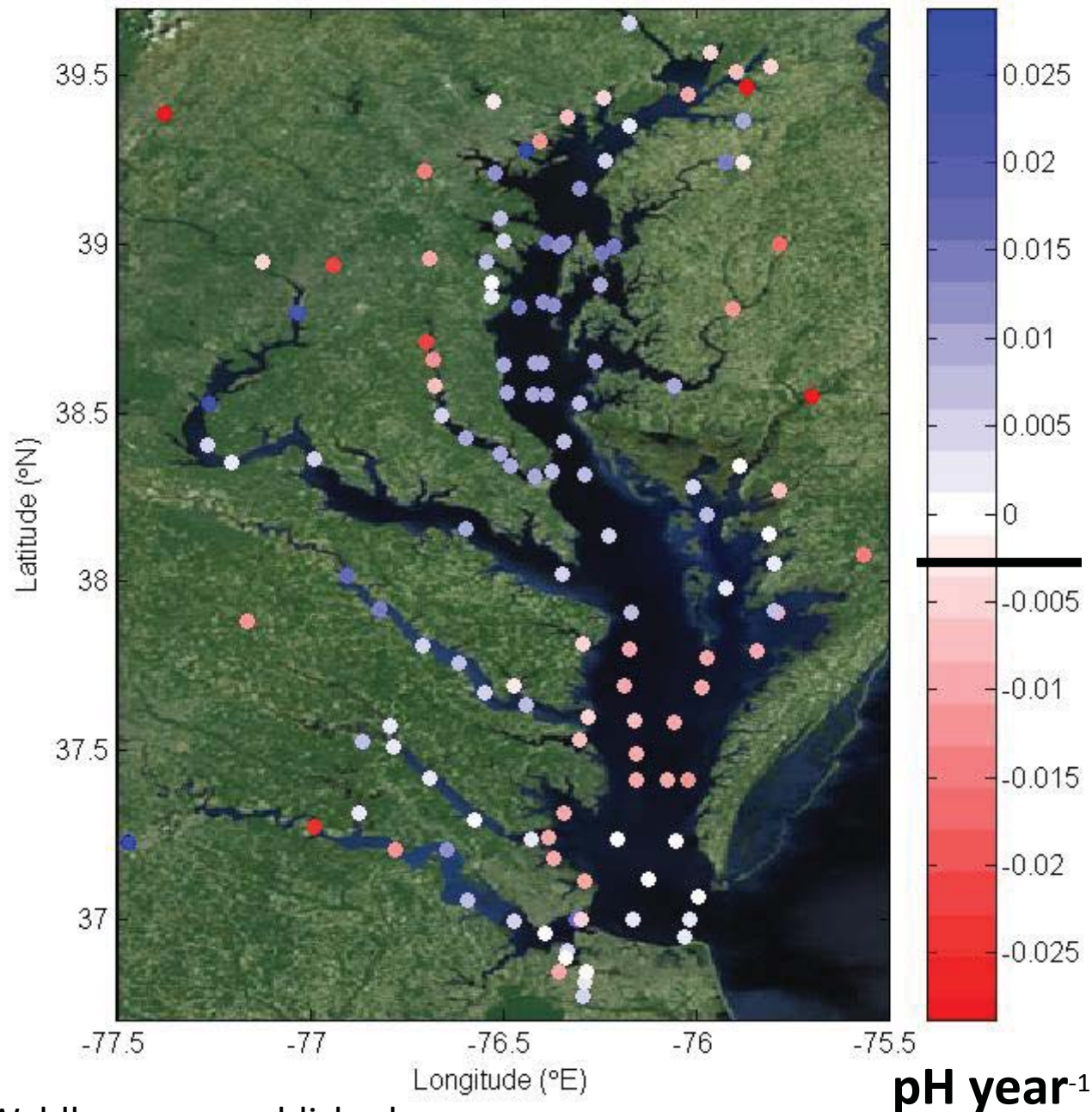


Annual trends in pH 1984-2008



- Rivers pH ↓
- Low to mid Sal ↑
- Higher Sal ↓

