Appendix 2B-1: Influence of Drying and Rewetting on Hg and S Cycling in Everglades and STA Soils

AQUATIC CYCLING OF MERCURY IN THE EVERGLADES (ACME) GROUP PRELIMINARY DRY/REWET EXPERIMENTS (2/02-1/03)

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Aquatic Cycling of Mercury in the Everglades (ACME) Group

Report on Everglades Investigations
Influence of Drying and Rewetting on Hg and S Cycling in Everglades and STA Soils
Preliminary Dry/Rewet Experiments (2/02-1/03)
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1. Executive Summary

Some Everglades soils produce high levels of toxic methylmercury (MeHg) when rewet following periods of dryness. Field data collected in the northern Water Conservation Areas (WCA) of the Everglades by the Aquatic Cycling of Mercury in the Everglades (ACME) group when the ecosystem rewet after the 1999 drought showed very high MeHg production in soils in northern WCA 3A (burned), and to a lesser extent in WCA 2A (dried out), in the weeks following rewetting. The high levels of MeHg production coincided with high levels of sulfate in the surface water and sediment porewater in these burned and dried areas following rewetting. Data suggested that the sulfate originated from oxidation of soil sulfur (reduced forms) as a result of the drought and fire. Since MeHg is produced in Everglades' sediments primarily by the activity of sulfate reducing bacteria, it was hypothesized that the release of sulfate from the soils (as well as release of sediment-bound mercury) stimulated MeHg production to the exceptionally high levels observed following the drought and fire.

MeHg production is also high in some newly constructed Storm Treatment Areas STA's, upon initial wetting and/or upon wetting after a dry period. However, reasons for the high levels of MeHg in some of the new STA's are unclear, and it is also unknown whether STA's planned or currently under construction will have similar MeHg problems.

This report presents the results of a laboratory experiment designed to examine the impacts of drying and rewetting of Everglades' and STA soils on the recycling of chemical species and the production of MeHg. The experiment involved the collection of small cores from the central Everglades and an STA, drying these cores under controlled laboratory conditions, rewetting of these cores with site water, and the analysis of chemical species and MeHg production in the overlying water, porewater, and sediments of the rewetted cores. The study was designed to help elucidate why some STAs produce high levels of MeHg upon rewetting, while other do not. More generally, the study was designed to help understand the biogeochemical processes controlling pulses of MeHg produced following rewetting of dried or burned soils in the Everglades ecosystem.

Results from this experiment confirm the observations from field studies that drying and rewetting of Everglades' soils produces large pulses of MeHg. Significant increases in MeHg in sediments and surface water were observed in dried and rewet cores from both the central Everglades and STA sites, relative to *in situ* concentrations. Sulfate concentrations also increased dramatically in the overlying water following rewetting of the dried cores from both sites. This increase in sulfate was similar to what had been observed in field studies following the 1999 drought and burn in the northern Everglades. This result supports the hypothesis that MeHg production is stimulated in rewet soils by oxidation of organic matter and reduced sulfur pools in sediments during drying periods. This observation agrees with the data collected during the natural drought and rewetting of 1999. In the field in 1999, sulfate, sulfide, and MeHg were the only parameters that showed dramatically different concentrations (beyond normal variability during 4 years of monitoring) before and after the drying and rewetting event. The drying and rewetting appears to provide fuel for Hg methylation and microbial sulfate reduction and MeHg production primarily through oxidation of reduced S to sulfate. Release of Hg from soils, and degradation of organic matter during dryout appear to be less important. Build-up of sulfide (sulfide has been shown to inhibit MeHg production) and/or depletion of labile organic matter may end the pulse of MeHg production that follows rewetting of soils. In our experimental dry/rewet cores, sulfide never reached levels high enough to inhibit MeHg production, possibly partly due to the brittle nature of the peaty soil after drying that limited buildup of sulfide in interstitial solution in the sediments. It should be noted, however, that very high levels of sulfide were present in the native Everglades after the 1999 drought, far beyond what is predicted to be inhibitory to mercury methylation, and yet substantial methylation rates were measured under these high sulfide conditions. Other chemical species were also remobilized into overlying water following drying and rewetting of the soils, such as nitrogen species (ammonium and nitrate, phosphate, and chloride). However, sulfate remobilization appears greatest causal factor leading to the stimulation sulfate reduction and MeHg production. The MeHg produced in the plumes following dry/rewet may quickly enter the food chain, and contribute to higher levels of MeHg in fish and higher trophic level wildlife in the ecosystem.

Minimization of drying events in the STAs is a management tool that can be used in STAs that are prone to MeHg production. STAs most prone to MeHg production appear to be those that have not been previously used for agriculture. Very high levels of reduced S in STAs constructed on former agricultural soils, like the former ENR, inhibit MeHg production through the formation of sulfide and Hg-sulfide species that are not available to microorganisms for uptake and methylation. However, iron, cations, organic matter, and other soil chemistry affect the relationships between sulfate reduction, sulfide accumulation, and methylation. Further examination of soils chemistry across the STAs, and the development of a numerical, diagenetic simulation of methylation, is needed to adequately predict the effects of drying and rewetting on MeHg production in these systems.

2. Introduction

Drought and fire have historically been forces impacting the Everglades ecosystem. Indeed, drought and fire can be positive forces that help maintain the ecosystem by periodically eradicating invading flora not adapted to living with this normal aspect of Everglades' ecology. Flora native to the Everglades is well adapted to withstand all but the most severe drought and fire conditions, and the recycling of nutrients following drought or fire can actually rejuvenate plant growth.

Construction of water control structures (canals, pumping stations, levees) around Lake Okeechobee and within the Everglades beginning around 1900 and continuing through the 1970's greatly altered the hydrology of the ecosystem. Water management practices routinely routed water toward agriculture and urban areas, and away from the Everglades during periods of low rainfall. This inevitably led to more severe drought and fire within the ecosystem compared to historical trends. One major goal of Everglades' restoration is to restore more natural flow of good quality water into the ecosystem to alleviate some of the extreme drought and fire conditions witnessed during the past several decades.

Although fire and drought can have beneficial effects on the ecosystem as mentioned, the full effects of these forces on the ecosystem have not been studied in detail. In particular, the biogeochemical impacts of fire and drought on the recycling of chemical species within the ecosystem have not been investigated in detail. Following an extended drought in the Everglades in 1998-1999, and extensive fires in spring 1999 in northern Water Conservation Area (WCA) 3A, the Aquatic Cycling of Mercury in the Everglades (ACME) team set out to examine biogeochemical impacts, at the behest of Aaron Higer (at the time Program Director of USGS South Florida Ecosystems studies). Extensive field sampling was conducted at both fire- and drought-impacted sites in northern WCA 3A (north of Alligator Alley) and portions of WCA 2A in June and July 1999 following the rewetting of these areas immediately after the fire and drought. Sampling included the collection of sediment, surface water, and porewater samples, and the analysis of these samples for nutrients, anions, cations, sulfur species, mercury species, organic carbon, and general chemical parameters. Periodic sampling of the affected areas continued into the fall of 1999, and a follow-up survey of the biogeochemistry of the affected areas was conducted 14 months after the initial rewetting of the areas.

The results of these studies were extremely exciting. Massive remobilization of some chemical species, most notably sulfate, was observed following fire/drought and rewet. Sediment and water studies showed that sulfur species stored in the sediments (principally acid volatile sulfide and organic sulfur) was oxidized to sulfate by the effects of fire and drought, and remobilized into the surface water following rewetting. At some sites, sulfate levels 50 to 100 fold higher than pre-fire/drought levels were observed in surface water. More exciting still, was the observation of extreme levels of methylmercury in surface water and sediments following drought/fire and rewetting. Remobilization of mercury from the sediments and increases in dissolved mercury in surface water was also observed. These results led to the formulation of the following conclusions regarding the biogeochemical impacts of fire/drought on mercury and sulfur geochemistry in the ecosystem:

(1) Fire/drought oxidizes reduced sulfur species in sediments (acid volatile sulfides and organic sulfur) into sulfate, which is remobilized into surface water and sediment porewater following rewetting of the fire/drought-impacted area.

(2) Fire/drought also remobilizes mercury from sediments into dissolved mercury in surface water and sediment porewater following rewetting, providing a vast pool of "new" mercury available for methylation.
(3) After rewetting of drought/fire-impacted soils, anoxic conditions are slowly reestablished, permitting anaerobic microbial metabolism to again flourish. With a reservoir of newly recycled sulfate and "new" mercury available, microbial sulfate reduction and mercury methylation (mercury is methylated by sulfate reducing bacteria) is rapidly reestablished.
(4) Immediately after rewetting (and for a significant time afterward) sulfide levels in sediment porewater have not increased to levels inhibitory to mercury methylation, this process can proceed unimpeded to produce some of the highest levels of methylmercury that have been reported in the literature.
(5) High levels of methylmercury persist for significant periods (perhaps as much as 3-6 months) following rewet after the burn/drought, but methylmercury and sulfate concentrations returned to normal levels within a year of the rewet, as sulfate reduction depleted sulfate and sulfide concentrations (inhibitory to methylmercury production) gradually increased in porewater.
(6) The high levels of methylmercury produced during the drought/fire and rewet events are likely bioaccumulated. Control of fire/drought and rewet represents an important management issue to minimize methylmercury impacts in the Everglades and the stormwater treatment areas or STA's.

Although field studies in 1999 provided much insight on how drought/fire and rewet events influence biogeochemical processes and especially toxic methylmercury production and bioaccumulation, many details of the process remained unclear. Furthermore, the observations of the field studies needed to be confirmed using an experimental approach. To address these issues, an experiment designed to further test the impact of fire/drought on biogeochemical processes and methylmercury production was proposed. This experiment and its outcome are described in detail in this report. Results from this experiment will be prepared for publication in peer-reviewed journals during the coming year. The results of the experiment confirm the observations from our field studies in 1999, specifically that drought (or artificial drydown) of Everglades peat and STA soils, followed by rewetting of these soils results in the release of large amounts of sulfate and free mercury, which stimulates sulfate reduction and massive methylmercury production in the affected sediments. Further experimental studies like this one are planned for future years, employing lessons learned from this preliminary study and designed to unravel details of the biogeochemical processes accompanying dry/rewet cycles in the Everglades.

3. Background

The experiment was designed to examine the effects of drying of Everglades sediments and subsequent rewetting of these sediments with ambient surface water on: (1) remobilization of chemical substances into the water, and (2) the effects of these remobilized substances on methylmercury production. The overall study is thus referred to as a dry/rewet experiment. Two very different sites were selected for the dry/rewet experiment: a site in the center of Water

Conservation Area 3A (site 3A-15), and a site in Storm Treatment Area 2 (STA-2) cell 1 (Fig. 1). The 3A-15 site is a typical oligotrophic, peat-forming environment in the central Everglades representative of large portions of the ecosystem.. This site has been a focal point of ACME studies since 1996 due to the high rates of MeHg production in sediments, and high concentrations of MeHg in fish here. Although this site has not routinely dried out in recent decades, it may experience dry down during extended drought.

The STA-2 site is a recently constructed buffer wetland area designed to help remove excess phosphorus from canal water destined for discharge into the Everglades. STA-2 has three treatment cells that can be operated concurrently and independently. Cell 3, the westernmost treatment cell, was originally a sod farm, Cell 2, the middle cell, was about one-third sod farm and two-thirds undeveloped wildlife preserve, while Cell 1, the easternmost cell and adjacent to the L-6 levee, was entirely undeveloped wildlife preserve. The bottom portion of Cell 3 has been supplemented with limerock and submerged macrophytes, which is presently considered to be the most promising Advanced Treatment Technology (ATT) for routinely achieving 10 ppb total phosphorus at the point of discharge. Cells 2 and 3 do not have a methylmercury problem, but Cell 1 has experienced anomalously high concentrations following reflooding after periods of dryout in the fall of 2000 and 2001. Cell 1 has a higher average elevation than Cells 2 and 3, and, consequently, Cell 1 dries out more frequently and for longer periods of time than Cells 2 and 3. A study conducted by the U.S. Geological Survey (USGS) in 1999 demonstrated that reflooding of the northern Everglades following dryout and burn produced a pulse of methylmercury production (see Introduction), but it was of shorter duration than the one experienced in Cell 1.

Although STA-2 and STA-6 are at different stages of maturation, the anomalous mercury events in STA-2 Cell 1 and the occasional outflow greater than inflow events in STA-6 may share the same cause: a dryout and rewetting cycle that liberates one or more constituents from a soil pool that otherwise limit methylmercury production. Potential limiting factors for methylmercury production include inorganic mercury, easily degradable organic matter, and sulfate. Inorganic mercury is the substrate from which methylmercury is synthesized by natural bacteria in the hydrated soil. Sulfate-reducing bacteria are important methylators in most ecosystems, including the Everglades, and their activity can be limited by either organic matter availability or by the concentration of the electron acceptor used by these anaerobic organisms, sulfate. Sulfate-reducers respire sulfate to produce sulfide. However, sulfide, at concentrations above roughly 10 micromolar in soil interstitial waters, can limit methylation. Sulfide inhibition occurs through the formation of charged mercury-sulfide complexes that are not readily taken up by bacteria. ACME field data collected from 1995-1998 from the WCAs, LNWR and ENP allow prediction of long-term methylmercury production based on the sulfide content of surficial sediment pore waters.

ACME field studies of mercury and sulfur cycling in WCAs 2 and 3 following the 1999 drought and rewetting strongly suggest that sulfur in sediments is oxidized during drying and burning of peat, and that the sulfate formed stimulates microbial sulfate reduction and mercury methylation upon rewetting. However, control of this methylation pulse is not well understood. In particular, the relationship between the amount of sulfur stored in sediments (or available in flooding waters) and the total amount of methylmercury produced upon rewetting is unclear. Since sulfate stimulates methylation, but sulfide inhibits methylation, methylation at high sulfur sites may shut down quickly after rewetting as sulfide accumulates. We need to know more clearly how sulfur levels control the magnitude and duration of the methylation pulse. The relative role of organic matter and mercury release during oxidation in the post-rewetting methylation pulse is also not known. However, field data from 1999 suggest that sulfur oxidation is the main factor leading to enhanced methylation after rewetting.

Methylmercury production in the "test" STA (ENR) has been low throughout its history. ENR soils are agricultural soils with very high reduced-sulfur content, and inflow waters to STA-1 are high in sulfate (30-60 mg/L). ENR has never undergone a substantial drying period. The net result is a constant, high sulfide concentration in ENR soils that limits Hg uptake by bacteria, and therefore limits methylmercury production. STA-2 soils are likely very different than ENR soils, since some have not been cropped and some have been in turf. The history of sulfur use in these areas, and the concentration of reduced sulfur in STA-2 soils are unknown. Therefore it is difficult to predict either the amount of methylmercury production upon rewetting or the long-term methylmercury production of these cells.

How can Cell 1 be opened to minimize the magnitude and duration of the "first-flush" methylmercury pulse? The three most reasonable hypotheses for why Cell 1 is producing high concentrations of methylmercury are:

1. Sulfate and sulfide concentrations are optimal for Hg methylation. While there is enough sulfate from S6 canal water to fuel sulfate reduction after flooding, reduced-sulfur in Cell 1 soils may be much lower than in the ENR, and dissolved sulfide concentrations do not build up quickly. In the best case, sulfur chemistry may be optimal for only a short time after rewetting, and sulfide build-up will limit methylation after weeks to months.
2. Decomposition of organic matter left over from initial flooding of Cell 1 may be fueling increased microbial activity that is driving excess methylation. It may take months to years to use up this organic matter.
3. Mercury is released from soils during drying, and this fuels a methylation pulse. This release may be related to vegetation flooded during the construction of STA-2. Data collected in WCAs 2 and 3 after the 1999 drought, suggest, however, that Hg is not released from soils for an extended period following drydown.

4. Scope of Study

The basic dry/rewet experiment design involved collecting cores from the two study sites, drying these cores for a selected period of time under simulated natural lighting conditions and temperatures of 25°C in the laboratory, and then rewetting the cores with water collected from the sites (simulating natural rewetting conditions). After rewetting, surface water, sediment porewater, and sediment from the cores was analyzed for various chemical substances of interest, especially sulfur and mercury species to determine the impact of dry/rewet cycles on the remobilization of chemical species and methylmercury production.

The purpose of the experiment was to examine S and Hg cycling in Everglades soils that have dried and then rewet, and to collect detailed information on the link between the S and Hg cycles after rewetting. The study was intended to confirm the 1999 drought/burn field data with controlled, process-level studies, and to examine the magnitude and timing of the post-rewetting MeHg pulse across sites with a range of ambient chemistries, particularly soil S concentrations. There was particular interest in examining mercury cycling in STA-2 Cell 1 soils following drying and rewetting. STA-2 Cell 1 has produced very high concentration of MeHg upon rewetting in each of the last two years. We intended to examine the magnitude and timing of the peak of MeHg production in STA-2 following rewetting, and to compare results to those from site 3A-15 (a site with low to intermediate sulfur concentrations and very high MeHg production). We hypothesized that differences in soil S concentration and/or chemistry between STA-2 Cell 1 (a site which has not been recently used for agriculture) and most of the other STAs (which were constructed on agricultural soils) account for differences in MeHg production. Results from this study would be used to help understand and manage the process of MeHg production during drying and rewetting cycles, particularly in the STAs.

