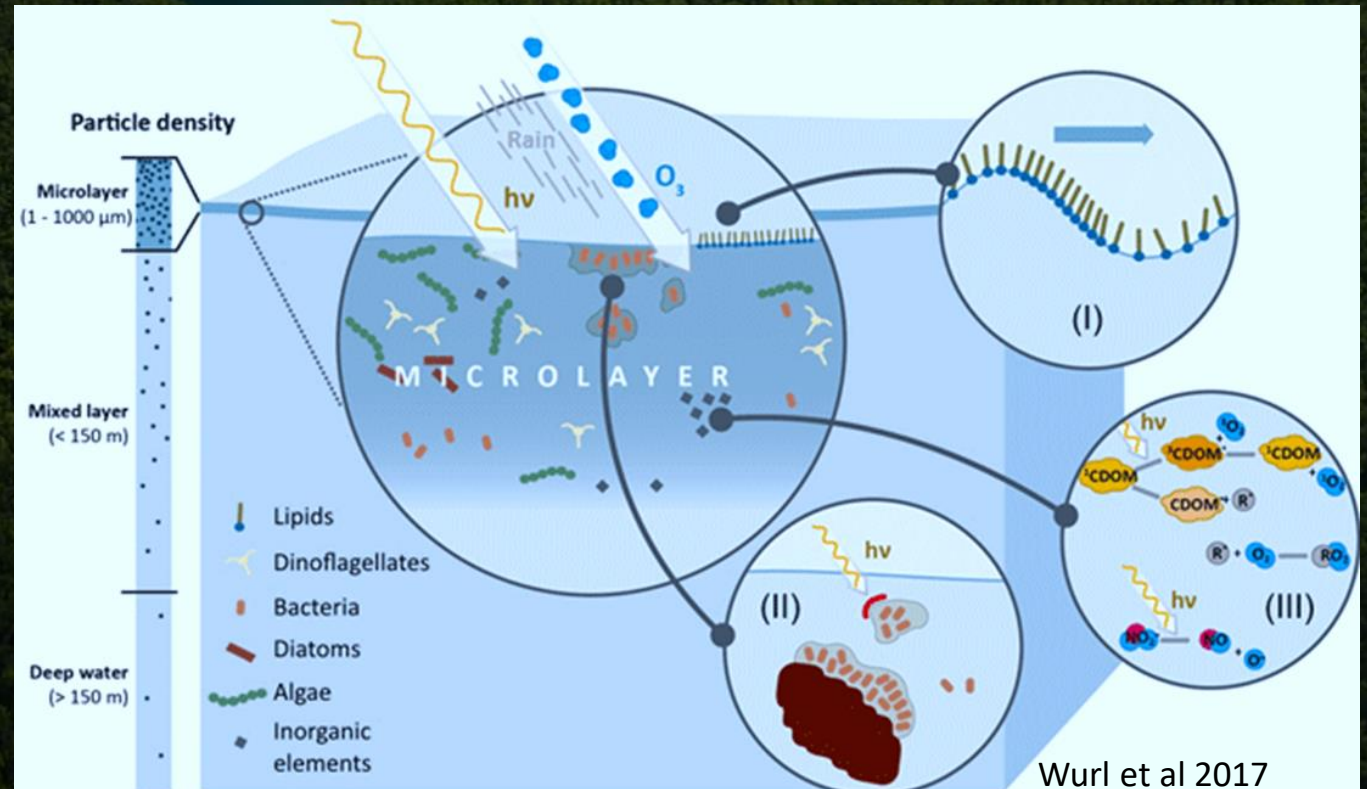
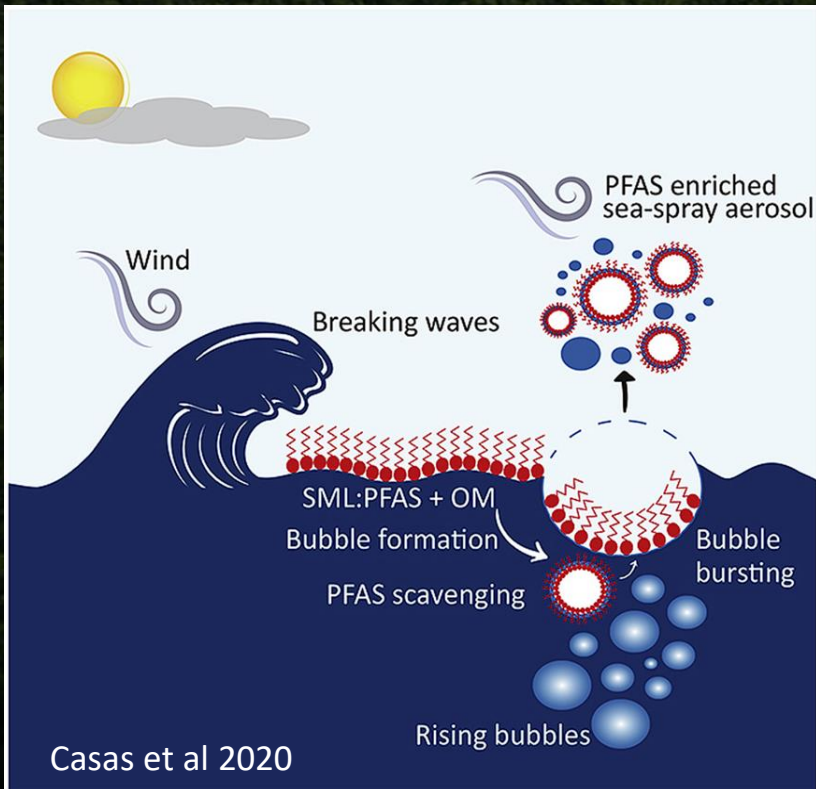