Rates of pH change
far exceed
atmospheric CO₂

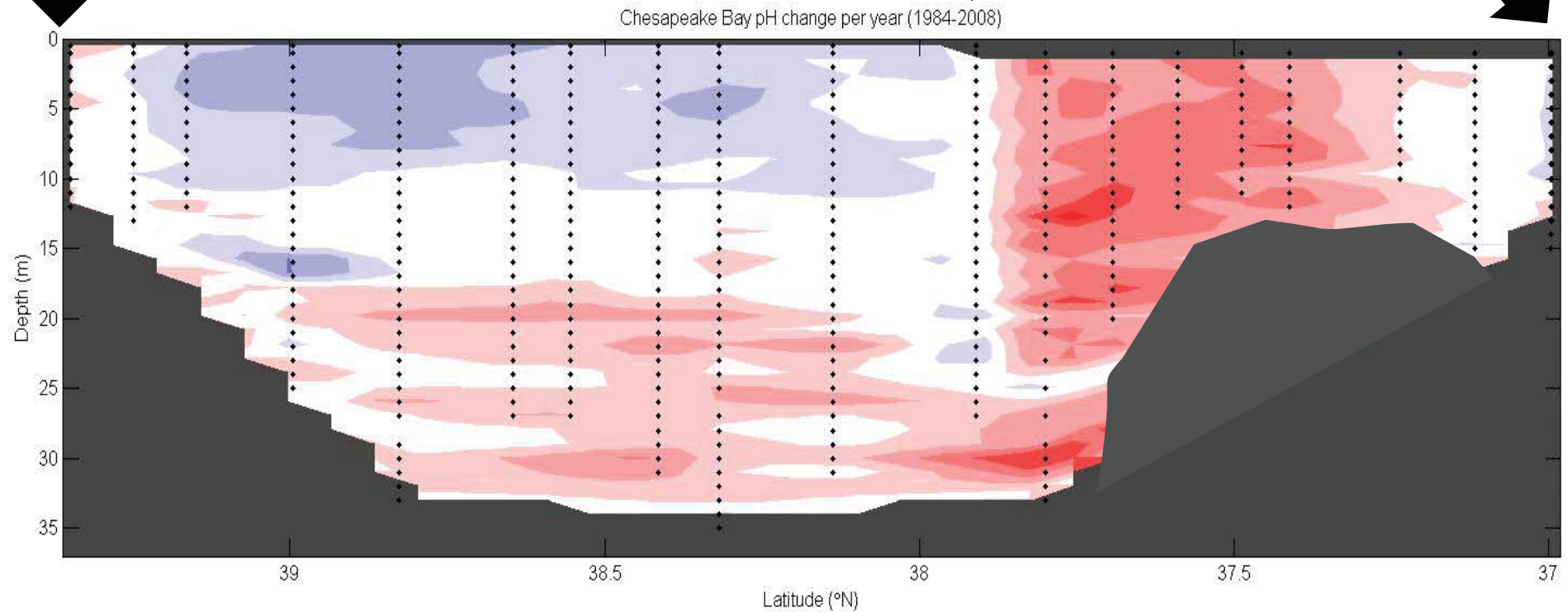
Organisms probably
don't care about
annual means...