4. Methods and Procedures

4a. Background (Ambient) Sampling

Surface water, porewater, and sediment samples were collected at each site for the determination of background (ambient) conditions at each site (STA-2 and WCA 3A-15). Surface water grab samples were carefully collected to minimize resuspension of soil particulate matter or interstitial waters into the sample. Porewater was collected at each site using a micropiezometer approach. The porewater samples represented a depth-integrated sample with an average depth of approximately 5 cm. The sipper is constructed from Teflon and was properly cleaned and stored for ultra-trace mercury and sulfur species analysis. Surface water and porewater was collected at the same sites and times as the soil cores.

Sediment cores from each site for background biogeochemistry were also collected at the same site and time as the water samples for measurement of: total and methylmercury, total sulfur, AVS, CRS, OS, and mercury methylation/demethylation rates. The sediment cores were collected in duplicate in 0-4 cm soils at the time of core collection for the dry/rewet experiment. Methylation and demethylation rates were estimated using Hg stable isotopes. Soil cores were be collected using appropriate equipment that was appropriately cleaned and stored prior to use. Soil cores were collected ina a manner to preserve the undisturbed physical, chemical, and microbiological community structure of the soil to the maximum practicable extent.

4b. Dry/Rewet Experiment Sampling

For this experiment approximately 40 cores were collected in 10 cm teflon and 7 cm PVC core barrels at each of the two sites: on February 6, 2002 at WCA 3A-15 and on February 7, 2002 at STA-2 Cell 1 at Site C. Teflon core barrels were used for cores from which surface water was sampled, and the PVC core barrels were used for sediment analyses. In addition to cores collected for laboratory experiments, additional samples were taken at each site to assess ambient mercury and sulfur biogeochemistry, as described above. The cores were collected to a depth of about 10 cm, which filled the core barrels about halfway. The cores were then topped off with site water and capped to prevent sloshing of the sediment and disturbance during shipment to laboratory facilities. Cores were tightly packed in an upright position in coolers to further protect against disturbance.

The cores were transported in a USGS van on February 8 and 9, 2002 from Florida to southern Maryland (Co-investigator Gilmour's labs at the Academy of Natural Sciences Estuarine Research Center in St. Leonard, MD) where the dry/rewet experiment was conducted. The cores were incubated in a 28 °C water bath under artificial sunlight ("sunlight" bulbs) using a 12 hour day/night cycle. A photograph of the core drying and incubation setup is shown in Fig. 2, and a picture of the cores prior to the beginning of the drying experiment is shown in Fig. 3. Isotopic ^{201}Hg was spiked into all cores to follow the changes in Hg during methylation. The actual drying experiment was begun on February 14, 2002. One set of cores was dried for a period of 40 days before rewet, while another smaller set of cores was dried for 299 days before rewet. A detailed timeline for the study is presented in Table 1, and details of the study design for the 40-day drying experiment are shown in Fig. 4. Following the 40-day and 299-day drydown, cores from sites 3A-15 and STA-2 were rewet with site water. The initial rewet after the 40-day drydown was on March 27, 2002, and for the 299-day drydown the initial rewet was on December 11, 2002. After the initial rewet, samples were collected from the rewet cores according to the schedules shown in Tables 2a and b (overlying water sampling), Tables 3a and b (porewater sampling), and Tables 4a and b (sediment sampling).

4c. Analytical Methods

Overlying water samples and porewater samples were analyzed for the following parameters: mercury species (total and MeHg), anions (chloride, fluoride, bromide), nutrients (nitrate, ammonium, and phosphate), sulfur species (sulfate, sulfide, sulfite, and thiosulfate), dissolved organic carbon, pH, major cations (Ca, Mg, Na, K), iron, manganese, conductivity, dissolved oxygen, salinity, total dissolved solids, and redox. Due to poor rewetting of the cores following drying, porewater recovery from the rewet samples was minimal, and few porewater measurements were made. Standard electrochemical methods were used for the analysis of pH, conductivity, salinity, total dissolved solids, dissolved oxygen (solid state microelectrode), sulfide, and redox. Anions, cations, and nitrate concentrations were determined by ion chromatography using standard suppressed IC methods and in-line conductivity and variable wavelength uv/vis spectrometry (nitrate only) for detection. Sulfite and thiosulfate were determined by HPLC using a diode array detection system. Ammonium and phosphate were determined using standard colorimetric methods with fiber optic uv/vis spectrophotometric detection. Dissolved organic carbon was determined using high temperature combustion and nondispersive infrared detection. Mercury species were determined using ICP-MS methods. Appropriate field quality control samples of surface water were collected and analyzed for total mercury and MeHg. In the analytical laboratory, appropriate laboratory blanks, spikes, and replicates were run each day. The data were reviewed routinely to ensure that quality control criteria were met.

Sediments were analyzed for the following parameters: total C, organic C, total N, total S, sulfur speciation (acid-volatile sulfides, chromium-reducible sulfides, organic sulfur, and sulfates), mercury species (total and MeHg), sulfate reduction rates, and mercury methylation rates. Total C, organic C, total N, and total S were analyzed by high temperature combustion using a Leco 932 CNS analyzer. Sulfur species were determined using wet chemical methods, with gravimetric analysis. Mercury species were determined after extraction from sediments by ICP-MS. Sulfate reduction rates and mercury methylation rates were determined using standard addition of radiotracer, incubation, and radiometric analysis of products.

Data entry was done electronically in Excel spreadsheets. Data entries were checked against hardcopy of the data report by a technician and then the Quality Assurance Officer (one of the principal investigators). An electronic copy of the database is included with this report.

Details of analytical methods and QA procedures can be found in the ACME FL DEP RQUAPP.

6. Results

6a. Ambient conditions at study sites

Results for ambient conditions at both sites 3A-15 and STA-2 are shown in Table 5. Ambient conditions were measured on 2/6/02 at site 3A-15, and on 2/7/02 at STA-2. Figures 5-7 show comparisons of mercury results from the STA-2 and 3A-15 ambient sampling to long term mercury results from the ACME sites in the Everglades. In general, measurements made at 3A-15 in February of 2002 were comparable to averages from long-term studies (1995-1998) at this site. MeHg concentrations and production rates at STA2 were generally above the running averages for all of the ACME Everglades sites. Sulfate-reduction rates, fueled by high SO4 inputs from the EAA canals, and probably from oxidation during drying of reduced S stored in sediments, were also at the high end of average for Everglades soils. Concentrations of salts and of suspended solids were higher at STA2 than at 3A15.

6b. Results of Dry/Rewet Experiments

Overlying water results from the dry/rewet 40-day experiment are shown in Tables 6 (all results), and 7 (average values for each date). Porewater results from the 40-day dry/rewet experiment are shown in Tables 8 (all results) and 9 (average values for each date). Sediment results for the 40-day dry/rewet experiment are shown in Tables 10 (all results) and 11 (average values for each date). Results for the 299-day dry/rewet study are shown in Tables 12 (overlying water), 13 (porewater) and 14 (sediments).

7. Discussion

7a. Bulk density of wet, dried and rewet soils

Surface soils sampled in February 2002 at STA-2 cell 1 site C were 3-4 times denser than surface flocs at site 3A15. After six weeks of drying, cores from both sites had about the same density (Fig. 8). Soil cores shrank significantly during drying, pulling away from the sides of the core barrels. Soils from both sites rewet very slowly, with rewetting still very incomplete after six weeks. Soils from site 3A15 were slightly easier to rewet. Because of this rewetting issue, little porewater was obtained from the dry/rewet cores.

7b. Oxygen in wet vs. dried/rewet cores

Cores that were dried and then rewet rapidly became anoxic after rewetting. Depth profiles of oxygen, through time, are compared for wet controls vs. cores dried and rewet on 3/27/02, in Fig. 9 (3A15) and Fig. 10 (STA2). Dried cores were fully oxic top to bottom before rewetting. In 3A15 cores, oxygen levels within dried cores began to drop within 24 hours of rewetting, and anoxia was fully developed within 5 days. Oxygen levels in cores that remained wet stayed fairly constant throughout the experiment, with intermittent oxygen in the top 4 cm of sediment. Oxygen levels in dried and rewet STA2 cores dropped dramatically within 24 hours of rewetting, and anoxia was fully developed within 5 days. Oxygen levels in cores that remained wet stayed fairly constant throughout the experiment, with only the top 1 cm containing any oxygen.

Comparison of oxygen levels in different treatments through time in cores from sites 3A-15 and STA-2 are shown in Fig. 11. All dates are after rewetting dried cores on 3/27/02. Oxygen levels in water over all soils were lower than in water-only controls (which approximate saturation) because of sediment oxygen demand. Oxygen levels in water overlying rewet cores may have been slightly lower than in cores that remained wet, especially for the cores from site STA-2. Oxygen levels were somewhat higher in the overlying water of rewet cores held in 10 cm diameter Teflon core barrels than in cores held in 7 cm diameter PVC core barrels. Note that all water-only controls and wet controls were held in Teflon core barrels.

7c. Solid-phase Hg and MeHg

Average concentrations for native MeHg and excess Me201Hg (top), and native total Hg and excess labeled 201Hg (bottom) for site 3A-15, are shown in Fig 12 plotted by date. The data shown include *in situ* values for MeHg and total Hg from the site during core collection on 2/6/02, the concentrations of MeHg and Hg in wet cores immediately after return to the lab in Maryland (2/14/02), and concentrations in dried cores after rewetting (dates 4/4/02 and later). Native MeHg increased significantly within 5 days of rewetting dried cores, and stayed roughly the same (or slightly increased) over the next six weeks. Me201Hg also appeared to increase, however, most excess Me201Hg data points are at or below the detection limit (BDL). Note that the detection limit for excess Me201Hg is about 1% of the total MeHg, and that the scales on the native MeHg and excess Me201Hg plots are 100x different. Therefore the degree of confidence in Me201Hg values is low. Detailed plots by date of all data for native MeHg and excess Me201Hg (top), and native total Hg and excess 201Hg (bottom) for site 3A-15 are shown in Fig. 13.

Average concentrations for native MeHg and excess Me201Hg (top), and native total Hg and excess 201Hg (bottom) for cores from site STA-2, plotted by date are shown in Fig. 14. Data include in situ values for MeHg and total Hg from the site during core collection (2/7/02), the concentrations of MeHg and total Hg in wet cores immediately after return to the lab in Maryland (2/14/02), and concentrations in dried cores after rewetting (dates 4/4/02 and later). Native MeHg increased significantly within 5 days of rewetting dried cores from STA-2, and remained at that level for the next six weeks (similar to results from site 3A-15). Me201Hg also appeared to increase, however, most excess Me201Hg data points are at or below the detection limit (BDL). Note that the detection limit for excess Me201Hg is about 1% of the total MeHg, and that the scales on the native MeHg and excess Me201Hg plots are 100x different. Therefore the degree of confidence in Me201Hg values is low. Detailed plots by date of all data for native MeHg and excess Me201Hg (top), and native Hg and excess 201Hg (bottom) for site STA-2 are shown in Fig. 15.

In situ MeHg concentrations at 3A-15 were somewhat lower (about 4%) than average values over the course of the ACME study for this site. From 1995-1998, site 3A-15 showed some of the highest %MeHg and MeHg production rates within the ACME data set. The % methylation of the 201Hg spike into cores appears much higher than the % methylation of native Hg in cores (Fig. 13), suggesting higher bioavailability of the isotopically labeled “new” mercury added to the cores. However, the degree of confidence in 201Hg values is low, as most data are at or below the DL.

In situ MeHg concentrations were somewhat higher in STA-2 soils than in peats from 3A-15 during sampling in February 2002. However, because the total Hg concentration (per g dry weight) is much higher at 3A-15, the % of native total Hg methylated at STA-2 is much higher than at 3A-15 (Figs. 16 and 17). The %MeHg in situ at STA-2 in February 2002 (Fig. 17) is about the same as the 4 year average for the ACME sites of highest MeHg production in the Everglades (2BS, 3A15 and TS7). The % MeHg at STA-2 after drying and rewetting soils substantially exceeds the average %MeHg for these sites (Fig. 17). The % methylation of the 201Hg spike into cores appears much higher than the % methylation of native total Hg in cores (Fig. 17), suggesting higher bioavailability of the labeled spike (“new” mercury). Again, however, the degree of confidence in 201Hg values is low, as most data are at or below the DL.

7d. Solid-phase sulfur chemistry

In 3A-15 sediment cores, acid volatile sulfides or AVS (the more reactive inorganic sulfides) decreased with drying, and began to increase again about six weeks after rewetting (Fig. 18). Chromium-reducible sulfides (pyrites and other disulfides) did not change appreciably with either drying or rewetting (Fig. 18). Most of the reduced sulfur in Everglades peats is CRS and organic sulfur. Variability among cores is high at this site (as usual).

In STA-2 sediment cores, AVS decreased to essentially zero with drying (fig. 19), and stayed that way for six weeks after rewetting. Chromium-reducible sulfides did not change appreciably with either drying or rewetting (Fig. 19). Variability among cores is lower at this site than at many open marsh sites.

In situ AVS and CRS concentrations are very comparable at STA-2 and 3A-15, and much lower than in northern WCA 2A or in the former ENR.

7e. MeHg in water over cores

Graphs of all data for native MeHg (top) and excess Me201Hg (bottom) in water overlying experimental (dry/rewet) cores from site 3A-15 are shown in Fig. 20. Average values by treatment through time for native MeHg (top) and excess Me201Hg (bottom) in water overlying experimental cores from site 3A-15 are shown in Fig. 21. In the 3A-15 samples, MeHg concentrations increased in the water above the cores after rewetting, relative to cores that remained wet, and to water-only controls (top panel). The maximum MeHg concentration in water was achieved 3-4 weeks after rewetting the cores. These are raw concentration data from which fluxes can be determined. Water to surface ratios for all cores are not the same, however, so patterns in concentration may not reflect patterns in sediment/water efflux of MeHg. Flux of Me201Hg from soils to the overlying water is difficult to assess (bottom panel) because most values are at or below the detection limit (BDL). Note that the detection limit for excess Me201Hg is about 1% of the total MeHg. Note the differences in the scales on the MeHg and excess Me201Hg plots (Figs. 20 and 21). Most excess Me201Hg data points are BDL. Therefore the degree of confidence in Me201Hg values is low.

All data for native MeHg (top) and excess Me201Hg (bottom) in water overlying experimental cores from site STA-2 are shown in Fig. 22. MeHg concentrations in water over STA-2 cores were very high soon after the cores were returned to the lab (this was not true of 3A15 cores). Flux of Me201Hg from soils to the overlying water is difficult to assess (bottom panel) because most values are at or below the detection limit (BDL). Note that the detection limit for excess Me201Hg is about 1% of the total MeHg. Note the different scales for the MeHg and excess Me201Hg plots (Fig. 22). Most excess Me201Hg data points are BDL. Therefore the degree of confidence in Me201Hg values is low. Average values for native MeHg (top) and excess Me201Hg (bottom) in water overlying experimental cores from site STA-2 are shown in Fig. 23. Graphs show averages by treatment and date. In the top plot, the scale has been decreased to better show MeHg concentration after core rewetting. MeHg concentrations increased in water over both rewet cores and cores that remained wet throughout the experiment, relative to water-only controls, although the difference may not be significant. MeHg concentrations continued to increase through six weeks after rewetting. These are raw concentration data from which fluxes may be determined. Water to surface ratios for all cores are not the same, therefore patterns in concentration may not reflect patterns in sediment/water efflux of MeHg.

7f. Dissolved Organic Carbon (DOC) in water overlying experimental cores

Average concentrations for dissolved organic carbon (DOC) in water overlying experimental cores by treatment and date for site 3A-15 are shown in Fig. 24. Some pore water information is also shown for rewet cores in Fig. 24. The DOC concentration of 3A-15 surface waters used to refill cores was 12.6 ppm. Higher DOC concentrations in water overlying cores and in water controls may reflect evaporation and/or efflux from pore waters. DOC concentrations were somewhat higher in porewaters than in overlying water suggesting that efflux contributes to surface water DOC.

Average concentrations for DOC in water overlying experimental cores by treatment and date for site STA-2 are shown in Fig. 25. Some pore water information is also shown for rewet cores in Fig. 25. The DOC concentration of canal water used to refill cores was 27.1 ppm. Higher DOC concentrations in water overlying cores and in water controls may reflect evaporation and/or efflux from pore waters. DOC concentrations were somewhat higher in porewaters than in overlying water suggesting that efflux contributes to surface water DOC.

7g. Chloride in water overlying experimental cores

Chloride data (Fig. 26) in overlying water from experimental cores provide information on the relative ionic strength of waters at both sites, with STA-2 about ten times "saltier" than 3A-15. See the data file for this experiment (Tables 6 and 7) for Fl and Br data. The concentration of conservative ions like chloride also provides information on the amount of evaporation occurring in each treatment throughout the experiment. All cores were open to the air starting 2/14/02, and were held at the same controlled temperature. Cores were refilled with fresh site water as needed to maintain a constant volume of overlying water (except core that were drying). The chloride concentration of dry/rewet cores (after rewetting, in red) and the chloride in cores that remained wet are not too dissimilar, showing roughly equal rates of evaporation.

7h. Nutrients in water overlying experimental cores

Average concentrations for nutrients (nitrate, phosphate, and ammonium) in overlying water from experimental dry/rewet cores by treatment and date for site 3A-15 are shown in Fig 27. Dried 3A-15 soils released nitrate immediately after rewetting, and ammonium in the first few weeks after rewetting, as soils become anoxic again. Nitrate and phosphate increases observed in water overlying cores that remained wet may have been evaporation, or de novo production and efflux from soils.

