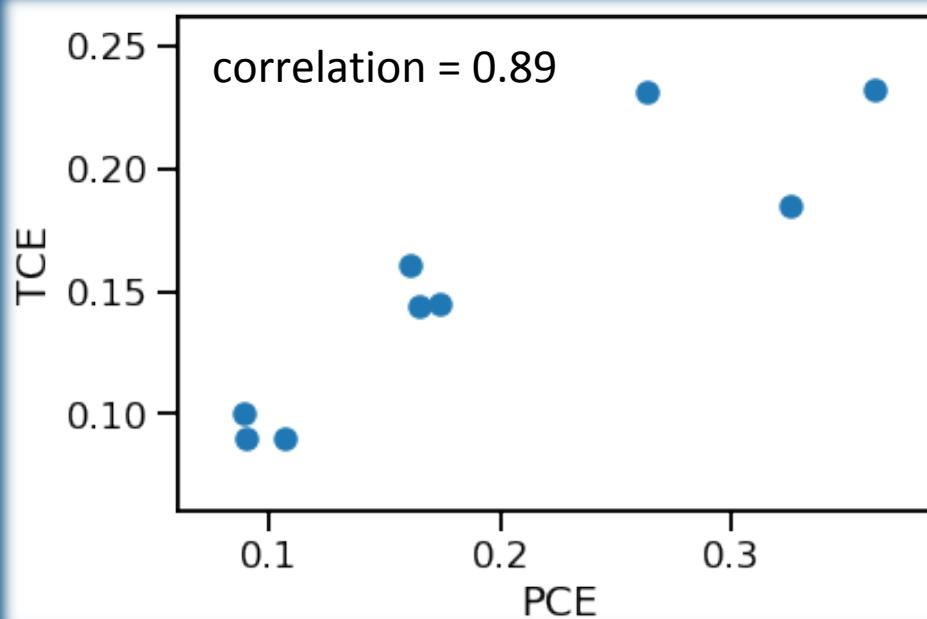


1. Dataset

- Downloaded all PFAS sampling results for the state of California and associated monitoring data for other chemicals (GAMA, DDW, SDWIS, UCMR3)
- Cleaned and normalized data to uniform scale
- Integrated data into single file for downstream analysis