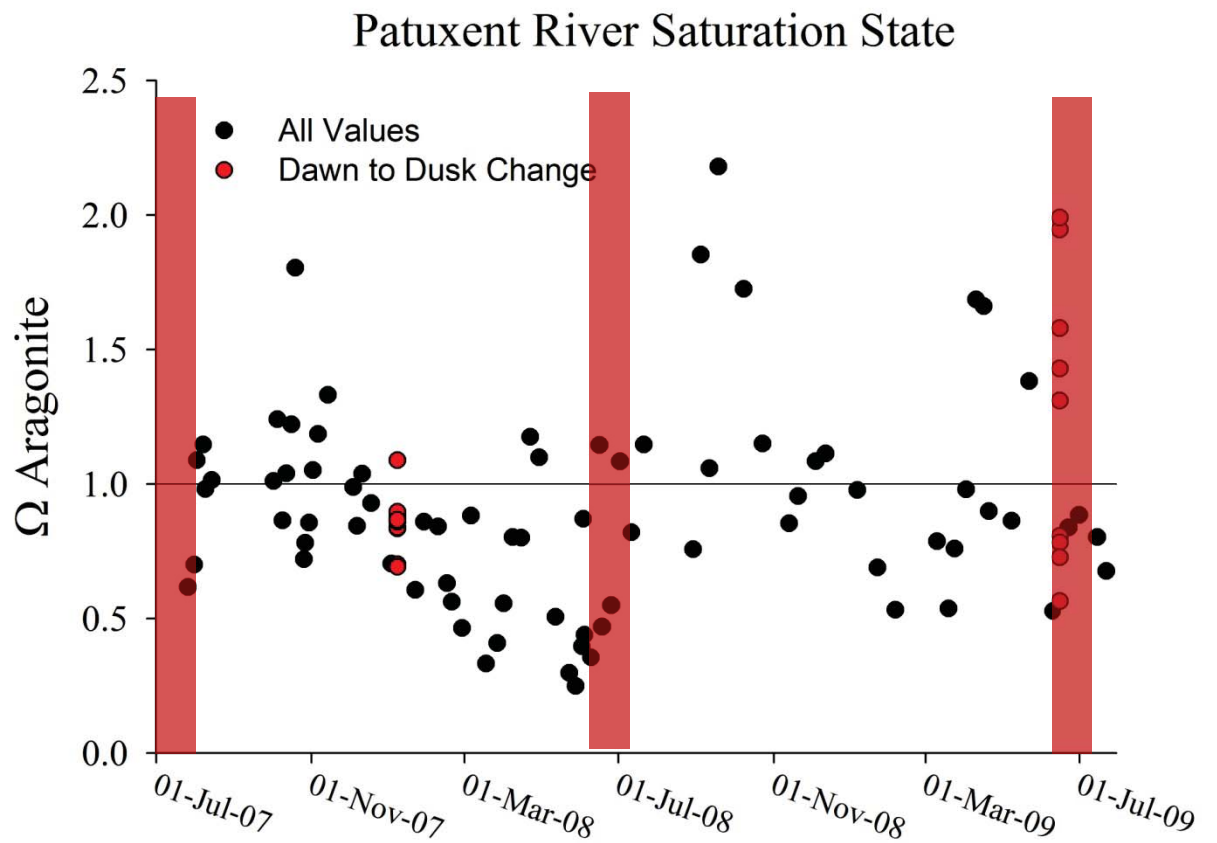
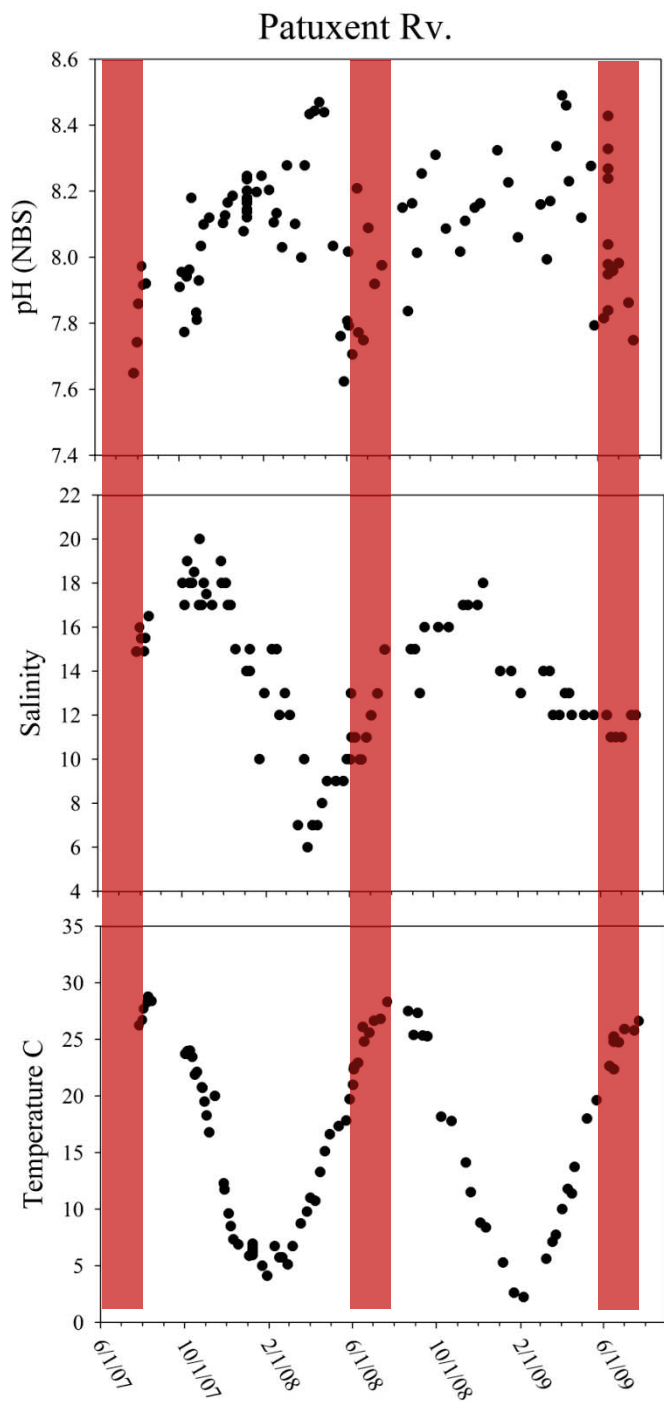
Cross Section of Chesapeake Bay pH trends