Average concentrations by treatment and date for nutrients in overlying water of experimental cores from site STA-2 are shown in Fig. 28. Dried STA-2 soils released nitrate and ammonium immediately after rewetting, releasing more nitrate and less ammonium than 3A-15 dry/rewet soils. Phosphate results were exceptionally variable, because one core of the triplicate dry/rewet cores released large amounts of phosphate.

7i. Sulfur species in water overlying experimental cores

Average concentrations by treatment and date for sulfate and sulfide in water overlying experimental cores from site 3A-15 are shown in Fig. 29. Dried 3A-15 soils released large concentrations of sulfate immediately after rewetting. Concentrations generated in these enclosed systems in the week following rewetting were roughly 100X ambient wet period concentrations. The concentration of sulfate in the 3A-15 surface water used to refill these cores was only about 5 uM. Therefore, almost all the sulfate generated was derived from oxidation of the reduced sulfur in sediments during soil drying. Most of the sulfate generated by drying the cores was used up again within about 3 weeks after rewetting the cores. The concentration of sulfate in soil pore waters (Fig. 29) also rose after rewetting, but was lower than sulfate in water over the cores, reflecting active sulfate reduction. Water over all cores, pore waters, and water-only controls contained very low levels of sulfide (Fig. 29). No appreciable sulfide built up in pore waters after rewetting cores.

Average concentrations of sulfate and sulfide by treatment and date in water overlying experimental cores from site STA-2 are shown in Fig. 30. Dried STA-2 soils released sulfate upon rewetting, but the high sulfate canal water used to refill these cores also contributed much of the sulfate in this experiment. The sulfate concentration in the STA2 inflow canal was about 500 uM. Sulfate concentrations in rewet cores were comparable to water only controls, but higher than wet cores. Sulfate in water can increase due to evaporation, or be lost through sulfate reduction in soils. Information on refill volumes is available, and calculation of evaporation can be made from existing data. This information can be used to estimate the relative contribution of sulfate from oxidized STA-2 soils and from canal refill water. Sulfate concentrations in the canal water and especially in cores after rewetting are exceptionally high for freshwater systems. Sulfate in the rewet cores was depleted back to levels found in the wet control cores over the course of about 4 weeks. Sulfide levels in water overlying cores and in water-only controls (Fig. 30) were low and comparable to levels in water overlying 3A-15 cores. However, sulfide built up to about 3.5 uM in the pore water of rewet controls from site STA-2.

Detailed plots of all the porewater sulfide data (Fig. 31) for 3A-15 cores (top) and STA-2 cores (bottom) highlight the somewhat higher sulfide levels in rewet STA-2 cores, and the variability among cores. The plot in Fig. 32 shows sulfide concentrations in porewaters (0-4 cm) through time at 8 ACME sites in the Everglades. Ambient porewater sulfide concentrations at both STA-2 and 3A-15 (less than 1 uM) were at the low end of the range observed in the ecosystem. Even after rewetting dried cores, porewater concentrations at both sites remained low relative to sulfide in northern WCA 2A or in ENR.

7j. Iron and manganese in water overlying experimental cores

Dissolved Iron and manganese are redox indicators. Average concentrations for iron and manganese in overlying water and porewater from site 3A-15 are shown in Fig, 33. After dried cores were rewet, the concentrations of both iron and manganese increased in porewaters and overlying waters for about 3 weeks, following the development of anoxia in the soils.The dissolved iron concentration in water used to refill 3A-15 cores was 48 ug/L; the Mn concentration was 1.8 ug/L. High Fe and Mn concentrations in wet cores on 2/14/02 (immediately after return to the lab) may indicate development of anoxia during transport.

Average dissolved iron and manganese concentrations by treatment and date for overlying water and porewater from site STA-2 are shown in Fig. 34. Neither Fe nor Mn concentrations increased in water over STA-2 cores after rewetting, and concentrations of both were low and comparable in all treatments. Porewater Fe and Mn concentrations were much higher than in surface waters, reflecting the anoxic condition of these soil cores. Dissolved Fe concentrations decreased after rewetting dried cores, possibly due to precipitation of iron sulfides formed after sulfate reduction to sulfide. The dissolved iron concentration in water used to refill STA-2 cores was 24 ug/L; the Mn concentration was <1 ug/L. High Fe and Mn concentrations in wet cores on 2/14/02 (immediately after return to the lab) may indicate development of anoxia during transport. Dissolved Fe concentrations in porewaters of 3A-15 rewet cores (~500 uM) were much higher than STA-2 porewaters (~150 uM).

7k. Sulfur chemistry and MeHg production

Fig. 35 shows MeHg as percent of total Hg, and measured methylation rates constants (bottom) against sulfur chemistry and modeled dissolved Hg complexation (top), for the 1995-1998 ACME data set. Maximal MeHg production occurred at sulfide concentrations around 10 uM and sulfate reduction rates of 250-500 umoles/cc-day. Sulfide concentrations in STA-2 and 3A-15 soils after rewetting appear optimal for MeHg production. Sulfate reduction rates in both soils in wet cores and cores after rewetting were calculated from sulfate depletion.

7l. Comparison MeHg with other sites across the Everglades

Fig. 36 shows Hg, MeHg and %MeHg in ACME site soils (0-4 cm) from 1995-1998. The %MeHg in situ at STA-2 in Feb. 2002 was 2-3%, comparable to the highest site averages for the ACME study. After rewetting, STA2 cores contained 6-8% MeHg, much higher than the highest average values for any of the ACME sites. In situ MeHg concentrations at STA-2 in Feb. 2002 were 2-4 ng/gdw. After rewetting dried cores, MeHg climbed to 6-8 ng/gdw. Total Hg in soils at STA-2 was about 150 ng/gdw, somewhat higher than ENR soils, but much lower than 3A-15 soils. The %MeHg in situ at 3A-15 in Feb. 2002 was 0.5-1%, lower than the running average for 1995-1998 for this site. After rewetting, 3A-15 cores contained about 1.5% MeHg. In situ MeHg concentrations at 3A15 in Feb. 2002 were about 2 ng/gdw. After rewetting dried cores, MeHg climbed to 4-7 ng/gdw. Measured total Hg in 3A15 soils in Feb 2002 were quite variable, as usual at this site, ranging from about 200 to 400 ng/gdw.

7m. Impacts of longer-term drying: 299-day drying experiment.

Some of the cores sampled in Feb. 2002 were held for about 10 months before rewetting. The objectives of this repeated dry/rewet experiment were to examine the potential effects of longer drying periods on reduced S oxidation and MeHg production, and to provide a second test of our hypothesis that dry/rewet cycles fuel Hg methylation through the oxidation of reduced S stored in soils.

Cores for this study were rewet with 3A15 surface water on 12/11/02. This is a change from the first dry/rewet experiment, in which 3A15 cores were rewet with 3A14 surface water, but STA2 cores were rewet with EAA canal water (inflow to STA2). Our objective in using 3A15 water for all cores was to separate the sulfate arising from oxidation of reduced S within cores, from the high background sulfate levels in EAA canal water. Surface water from 3A15 contained only about 10 µM sulfate.

After rewetting, each 7 cm core was spiked with 1.125 µg ^{198}Hg into the overlying water on 12/11/02. Note that for this experiment, the isotopic Hg spike level was increased over the level used in the first dry/rewet experiment, in order to provide a signal farther above background.

Figs. 37 and 38 show the concentrations of native and isotopic Hg and MeHg in the top 4 cm of the sediment cores through time, after rewetting. For cores from both sites, native MeHg increased significantly within a week of rewetting dried cores, and stayed roughly the same over the next six weeks. Me^{198}Hg also increased, following the same pattern as native MeHg production. For cores taken from both sites, MeHg concentrations in cores held for 10 months before rewetting were similar to MeHg in cores held 2 months.

Fig. 39 shows the same data, plotted as %MeHg (MeHg/Hg X 100) for both native and excess ^{198}Hg. Note the much higher production of both native and isotope spike MeHg at STA2 relative to 3A15. About 7% of the native Hg was methylated in one week in rewet STA2 cores in comparison with about 1% in the 3A15 cores. Also note that the isotope spike is methylation to a much larger extent than the native Hg at both sites. Almost 25% of the ^{198}Hg spike was methylated during the first week after STA2 cores were rewet.

Native MeHg in the water overlying the cores increased significantly within a week of rewetting dried cores, and declined over the next six weeks (Fig. 40). Me^{198}Hg also increased, following the same pattern as native MeHg production. Concentrations of especially native MeHg were much higher in STA2 cores than in 3A15 cores, the same pattern seen in surface soils, where MeHg is presumably produced. Although MeHg concentrations in surface soils were similar for cores dried for 2 vs. 10 months, MeHg concentrations in water over the cores was much higher in the cores that were dried longer.

Fig. 41 shows sulfate concentrations in water overlying the cores, through time after rewetting. The sulfate concentration in the 3A15 surface water used to rewet cores was only 8.8 μM (0.85 ppm). Therefore, essentially all of the sulfate in the water overlying cores derived from oxidation of reduced S within cores during drying. Note that sulfate was present immediately after rewetting, demonstrating the presence of sulfate in the dried cores before rewetting. After 1 week, sulfate concentrations were similar at both sites. Sulfate was depleted to essentially zero within 6 weeks of rewetting at both sites.

Low concentrations of sulfide accumulated in water over cores and in porewaters through time after rewetting (Fig. 42). The cores remained quite dry after rewetting, and never re-expanded horizontally to fill the core barrels. Low volumes (<5ml) of interstitial water could be obtained by siphoning off the overlying water and allowing the interstitial waters to drain out of the peat. These samples were used for sulfide analysis, since sulfide is a key factor in Hg bioavailability and methylation. Roughly 5-15 μM sulfide accumulated in porewaters of the cores in the first week afer rewetting, after which sulfide concentrations decreases. Sulfide concentrations in this range are ideal for Hg methylation in Everglades soils.

Overall, the 299-day drying experiment gave similar results as the 40-day drying experiment. High concentrations of sulfate accumulated during drying, fueling high levels of sulfate reduction and Hg methylation upon rewetting. In both experiments, Hg methylation occurred predominantly in the first week after rewetting. The release of sulfate did not appear to be significantly different after the longer drying period. Somewhat higher accumulation of MeHg in water overlying cores that had been dried for the longer time period may reflect other changes in chemistry through time during drying, e.g. DOC chemistry.

8. Conclusions and Recommendations for Mitigation

We hypothesized that MeHg production is stimulated in some rewet soils because oxidation of organic matter and of reduced sulfur pools in sediments during drying provides fuel for microbial sulfate reduction once soils are rewet. Preliminary data analysis supports this idea, with very large observed increases in sulfate concentrations in dried and rewet cores from both sites. Soils from both sites rewet very slowly, with rewetting still very incomplete after six weeks. Soils from 3A-15 were slightly easier to rewet. However, anoxia was fully developed in soils from both sites within 5 days of rewetting dried cores.

MeHg increased significantly in soils from both sites within a week of rewetting dried cores, and stayed roughly the same (or crept up slightly) over the next six weeks. Water column MeHg concentrations lagged a bit behind soil, as MeHg in water derived from production in and flux from soils. The pulse of MeHg production following rewetting was rapid, but MeHg concentrations in surface soils remained high for at least six weeks following rewet.

This study confirms that the high MeHg concentrations observed in STA-2 Cell 3 are a result of *in situ* production in surface soils immediately following rewetting. The soil chemistry at STA-2 Cell 1 is ideal for MeHg production, which is further fueled by the addition of high sulfate canal waters to the STA from EAA canal water runoff. *In situ* MeHg concentrations in the STA-2 soils were higher than the 4-year average for the ACME sites of highest MeHg production in the Everglades. The % MeHg in STA-2 cores after drying and rewetting substantially exceeded the average %MeHg for the high MeHg sites in the WCAs.

The most labile fraction of reduced sulfur in soils (AVS) was lost from soils from both sites during the first 40 days of drying. AVS began to build up again in 3A-15 cores about 6 weeks after rewetting, but not in STA-2 cores. Dissolved iron concentrations were somewhat higher in 3A-15 waters than STA-2 waters, which may account for lower dissolved sulfide concentrations and higher accumulation of AVS in rewet cores from 3A-15. Solid phase sulfur concentrations (*in situ* AVS and CRS) were very comparable at STA-2 and 3A-15, and both much lower than in northern WCA 2A or in the former ENR.

Nitrate and ammonium fluxes were observed after rewetting after 40 days of drying, but no significant phosphate flux was observed. In field observations after the drought and fire in June 1999, we observed some recycling of nitrogen species, but phosphate levels in the surface water after rewetting remained low. Thus, phosphorus does not appear to be as readily recycled after a brief drydown and rewet as nitrogen species. The 299-day dry/rewet experiment resulted in extensive remobilization of phosphorus, suggesting longer or more severe drying events are necessary to remobilize the phosphorus from the soils.

A number of steps can be taken to minimize the large MeHg pulses observed after dry/rewet events in the Everglades and STA's. Certainly sulfur appears to play a central role (along with mercury deposition) in generating these MeHg pulses. In the long run, implementation of BMP's for sulfur in the EAA will help to mitigate these kinds of events by reducing some of the large sulfur pools currently available in the ecosystem. In the short run, however, the best approach is to minimize the occurrence of drydown events. STA's, in particular, should be allowed sufficient water during drought periods to remain wet, even if only a few cm of water cover. Further study in STA's is needed in order to determine what STA's are more susceptible to MeHg production plumes during start up (initial wetting). An understanding of the factors involved in producing these MeHg pulses would facilitate the development of approaches to minimize the impact of these events. The ACME group with funding from the USGS and the Florida Department of Environmental Protection is planning on undertaking a study of STA's over the next several years to determine the factors important in producing dry/rewet MeHg plumes.

Table 1. Dry/rewet experiment time line.

Date	**Activity**
2/6/02 – 2/7/02	Sample multiple cores in PVC and Teflon tubes from sites 3A15 and STA2 Collect surface water in PETG bottles.
2/8/02 – 2/9/02	Drive samples to Maryland Sealed cores placed in 28 degree water bath at ANSERC.
2/13/02	Spike all cores with 201Hg Begin drying subset of cores (take off cover on all cores) Cores exposed to 12h light/dark cycle with "sunlight" bulbs.
2/14/02	Sample sediments, water and pore waters in wet controls (baseline) Begin 40 day and 299 day drydown experiments
2/14/02 – 3/27/02	40 day drydown experiment Refill wet cores and water controls weekly to maintain water level
3/27/02	Rewet dry cores from 40 day drydown experiment using site water.
3/27/02 – 5/13/02	Sample sediments, water and pore waters through time in rewet cores, wet controls, and water-only controls from 40 day drydown experiment. Refill cores weekly to maintain water level
6/1/02 – 12/1/02	Chemical analysis of surface water, porewater, and sediments from ambient sample collection (2/7/02) at WCA 3A-15 and STA-2 sites and from 40 day drydown experiment.
2/14/02 – 12/11/02	299 day drydown experiment Refill wet cores and water controls weekly to maintain water level
12/11/02	Rewet dry cores from 299 day drydown experiment using site water
12/11/02 – 1/31/03	Sample sediments, water and pore waters through time in rewet cores, wet controls, and water-only controls from 299 day drydown experiment. Refill cores weekly to maintain water level
2/1/03 – 6/1/03	Chemical analysis of surface water, porewater, and sediments from 299 day drydown experiment.