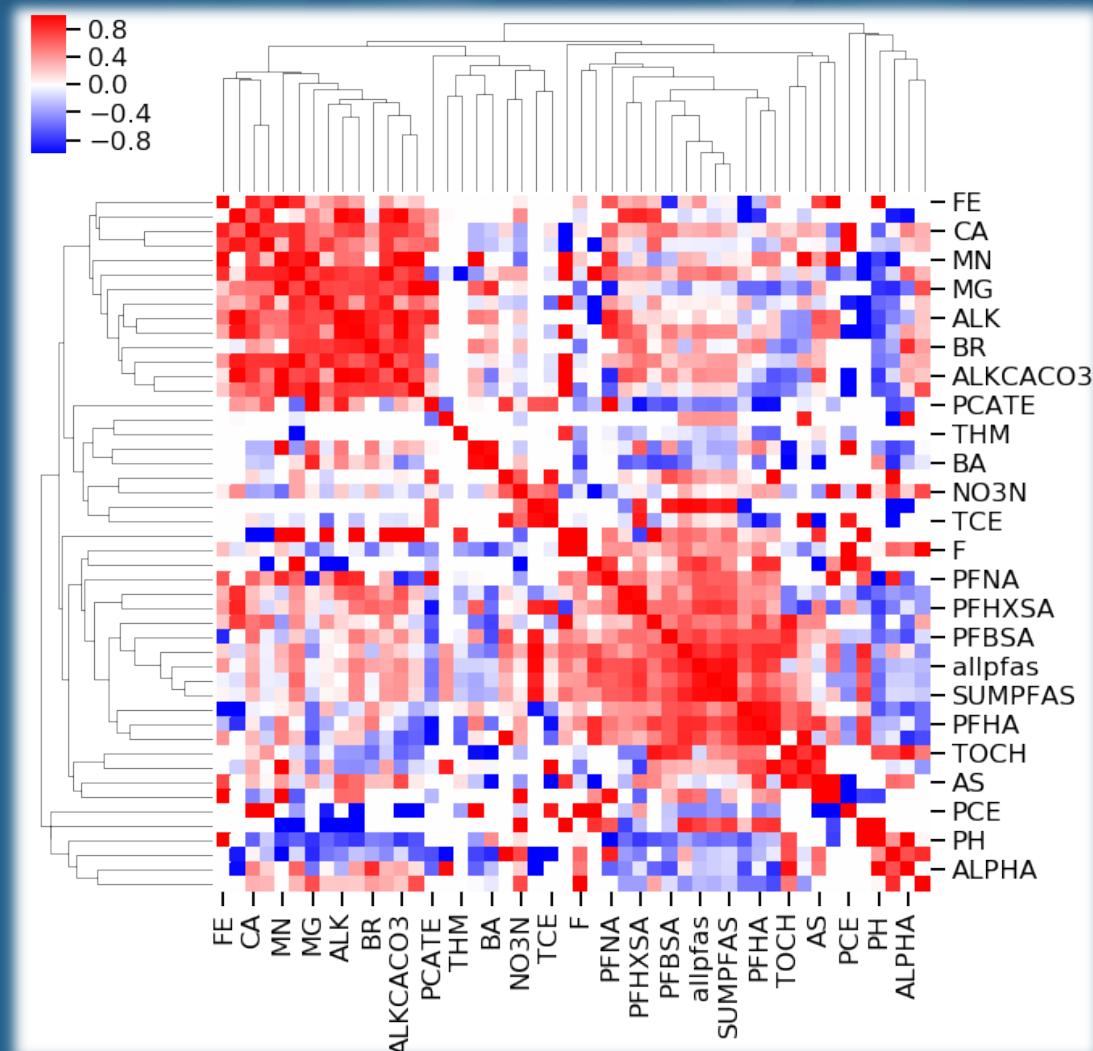
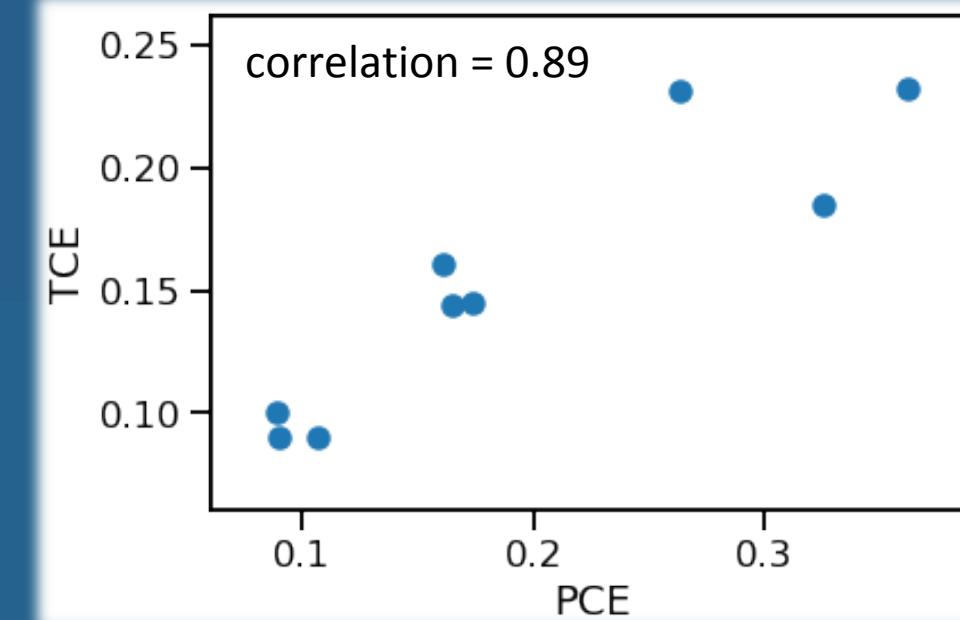


