

## CRUISE PLAN - Louisiana Shelf, 2015

This cruise will involve a combination of metagenomic sampling, gene expression profiling, and biogeochemical experiments to characterize microbial nitrogen, sulfur, and methane cycling in the hypoxic “dead zone” on the Louisiana Shelf. A primary objective is to sample along gradients (vertical and longitudinal) extending from oxygen-enriched waters to the most oxygen-depleted regions of the hypoxic zone. Our proposed sampling will target near-shore (<50 miles) sites that, based on prior years’ data, are likely to be within the hypoxic zone. Specifically, sampling will encompass ~9 stations (typically less than <50 m water depth) on a rough west-east transect paralleling the Louisiana Coast, beginning at ~29.2° N, 94° W and ending ~28.6° N, 88.6° W (see following page).

Details on site locations for sampling can be found on the following page, with an overview provided here. The majority of time will be spent at **2-4 "process"** stations on the northern Louisiana Shelf south-southwest of Cocodrie. We will spend ~2 days at each process station, allowing for extended experiments and diel sampling. Sampling at process stations will involve both water column (rosette) and sediment (multi-corer) collections. At each station, water column parameters will be assessed via vertical depth surveys using a CTD equipped with sensors for fluorometry, PAR, and dissolved oxygen. Seawater collections for nutrients (nitrate, nitrite, ammonium, phosphate), DNA, RNA, single-cell genomics, and shipboard biogeochemical experiments will be done via rosette casts to multiple depths (4-12 depth anticipated per profile) from the surface to the sediment-water interface (<30 m depth at most shelf stations). Our water requirements per cast are relatively large (~150 L) - it will be critical to have a rosette with 20L bottles. We anticipate making multiple rosette deployments at each process station. Sediment core samples will be collected at each process station using a multi-corer. We anticipate ~2 multi-corer deployments per station, ~6-8 total. Additional sampling will take place at ~**5 "survey"** stations if time allows (see next page). We anticipate taking only water column samples at survey stations.

Sample processing and experimentation will require access to both an air conditioned van (to approximate in situ temperatures) and a radioisotope van (a list of isotopes and radioisotope use permit have been provided by the Joye lab).

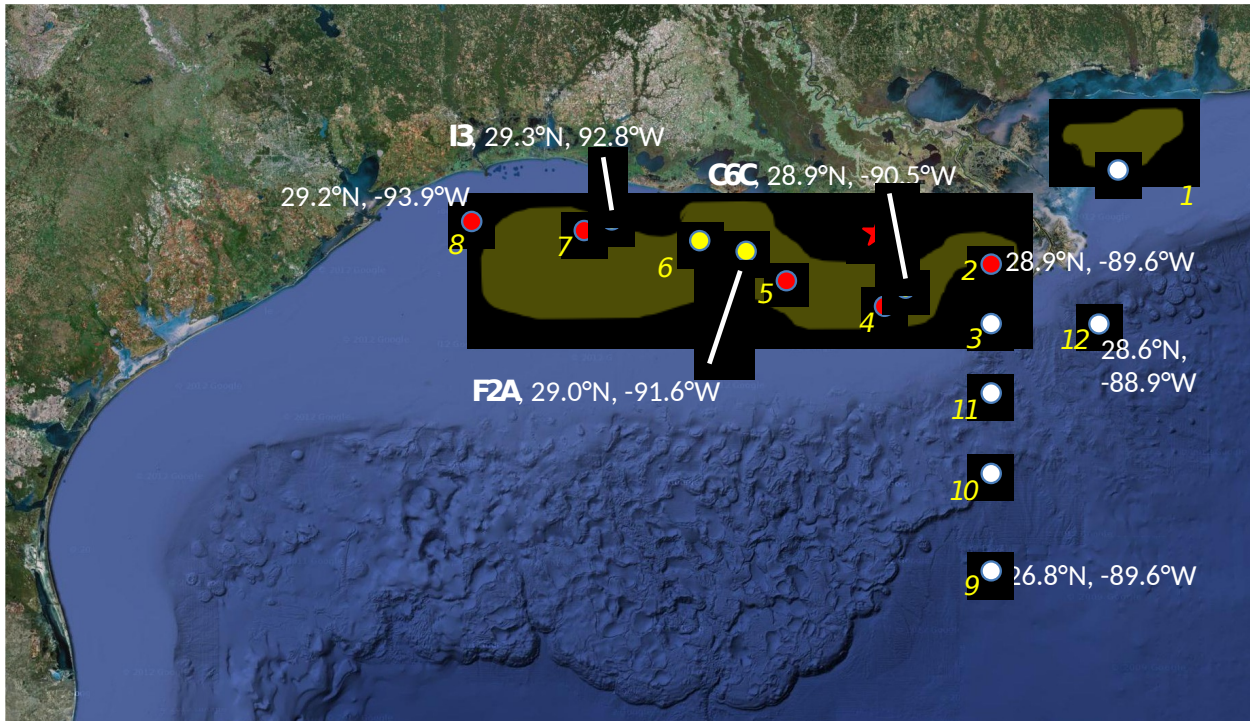
As the goals of the cruise participants may shift in response to field conditions and observations, we anticipate that the exact number and location of sampling stations might vary. We will (to the extent possible, and as determined by consultation with the captain and crew) try to accommodate the interests and objectives of all groups.

### Proposed sampling schedule:

We will target four "process" stations for water column and sediment collections:

Station #6, 29.1N, 92.2W  
Station F2A, 26.98N, 91.58W  
Station C6C, 28.87N, 90.49W  
Station I3, 29.30N, 92.76W

Approximate locations of process stations are shown on the map below (yellow dots). Station C6C will be our first target after leaving Cocodrie (red star) on July 3, followed by F2A, and then either I3 or #6, depending on time and group objectives. We anticipate spending ~2 days at each site. It is possible that we may end up sampling at only 2-3 of the 4 process stations. If so, stations C6C and F2A are our top priorities. Work at the process sites may involve day-night operations, although we anticipate that these will be limited.



If time allows, we will also sample at additional "survey" stations (red dots on the above map):

Station #2, 28.9N, 89.6W  
Station #4, 28.8N, 90.7W  
Station #5, 28.9N, 91.4W  
Station #7, 29.1N, 93.0W  
Station #8, 29.2N, 93.9W

We anticipate spending ~ 3-5 hrs at each of these stations. Some of these sites may be visited during transit between process stations (e.g., stations #4 and #6 during transit from C6C to F2A). Work at the survey sites will involve rosette casts for biomass and chemical samples.