Table 2a. ACME 40-day Dry/Rewet Experiment, overlying water final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Treatment	Medium	Hg/MeHg	DOC	Nuts	Anions	Cations	Fe/Mn	Sulfide	Thio
2/14/2002	Wet Control A	SW	X	X	X	X	X	X	X	X
2/14/2002	Wet Control B	SW	X	X	X	X	X	X	X	X
2/14/2002	Wet Control C	SW	X	X	X	X	X	X	X	X
3/27/2002	Refill water	SW	X	X	X	X	X	X	X	X
3/27/2002	Water Control	SW	X	X	X	X	X	X	X	X
3/27/2002	Wet Control A	SW	X	X	X	X	X	X	X	X
3/27/2002	Wet Control B	SW	X	X	X	X	X	X	X	X
3/27/2002	Wet Control C	SW	X	X	X	X	X	X	X	X
3/29/2002	Rewet A	SW		X	X	X	X	X	X	
3/29/2002	Rewet B	SW		X	X	X	X	X	X	
3/29/2002	Rewet C	SW		X	X	X	X	X	X	
4/1/2002	Rewet A	SW			X	X	X	X	X	
4/1/2002	Rewet B	SW			X	X	X	X	X	
4/1/2002	Rewet C	SW			X	X	X	X	X	
4/4/2002	Rewet A	SW	X	X	X	X	X	X	X	X
4/4/2002	Rewet B	SW	X	X	X	X	X	X	X	X
4/4/2002	Rewet C	SW	X	X	X	X	X	X	X	X
4/8/2002	Rewet A	SW	X	X	X	X	X	X	X	X
4/8/2002	Rewet B	SW	X	X	X	X	X	X	X	X
4/8/2002	Rewet C	SW	X	X	X	X	X	X	X	X
4/15/2002	Rewet A	SW		X	X	X	X	X	X	
4/15/2002	Rewet B	SW		X	X	X	X	X	X	
4/15/2002	Rewet C	SW		X	X	X	X	X	X	
4/22/2002	Rewet A	SW	X	X	X	X	X	X	X	X
4/22/2002	Rewet B	SW	X	X	X	X	X	X	X	X
4/22/2002	Rewet C	SW	X	X	X	X	X	X	X	X
4/22/2002	Water Control	SW	X	X	X	X	X	X	X	X
4/22/2002	Wet Control A	SW	X	X	X	X	X	X	X	X
4/22/2002	Wet Control B	SW	X	X	X	X	X	X	X	X
4/22/2002	Wet Control C	SW	X	X	X	X	X	X	X	X
4/29/2002	Rewet A	SW	X	X	X	X	X	X	X	X
4/29/2002	Rewet B	SW	X	X	X	X	X	X	X	X
4/29/2002	Rewet C	SW	X	X	X	X	X	X	X	X
5/6/2002	Rewet A	SW		X	X	X	X	X	X	
5/6/2002	Rewet B	SW		X	X	X	X	X	X	
5/6/2002	Rewet C	SW		X	X	X	X	X	X	
5/13/2002	Rewet A	SW	X	X	X	X	X	X	X	X
5/13/2002	Rewet B	SW	X	X	X	X	X	X	X	X
5/13/2002	Rewet C	SW	X	X	X	X	X	X	X	X
5/13/2002	Water Control	SW	X	X	X	X	X	X	X	X
5/13/2002	Wet Control A	SW	X	X	X	X	X	X	X	X
5/13/2002	Wet Control B	SW	X	X	X	X	X	X	X	X
5/13/2002	Wet Control C	SW	X	X	X	X	X	X	X	X

Table 2b. ACME 299-day Dry/Rewet Experiment, overlying water final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Treatment	Medium	Hg/MeHg	DOC	Nuts	Anions	Cations	Sulfide	pH
12/11/2002	Refill water	SW	X	X	X	X	X	X	X
12/11/2002	DI blank		X	X	X	X	X	X	X
12/11/2002	Rewet A	SW	X	X	X	X	X	X	X
12/11/2002	Rewet B	SW	X	X	X	X	X	X	X
12/11/2002	Rewet C	SW	X	X	X	X	X	X	X
12/18/2002	DI blank		X	X	X	X	X	X	X
12/18/2002	Rewet A	SW	X	X	X	X	X	X	X
12/18/2002	Rewet B	SW	X	X	X	X	X	X	X
12/18/2002	Rewet C	SW	X	X	X	X	X	X	X
1/31/2003	DI blank		X	X	X	X	X	X	X
1/31/2003	Rewet A	SW	X	X	X	X	X	X	X
1/31/2003	Rewet B	SW	X	X	X	X	X	X	X
1/31/2003	Rewet C	SW	X	X	X	X	X	X	X

Table 3a. ACME 40-day Dry/Rewet Experiment, porewater final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Treatment	Medium	Hg/MeHg	DOC	Nuts	Anions	Cations	Fe/Mn	Sulfide	Thio	pH	DO
2/14/2002	Wet Control A	PW	Combined A,B,C	Combined A,B,C	Combined A,B,C	X	Combined A,B,C	Combined A,B,C	Combined A,B,C	Combined A,B,C	Not yet compiled	See separate data file
2/14/2002	Wet Control B	PW				X						
2/14/2002	Wet Control C	PW				X						
4/4/2002	Rewet A	PW				Combined A,B,C		Combined A,B,C	Combined A,B,C			
4/4/2002	Rewet B	PW										
4/4/2002	Rewet C	PW										
4/29/2002	Rewet A	PW		X	X	X	X	X	X	X		
4/29/2002	Rewet B	PW		X	X	X	X	X	X	X		
4/29/2002	Rewet C	PW		X	X	X	X	X	X	X		
5/13/2002	Rewet A	PW		X	X	X	X	X	X	X		
5/13/2002	Rewet B	PW		X	X	X	X	X	X	X		
5/13/2002	Rewet C	PW		X	X	X	X	X	X	X		

Table 3b. ACME 299-day Dry/Rewet Experiment, porewater final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Site	Treatment	Medium	Sulfide
12/11/2002	3A15	Rewet A	Pseudo-pw	X
12/11/2002	3A15	Rewet B	Pseudo-pw	X
12/11/2002	3A15	Rewet C	Pseudo-pw	X
12/18/2002	3A15	Rewet A	Pseudo-pw	X
12/18/2002	3A15	Rewet B	Pseudo-pw	X
12/18/2002	3A15	Rewet C	Pseudo-pw	X
1/31/2003	3A15	Rewet A	Pseudo-pw	X
1/31/2003	3A15	Rewet B	Pseudo-pw	X
1/31/2003	3A15	Rewet C	Pseudo-pw	X
12/11/2002	STA2	Rewet A	Pseudo-pw	X
12/11/2002	STA2	Rewet B	Pseudo-pw	X
12/11/2002	STA2	Rewet C	Pseudo-pw	X
12/18/2002	STA2	Rewet A	Pseudo-pw	X
12/18/2002	STA2	Rewet B	Pseudo-pw	X
12/18/2002	STA2	Rewet C	Pseudo-pw	X
1/31/2003	STA2	Rewet A	Pseudo-pw	X
1/31/2003	STA2	Rewet B	Pseudo-pw	X
1/31/2003	STA2	Rewet C	Pseudo-pw	X

Table 4a. ACME 40-day Dry/Rewet Experiment, sediment final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Treatment	Medium	Hg/MeHg	AVS/CRS	TS
2/14/2002	Wet Control A	SED	X	X	X
2/14/2002	Wet Control B	SED	X	X	X
2/14/2002	Wet Control C	SED	X	X	X
4/04/2002	Rewet A	SED	X	X	X
4/04/2002	Rewet B	SED	X	X	X
4/04/2002	Rewet C	SED	X	X	X
4/29/2002	Rewet A	SED	X	X	X
4/29/2002	Rewet B	SED	X	X	X
4/29/2002	Rewet C	SED	X	X	X
5/13/2002	Rewet A	SED	X	X	X
5/13/2002	Rewet B	SED	X	X	X
5/13/2002	Rewet C	SED	X	X	X

Table 4b. ACME 299-day Dry/Rewet Experiment, sediment final sampling scheme.
Sampling scheme was the same for cores from both sites, 3A15 and STA2.

Date	Treatment	Medium	Hg/MeHg	AVS/CRS	TC/OC/TN/TP/TS
12/11/2002	Rewet A	SED	X	X	X
12/11/2002	Rewet B	SED	X	X	X
12/11/2002	Rewet C	SED	X	X	X
12/18/2002	Rewet A	SED	X	X	X
12/18/2002	Rewet B	SED	X	X	X
12/18/2002	Rewet C	SED	X	X	X
1/31/2003	Rewet A	SED	X	X	X
1/31/2003	Rewet B	SED	X	X	X
1/31/2003	Rewet C	SED	X	X	X

Table 5. Concentrations of chemical species in surface water, porewater, and sediments, and various biogeochemical rate measurements during ambient sampling at sites STA-2 (sampled 2/7/2002) and 3A-15 (sampled 2/6/2002).

A. Surface Water and Porewater Results

Date	Site	Matrix	FMHg (ng/L)	FTHg (ng/L)	PMHg (ng/L)	PTHg (ng/L)	NO_3^- (ppm)	Cl^- (ppm)	F^- (ppm)	Br^- (ppm)	SO_4^{2-} (ppm)	$S_2O_3^-$ (ppb)
2/7/2002	STA-2	surface water	0.642	2.21	0.037	0.19	<0.01	252	0.59	<0.01	8.05	2.24
2/7/2002	STA-2	surface water	0.693	2.26	0.079	0.41	<0.01	244	0.56	<0.01	8.12	6.73
2/7/2002	STA-2	porewater	0.102	2.73	x	x	<0.01	246	0.73	<0.01	7.75	62.8
2/7/2002	STA-2	porewater	0.150	1.56	x	x	<0.01	235	0.63	<0.01	4.51	84.1
2/6/2002	3A-15	surface water	0.025	0.96			0.01	24.1	0.13	<0.01	0.54	<0.01
2/6/2002	3A-15	surface water	0.073	1.05			<0.01	24.3	0.13	<0.01	0.46	nd
2/6/2002	3A-15	porewater					0.28	20.9	0.17	<0.01	0.49	11.2
2/6/2002	3A-15	porewater					0.84	24.9	0.18	<0.01	0.56	8.97

Date	Site	Matrix	SO_3^{2-} (ppb)	Redox (mv)	pH	Cond. (uS)	Sal. (ppt)	TDS (mg/l)	NH_4^+ (ppb)	PO_4^{3-} (ppb)	sulfide uM
2/7/2002	STA-2	surface water	76.8	25	7.86	1160	0.6	561	1.62	17.7	0.90
2/7/2002	STA-2	surface water	105	4	7.97	1160	0.6	562	0.52	56.4	0.90
2/7/2002	STA-2	porewater	174	-189	7.36	1151	0.6	559		27.1	11.65
2/7/2002	STA-2	porewater	225	-197	7.31	876	0.4	424		3.36	18.87
2/6/2002	3A-15	surface water	9.61	113	7.23	315	0.1	150	17.4	72.8	0.30
2/6/2002	3A-15	surface water	Nd	x	x	322	0.2	153	16.3	12.4	0.29
2/6/2002	3A-15	porewater	259						123	56.4	2.11
2/6/2002	3A-15	porewater	299						75.8	<0.1	2.14

Table 5. Continued.

B. Sediment Results

Date	Site	Matrix	Organic C (%)	Total N (%)	Total S (%)	MeHg ng/gdw avg	MeHg ng/gdw std	Hg ng/gdw avg	Hg ng/gdw std	% MeHg avg	% MeHg std	AVS µmoles/ gdw
2/6/2002	3A15	sediment	45.21	4.01	0.827	2.21	0.80	221.0	75.8	1.13	0.60	2.98
2/7/2002	STA2	sediment	45.21	3.35	0.658	3.56	1.27	128.6	17.8	2.92	1.43	1.68

Date	Site	Matrix	AVS µmoles/ gdw std	CRS µmoles/ gdw	CRS µmoles/ gdw std	gww/gdw	gww/gdw std	Wet Wt, g/cm3	Wet Wt, g/cm3 std	Dry Wt, g/cm3	Dry Wt, g/cm3 std	kmeth, d avg
2/6/2002	3A15	sediment	3.14	38.93	6.76	23.85	1.72	1.06	0.13	0.045	0.002	0.041
2/7/2002	STA2	sediment	0.71	45.30	3.40	7.00	0.16	1.17	0.08	0.17	0.01	0.107

Date	Site	Matrix	kmeth, d std	Meth rate, ng/gdw h avg	Meth rate, ng/gdw h std	kdemeth, h avg	kdemeth, h std	Demeth rate, ng/gdw h avg	Demeth rate, ng/gdw h std	SRR AVS+CRS nmoles/cc d avg	SRR AVS+CRS nmoles/cc d std
2/6/2002	3A15	sediment	0.001	9.00	0.18	0.25	0.01	0.66	0.06	231	184
2/7/2002	STA2	sediment	0.083	13.78	10.68	0.30	0.05	1.07	0.44	1454	353

Table 6. ACME 40-day Dry/Rewet Experiment, overlying water results.

							MeHgT (ng/L)			
Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	amb MeHg ng/L	xs Me201Hg ng/L [1]	Sample # DOC	UV @ 254 nm
2/14/2002	3A15	Wet Control A	SW	FLO2 720	2.947	0.014	0.186	0.001	755	0.526
2/14/2002	3A15	Wet Control B	SW	FLO2 721	3.365	0.005	0.338	0.000	756	0.566
2/14/2002	3A15	Wet Control C	SW	FLO2 722	1.661	0.013	0.233	0.000	757	0.540
3/27/2002	3A15	Refill water	SW	FLO2 827	5.142	18.079	0.046	0.001	885	0.447
3/27/2002	3A15	Water Control	SW	FLO2 826	5.432	18.918	0.206	0.001	884	1.446
3/27/2002	3A15	Wet Control A	SW	FLO2 823	8.910	27.731	0.213	0.002	881	1.069
3/27/2002	3A15	Wet Control B	SW	FLO2 824	7.767	24.748	0.143	0.004	882	1.227
3/27/2002	3A15	Wet Control C	SW	FLO2 825	6.320	24.672	0.161	0.000	883	0.900
3/29/2002	3A15	Rewet A	SW						934	0.817
3/29/2002	3A15	Rewet B	SW						935	0.838
3/29/2002	3A15	Rewet C	SW						936	0.807
4/1/2002	3A15	Rewet A	SW							NS

[1] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm [2]	SUVA	Sample # anions	Fluoride	Chloride	Bromide
2/14/2002	3A15	Wet Control A	SW	FLO2 720	15.4	2.580	741	0.19	19.66	0.04
2/14/2002	3A15	Wet Control B	SW	FLO2 721	16.0	2.691	742	0.17	17.91	0.05
2/14/2002	3A15	Wet Control C	SW	FLO2 722	15.6	2.626	743	0.14	21.23	0.55
3/27/2002	3A15	Refill water	SW	FLO2 827	12.6	2.574	860	0.02	17.34	BDL
3/27/2002	3A15	Water Control	SW	FLO2 826	50.0	2.475	859	0.16	85.17	BDL
3/27/2002	3A15	Wet Control A	SW	FLO2 823	39.5	2.261	856	0.08	53.41	BDL
3/27/2002	3A15	Wet Control B	SW	FLO2 824	43.3	2.397	857	0.12	57.91	BDL
3/27/2002	3A15	Wet Control C	SW	FLO2 825	27.5	2.684	858	0.09	52.54	BDL
3/29/2002	3A15	Rewet A	SW		25.5	2.595	920	0.10	47.54	BDL
3/29/2002	3A15	Rewet B	SW		25.7	2.656	921	0.10	59.68	BDL
3/29/2002	3A15	Rewet C	SW		24.6	2.652	922	0.07	43.20	BDL
4/1/2002	3A15	Rewet A	SW		NS	NS	960	0.03	BDL	BDL

[2] Grey shaded areas represent values where the mV reading was outside the DOC calibration curve. Data are estimated, however, with a high degree of confidence.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
2/14/2002	3A15	Wet Control A	SW	FLO2 720	BDL	0.77	734	BDL	49.82	816
2/14/2002	3A15	Wet Control B	SW	FLO2 721	BDL	0.42	735	0.04	55.75	817
2/14/2002	3A15	Wet Control C	SW	FLO2 722	BDL	0.66	736	0.14	57.53	818
3/27/2002	3A15	Refill water	SW	FLO2 827	0.16	BDL	849	BDL	5.50	896
3/27/2002	3A15	Water Control	SW	FLO2 826	BDL	BDL	848	BDL	1.15	895
3/27/2002	3A15	Wet Control A	SW	FLO2 823	BDL	4.79	845	0.10	202.00	892
3/27/2002	3A15	Wet Control B	SW	FLO2 824	BDL	5.03	846	BDL	257.57	893
3/27/2002	3A15	Wet Control C	SW	FLO2 825	0.78	3.30	847	0.31	59.29	894
3/29/2002	3A15	Rewet A	SW		25.38	64.13	913	0.10	31.02	941
3/29/2002	3A15	Rewet B	SW		3.11	34.91	914	BDL	31.91	942
3/29/2002	3A15	Rewet C	SW		27.20	50.29	915	0.21	28.20	943
4/1/2002	3A15	Rewet A	SW		BDL	0.04	954	0.21	38.41	976

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
2/14/2002	3A15	Wet Control A	SW	FLO2 720	253	24		727	0.03	0.36
2/14/2002	3A15	Wet Control B	SW	FLO2 721	351	35		728	0.01	0.15
2/14/2002	3A15	Wet Control C	SW	FLO2 722	145	29		729	-0.01	0.02
3/27/2002	3A15	Refill water	SW	FLO2 827	2	48	0.4	838	0.25	0.09
3/27/2002	3A15	Water Control	SW	FLO2 826	1	51	0.3	837	0.20	0.02
3/27/2002	3A15	Wet Control A	SW	FLO2 823	20	194	0.9	834	0.58	0.02
3/27/2002	3A15	Wet Control B	SW	FLO2 824	31	719	0.8	835	1.00	0.08
3/27/2002	3A15	Wet Control C	SW	FLO2 825	3	52	0.4	836	0.27	0.03
3/29/2002	3A15	Rewet A	SW		3	19	0.3			
3/29/2002	3A15	Rewet B	SW		1	30	0.3			
3/29/2002	3A15	Rewet C	SW		2	26	0.2			
4/1/2002	3A15	Rewet A	SW		1	26	0.1			

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [3]	Sample # DOC	UV @ 254 nm
4/1/2002	3A15	Rewet B	SW							NS
4/1/2002	3A15	Rewet C	SW							NS
4/4/2002	3A15	Rewet A	SW	FLO2 989	2.055	0.097	0.126	0.002	1024	0.981
4/4/2002	3A15	Rewet B	SW	FLO2 990	2.953	0.292	0.199	0.002	1025	1.077
4/4/2002	3A15	Rewet C	SW	FLO2 991	2.182	0.130	0.082	0.001	1026	0.943
4/8/2002	3A15	Rewet A	SW	FLO2 1105	2.497	0.071	0.338	0.003	1133	1.031
4/8/2002	3A15	Rewet B	SW	FLO2 1106	3.357	0.166	0.365	0.003	1134	1.003
4/8/2002	3A15	Rewet C	SW	FLO2 1107	2.813	0.096	0.195	0.001	1135	1.028
4/15/2002	3A15	Rewet A	SW						1181	1.040
4/15/2002	3A15	Rewet B	SW						1182	0.980