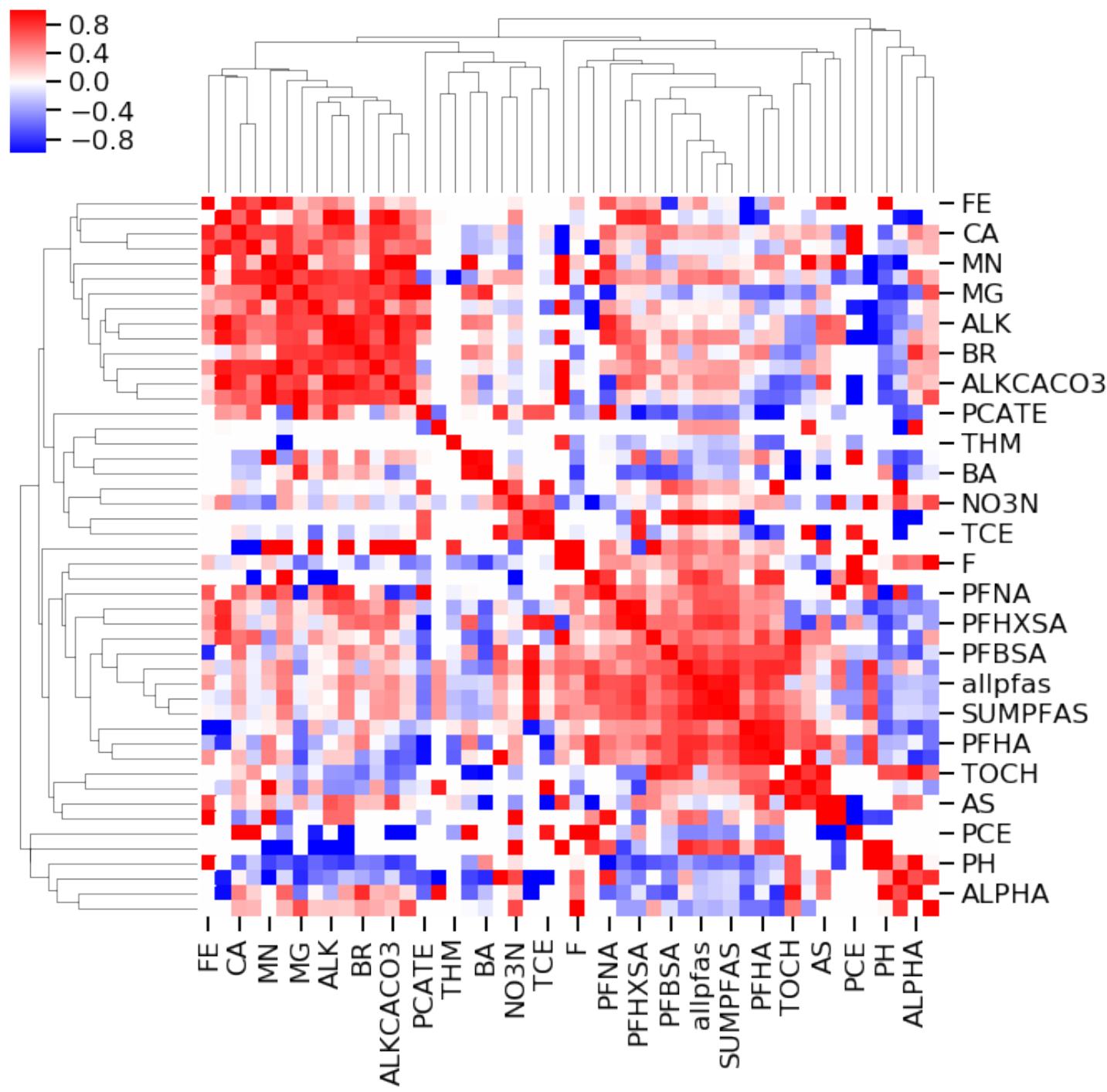
2. Correlation





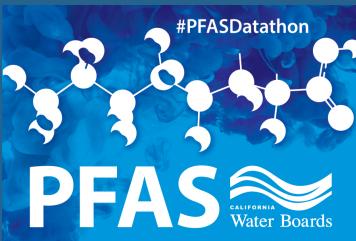
2. Correlation







3. Clustering & Fingerprinting





3. Clustering & Fingerprinting

