Supporting Information

Wootton *et al*. 10.1073/pnas.0810079105

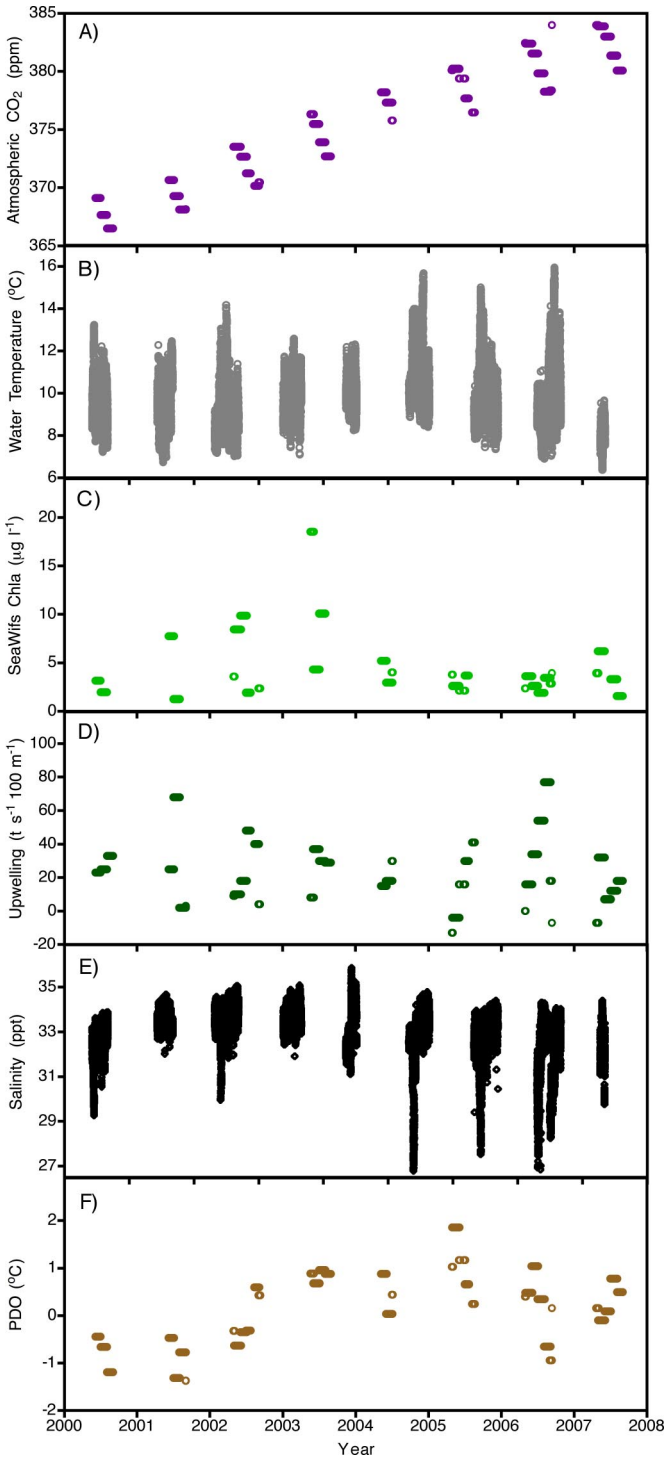

Fig. S1. Temporal dynamics of physical/chemical variables used to explore drivers of pH variation through time. (*A*) Globally averaged monthly atmospheric CO_2 at the ocean surface, (*B*) Water temperature, (*C*) Monthly SeaWIFS estimates of chl a derived from the adjacent ocean (48°22′-48°26′N; 124°43′-124°47′W), (*D*) Monthly average upwelling index, (*E*) Salinity, (*F*) Monthly average Pacific Decadal Oscillation (PDO) index. Data are restricted to periods of time that pH data were collected.