[3] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm [4]	SUVA	Sample # anions	Fluoride	Chloride	Bromide
4/1/2002	3A15	Rewet B	SW		NS	NS	961	0.12	50.29	BDL
4/1/2002	3A15	Rewet C	SW		NS	NS	962	0.12	58.26	BDL
4/4/2002	3A15	Rewet A	SW	FLO2 989	30.5	2.662	1010	0.13	59.60	0.07
4/4/2002	3A15	Rewet B	SW	FLO2 990	37.1	2.428	1011	0.14	67.79	0.00
4/4/2002	3A15	Rewet C	SW	FLO2 991	33.3	2.342	1012	0.13	58.98	0.17
4/8/2002	3A15	Rewet A	SW	FLO2 1105	31.9	2.693	1126	0.17	49.22	BDL
4/8/2002	3A15	Rewet B	SW	FLO2 1106	35.6	2.340	1127	0.20	51.70	0.08
4/8/2002	3A15	Rewet C	SW	FLO2 1107	34.9	2.454	1128	0.17	51.52	0.06
4/15/2002	3A15	Rewet A	SW		43.3	2.001	1167	0.18	39.50	0.10
4/15/2002	3A15	Rewet B	SW		37.4	2.176	1168	0.18	36.03	0.11

[4] Grey shaded areas represent values where the mV reading was outside the DOC calibration curve. Data are estimated, however, with a high degree of confidence.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
4/1/2002	3A15	Rewet B	SW		1.72	59.12	955	BDL	62.02	977
4/1/2002	3A15	Rewet C	SW		0.20	41.92	956	0.21	41.97	978
4/4/2002	3A15	Rewet A	SW	FLO2 989	0.04	50.89	1003	0.25	88.39	1031
4/4/2002	3A15	Rewet B	SW	FLO2 990	BDL	31.49	1004	BDL	93.24	1032
4/4/2002	3A15	Rewet C	SW	FLO2 991	BDL	42.59	1005	BDL	78.29	1033
4/8/2002	3A15	Rewet A	SW	FLO2 1105	BDL	25.13	1119	0.22	122.40	1140
4/8/2002	3A15	Rewet B	SW	FLO2 1106	BDL	11.73	1120	0.25	121.39	1141
4/8/2002	3A15	Rewet C	SW	FLO2 1107	BDL	25.37	1121	0.25	125.43	1142
4/15/2002	3A15	Rewet A	SW		BDL	8.26	1160	BDL	120.27	1188
4/15/2002	3A15	Rewet B	SW		BDL	3.80	1161	0.10	151.12	1189

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
4/1/2002	3A15	Rewet B	SW		4	36	0.2			
4/1/2002	3A15	Rewet C	SW		5	19	0.2			
4/4/2002	3A15	Rewet A	SW	FLO2 989	6	48	0.5	996	0.18	0.02
4/4/2002	3A15	Rewet B	SW	FLO2 990	5	55	0.4	997	0.68	0.05
4/4/2002	3A15	Rewet C	SW	FLO2 991	5	41	0.3	998	0.87	0.08
4/8/2002	3A15	Rewet A	SW	FLO2 1105	3	61	0.4	1112	0.05	0.01
4/8/2002	3A15	Rewet B	SW	FLO2 1106	9	67	0.3	1113	0.42	0.02
4/8/2002	3A15	Rewet C	SW	FLO2 1107	5	49	0.3	1114	0.71	0.03
4/15/2002	3A15	Rewet A	SW		13	125	0.2			
4/15/2002	3A15	Rewet B	SW		37	208	0.2			

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [5]	Sample # DOC	UV @ 254 nm
4/15/2002	3A15	Rewet C	SW						1183	0.957
4/22/2002	3A15	Rewet A	SW	FLO2 1205	4.150	0.030	0.402	0.005	1311	0.865
4/22/2002	3A15	Rewet B	SW	FLO2 1206	3.168	0.041	0.473	0.004	1312	0.896
4/22/2002	3A15	Rewet C	SW	FLO2 1207	2.743	0.036	0.352	0.002	1313	0.796
4/22/2002	3A15	Water Control	SW	FLO2 1204	3.093	2.414	0.133	0.001	1310	1.298
4/22/2002	3A15	Wet Control A	SW	FLO2 1201	1.951	0.034	0.176	0.007	1276	1.031
4/22/2002	3A15	Wet Control B	SW	FLO2 1202	5.667	0.056	0.194	0.010	1277	NS
4/22/2002	3A15	Wet Control C	SW	FLO2 1203	2.692	0.130	0.166	0.008	1309	1.070
4/29/2002	3A15	Rewet A	SW	FLO2 1351	2.469	0.028	0.536	0.001	1386	0.774
4/29/2002	3A15	Rewet B	SW	FLO2 1352	2.500	0.024	0.414	0.004	1387	0.719
4/29/2002	3A15	Rewet C	SW	FLO2 1353	6.912	0.058	0.182	0.002	1388	0.741

[5] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm [6]	SUVA	Sample # anions	Fluoride	Chloride	Bromide
4/15/2002	3A15	Rewet C	SW		34.8	2.279	1169	0.18	36.94	0.16
4/22/2002	3A15	Rewet A	SW	FLO2 1205	26.5	2.667	1250	0.09	31.37	BDL
4/22/2002	3A15	Rewet B	SW	FLO2 1206	34.0	2.171	1251	0.09	31.82	BDL
4/22/2002	3A15	Rewet C	SW	FLO2 1207	26.5	2.434	1252	0.10	29.74	BDL
4/22/2002	3A15	Water Control	SW	FLO2 1204	48.0	2.295	1249	0.17	79.64	BDL
4/22/2002	3A15	Wet Control A	SW	FLO2 1201	37.2	2.309	1246	0.16	48.67	0.46
4/22/2002	3A15	Wet Control B	SW	FLO2 1202	NS	NS	1247	0.26	58.42	0.36
4/22/2002	3A15	Wet Control C	SW	FLO2 1203	37.2	2.406	1248	0.23	53.74	0.15
4/29/2002	3A15	Rewet A	SW	FLO2 1351	29.1	2.156	1372	0.10	29.10	BDL
4/29/2002	3A15	Rewet B	SW	FLO2 1352	23.5	2.447	1373	0.10	27.15	BDL
4/29/2002	3A15	Rewet C	SW	FLO2 1353	41.6	1.422	1374	0.10	25.15	BDL

[6] Grey shaded areas represent values where the mV reading was outside the DOC calibration curve. Data are estimated, however, with a high degree of confidence.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
4/15/2002	3A15	Rewet C	SW		BDL	8.18	1162	0.20	151.12	1190
4/22/2002	3A15	Rewet A	SW	FLO2 1205	BDL	4.36	1235	BDL	134.33	1326
4/22/2002	3A15	Rewet B	SW	FLO2 1206	BDL	2.79	1236	0.20	179.64	1327
4/22/2002	3A15	Rewet C	SW	FLO2 1207	BDL	4.90	1237	0.32	141.75	1328
4/22/2002	3A15	Water Control	SW	FLO2 1204	BDL	3.30	1234	BDL	0.36	1325
4/22/2002	3A15	Wet Control A	SW	FLO2 1201	BDL	4.38	1231	0.09	135.11	1322
4/22/2002	3A15	Wet Control B	SW	FLO2 1202	BDL	1.93		NS	NS	1323
4/22/2002	3A15	Wet Control C	SW	FLO2 1203	BDL	0.92	1233	0.20	109.72	1324
4/29/2002	3A15	Rewet A	SW	FLO2 1351	0.23	3.00		NS	NS	1393
4/29/2002	3A15	Rewet B	SW	FLO2 1352	BDL	2.00		NS	NS	1394
4/29/2002	3A15	Rewet C	SW	FLO2 1353	0.11	3.42		NS	NS	1395

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
4/15/2002	3A15	Rewet C	SW		13	82	0.2			
4/22/2002	3A15	Rewet A	SW	FLO2 1205	9	74	0.1	1220	0.04	0.00
4/22/2002	3A15	Rewet B	SW	FLO2 1206	10	194	0.2	1221	0.04	0.00
4/22/2002	3A15	Rewet C	SW	FLO2 1207	6	59	0.2	1222	0.05	0.00
4/22/2002	3A15	Water Control	SW	FLO2 1204	2	33	0.1	1219	0.03	0.00
4/22/2002	3A15	Wet Control A	SW	FLO2 1201	16	107	0.1	1216	0.07	0.00
4/22/2002	3A15	Wet Control B	SW	FLO2 1202	NS	NS	0.2			
4/22/2002	3A15	Wet Control C	SW	FLO2 1203	17	165	0.2	1218	0.03	0.00
4/29/2002	3A15	Rewet A	SW	FLO2 1351	4	50	0.0	1358	0.05	-0.01
4/29/2002	3A15	Rewet B	SW	FLO2 1352	3	99	0.0	1359	0.03	-0.01
4/29/2002	3A15	Rewet C	SW	FLO2 1353	4	63	0.0	1360	0.04	-0.01

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [7]	Sample # DOC	UV @ 254 nm
5/6/2002	3A15	Rewet A	SW						1503	0.655
5/6/2002	3A15	Rewet B	SW						1504	0.647
5/6/2002	3A15	Rewet C	SW						1505	0.648
5/13/2002	3A15	Rewet A	SW	FLO2 1541	3.443	0.059	0.225	0.001	1576	0.688
5/13/2002	3A15	Rewet B	SW	FLO2 1542	15.319	0.066	0.478	0.009	1577	0.688
5/13/2002	3A15	Rewet C	SW	FLO2 1543	14.313	0.038	0.142	0.001	1578	0.697
5/13/2002	3A15	Water Control	SW	FLO2 1668	4.499	1.021	0.043	0.001	1708	0.892
5/13/2002	3A15	Wet Control A	SW	FLO2 1665	4.036	0.036	0.203	0.007	1705	0.870
5/13/2002	3A15	Wet Control B	SW	FLO2 1666	19.522	0.131	0.210	0.008	1706	0.808
5/13/2002	3A15	Wet Control C	SW	FLO2 1667	6.627	0.100	0.115	0.003	1707	0.998

[7] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm	SUVA	Sample # anions	Fluoride	Chloride	Bromide
5/6/2002	3A15	Rewet A	SW		19.8	2.601	1489	0.06	29.46	BDL
5/6/2002	3A15	Rewet B	SW		22.1	2.314	1490	0.13	25.30	BDL
5/6/2002	3A15	Rewet C	SW		20.5	2.486	1491	0.06	25.78	BDL
5/13/2002	3A15	Rewet A	SW	FLO2 1541	18.4	2.926	1562	0.09	28.20	BDL
5/13/2002	3A15	Rewet B	SW	FLO2 1542	24.3	2.261	1563	M	24.85	BDL
5/13/2002	3A15	Rewet C	SW	FLO2 1543	23.4	2.377	1564	M	25.93	BDL
5/13/2002	3A15	Water Control	SW	FLO2 1668	32.0	2.291	1692	0.16	51.01	0.19
5/13/2002	3A15	Wet Control A	SW	FLO2 1665	28.2	2.521	1689	M	37.73	BDL
5/13/2002	3A15	Wet Control B	SW	FLO2 1666	27.0	2.432	1690	0.14	38.06	0.34
5/13/2002	3A15	Wet Control C	SW	FLO2 1667	36.9	2.247	1691	0.17	43.25	0.15

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
5/6/2002	3A15	Rewet A	SW		7.41	3.77	1482	0.08	24.03	1510
5/6/2002	3A15	Rewet B	SW		BDL	1.72	1483	0.07	143.41	1511
5/6/2002	3A15	Rewet C	SW		1.38	3.41	1484	BDL	65.75	1512
5/13/2002	3A15	Rewet A	SW	FLO2 1541	6.07	3.96	1555	0.08	1.49	1583
5/13/2002	3A15	Rewet B	SW	FLO2 1542	BDL	1.94	1556	0.08	134.38	1584
5/13/2002	3A15	Rewet C	SW	FLO2 1543	5.58	3.93	1557	0.16	3.62	1585
5/13/2002	3A15	Water Control	SW	FLO2 1668	BDL	1.98	1684	BDL	0.00	1716
5/13/2002	3A15	Wet Control A	SW	FLO2 1665	BDL	3.51	1681	0.18	209.86	1713
5/13/2002	3A15	Wet Control B	SW	FLO2 1666	BDL	3.20	1682	0.08	174.52	1714
5/13/2002	3A15	Wet Control C	SW	FLO2 1667	BDL	2.10	1683	0.08	15.15	1715

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
5/6/2002	3A15	Rewet A	SW		NS	NS	0.0			
5/6/2002	3A15	Rewet B	SW		3	52	0.0			
5/6/2002	3A15	Rewet C	SW		7	47	0.0			
5/13/2002	3A15	Rewet A	SW	FLO2 1541	3	2	0.3			
5/13/2002	3A15	Rewet B	SW	FLO2 1542	12	88	0.3			
5/13/2002	3A15	Rewet C	SW	FLO2 1543	5	19	0.3			
5/13/2002	3A15	Water Control	SW	FLO2 1668	21	14	0.2			
5/13/2002	3A15	Wet Control A	SW	FLO2 1665	7	61	0.3			
5/13/2002	3A15	Wet Control B	SW	FLO2 1666	10	45	0.3			
5/13/2002	3A15	Wet Control C	SW	FLO2 1667	3	29	0.3			

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [8]	Sample # DOC	UV @ 254 nm
2/14/2002	STA2	Wet Control A	SW	FLO2 723	11.650	0.015	6.983	-0.010	758	2.677
2/14/2002	STA2	Wet Control B	SW	FLO2 724	8.683	0.007	4.381	-0.007	759	2.671
2/14/2002	STA2	Wet Control C	SW	FLO2 725	6.562	0.025	2.573	0.005	760	2.623
3/27/2002	STA2	Refill water	SW	FLO2 832	5.468	18.731	0.070	0.001	890	1.085
3/27/2002	STA2	Water Control	SW	FLO2 831	5.638	21.841	0.179	0.000	889	3.023
3/27/2002	STA2	Wet Control A	SW	FLO2 828	7.257	25.478	0.080	0.004	886	3.103
3/27/2002	STA2	Wet Control B	SW	FLO2 829	6.613	17.675	0.451	0.004	887	3.030
3/27/2002	STA2	Wet Control C	SW	FLO2 830	8.470	22.601	0.136	0.006	888	3.126
3/29/2002	STA2	Rewet A	SW						937	3.071
3/29/2002	STA2	Rewet B	SW						938	3.077
3/29/2002	STA2	Rewet C	SW						939	2.821

[8] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm [9]	SUVA	Sample # anions	Fluoride	Chloride	Bromide
2/14/2002	STA2	Wet Control A	SW	FLO2 723	76.5	3.110	744	0.75	258.61	0.33
2/14/2002	STA2	Wet Control B	SW	FLO2 724	85.6	2.764	745	0.77	296.53	39.96
2/14/2002	STA2	Wet Control C	SW	FLO2 725	74.8	3.117	746	0.82	274.33	0.30
3/27/2002	STA2	Refill water	SW	FLO2 832	27.1	3.326	865	0.65	221.32	M
3/27/2002	STA2	Water Control	SW	FLO2 831	103.0	2.603	864	2.40	921.81	M
3/27/2002	STA2	Wet Control A	SW	FLO2 828	96.9	2.855	861	1.67	541.02	M
3/27/2002	STA2	Wet Control B	SW	FLO2 829	95.3	2.831	862	1.38	515.96	M
3/27/2002	STA2	Wet Control C	SW	FLO2 830	103.1	2.698	863	1.71	623.69	M
3/29/2002	STA2	Rewet A	SW		91.9	2.983	923	0.91	488.13	BDL
3/29/2002	STA2	Rewet B	SW		96.0	2.858	924	1.06	560.68	1.13
3/29/2002	STA2	Rewet C	SW		74.3	3.390	925	0.78	440.75	1.25

[9] Grey shaded areas represent values where the mV reading was outside the DOC calibration curve. Data are estimated, however, with a high degree of confidence.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
2/14/2002	STA2	Wet Control A	SW	FLO2 723	0.51	9.93	737	0.44	92.55	819
2/14/2002	STA2	Wet Control B	SW	FLO2 724	11.03	14.77	738	0.54	140.91	820
2/14/2002	STA2	Wet Control C	SW	FLO2 725	BDL	11.56	739	0.65	72.67	821
3/27/2002	STA2	Refill water	SW	FLO2 832	1.49	50.60	854	0.10	0.32	901
3/27/2002	STA2	Water Control	SW	FLO2 831	1.55	183.47	853	0.33	0.65	900
3/27/2002	STA2	Wet Control A	SW	FLO2 828	2.97	51.54	850	0.70	6.02	897
3/27/2002	STA2	Wet Control B	SW	FLO2 829	0.25	41.28	851	1.11	54.42	898
3/27/2002	STA2	Wet Control C	SW	FLO2 830	BDL	75.45	852	2.47	4.30	899
3/29/2002	STA2	Rewet A	SW		75.07	188.83	916	0.46	19.02	944
3/29/2002	STA2	Rewet B	SW		38.05	260.88	917	16.70	169.89	945
3/29/2002	STA2	Rewet C	SW		44.97	202.59	918	0.97	2.34	946

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
2/14/2002	STA2	Wet Control A	SW	FLO2 723	107	145		730	0.01	0.29
2/14/2002	STA2	Wet Control B	SW	FLO2 724	82	55		731	0.00	0.35
2/14/2002	STA2	Wet Control C	SW	FLO2 725	30	18		732	0.00	0.25
3/27/2002	STA2	Refill water	SW	FLO2 832	-1	24	0.3	843	0.24	-0.13
3/27/2002	STA2	Water Control	SW	FLO2 831	-2	31	0.4	842	1.13	-0.09
3/27/2002	STA2	Wet Control A	SW	FLO2 828	4	36	0.6	839	0.44	-0.13
3/27/2002	STA2	Wet Control B	SW	FLO2 829	12	15	0.7	840	0.59	-0.12
3/27/2002	STA2	Wet Control C	SW	FLO2 830	3	11	0.5	841	0.37	-0.15
3/29/2002	STA2	Rewet A	SW		5	17	0.3			
3/29/2002	STA2	Rewet B	SW		7	9	0.4			
3/29/2002	STA2	Rewet C	SW		3	16	0.3			