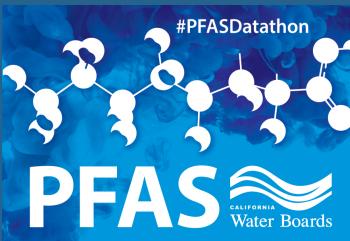
Fingerprint 1

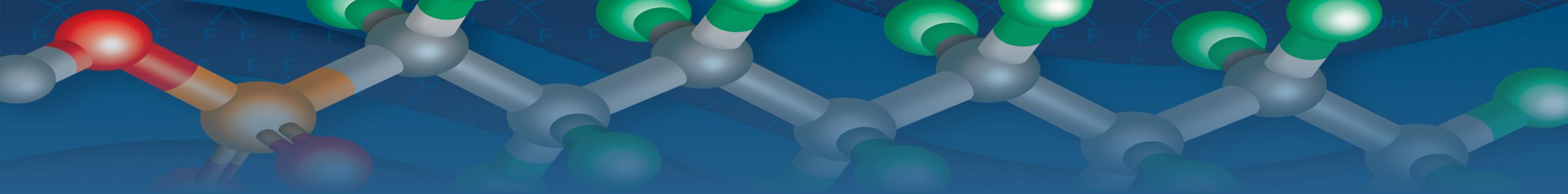
Fingerprint 2

Fingerprint 3

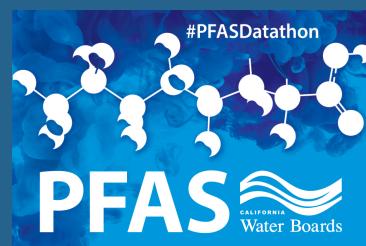
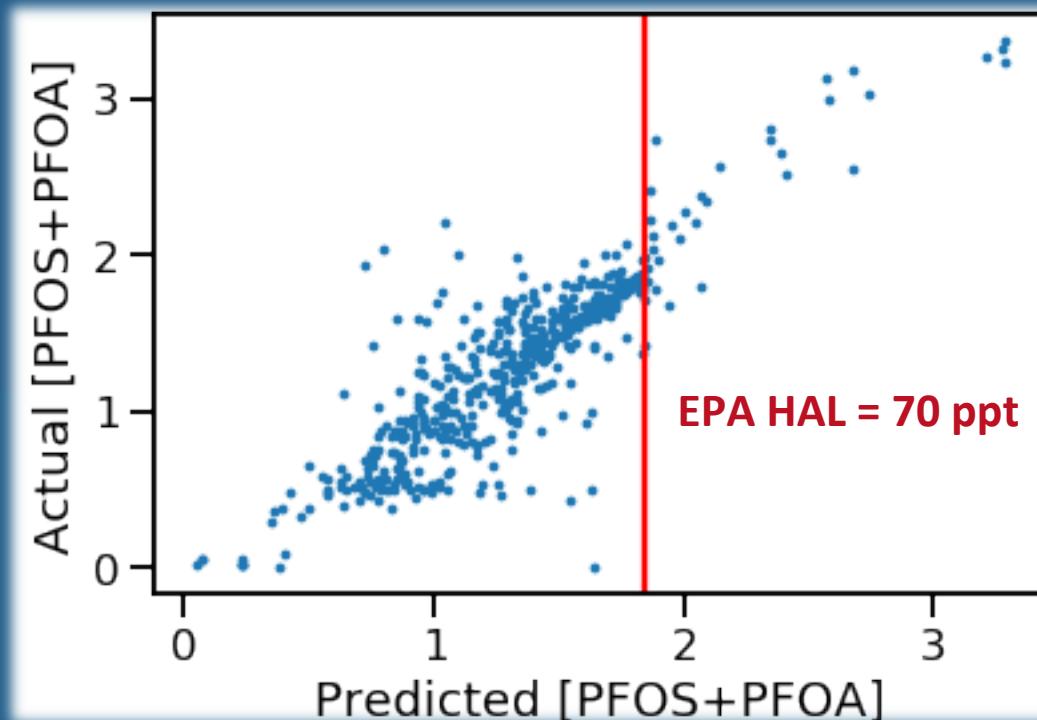
Fingerprint 4