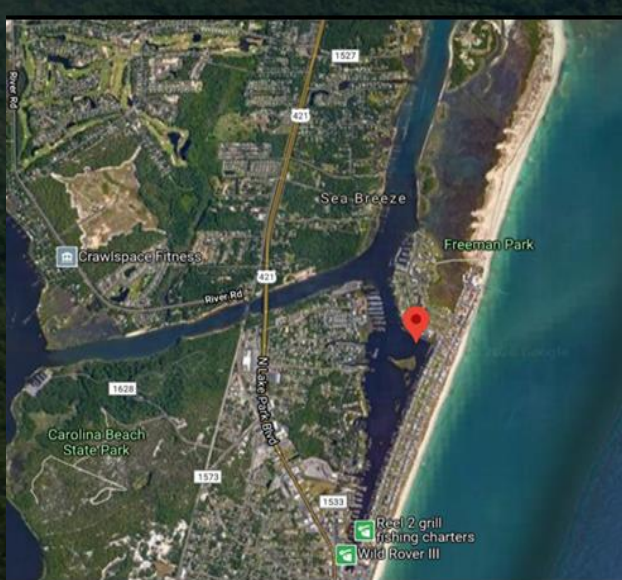
Air-Sea Interchange of Per- and Polyfluoroalkyl Substances

- The sea surface microlayer (SML) is the interface that lies within the top 1000 μm of the waters surface
- This boundary interface between the atmosphere and hydrosphere has measurably different chemical and biological properties in comparison to the underlying waters called the sub-surface water (SSW)
- This layer expected to be a significant component for long-range atmospheric transport and enrichment of legacy and emerging PFAS



Legacy vs Emerging PFAS

- Six PFAS compounds, including four emerging PFAS, were quantified in the SML and the SSW at two sites near a tidal bay on the eastern coast of North Carolina

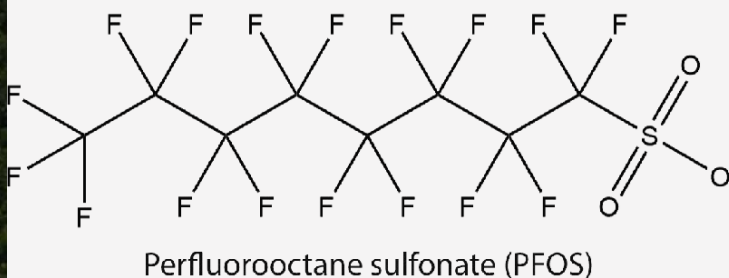
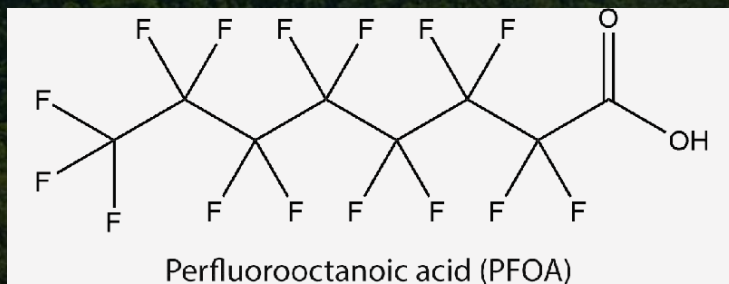