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [10]	Sample # DOC	UV @ 254 nm
4/1/2002	STA2	Rewet A	SW							NS
4/1/2002	STA2	Rewet B	SW							NS
4/1/2002	STA2	Rewet C	SW							NS
4/4/2002	STA2	Rewet A	SW	FLO2 992	2.017	0.086	0.003	0.000	1027	3.043
4/4/2002	STA2	Rewet B	SW	FLO2 993	3.070	0.137	0.430	-0.004	1028	3.075
4/4/2002	STA2	Rewet C	SW	FLO2 994	2.720	0.104	0.228	0.001	1029	2.825
4/8/2002	STA2	Rewet A	SW	FLO2 1108	1.698	0.044	0.105	0.000	1136	2.883
4/8/2002	STA2	Rewet B	SW	FLO2 1109	2.663	0.102	0.474	0.001	1137	2.969
4/8/2002	STA2	Rewet C	SW	FLO2 1110	1.522	0.061	0.129	0.001	1138	2.739
4/15/2002	STA2	Rewet A	SW						1184	2.710

[10] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm	SUVA	Sample # anions	Fluoride	Chloride	Bromide
4/1/2002	STA2	Rewet A	SW		NS	NS	963	0.10	43.81	BDL
4/1/2002	STA2	Rewet B	SW		NS	NS	964	1.09	470.92	1.76
4/1/2002	STA2	Rewet C	SW		NS	NS	965	1.42	557.18	2.65
4/4/2002	STA2	Rewet A	SW	FLO2 992	97.0	2.792	1013	0.92	470.05	1.62
4/4/2002	STA2	Rewet B	SW	FLO2 993	100.6	2.717	1014	1.22	572.74	0.93
4/4/2002	STA2	Rewet C	SW	FLO2 994	79.4	3.174	1015	0.04	413.89	1.56
4/8/2002	STA2	Rewet A	SW	FLO2 1108	80.1	3.212	1129	1.07	663.83	0.43
4/8/2002	STA2	Rewet B	SW	FLO2 1109	89.4	2.963	1130	0.88	809.42	1.33
4/8/2002	STA2	Rewet C	SW	FLO2 1110	69.2	3.530	1131	0.86	436.08	1.98
4/15/2002	STA2	Rewet A	SW		75.9	3.179	1170	M	440.77	BDL

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
4/1/2002	STA2	Rewet A	SW		3.70	47.35	957	0.22	0.33	979
4/1/2002	STA2	Rewet B	SW		27.20	178.80	958	0.35	1.14	980
4/1/2002	STA2	Rewet C	SW		24.59	224.73	959	18.56	84.75	981
4/4/2002	STA2	Rewet A	SW	FLO2 992	2.25	178.79	1006	BDL	0.48	1034
4/4/2002	STA2	Rewet B	SW	FLO2 993	3.24	218.59	1007	17.43	1.55	1035
4/4/2002	STA2	Rewet C	SW	FLO2 994	1.31	181.57	1008	0.25	0.65	1036
4/8/2002	STA2	Rewet A	SW	FLO2 1108	0.34	157.61	1122	0.38	1.34	1143
4/8/2002	STA2	Rewet B	SW	FLO2 1109	BDL	187.42	1123	15.29	0.54	1144
4/8/2002	STA2	Rewet C	SW	FLO2 1110	0.94	177.83	1124	0.13	0.43	1145
4/15/2002	STA2	Rewet A	SW		BDL	128.25	1163	0.47	1.06	1191

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
4/1/2002	STA2	Rewet A	SW		7	13	0.3			
4/1/2002	STA2	Rewet B	SW		5	12	0.3			
4/1/2002	STA2	Rewet C	SW		33	10	0.3			
4/4/2002	STA2	Rewet A	SW	FLO2 992	7	11	0.2	999	0.30	-0.03
4/4/2002	STA2	Rewet B	SW	FLO2 993	12	5	0.1	1000	0.14	-0.07
4/4/2002	STA2	Rewet C	SW	FLO2 994	5	7	0.1	1001	0.32	-0.05
4/8/2002	STA2	Rewet A	SW	FLO2 1108	5	11	0.4	1115	0.56	0.02
4/8/2002	STA2	Rewet B	SW	FLO2 1109	8	10	0.4	1116	0.37	0.04
4/8/2002	STA2	Rewet C	SW	FLO2 1110	6	14	0.2	1117	0.66	0.05
4/15/2002	STA2	Rewet A	SW		5	9	0.2			

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [11]	Sample # DOC	UV @ 254 nm
4/15/2002	STA2	Rewet B	SW						1185	2.759
4/15/2002	STA2	Rewet C	SW						1186	NS
4/22/2002	STA2	Rewet A	SW	FLO2 1212	1.582	0.027	0.093	0.002	1318	2.535
4/22/2002	STA2	Rewet B	SW	FLO2 1213	6.492	0.095	0.602	0.001	1319	2.486
4/22/2002	STA2	Rewet C	SW	FLO2 1214	5.631	0.087	0.380	0.004	1320	2.493
4/22/2002	STA2	Water Control	SW	FLO2 1211	3.780	1.744	0.094	0.001	1317	2.933
4/22/2002	STA2	Wet Control A	SW	FLO2 1208	2.398	0.062	0.117	0.006	1314	3.041
4/22/2002	STA2	Wet Control B	SW	FLO2 1209	5.507	0.048	0.363	0.011	1315	2.985
4/22/2002	STA2	Wet Control C	SW	FLO2 1210	2.730	0.057	0.157	0.007	1316	2.876
4/29/2002	STA2	Rewet A	SW	FLO2 1354	1.729	0.027	0.093	0.001	1389	2.379
4/29/2002	STA2	Rewet B	SW	FLO2 1355	2.864	0.062	0.347	0.003	1390	2.146

[11] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm	SUVA	Sample # anions	Fluoride	Chloride	Bromide
4/15/2002	STA2	Rewet B	SW		79.1	3.104	1171	M	429.03	BDL
4/15/2002	STA2	Rewet C	SW		NS	NS	1172	M	348.38	BDL
4/22/2002	STA2	Rewet A	SW	FLO2 1212	61.8	3.645	1257	M	376.92	M
4/22/2002	STA2	Rewet B	SW	FLO2 1213	62.2	3.547	1258	M	355.97	M
4/22/2002	STA2	Rewet C	SW	FLO2 1214	66.0	3.355	1259	M	377.46	1.30
4/22/2002	STA2	Water Control	SW	FLO2 1211	103.3	2.511	1256	M	798.77	M
4/22/2002	STA2	Wet Control A	SW	FLO2 1208	97.4	2.780	1253	M	506.80	M
4/22/2002	STA2	Wet Control B	SW	FLO2 1209	93.8	2.832	1254	M	500.39	M
4/22/2002	STA2	Wet Control C	SW	FLO2 1210	89.1	2.872	1255	M	520.85	M
4/29/2002	STA2	Rewet A	SW	FLO2 1354	62.2	3.389	1375	M	324.73	0.81
4/29/2002	STA2	Rewet B	SW	FLO2 1355	58.6	3.225	1376	M	291.32	1.17

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
4/15/2002	STA2	Rewet B	SW		BDL	132.42	1164	11.81	0.52	1192
4/15/2002	STA2	Rewet C	SW		BDL	119.64	1165	0.19	0.39	1193
4/22/2002	STA2	Rewet A	SW	FLO2 1212	M	121.36	1242	0.10	0.61	1333
4/22/2002	STA2	Rewet B	SW	FLO2 1213	M	115.92	1243	12.59	0.31	1334
4/22/2002	STA2	Rewet C	SW	FLO2 1214	0.13	121.72	1244	0.09	0.52	1335
4/22/2002	STA2	Water Control	SW	FLO2 1211	M	180.43	1241	0.46	0.25	1332
4/22/2002	STA2	Wet Control A	SW	FLO2 1208	M	75.78	1238	1.12	4.39	1329
4/22/2002	STA2	Wet Control B	SW	FLO2 1209	M	74.63	1239	3.43	3.72	1330
4/22/2002	STA2	Wet Control C	SW	FLO2 1210	M	86.71	1240	0.44	0.52	1331
4/29/2002	STA2	Rewet A	SW	FLO2 1354	BDL	102.09		NS	NS	1396
4/29/2002	STA2	Rewet B	SW	FLO2 1355	2.76	93.95		NS	NS	1397

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
4/15/2002	STA2	Rewet B	SW		7	8	0.3			
4/15/2002	STA2	Rewet C	SW		6	10	0.3			
4/22/2002	STA2	Rewet A	SW	FLO2 1212	6	-3	0.2	1227	0.02	-0.01
4/22/2002	STA2	Rewet B	SW	FLO2 1213	1	10	0.3	1228	0.07	-0.01
4/22/2002	STA2	Rewet C	SW	FLO2 1214	10	18	0.3	1229	0.05	-0.01
4/22/2002	STA2	Water Control	SW	FLO2 1211	4	9	0.2	1226	0.19	-0.01
4/22/2002	STA2	Wet Control A	SW	FLO2 1208	9	19	0.5	1223	0.10	0.00
4/22/2002	STA2	Wet Control B	SW	FLO2 1209	16	11	0.5	1224		
4/22/2002	STA2	Wet Control C	SW	FLO2 1210	8	1	0.4	1225	0.07	-0.01
4/29/2002	STA2	Rewet A	SW	FLO2 1354	3	11	0.1	1361	0.09	0.00
4/29/2002	STA2	Rewet B	SW	FLO2 1355	5	6	0.1	1362	0.28	0.01

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	amb Hg ng/L	xs 201Hg ng/L	MeHgT (ng/L) amb MeHg ng/L	xs Me201Hg ng/L [12]	Sample # DOC	UV @ 254 nm
4/29/2002	STA2	Rewet C	SW	FLO2 1356	4.204	0.057	1.191	0.008	1391	2.036
5/6/2002	STA2	Rewet A	SW						1506	2.566
5/6/2002	STA2	Rewet B	SW						1507	2.304
5/6/2002	STA2	Rewet C	SW						1508	2.343
5/13/2002	STA2	Rewet A	SW	FLO2 1544	10.021	0.056	1.280	-0.001	1579	2.479
5/13/2002	STA2	Rewet B	SW	FLO2 1545	9.750	0.041	0.495	0.001	1580	2.171
5/13/2002	STA2	Rewet C	SW	FLO2 1546	6.221	0.051	1.487	0.006	1581	2.036
5/13/2002	STA2	Water Control	SW	FLO2 1672	5.018	0.667	0.055	0.000	1712	2.456
5/13/2002	STA2	Wet Control A		FLO2 1669	9.444	0.001	0.127	0.003	1709	2.571
5/13/2002	STA2	Wet Control B		FLO2 1670	5.301	0.020	0.292	0.004	1710	2.792
5/13/2002	STA2	Wet Control C		FLO2 1671	11.765	0.073	1.514	0.006	1711	2.849

[12] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	DOC ppm	SUVA	Sample # anions	Fluoride	Chloride	Bromide
4/29/2002	STA2	Rewet C	SW	FLO2 1356	51.1	3.498	1377	M	293.61	1.04
5/6/2002	STA2	Rewet A	SW		69.0	3.306	1492	M	366.32	M
5/6/2002	STA2	Rewet B	SW		62.9	3.233	1493	M	347.04	M
5/6/2002	STA2	Rewet C	SW		62.5	3.318	1494	M	358.19	M
5/13/2002	STA2	Rewet A	SW	FLO2 1544	65.2	3.373	1565	M	328.37	BDL
5/13/2002	STA2	Rewet B	SW	FLO2 1545	57.0	3.357	1566	M	279.64	BDL
5/13/2002	STA2	Rewet C	SW	FLO2 1546	56.6	3.158	1567	M	282.02	BDL
5/13/2002	STA2	Water Control	SW	FLO2 1672	78.4	2.766	1696	M	622.85	M
5/13/2002	STA2	Wet Control A		FLO2 1669	75.9	3.003	1693	M	441.44	M
5/13/2002	STA2	Wet Control B		FLO2 1670	85.6	2.899	1694	M	433.42	M
5/13/2002	STA2	Wet Control C		FLO2 1671	84.2	3.014	1695	M	440.76	M

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Nitrate	Sulfate	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn
4/29/2002	STA2	Rewet C	SW	FLO2 1356	0.00	90.45		NS	NS	1398
5/6/2002	STA2	Rewet A	SW		M	111.20	1558	BDL	0.91	1513
5/6/2002	STA2	Rewet B	SW		M	93.26	1559	5.41	0.84	1514
5/6/2002	STA2	Rewet C	SW		M	98.30	1560	BDL	2.75	1515
5/13/2002	STA2	Rewet A	SW	FLO2 1544	BDL	106.41	1688	0.28	BDL	1586
5/13/2002	STA2	Rewet B	SW	FLO2 1545	2.25	92.39	1685	2.22	2.06	1587
5/13/2002	STA2	Rewet C	SW	FLO2 1546	0.79	81.68	1686	0.81	2.14	1588
5/13/2002	STA2	Water Control	SW	FLO2 1672	BDL	157.59	1687	1.02	9.00	1720
5/13/2002	STA2	Wet Control A		FLO2 1669	1.76	63.09	1485	0.07	0.42	1717
5/13/2002	STA2	Wet Control B		FLO2 1670	M	62.95	1486	9.15	0.20	1718
5/13/2002	STA2	Wet Control C		FLO2 1671	0.79	69.43	1487	BDL	1.34	1719

Table 6. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	Mn ug/L	Fe ug/L	Sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
4/29/2002	STA2	Rewet C	SW	FLO2 1356	18	21	0.1	1363	0.15	0.00
5/6/2002	STA2	Rewet A	SW		7	13	0.2			
5/6/2002	STA2	Rewet B	SW		4	11	0.2			
5/6/2002	STA2	Rewet C	SW		16	11	0.3			
5/13/2002	STA2	Rewet A	SW	FLO2 1544	7	-7	0.4			
5/13/2002	STA2	Rewet B	SW	FLO2 1545	6	-5	0.4			
5/13/2002	STA2	Rewet C	SW	FLO2 1546	18	15	0.4			
5/13/2002	STA2	Water Control	SW	FLO2 1672	4	-6	0.3			
5/13/2002	STA2	Wet Control A		FLO2 1669	7	1	0.5			
5/13/2002	STA2	Wet Control B		FLO2 1670	12	10	0.5			
5/13/2002	STA2	Wet Control C		FLO2 1671	8	-5	0.3			

Table 7. ACME 40-day dry/rewet experiment overlying water results, averages for all treatments.

Date	Site	Treatment	Medium	amb Hg ng/L	amb Hg ng/L std	xs 201Hg ng/L	xs 201Hg ng/L std	amb MeHg ng/L
3/27/2002	3A15	Refill water	SW	5.14	ND	18.08	ND	0.046
3/29/2002	3A15	Rewet	SW	ND	ND	ND	ND	ND
4/1/2002	3A15	Rewet	SW	ND	ND	ND	ND	ND
4/4/2002	3A15	Rewet	SW	2.40	0.49	0.17	0.10	0.136
4/8/2002	3A15	Rewet	SW	2.89	0.44	0.11	0.05	0.299
4/15/2002	3A15	Rewet	SW	ND	ND	ND	ND	ND
4/22/2002	3A15	Rewet	SW	3.44	1.97	0.07	0.05	0.409
4/29/2002	3A15	Rewet	SW	3.96	2.56	0.04	0.02	0.377
5/6/2002	3A15	Rewet	SW	ND	ND	ND	ND	ND
5/13/2002	3A15	Rewet	SW	11.02	6.59	0.05	0.01	0.282
3/27/2002	3A15	Water Control	SW	5.43	ND	18.92	ND	0.206
4/22/2002	3A15	Water Control	SW	3.09	ND	2.41	ND	0.133
5/13/2002	3A15	Water Control	SW	4.50	ND	1.02	ND	0.043
2/14/2002	3A15	Wet Control	SW	2.66	0.89	0.01	0.00	0.252
3/27/2002	3A15	Wet Control	SW	7.67	1.30	25.72	1.74	0.172
4/22/2002	3A15	Wet Control	SW	3.35	0.72	0.04	0.01	0.179
5/13/2002	3A15	Wet Control	SW	10.06	8.29	0.09	0.05	0.176
3/27/2002	STA2	Refill water	SW	5.47	ND	18.73	ND	0.070
3/29/2002	STA2	Rewet	SW	ND	ND	ND	ND	ND
4/1/2002	STA2	Rewet	SW	ND	ND	ND	ND	ND
4/4/2002	STA2	Rewet	SW	2.60	0.54	0.11	0.03	0.220
4/8/2002	STA2	Rewet	SW	1.96	0.61	0.07	0.03	0.236
4/15/2002	STA2	Rewet	SW	ND	ND	ND	ND	ND
4/22/2002	STA2	Rewet	SW	4.57	2.62	0.07	0.04	0.358
4/29/2002	STA2	Rewet	SW	2.93	1.24	0.05	0.02	0.544
5/6/2002	STA2	Rewet	SW	ND	ND	ND	ND	ND
5/13/2002	STA2	Rewet	SW	8.66	2.12	0.05	0.01	1.087
3/27/2002	STA2	Water Control	SW	5.64	ND	21.84	ND	0.179
4/22/2002	STA2	Water Control	SW	3.78	ND	1.74	ND	0.094
5/13/2002	STA2	Water Control	SW	5.02	ND	0.67	ND	0.055
2/14/2002	STA2	Wet Control	SW	8.97	2.56	0.02	0.01	4.645
3/27/2002	STA2	Wet Control	SW	7.45	0.94	21.92	3.95	0.223
4/22/2002	STA2	Wet Control	SW	3.54	1.71	0.06	0.01	0.212
5/13/2002	STA2	Wet Control	SW	8.84	3.27	0.03	0.04	0.644

Table 7. Continued.