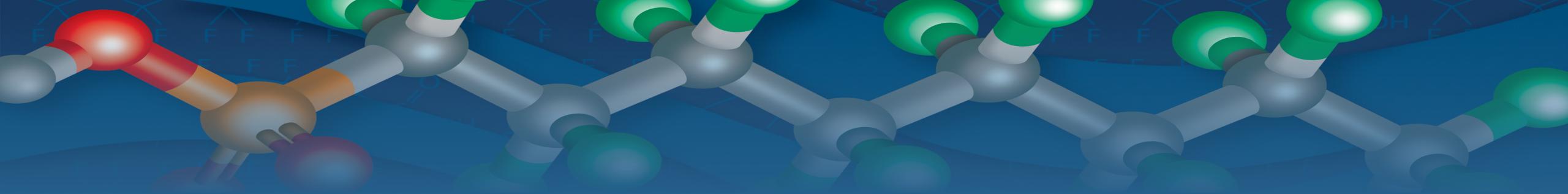
Fingerprint 5



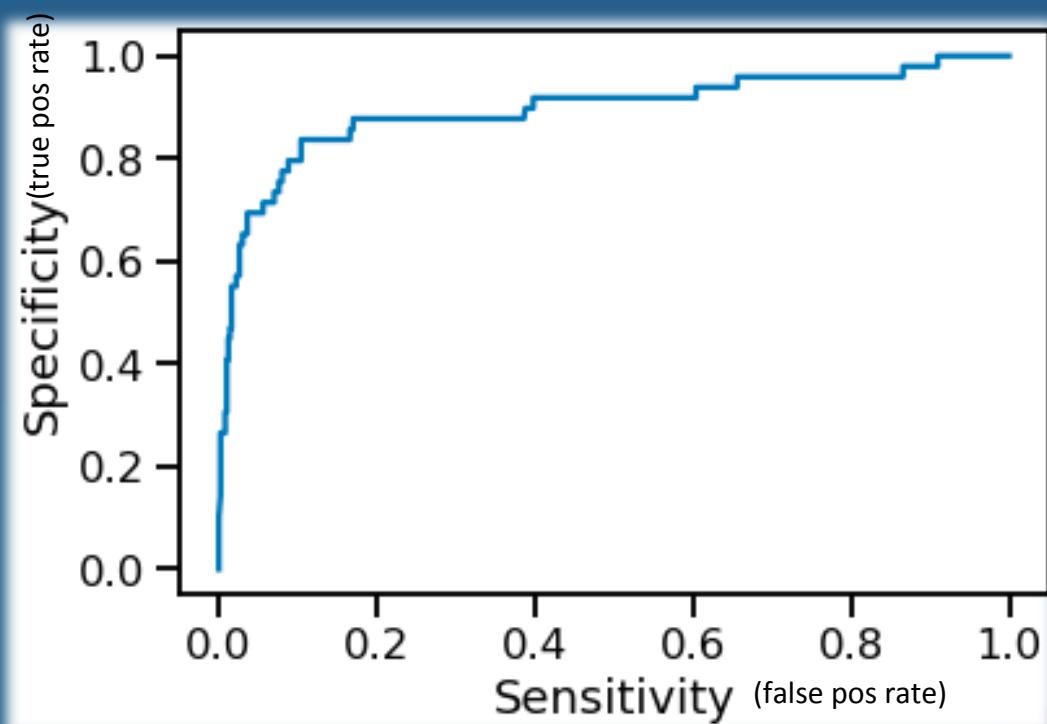
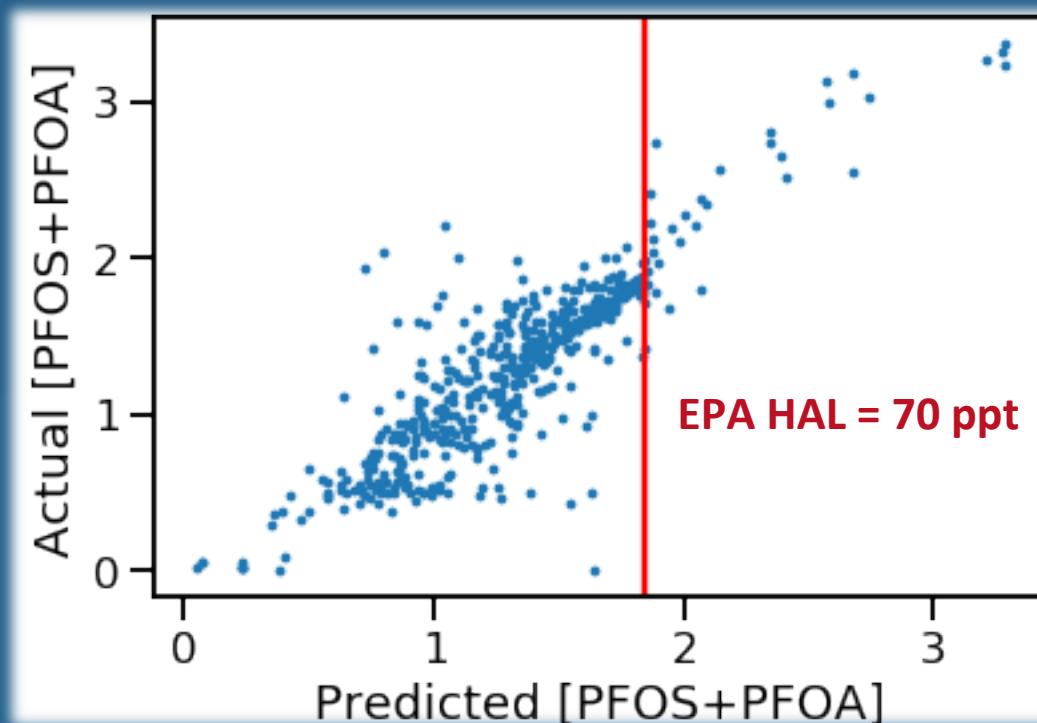


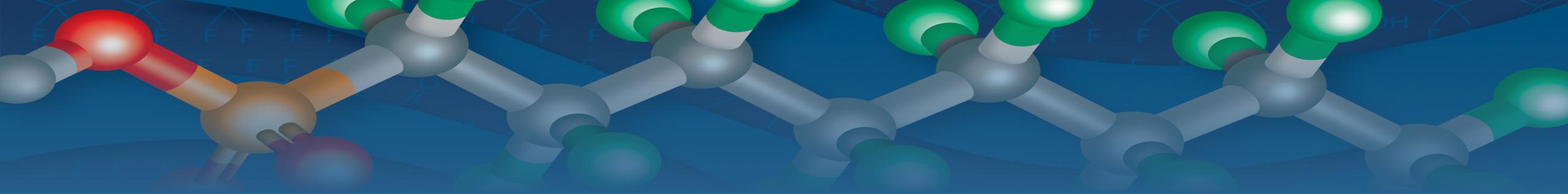
4. PFAS Prediction from non-PFAS monitoring data



