The USC San Pedro Ocean Time-series and Microbial Observatory

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Poster: Diane Y. Kim (dianekim@usc.edu) https://dornsife.usc.edu/labs/usc-microbial-observatory http://dornsife.usc.edu/spot/
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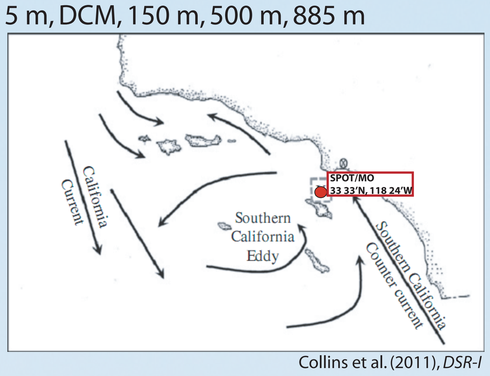
1) STATION LOCATION and DEPTHS - monthly samples

1998 - current : SPOT program (physical, chemical): 0, 10, 20, 30, 40, 50, 60, 100, 250, 500, 750, 885 m
2000 - current : MO program (diversity, biomass, rates): 5 m, DCM, 150 m, 500 m, 885 m

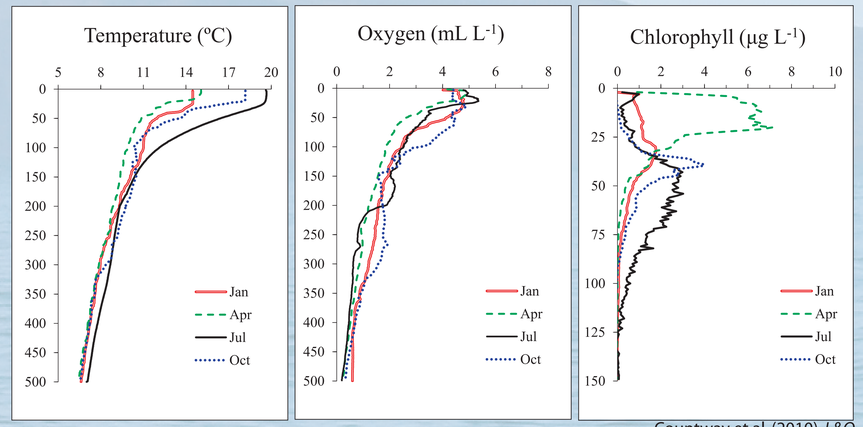
Coastal temperate system
Oligotrophic to mesotrophic
San Pedro Basin (sill depth ~740 m)
Maximum depth ~890 m



Collins et al. (2011), *DSR-I*

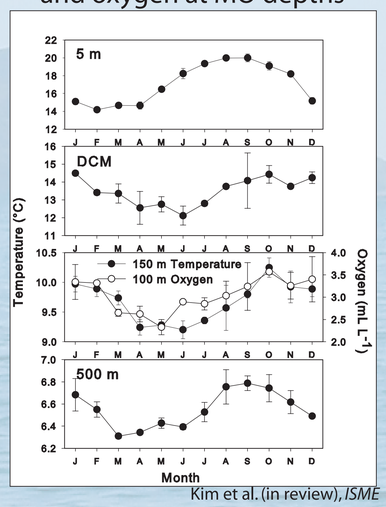
2) PHYSICAL and CHEMICAL PARAMETERS (SPOT)

Continuous profiles of temperature, oxygen and fluorescence from 4 seasons in 2001 (SBE CTD and sensors)