Date	Site	Treatment	Medium	amb MeHg ng/L std	xs Me201Hg ng/L	xs Me201Hg ng/L std	UV @ 254 nm	UV @ 254 nm std
3/27/2002	3A15	Refill water	SW		0.001		0.447	
3/29/2002	3A15	Rewet	SW	ND	ND	ND	0.821	0.016
4/1/2002	3A15	Rewet	SW	ND	ND	ND	ND	ND
4/4/2002	3A15	Rewet	SW	0.059	0.001	0.000	1.000	0.069
4/8/2002	3A15	Rewet	SW	0.091	0.002	0.001	1.021	0.016
4/15/2002	3A15	Rewet	SW	ND	ND	ND	0.993	0.043
4/22/2002	3A15	Rewet	SW	0.061	0.003	0.001	0.852	0.051
4/29/2002	3A15	Rewet	SW	0.180	0.002	0.001	0.744	0.028
5/6/2002	3A15	Rewet	SW	ND	ND	ND	0.650	0.004
5/13/2002	3A15	Rewet	SW	0.175	0.004	0.005	0.691	0.005
3/27/2002	3A15	Water Control	SW		0.001		1.446	
4/22/2002	3A15	Water Control	SW		0.001		1.298	
5/13/2002	3A15	Water Control	SW		0.001		0.892	
2/14/2002	3A15	Wet Control	SW	0.078	0.000	0.001	0.544	0.020
3/27/2002	3A15	Wet Control	SW	0.037	0.002	0.002	1.065	0.164
4/22/2002	3A15	Wet Control	SW	0.014	0.008	0.002	1.051	0.027
5/13/2002	3A15	Wet Control	SW	0.053	0.006	0.002	0.892	0.097
3/27/2002	STA2	Refill water	SW		0.001		1.085	
3/29/2002	STA2	Rewet	SW	ND	ND	ND	2.990	0.146
4/1/2002	STA2	Rewet	SW	ND	ND	ND	ND	ND
4/4/2002	STA2	Rewet	SW	0.214	-0.001	0.002	2.981	0.136
4/8/2002	STA2	Rewet	SW	0.207	0.000	0.001	2.864	0.116
4/15/2002	STA2	Rewet	SW	ND	ND	ND	2.735	0.034
4/22/2002	STA2	Rewet	SW	0.255	0.002	0.001	2.504	0.026
4/29/2002	STA2	Rewet	SW	0.575	0.004	0.004	2.187	0.175
5/6/2002	STA2	Rewet	SW	ND	ND	ND	2.404	0.142
5/13/2002	STA2	Rewet	SW	0.523	0.002	0.004	2.228	0.227
3/27/2002	STA2	Water Control	SW		0.000		3.023	
4/22/2002	STA2	Water Control	SW		0.001		2.933	
5/13/2002	STA2	Water Control	SW		0.000		2.456	
2/14/2002	STA2	Wet Control	SW	2.217	-0.004	0.008	2.657	0.030
3/27/2002	STA2	Wet Control	SW	0.200	0.005	0.001	3.086	0.050
4/22/2002	STA2	Wet Control	SW	0.132	0.008	0.003	2.968	0.084
5/13/2002	STA2	Wet Control	SW	0.758	0.004	0.001	2.737	0.147

Table 7. Continued.

Date	Site	Treatment	Medium	DOC ppm	DOC ppm std	SUVA	SUVA std	Fluoride ppm
3/27/2002	3A15	Refill water	SW	12.6		2.574		0.02
3/29/2002	3A15	Rewet	SW	25.3	0.6	2.634	0.034	0.09
4/1/2002	3A15	Rewet	SW	ND	ND	ND	ND	0.09
4/4/2002	3A15	Rewet	SW	33.6	3.3	2.478	0.165	0.14
4/8/2002	3A15	Rewet	SW	34.1	2.0	2.496	0.180	0.18
4/15/2002	3A15	Rewet	SW	38.5	4.3	2.152	0.141	0.18
4/22/2002	3A15	Rewet	SW	29.0	4.3	2.424	0.248	0.10
4/29/2002	3A15	Rewet	SW	31.4	9.3	2.008	0.528	0.10
5/6/2002	3A15	Rewet	SW	20.8	1.2	2.467	0.144	0.08
5/13/2002	3A15	Rewet	SW	22.0	3.2	2.522	0.355	0.09
3/27/2002	3A15	Water Control	SW	50.0		2.475		0.16
4/22/2002	3A15	Water Control	SW	48.0		2.295		0.17
5/13/2002	3A15	Water Control	SW	32.0		2.291		0.16
2/14/2002	3A15	Wet Control	SW	15.7	0.3	2.632	0.056	0.17
3/27/2002	3A15	Wet Control	SW	36.8	8.3	2.447	0.216	0.10
4/22/2002	3A15	Wet Control	SW	37.2	0.0	2.357	0.069	0.22
5/13/2002	3A15	Wet Control	SW	30.7	5.4	2.400	0.140	0.16
3/27/2002	STA2	Refill water	SW	27.1		3.326		0.65
3/29/2002	STA2	Rewet	SW	87.4	11.5	3.077	0.278	0.92
4/1/2002	STA2	Rewet	SW	ND	ND	ND	ND	0.87
4/4/2002	STA2	Rewet	SW	92.4	11.4	2.894	0.245	0.73
4/8/2002	STA2	Rewet	SW	79.6	10.1	3.235	0.284	0.94
4/15/2002	STA2	Rewet	SW	77.5	2.3	3.141	0.053	M
4/22/2002	STA2	Rewet	SW	63.3	2.3	3.516	0.148	M
4/29/2002	STA2	Rewet	SW	57.3	5.7	3.371	0.137	M
5/6/2002	STA2	Rewet	SW	64.8	3.6	3.286	0.046	M
5/13/2002	STA2	Rewet	SW	59.6	4.9	3.296	0.120	M
3/27/2002	STA2	Water Control	SW	103.0		2.603		2.40
4/22/2002	STA2	Water Control	SW	103.3		2.511		M
5/13/2002	STA2	Water Control	SW	78.4		2.766		M
2/14/2002	STA2	Wet Control	SW	79.0	5.8	2.997	0.202	0.78
3/27/2002	STA2	Wet Control	SW	98.4	4.1	2.795	0.085	1.58
4/22/2002	STA2	Wet Control	SW	93.4	4.2	2.828	0.046	M
5/13/2002	STA2	Wet Control	SW	81.9	5.2	2.972	0.063	M

Table 7. Continued.

Date	Site	Treatment	Medium	Fluoride std	Chloride ppm	Chloride std	Bromide ppm	Bromide std
3/27/2002	3A15	Refill water	SW		17.3		BDL	
3/29/2002	3A15	Rewet	SW	0.02	50.1	8.5	BDL	
4/1/2002	3A15	Rewet	SW	0.05	54.3	5.6	BDL	
4/4/2002	3A15	Rewet	SW	0.01	62.1	4.9	0.078	0.085
4/8/2002	3A15	Rewet	SW	0.02	50.8	1.4	0.068	0.014
4/15/2002	3A15	Rewet	SW	0.00	37.5	1.8	0.126	0.030
4/22/2002	3A15	Rewet	SW	0.00	31.0	1.1	BDL	
4/29/2002	3A15	Rewet	SW	0.00	27.1	2.0	BDL	
5/6/2002	3A15	Rewet	SW	0.04	26.8	2.3	BDL	
5/13/2002	3A15	Rewet	SW		26.3	1.7	BDL	
3/27/2002	3A15	Water Control	SW		85.2		BDL	
4/22/2002	3A15	Water Control	SW		79.6		BDL	
5/13/2002	3A15	Water Control	SW		51.0		0.19	
2/14/2002	3A15	Wet Control	SW	0.03	19.6	1.7	0.212	0.292
3/27/2002	3A15	Wet Control	SW	0.02	54.6	2.9	BDL	
4/22/2002	3A15	Wet Control	SW	0.05	53.6	4.9	0.322	0.158
5/13/2002	3A15	Wet Control	SW	0.02	39.7	3.1	0.248	0.134
3/27/2002	STA2	Refill water	SW		221.3		M	
3/29/2002	STA2	Rewet	SW	0.14	496.5	60.4	1.186	0.086
4/1/2002	STA2	Rewet	SW	0.69	357.3	274.9	2.203	0.629
4/4/2002	STA2	Rewet	SW	0.61	485.6	80.6	1.368	0.382
4/8/2002	STA2	Rewet	SW	0.12	636.4	188.2	1.245	0.778
4/15/2002	STA2	Rewet	SW		406.1	50.3	BDL	
4/22/2002	STA2	Rewet	SW		370.1	12.3	1.303	
4/29/2002	STA2	Rewet	SW		303.2	18.7	1.005	0.179
5/6/2002	STA2	Rewet	SW		357.2	9.7	ND	
5/13/2002	STA2	Rewet	SW		296.7	27.5	ND	
3/27/2002	STA2	Water Control	SW		921.8		M	
4/22/2002	STA2	Water Control	SW		798.8		M	
5/13/2002	STA2	Water Control	SW		622.8		M	
2/14/2002	STA2	Wet Control	SW	0.04	276.5	19.1	13.528	22.889
3/27/2002	STA2	Wet Control	SW	0.18	560.2	56.4	ND	
4/22/2002	STA2	Wet Control	SW		509.3	10.5	ND	
5/13/2002	STA2	Wet Control	SW		438.5	4.4	ND	

Table 7. Continued.

Date	Site	Treatment	Medium	Nitrate ppm	Nitrate std	Sulfate ppm	Sulfate std	PO4 uM
3/27/2002	3A15	Refill water	SW	0.16		0.5		BDL
3/29/2002	3A15	Rewet	SW	18.56	13.41	49.8	14.6	0.16
4/1/2002	3A15	Rewet	SW	0.96	1.07	33.7	30.4	0.21
4/4/2002	3A15	Rewet	SW	0.04		41.7	9.7	0.25
4/8/2002	3A15	Rewet	SW	BDL		20.7	7.8	0.24
4/15/2002	3A15	Rewet	SW	BDL		6.7	2.6	0.15
4/22/2002	3A15	Rewet	SW	BDL		4.0	1.1	0.26
4/29/2002	3A15	Rewet	SW	0.17	0.09	2.8	0.7	ND
5/6/2002	3A15	Rewet	SW	4.39	4.27	3.0	1.1	0.08
5/13/2002	3A15	Rewet	SW	5.82	0.35	3.3	1.2	0.11
3/27/2002	3A15	Water Control	SW	BDL		0.5		BDL
4/22/2002	3A15	Water Control	SW	BDL		3.3		BDL
5/13/2002	3A15	Water Control	SW	BDL		2.0		BDL
2/14/2002	3A15	Wet Control	SW	BDL		0.6	0.2	0.09
3/27/2002	3A15	Wet Control	SW	0.78		4.4	0.9	0.20
4/22/2002	3A15	Wet Control	SW	BDL		2.4	1.8	0.15
5/13/2002	3A15	Wet Control	SW	BDL		2.9	0.7	0.11
3/27/2002	STA2	Refill water	SW	1.49		50.6		0.10
3/29/2002	STA2	Rewet	SW	52.70	19.68	217.4	38.3	6.04
4/1/2002	STA2	Rewet	SW	18.49	12.88	150.3	92.1	6.38
4/4/2002	STA2	Rewet	SW	2.26	0.97	193.0	22.2	8.84
4/8/2002	STA2	Rewet	SW	0.64	0.42	174.3	15.2	5.26
4/15/2002	STA2	Rewet	SW	BDL		126.8	6.5	4.16
4/22/2002	STA2	Rewet	SW	0.13		119.7	3.2	4.26
4/29/2002	STA2	Rewet	SW	1.38	1.95	95.5	6.0	ND
5/6/2002	STA2	Rewet	SW	BDL		100.9	9.2	5.41
5/13/2002	STA2	Rewet	SW	1.52	1.03	93.5	12.4	1.10
3/27/2002	STA2	Water Control	SW	1.55		183.5		0.33
4/22/2002	STA2	Water Control	SW	M		180.4		0.46
5/13/2002	STA2	Water Control	SW	BDL		157.6		1.02
2/14/2002	STA2	Wet Control	SW	5.77	7.44	12.1	2.5	0.54
3/27/2002	STA2	Wet Control	SW	1.61	1.93	56.1	17.5	1.43
4/22/2002	STA2	Wet Control	SW	BDL		79.0	6.7	1.67
5/13/2002	STA2	Wet Control	SW	1.27	0.68	65.2	3.7	4.61

Table 7. Continued.

Date	Site	Treatment	Medium	NH4 uM	NH4 uM std	Mn ug/L	Mn ug/L std
3/27/2002	3A15	Refill water	SW	5.5		1.8	
3/29/2002	3A15	Rewet	SW	30.4	1.9	1.9	1.3
4/1/2002	3A15	Rewet	SW	47.5	12.7	3.3	2.1
4/4/2002	3A15	Rewet	SW	86.6	7.6	5.6	0.6
4/8/2002	3A15	Rewet	SW	123.1	2.1	5.6	3.1
4/15/2002	3A15	Rewet	SW	140.8	17.8	21.0	13.6
4/22/2002	3A15	Rewet	SW	151.9	24.3	8.2	2.3
4/29/2002	3A15	Rewet	SW	ND	ND	3.5	0.4
5/6/2002	3A15	Rewet	SW	77.7	60.6	5.4	2.9
5/13/2002	3A15	Rewet	SW	46.5	76.1	6.8	4.3
3/27/2002	3A15	Water Control	SW	1.2		1.3	
4/22/2002	3A15	Water Control	SW	0.4		2.0	
5/13/2002	3A15	Water Control	SW	0.0		20.9	
2/14/2002	3A15	Wet Control	SW	54.4	4.0	249.6	103.1
3/27/2002	3A15	Wet Control	SW	173.0	102.3	18.1	14.0
4/22/2002	3A15	Wet Control	SW	122.4	18.0	16.8	0.4
5/13/2002	3A15	Wet Control	SW	133.2	103.7	6.5	3.3
3/27/2002	STA2	Refill water	SW	0.3		-0.6	
3/29/2002	STA2	Rewet	SW	63.7	92.3	4.9	2.2
4/1/2002	STA2	Rewet	SW	28.7	48.5	15.1	15.6
4/4/2002	STA2	Rewet	SW	0.9	0.6	8.1	3.5
4/8/2002	STA2	Rewet	SW	0.8	0.5	6.3	1.6
4/15/2002	STA2	Rewet	SW	0.7	0.4	6.1	1.4
4/22/2002	STA2	Rewet	SW	0.5	0.2	5.8	4.2
4/29/2002	STA2	Rewet	SW	ND	ND	8.3	8.1
5/6/2002	STA2	Rewet	SW	1.5	1.1	8.9	5.9
5/13/2002	STA2	Rewet	SW	2.1	0.1	10.2	6.7
3/27/2002	STA2	Water Control	SW	0.6		-1.9	
4/22/2002	STA2	Water Control	SW	0.2		3.8	
5/13/2002	STA2	Water Control	SW	9.0		3.6	
2/14/2002	STA2	Wet Control	SW	102.0	35.1	73.2	39.2
3/27/2002	STA2	Wet Control	SW	21.6	28.5	6.2	4.7
4/22/2002	STA2	Wet Control	SW	2.9	2.1	11.0	4.3
5/13/2002	STA2	Wet Control	SW	0.7	0.6	8.9	2.4

Table 7. Continued.