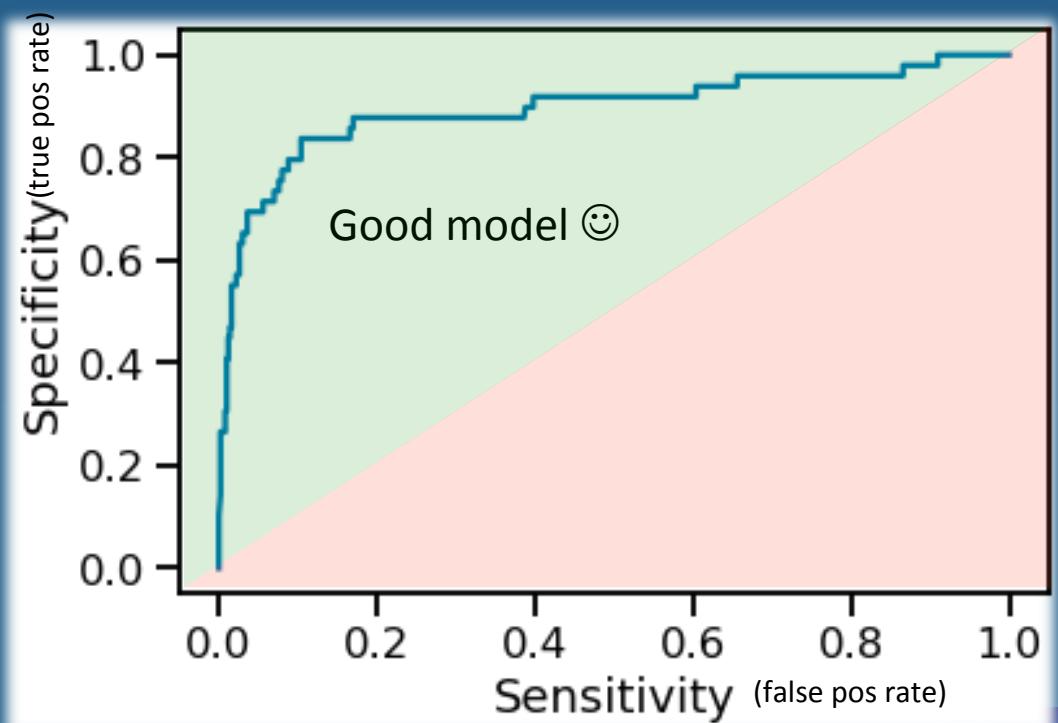
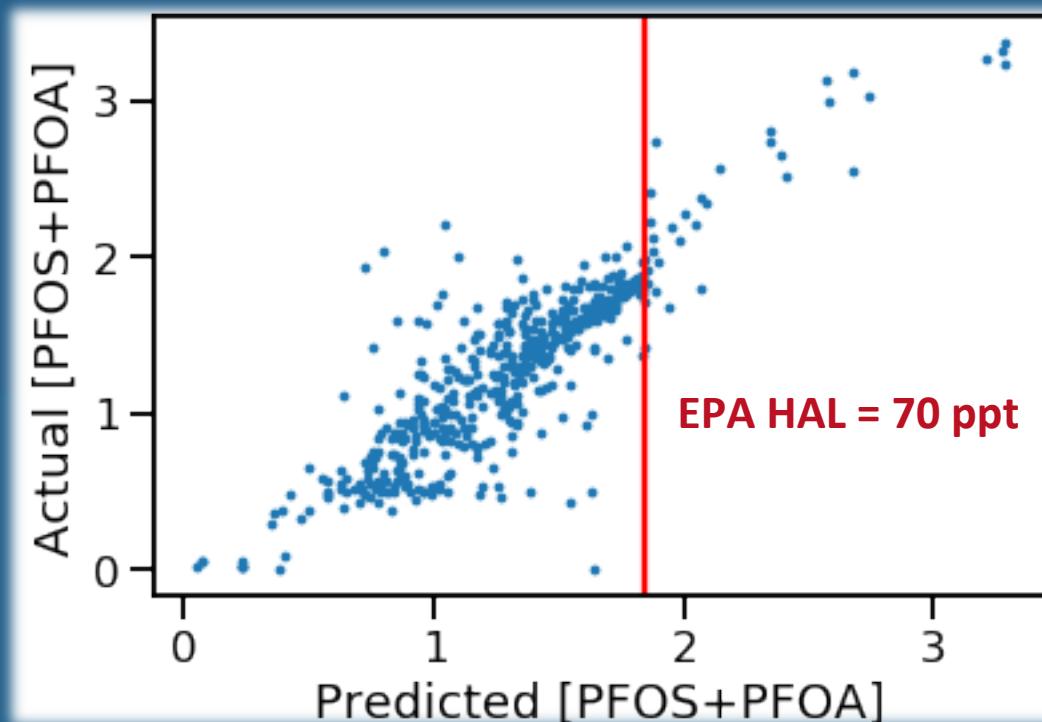