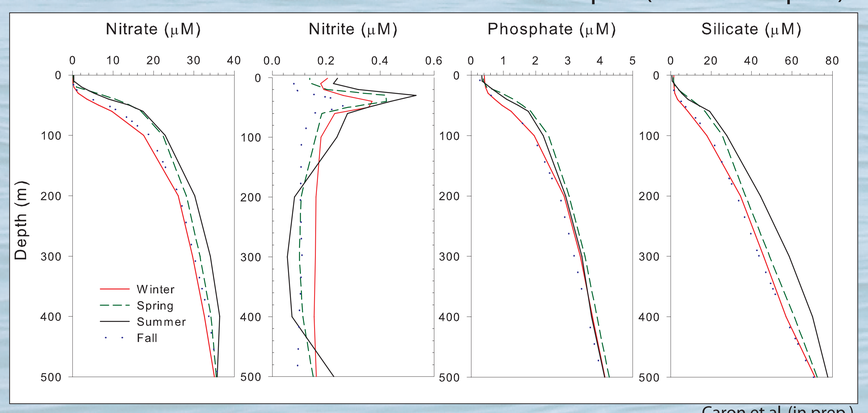
Countway et al. (2010), *L&O*

Seasonal variability in temperature and oxygen at MO depths



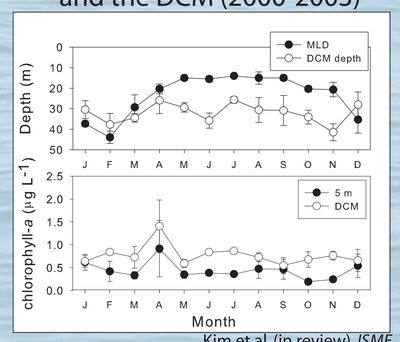
Kim et al. (in review), *ISME*

Nutrient concentrations from discrete water samples (12 SPOT depths)



Caron et al. (in prep.)

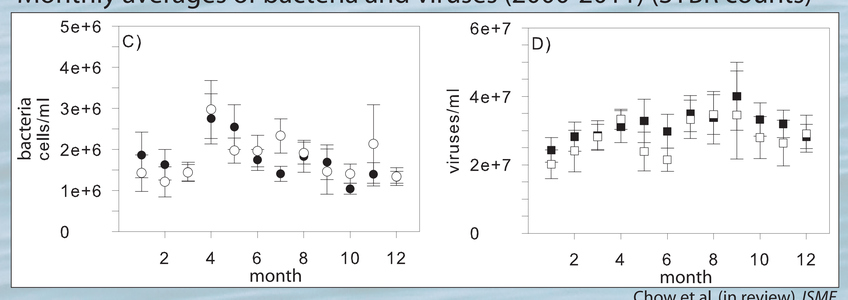
Monthly averages of MLD, depth of the DCM and chlorophyll-*a* from 5 m and the DCM (2000-2003)



Kim et al. (in review), *ISME*

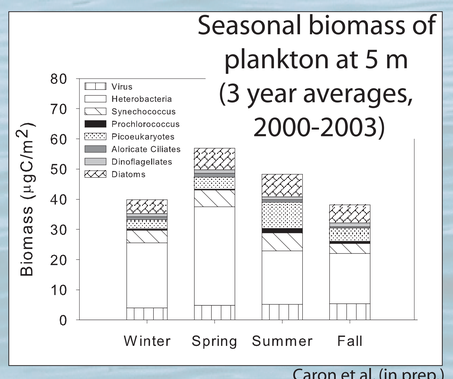
3) BIOMASS and COUNTS (MO)

Monthly averages of bacteria and viruses (2000-2011) (SYBR counts)



Chow et al. (in review), *ISME*

Seasonal biomass of plankton at 5 m (3 year averages, 2000-2003)

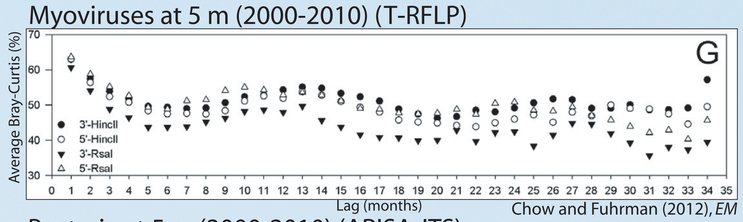


Caron et al. (in prep.)

4) MICROBIAL DIVERSITY (MO) bacteria, archaea, eukarya and viruses

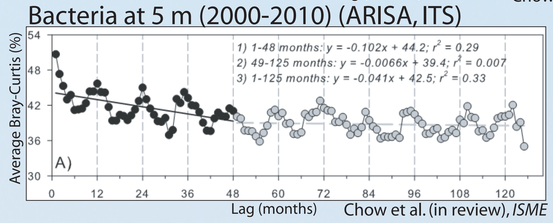
Seasonal myoviral and microbial assemblages:
Assemblages from 'opposite' seasons (e.g., 6 and 18 months apart) resulted in the lowest average similarity;
Annually returning high similarities between assemblages from similar seasons (e.g., 12 and 24 months apart)

Myoviruses at 5 m (2000-2010) (T-RFLP)



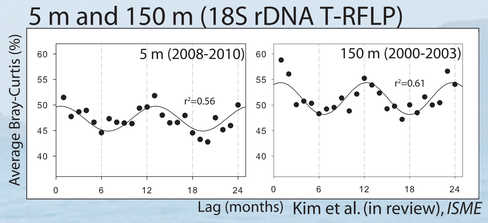
Chow and Fuhrman (2012), *EM*

Bacteria at 5 m (2000-2010) (ARISA, ITS)