Susquehanna River

Potomac River

Atlantic Ocean

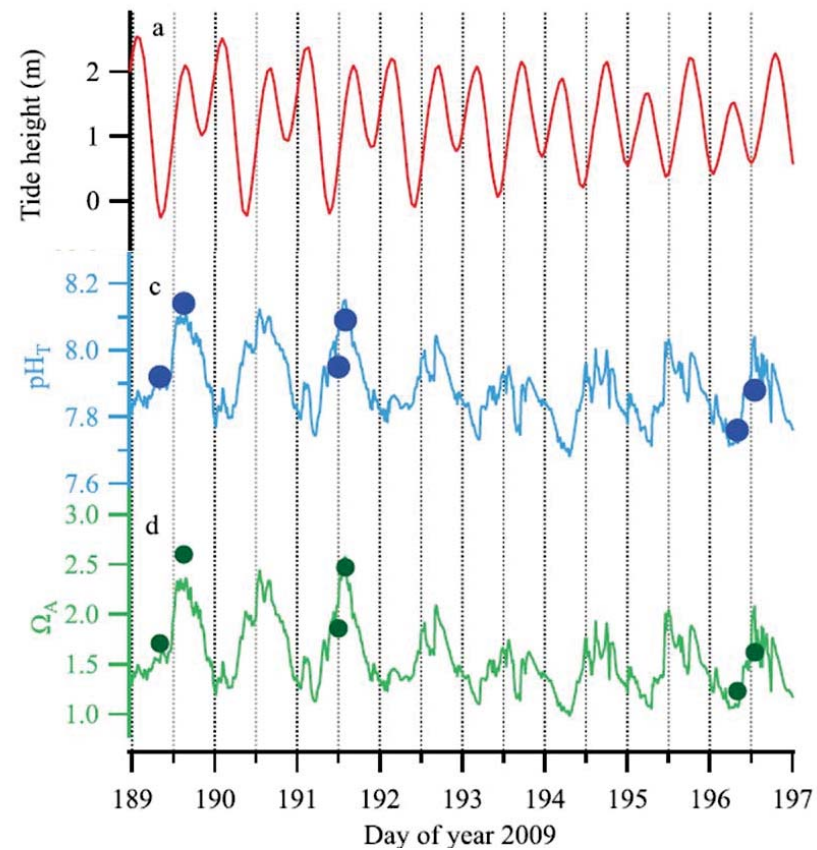
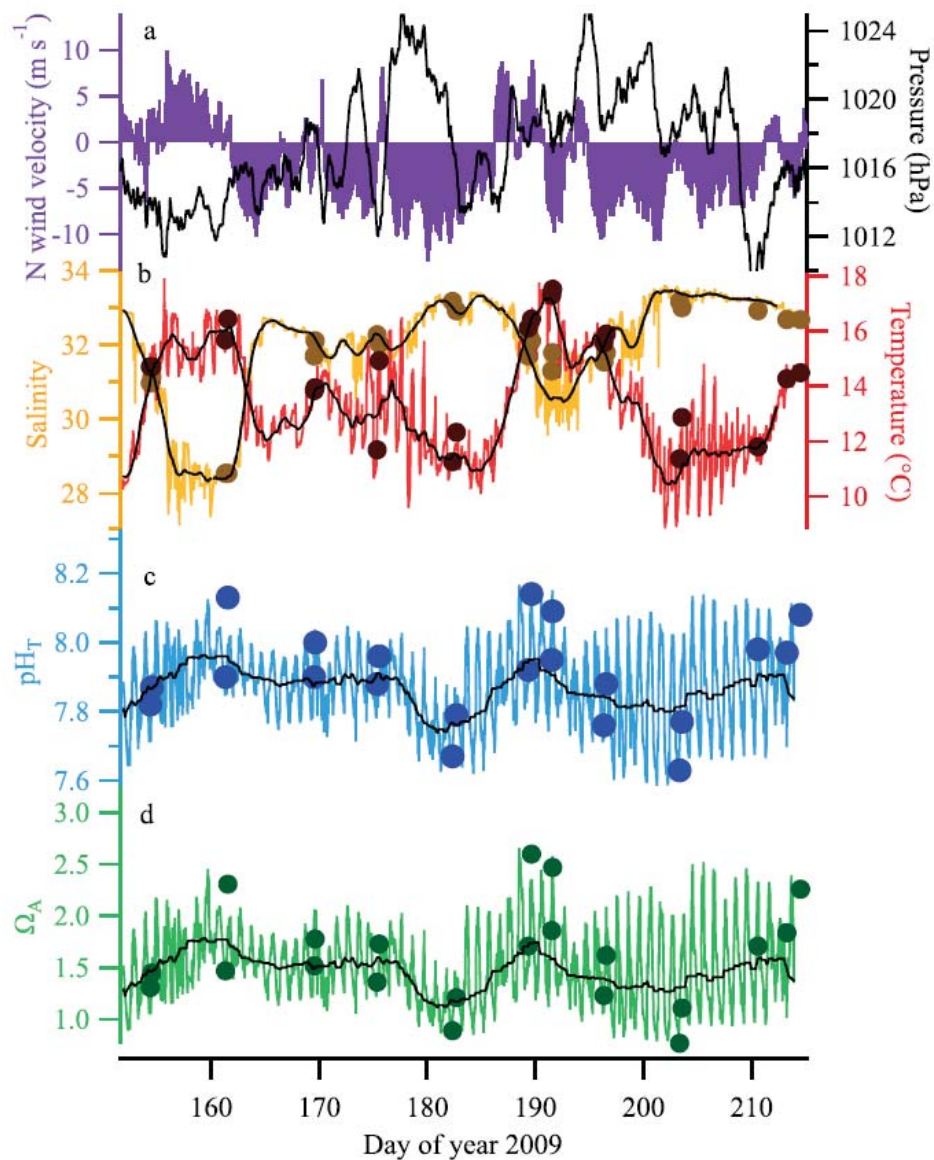