4. PFAS Prediction from non-PFAS monitoring data



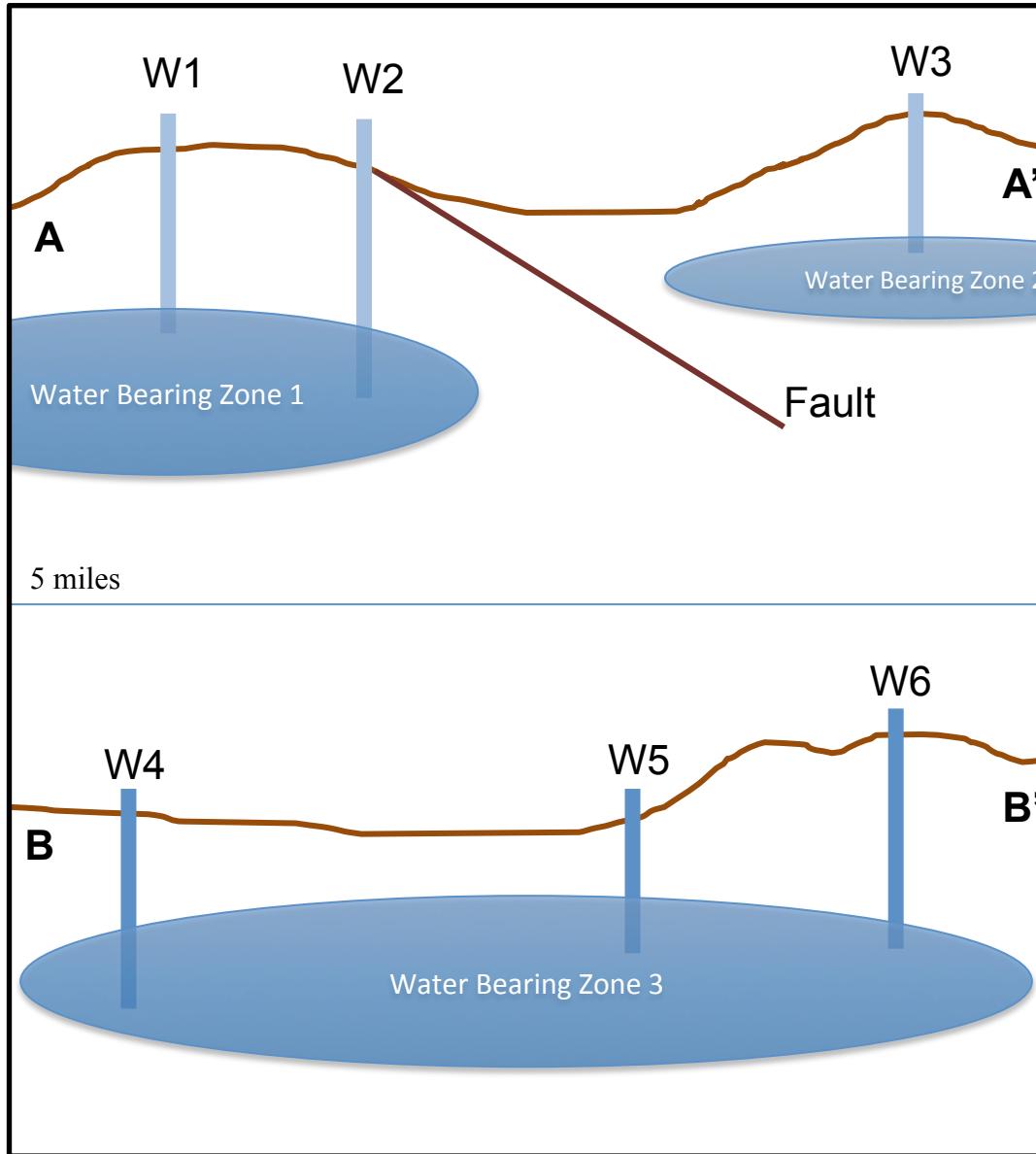
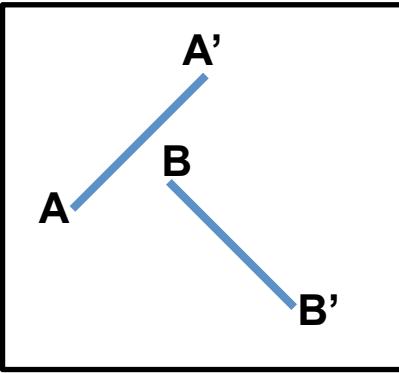


