Post-cruise synopsis
SINC-1
November 10-12, 2009
Science Crew: R. Sterner, S. Brovold, Aaron Myers, Brenda Scott, Nick Sterner

The cruise track took us from CD-1 to WFM (47 03.010 N Lat ,091 14.926 W Lon) from Mike King -- new station for our group and location of one of J. Austin's moorings plus former work on sediment cores by S. Katsev group), then to WM. Due to weather predictions for WM, bottle experiments were incubated closer to south shore. After retrieving bottles on second night, cores were taken within Chequamegon harbor, then more were taken at STE-C.

The lake was stratified deeply (ca.60 m) with surface temperature of 7 C.

All science goals were met, with the only modification of plans being the relocation of bottle incubation site. We assume temperature and light at incubation site are representative of WM site.

Core chemistry (CD-1 and WM)

Site CD-1. Samples taken at 5, 20, 50, 60, 70, 100, 150, 235m

Site WM. Samples taken at 2, 5, 10, 20, 30, 40, 60, 80, 150m.

Size fractions at 80, 10, and 2 um.

***Sediment Core* for incubations taken at**

FWM (4 cores)

WM (4 cores)

Che Bay (4 cores)

STE-C (2 cores).

Incubations occurring with and without nitrapyrin with sampling being done for 4-d period in capped tubes. No stirring. Also took extra cores for S. Katsev at WFM and WM. Information from him copied below.

Hi Bob,

This may be of interest to you. We measured dissolved oxygen in your cores. At FWM, oxygen penetrated down to 8 cm. At WM, the concentration was still high at 9 cm depth and the gradient was essentially flat, suggesting that the core might have been oxygenated all the way to the bottom. This is very similar to

what we saw in June. The core from FWM had a thin iron crust at about 8 cm depth, the WM core had none. Given this deep oxygen penetration, there should be no denitrification going on in the WM cores, and I won't be surprised if your isotope-label incubations do not detect denitrification at FWM, as it should be occurring below 8 cm.
Sy
Sergei

Bottle arrays.

Did a CARGO-style incubation for primary production with the addition of four nitrification bottles. The latter were dark by virtue of black fabric bags. Two had addition of nitrapyrin and two did not. Used same 14C spike for nitrification as well as primary production bottles. Primary production bottles were filtered onto GF/Fs per past CARGO protocol. Nitrification bottles filtered onto 47 mm 0.22 um nitrocellulose filters per Hicks protocol.

Due to weather at WM, incubations were done at 46 deg 47.131 N, 90 deg 15.645 W.

High resolution nitrate and chlorophyll

At bottle array incubation site did high resolution chlorophyll and nitrate sampling.

Chlorophyll – every m from 50 m to surface (will compare to CTD fluorescence). CTD fluorescence recorded for every bottle firing. Note when analyzing data that the center of the Niskins is 0.75 m above the instrument package (including depth sensor). Not 80 um filtered.

Nitrate – samples collected at bottom (94.5 m), 93, 92, 75, 72, 69, 50, 48, 46, 44, …, 2, 1m. Not 80 um filtered.

Genetics samples.

Cubitaners of whole water filled at WM and STE-C. Surficial sediment samples taken at WM and STE-C.