Carolina Beach Canal
CBC

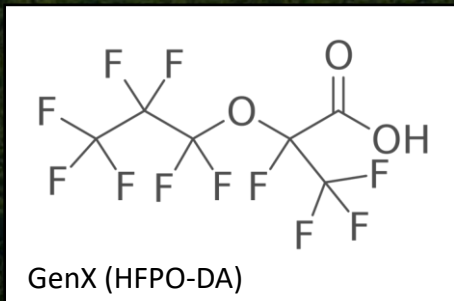
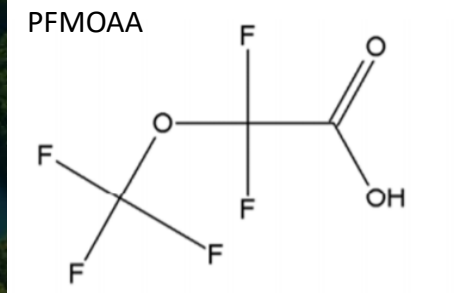


Carolina Beach Inlet
CBI

Legacy PFAS



Emerging PFAS



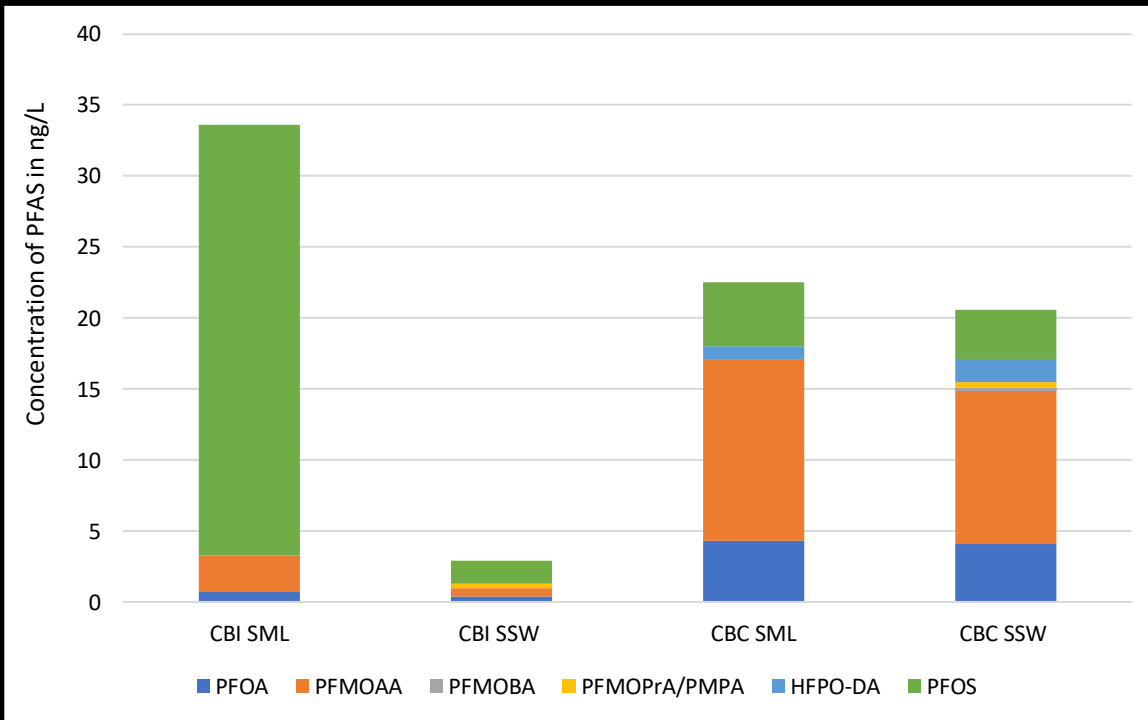
- **Collection**
 - SML samples were collected using a custom made 40 mesh sampler
 - Samples were extracted using Dionex AutoTrace 280 Solid-Phase Extraction and analyzed with LC-MS analysis on Sciex 4000 Qtrap instrument

Enrichment Factors and Conclusions

- Enrichment factors were determined by comparing the concentrations of the SML and the sub-surface water (SSW)

$$\frac{C_{SML}}{C_{SSW}}$$

- Distribution of PFAS in the CBI was dominated by PFOS in both the SML (30.3 ng/L) and SSW (1.6 ng/L)
- Distribution of PFAS in the CBC was dominated by PFMOAA in both the SML (12.8 ng/L) and SSW (10.8 ng/L)
- Enrichment factors were highest for legacy PFAS (range: 1.0 to 18.9) and lowest for emerging PFAS (range: 0.6 to 4.3)



CBI- Carolina Beach Inlet
 CBC- Carolina Beach Canal

Enrichment Factors

Compounds	CBI	CBC
PFOA	1.8	1.0
PFMOAA	4.3	1.2
PFMOBA	-	-
PFMOPrA/PMPA	-	-
HFPO-DA	-	0.6
PFOS	18.9	1.3