4. PFAS Prediction from non-PFAS monitoring data



Cross Section

Map View





5. Source Identification

Fingerprint 1 = Source A

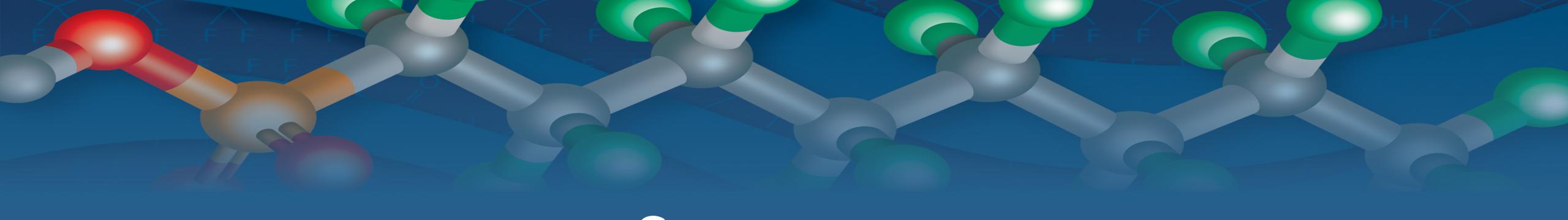
Fingerprint 2 = Source B

Fingerprint 3 = Source C

Fingerprint 4 = Source D

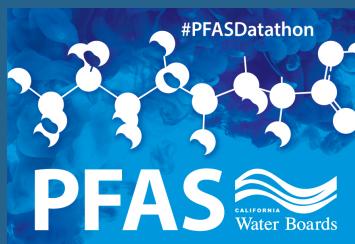
Fingerprint 5 = Source E





Summary

- Existing PFAS and other chemical monitoring data contain useful information for identifying areas of concern
 - This tool could be used to ‘fingerprint’ PFAS profiles, identify source areas, and expedite the cleanup process
 - This tool could also be used as guidance for future monitoring programs where groundwater is used as a source of drinking water

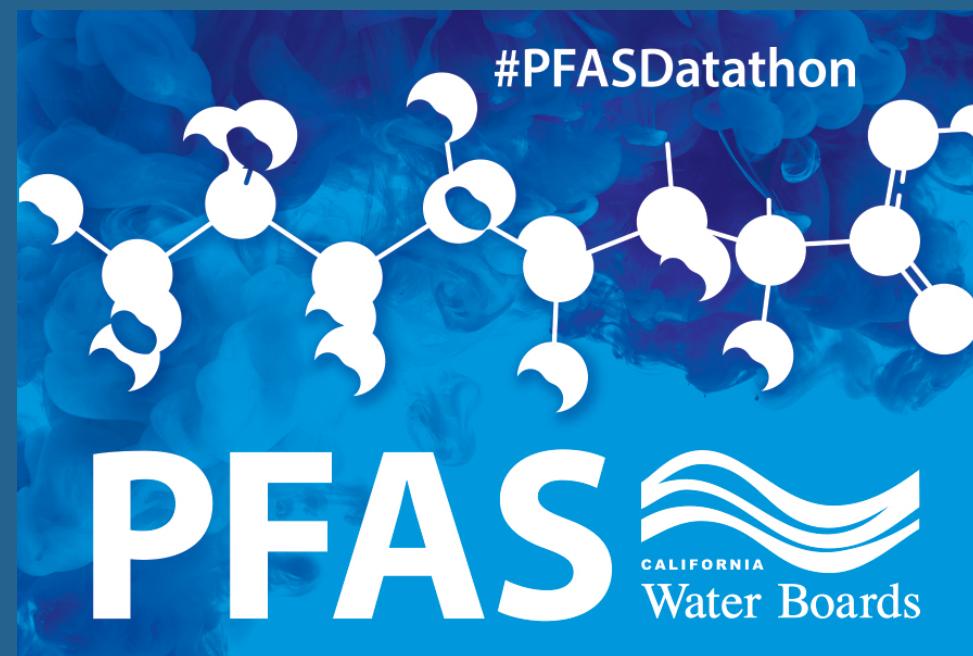


Thank you!

PFAS Source Identification Through Fingerprinting

Thank you ~wonderful~ Datathon collaborators!*

Priya Shivaani Chauhan, Jennifer Chen, Sara Huber, Erica Kalve, Brittany Saleeby, Susie Smith



*Collaborators listed in alphabetical order.