pH, Temperature, and Salinity all affect saturation state (corrosivity)

Many scales of variability...

Carbonate Chemistry Climatology in Netarts Bay, OR



Barton et al. (2012)

Preliminary Analyses of pH trends by depth layers

	<u>Salinity</u>	<u>Season</u>	<u>Layer</u>	<u>Avg pH</u>	<u>Slope</u>	<u>std err</u>	<u>Adj R2</u>	<u>F</u>	<u>P</u>	<u>n</u>
<i>Sig Neg</i>	Poly	Summer	Surface	8.00	-0.006	0.002	0.27	9.99	0.0044	25
	Poly	Summer	Above Pyc	8.09	-0.003	0.002	0.10	3.49	0.0753	25
<i>Sig Pos</i>	Poly	Summer	Mid	7.70	0.012	0.003	0.38	15.49	0.0007	25
<i>Sig Neg</i>	Poly	Summer	Below Pyc	7.68	-0.009	0.004	0.18	6.43	0.0185	25
<i>Sig Neg</i>	Poly	Summer	Bottom	7.73	-0.005	0.002	0.22	7.80	0.0103	25
	Poly	Spring	Surface	8.03	-0.010	0.007	0.05	2.28	0.1455	24
	Poly	Spring	Above Pyc	8.14	-0.004	0.005	0.00	0.68	0.4188	22
	Poly	Spring	Mid	7.84	0.002	0.005	0.00	0.20	0.659	24
<i>Sig Neg</i>	Poly	Spring	Below Pyc	7.89	-0.013	0.004	0.29	10.33	0.004	24
<i>Sig Neg</i>	Poly	Spring	Bottom	7.86	-0.012	0.003	0.33	12.08	0.0021	24
	Meso	Summer	Surface	7.99	0.005	0.003	0.07	2.77	0.1097	25
<i>Sig Pos</i>	Meso	Summer	Above Pyc	7.88	0.011	0.002	0.46	21.15	0.0001	25
<i>Sig Pos</i>	Meso	Summer	Mid	7.70	0.009	0.002	0.56	31.21	0.0001	25
	Meso	Summer	Below Pyc	7.48	0.003	0.003	0.02	1.44	0.2416	25
<i>Sig Pos</i>	Meso	Summer	Bottom	7.49	0.004	0.002	0.15	5.33	0.0295	25
	Meso	Spring	Surface	8.11	-0.003	0.003	0.00	0.96	0.3387	24
	Meso	Spring	Above Pyc	8.12	0.003	0.003	0.00	0.93	0.3462	24
	Meso	Spring	Mid	7.86	0.003	0.003	0.00	0.60	0.4453	24
	Meso	Spring	Below Pyc	7.70	-0.001	0.004	0.00	0.15	0.7061	24
	Meso	Spring	Bottom	7.72	-0.004	0.002	0.08	3.13	0.0908	24

relationship between total Alkalinity and salinity in Pa...