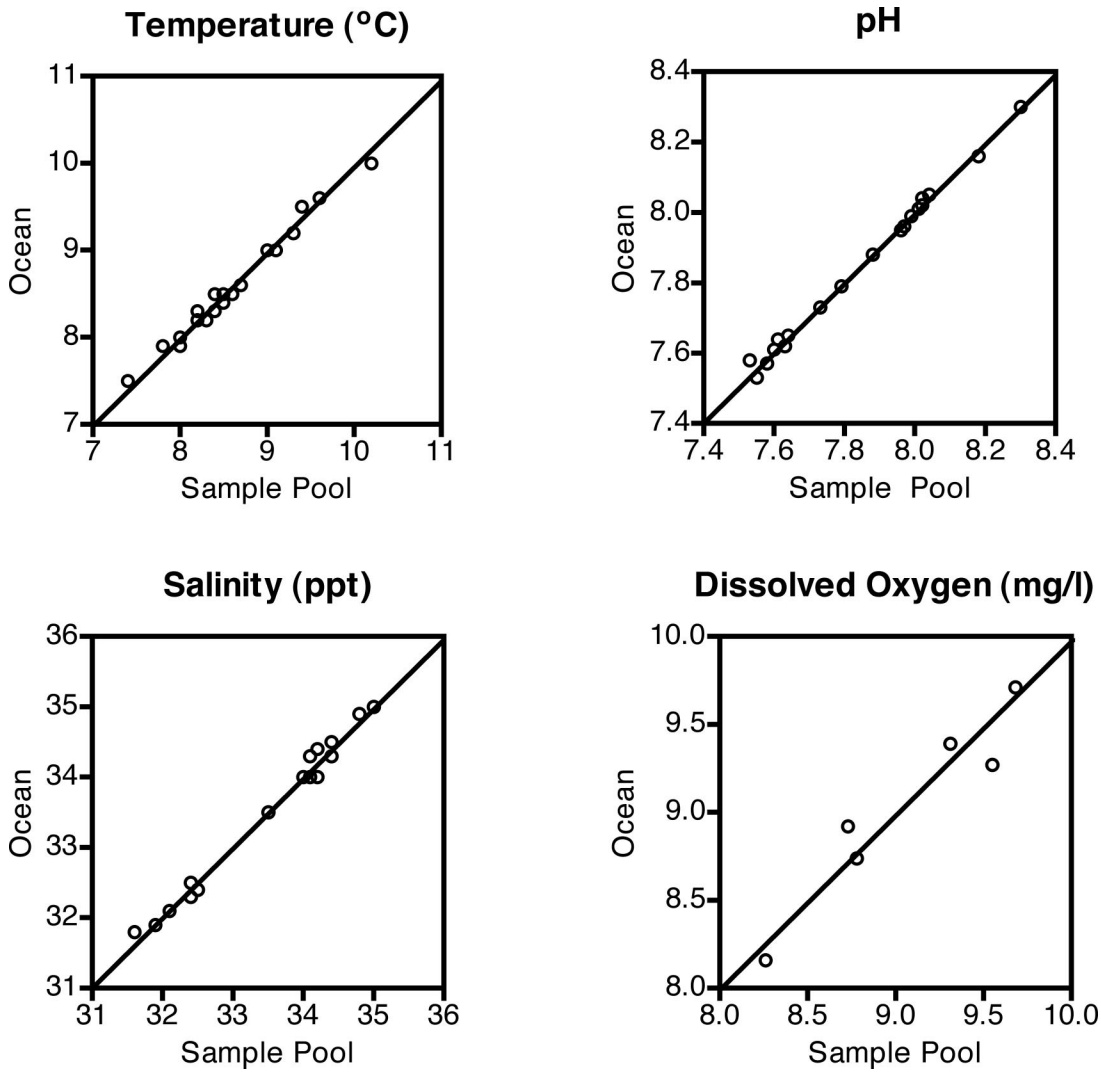

Fig. S2. Comparisons of four physical/chemical parameters between the large tide pool containing the data logger and the adjacent open ocean. Measures made after appreciable separation between the two, during low tides (>0.5 h), excluded. No statistically significant differences exist between simultaneous measures of any parameters (paired *t* test, all $P > 0.45$).

Table S1. Parameter estimates for a model of ocean pH as a function of atmospheric CO2, physical, and algal parameters from data rarified to minimize autocorrelation of residuals (AC < 0.1).

Parameter	Interpretation	Mean	95% C.I.
a	Constant, pH	−34.167	−86.717, 18.383
b	Change in pH with atmospheric CO_2, pH/ppm CO_2	−20.706	−23.392, −18.019
h	Half the amplitude of the diurnal productivity oscillation, pH	−0.112	−0.144, −0.081
φ	Phase shift from midnight of diurnal oscillation, h	3.125	2.129, 4.121
u	Effects of upwelling, pH/(metric tons/sec/100 m coastline)	−0.005	−0.006, −0.004
c	Phytoplankton abundance effect, pH-liter/mg chlorophyll	0.196	0.143, 0.249
τ	Temperature effect, pH/°C	0.087	0.065, 0.108
d	Pacific Decadal Oscillation effect, pH/ °C	−0.037	−0.072, −0.003
k	Estimated Alkalinity, pH/μmol/kg	30.715	14.840, 46.590
s	Salinity effect, pH/ppt dissolved salt	−0.246	−0.373, −0.119

Estimates derived from nonlinear regression on 18 series of data points that were separated by 900 intervening points in the full data series.