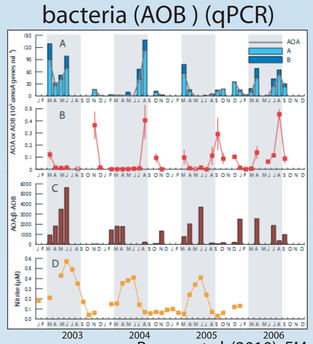
Chow et al. (in review), *ISME*

Microbial eukaryotes at 5 m and 150 m (18S rDNA T-RFLP)



Kim et al. (in review), *ISME*

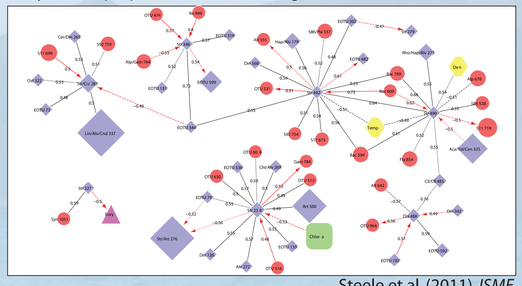
Ecological dynamics of nitrification at 150 m: ammonia oxidizing archaea (AOA) and bacteria (AOB) (qPCR)



Beman et al. (2010), *EM*

Microbial Association Network

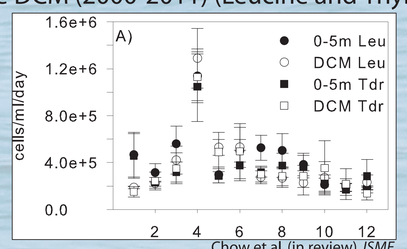
Included: Bacteria (circles), Protista (diamonds), and Archaea, (triangles) based on Local Similarity Analysis (rank correlation analysis that allows for time-lagged relationships). Connections show when organisms tend to increase or decrease together over time (solid lines), or conversely when their abundance changes in opposite ways (dashed lines); arrows indicate a correlation lagged by one month. Size of a symbol is proportional to the average relative abundance of that taxon.



Steele et al. (2011), *ISME*

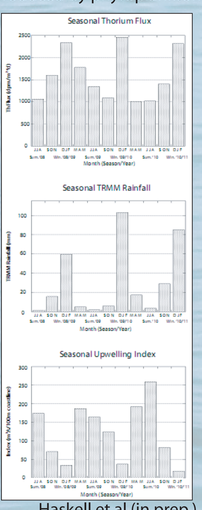
5) RATES and FLUXES (MO and ancillary)

Monthly averages of bacterial production at 5 m and the DCM (2000-2011) (Leucine and Thymidine)



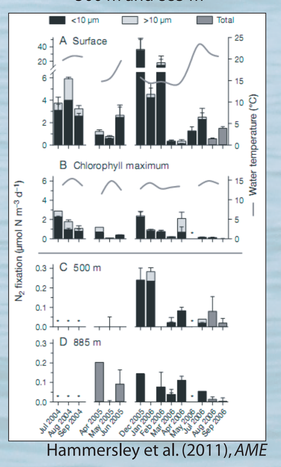
Chow et al. (in review), *ISME*

Thorium flux
was dominated by runoff, as opposed to being attached to organic carbon produced by phytoplankton



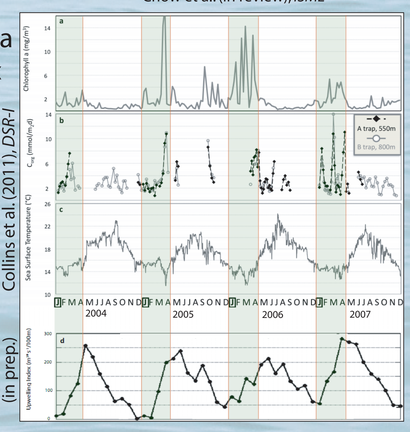
Haskell et al.(in prep.)

Nitrogen fixation rates
-highest in surface (mean 5.8 +/- 2.6 umol N m-3 d-1)
-dominated by nanoplankton
-correlated with SST (r=0.54, p=0.03), with exception of Dec 2005 and Feb 2006
-nitrogen fixation also detected in hypoxic water column at 500 m and 885 m



Hammersley et al. (2011), *AME*

Sediment trap data & Upwelling Index
-Settling velocities 83-125 m/d
-POC, PON, bSiO2 correlated with SeaWIFS chl-*a* (r=0.25-0.28, p<0.01)
-highest flux during the spring, but timing varied
-upwelling index not lined up with export



*Participants (past and present, alphabetical) and Acknowledgments
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