Date	Site	Treatment	Medium	Fe ug/L	Fe ug/L std	Sulfide, uM	Sulfide, uM std	SO4 uM avg
3/27/2002	3A15	Refill water	SW	48.1		0.4		5.1
3/29/2002	3A15	Rewet	SW	25.0	5.6	0.3	0.0	510.2
4/1/2002	3A15	Rewet	SW	27.1	9.0	0.1	0.0	345.4
4/4/2002	3A15	Rewet	SW	48.0	7.2	0.4	0.1	427.0
4/8/2002	3A15	Rewet	SW	58.9	9.5	0.3	0.0	212.6
4/15/2002	3A15	Rewet	SW	138.5	63.9	0.2	0.0	69.1
4/22/2002	3A15	Rewet	SW	109.3	74.0	0.2	0.0	41.2
4/29/2002	3A15	Rewet	SW	70.6	25.6	0.0	0.0	28.8
5/6/2002	3A15	Rewet	SW	49.6	3.0	0.0	0.0	30.4
5/13/2002	3A15	Rewet	SW	36.1	45.9	0.3	0.0	33.6
3/27/2002	3A15	Water Control	SW	50.6		0.3		5.1
4/22/2002	3A15	Water Control	SW	33.5		0.1		33.9
5/13/2002	3A15	Water Control	SW	14.3		0.2		20.3
2/14/2002	3A15	Wet Control	SW	29.3	6.0	ND	ND	6.4
3/27/2002	3A15	Wet Control	SW	321.7	351.2	0.7	0.2	44.8
4/22/2002	3A15	Wet Control	SW	136.0	40.6	0.1	0.0	24.7
5/13/2002	3A15	Wet Control	SW	44.8	15.8	0.3	0.0	30.1
3/27/2002	STA2	Refill water	SW	24.3		0.3		518.6
3/29/2002	STA2	Rewet	SW	14.1	4.1	0.3	0.0	2228.7
4/1/2002	STA2	Rewet	SW	11.6	1.1	0.3	0.0	1540.5
4/4/2002	STA2	Rewet	SW	7.9	3.3	0.1	0.1	1978.1
4/8/2002	STA2	Rewet	SW	11.5	1.8	0.3	0.1	1786.4
4/15/2002	STA2	Rewet	SW	9.2	1.1	0.3	0.0	1299.4
4/22/2002	STA2	Rewet	SW	8.3	10.7	0.3	0.1	1226.5
4/29/2002	STA2	Rewet	SW	12.4	7.7	0.1	0.0	978.8
5/6/2002	STA2	Rewet	SW	11.4	1.1	0.3	0.1	1034.5
5/13/2002	STA2	Rewet	SW	1.3	12.3	0.4	0.0	958.3
3/27/2002	STA2	Water Control	SW	30.7		0.4		1880.5
4/22/2002	STA2	Water Control	SW	9.0		0.2		1849.4
5/13/2002	STA2	Water Control	SW	-6.1		0.3		1615.3
2/14/2002	STA2	Wet Control	SW	72.5	65.3	ND	ND	123.9
3/27/2002	STA2	Wet Control	SW	20.5	13.4	0.6	0.1	574.9
4/22/2002	STA2	Wet Control	SW	10.1	9.0	0.5	0.1	810.2
5/13/2002	STA2	Wet Control	SW	1.8	7.4	0.5	0.1	667.9

Table 7. Continued.

Date	Site	Treatment	Medium	SO4 uM std	Sulfite, uM	Sulfite, uM std	Thio-sulfate, uM	Thio-sulfate, uM std
3/27/2002	3A15	Refill water	SW	0.0	0.25		0.09	
3/29/2002	3A15	Rewet	SW	149.8				
4/1/2002	3A15	Rewet	SW	311.5				
4/4/2002	3A15	Rewet	SW	99.8	0.58	0.36	0.05	0.03
4/8/2002	3A15	Rewet	SW	80.0	0.39	0.33	0.02	0.01
4/15/2002	3A15	Rewet	SW	26.2				
4/22/2002	3A15	Rewet	SW	11.2	0.04	0.00	0.00	0.00
4/29/2002	3A15	Rewet	SW	7.5	0.04	0.01	-0.01	0.00
5/6/2002	3A15	Rewet	SW	11.2				
5/13/2002	3A15	Rewet	SW	11.9				
3/27/2002	3A15	Water Control	SW	0.0				
4/22/2002	3A15	Water Control	SW	0.0	0.03		0.00	
5/13/2002	3A15	Water Control	SW	0.0				
2/14/2002	3A15	Wet Control	SW	1.8	0.01	0.02	0.18	0.17
3/27/2002	3A15	Wet Control	SW	9.6	0.62	0.36	0.04	0.03
4/22/2002	3A15	Wet Control	SW	18.2	0.05	0.03	0.00	0.00
5/13/2002	3A15	Wet Control	SW	7.6				
3/27/2002	STA2	Refill water	SW	0.0	0.24		-0.13	
3/29/2002	STA2	Rewet	SW	392.1				
4/1/2002	STA2	Rewet	SW	943.6				
4/4/2002	STA2	Rewet	SW	227.7	0.25	0.10	-0.05	0.02
4/8/2002	STA2	Rewet	SW	156.0	0.53	0.15	0.04	0.02
4/15/2002	STA2	Rewet	SW	66.8				
4/22/2002	STA2	Rewet	SW	33.3	0.05	0.03	-0.01	0.00
4/29/2002	STA2	Rewet	SW	61.2	0.17	0.10	0.00	0.01
5/6/2002	STA2	Rewet	SW	94.8				
5/13/2002	STA2	Rewet	SW	127.1				
3/27/2002	STA2	Water Control	SW	0.0	1.13		-0.09	
4/22/2002	STA2	Water Control	SW	0.0				
5/13/2002	STA2	Water Control	SW	0.0				
2/14/2002	STA2	Wet Control	SW	25.2	0.00	0.00	0.30	0.05
3/27/2002	STA2	Wet Control	SW	179.7	0.47	0.11	-0.13	0.01
4/22/2002	STA2	Wet Control	SW	68.3	0.09	0.02	-0.01	0.00
5/13/2002	STA2	Wet Control	SW	37.9				

Table 8. ACME 40-day dry/rewet experiment, spring 2002, porewater results.

Date	Site	Treatment	Medium	Sample # DOC	UV @ 254 nm	DOC ppm	SUVA	Sample # anions
2/14/2002	3A15	Wet Control A	PW	794	NS	29.3	NS	777
2/14/2002	3A15	Wet Control B	PW					778
2/14/2002	3A15	Wet Control C	PW					779
4/4/2002	3A15	Rewet A	PW		NS	NS	NS	1058
4/4/2002	3A15	Rewet B	PW		NS	NS	NS	
4/4/2002	3A15	Rewet C	PW		NS	NS	NS	
4/29/2002	3A15	Rewet A	PW	1450	1.646	53.8	2.641	1436
4/29/2002	3A15	Rewet B	PW	1451	NS	NS	NS	1437
4/29/2002	3A15	Rewet C	PW	1452	1.691	51.2	2.860	1438
5/13/2002	3A15	Rewet A	PW	1634	1.161	34.1	2.862	1620
5/13/2002	3A15	Rewet B	PW	1635	1.372	53.1	2.195	1621
5/13/2002	3A15	Rewet C	PW	1636	1.460	53.8	2.320	1622
2/14/2002	STA2	Wet Control A	PW	795	NS	83.7	NS	780
2/14/2002	STA2	Wet Control B	PW					781
2/14/2002	STA2	Wet Control C	PW					782
4/4/2002	STA2	Rewet A	PW		NS	NS	NS	1063
4/4/2002	STA2	Rewet B	PW		NS	NS	NS	
4/4/2002	STA2	Rewet C	PW		NS	NS	NS	
4/29/2002	STA2	Rewet A	PW	1453	3.084	103.4	2.650	1439
4/29/2002	STA2	Rewet B	PW	1454	3.207	148.7	1.870	1440
4/29/2002	STA2	Rewet C	PW	1455	3.167	124.1	2.246	1441
5/13/2002	STA2	Rewet A	PW	1637	3.194	155.8	1.769	1623
5/13/2002	STA2	Rewet B	PW	1638	NS	NS	NS	1624
5/13/2002	STA2	Rewet C	PW	1639	3.140	121.7	2.273	1625

Table 8. Continued.

Date	Site	Treatment	Medium	Fluoride	Chloride	Bromide	Nitrate	Sulfate
2/14/2002	3A15	Wet Control A	PW	0.17	21.20	BDL	0.24	0.27
2/14/2002	3A15	Wet Control B	PW	0.05	18.82	BDL	BDL	0.30
2/14/2002	3A15	Wet Control C	PW	0.14	19.39	0.12	BDL	0.25
4/4/2002	3A15	Rewet A	PW	0.24	84.59	0.35	BDL	9.71
4/4/2002	3A15	Rewet B	PW					
4/4/2002	3A15	Rewet C	PW					
4/29/2002	3A15	Rewet A	PW	M	104.95	M	0.40	26.28
4/29/2002	3A15	Rewet B	PW	0.18	75.06	M	0.47	3.97
4/29/2002	3A15	Rewet C	PW	0.16	82.53	0.30	0.05	2.15
5/13/2002	3A15	Rewet A	PW	M	152.09	0.35	BDL	0.81
5/13/2002	3A15	Rewet B	PW	M	257.22	BDL	1.94	18.32
5/13/2002	3A15	Rewet C	PW	M	229.59	BDL	1.72	8.11
2/14/2002	STA2	Wet Control A	PW	0.78	239.82	BDL	BDL	1.36
2/14/2002	STA2	Wet Control B	PW	0.73	233.03	BDL	BDL	1.77
2/14/2002	STA2	Wet Control C	PW	0.65	228.51	BDL	BDL	1.96
4/4/2002	STA2	Rewet A	PW	0.31	682.17	1.62	0.31	204.31
4/4/2002	STA2	Rewet B	PW					
4/4/2002	STA2	Rewet C	PW					
4/29/2002	STA2	Rewet A	PW	M	656.61	M	M	190.37
4/29/2002	STA2	Rewet B	PW	M	874.63	M	M	62.14
4/29/2002	STA2	Rewet C	PW	M	737.08	M	M	174.86
5/13/2002	STA2	Rewet A	PW	M	1092.44	M	M	34.16
5/13/2002	STA2	Rewet B	PW	M	1280.61	M	M	233.12
5/13/2002	STA2	Rewet C	PW	M	940.09	M	M	129.98

Table 8. Continued.

Date	Site	Treatment	Medium	Sample # nuts	PO4 uM	NH4 uM	Sample # Fe/Mn	Mn ug/L
2/14/2002	3A15	Wet Control A	PW	775	0.98	18.57	801	563
2/14/2002	3A15	Wet Control B	PW					
2/14/2002	3A15	Wet Control C	PW					
4/4/2002	3A15	Rewet A	PW		NS	NS	1080	31
4/4/2002	3A15	Rewet B	PW		NS	NS		
4/4/2002	3A15	Rewet C	PW		NS	NS		
4/29/2002	3A15	Rewet A	PW	1429	0.26	69.77	1457	57
4/29/2002	3A15	Rewet B	PW	1430	0.16	66.02	1458	49
4/29/2002	3A15	Rewet C	PW	1431	0.94	232.02		
5/13/2002	3A15	Rewet A	PW	1613	0.27	86.49	1641	147
5/13/2002	3A15	Rewet B	PW	1614	0.37	10.42	1642	25
5/13/2002	3A15	Rewet C	PW	1615	0.44	83.21	1643	124
2/14/2002	STA2	Wet Control A	PW	776	2.73	84.53	802	133
2/14/2002	STA2	Wet Control B	PW					
2/14/2002	STA2	Wet Control C	PW					
4/4/2002	STA2	Rewet A	PW		NS	NS	1084	184
4/4/2002	STA2	Rewet B	PW		NS	NS		
4/4/2002	STA2	Rewet C	PW		NS	NS		
4/29/2002	STA2	Rewet A	PW	1432	3.20	39.29	1460	299
4/29/2002	STA2	Rewet B	PW	1433	22.51	96.92	1461	153
4/29/2002	STA2	Rewet C	PW	1434	14.38	55.81	1462	224
5/13/2002	STA2	Rewet A	PW	1616	25.46	57.19	1644	189
5/13/2002	STA2	Rewet B	PW		NS	NS	1645	132
5/13/2002	STA2	Rewet C	PW	1618	7.53	20.30	1646	147

Table 8. Continued.

Date	Site	Treatment	Medium	Fe ug/L	sulfide, uM	Sulfite/thiosulfite sample FL02#	Sulfite, uM	Thiosulfate, uM
2/14/2002	3A15	Wet Control A	PW	49		2729	n.d.	n.d.
2/14/2002	3A15	Wet Control B	PW					
2/14/2002	3A15	Wet Control C	PW					
4/4/2002	3A15	Rewet A	PW	410	0.3			
4/4/2002	3A15	Rewet B	PW					
4/4/2002	3A15	Rewet C	PW					
4/29/2002	3A15	Rewet A	PW	370	0.2	1422	0.02	0.003146585
4/29/2002	3A15	Rewet B	PW	418	0.2	1423	0.15	0.037047397
4/29/2002	3A15	Rewet C	PW		0.3	1424	0.15	0.036730166
5/13/2002	3A15	Rewet A	PW	1871	0.3			
5/13/2002	3A15	Rewet B	PW	332	0.4			
5/13/2002	3A15	Rewet C	PW	623	0.3			
2/14/2002	STA2	Wet Control A	PW	172		2774	1.31	0.68
2/14/2002	STA2	Wet Control B	PW					
2/14/2002	STA2	Wet Control C	PW					
4/4/2002	STA2	Rewet A	PW	183	0.2			
4/4/2002	STA2	Rewet B	PW					
4/4/2002	STA2	Rewet C	PW					
4/29/2002	STA2	Rewet A	PW	176	1.1	1425	0.13	0.048862096
4/29/2002	STA2	Rewet B	PW	80	1.8	1426	0.08	0.036344345
4/29/2002	STA2	Rewet C	PW	165	1.5	1427	0.11	0.04278327
5/13/2002	STA2	Rewet A	PW	89	2.5			
5/13/2002	STA2	Rewet B	PW	134	1.3			
5/13/2002	STA2	Rewet C	PW	131	6.7			

Table 9. ACME 40-day dry rewet experiment, spring 2002, porewater results, averages for all treatments.

Date	**Site**	**Treatment**	**Medium**	**UV @ 254 nm**	**std**	**DOC ppm**	**std**	**SUVA**	**std**	**Fluoride**	**std**
2/14/2002	3A15	Wet Control	PW	NS		29.3		NS		0.12	0.06
4/4/2002	3A15	Rewet	PW	NS		NS		NS		0.24	
4/29/2002	3A15	Rewet	PW	1.669	0.032	52.5	1.9	2.750	0.155	0.17	0.01
05/13/2002	3A15	Rewet	PW	1.331	0.154	47.0	11.2	2.459	0.354	M	
2/14/2002	STA2	Wet Control	PW	NS		83.7		NS		0.72	0.07
4/4/2002	STA2	Rewet	PW	NS		NS		NS		0.31	
4/29/2002	STA2	Rewet	PW	3.153	0.062	125.4	22.7	2.255	0.390	M	
05/13/2002	STA2	Rewet	PW	3.167	0.038	138.7	24.1	2.021	0.356	M	

Date	**Site**	**Treatment**	**Medium**	**Chloride**	**std**	**Bromide**	**std**	**Nitrate**	**std**	**Sulfate**	**std**
2/14/2002	3A15	Wet Control	PW	20	1	0.12		0.24		0.3	0.0
4/4/2002	3A15	Rewet	PW	85		0.35		BDL		9.7	
4/29/2002	3A15	Rewet	PW	88	16	0.30		0.31	0.22	10.8	13.4
05/13/2002	3A15	Rewet	PW	213	55	0.35		1.83	0.16	9.1	8.8
2/14/2002	STA2	Wet Control	PW	234	6	BDL		BDL		1.7	0.3
4/4/2002	STA2	Rewet	PW	682		1.62		0.31		204.3	
4/29/2002	STA2	Rewet	PW	756	110	M		M		142.5	70.0
05/13/2002	STA2	Rewet	PW	1104	171	M		M		132.4	99.5

Table 9. Continued.

Date	Site	Treatment	Medium	PO4 uM	std	NH4 uM	std	Mn ug/L	std	Fe ug/L	std
2/14/2002	3A15	Wet Control	PW	0.98		18.6		563		49	
4/4/2002	3A15	Rewet	PW	NS		NS		31		410	
4/29/2002	3A15	Rewet	PW	0.45	0.42	122.6	94.8	53	5	394	33
05/13/2002	3A15	Rewet	PW	0.36	0.09	60.0	43.0	99	65	942	817
2/14/2002	STA2	Wet Control	PW	2.73		84.5		133		172	
4/4/2002	STA2	Rewet	PW	NS		NS		184		183	
4/29/2002	STA2	Rewet	PW	13.36	9.69	64.0	29.7	225	73	140	53
05/13/2002	STA2	Rewet	PW	16.50	12.68	38.7	26.1	156	29	118	25

Date	Site	Treatment	Medium	sulfide, uM	std	SO4, uM	std	Sulfite, uM	std	Thiosulfate, uM	std
2/14/2002	3A15	Wet Control	PW			2.8	0.3	n.d.		n.d.	
4/4/2002	3A15	Rewet	PW	0.3		99.6	0.0				
4/29/2002	3A15	Rewet	PW	0.2	0.1	110.7	137.7	0.11	0.07	0.03	0.02
05/13/2002	3A15	Rewet	PW	0.3	0.0	93.1	90.2				
2/14/2002	STA2	Wet Control	PW			17.4	3.2	1.31		0.68	
4/4/2002	STA2	Rewet	PW	0.2		2094.2	0.0				
4/29/2002	STA2	Rewet	PW	1.5	0.3	1460.2	717.4	0.11	0.03	0.04	0.01
05/13/2002	STA2	Rewet	PW	3.5	2.8	1357.3	1019.9				

Table 10. ACME 40-day dry/rewet experiment, spring 2002, sediment results.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	MeHg ng/gdw avg	MeHg ng/gdw std	xs Me201Hg ng/gdw avg	xs Me201Hg ng/gdw std	Hg ng/gdw avg
2/6/2002	3A15	In situ	SED	579	1.26	0.06	0.00	0.003	289.7
2/6/2002	3A15	In situ	SED	580	1.97		0.00		135.3
2/6/2002	3A15	In situ	SED	665	3.18				179.3
2/6/2002	3A15	In situ	SED	666	2.43				279.7
2/14/2002	3A15	Wet Control A	SED	803	1.10	0.01	0.00	0.00	377.9
2/14/2002	3A15	Wet Control B	SED	804	0.93		0.00		229.9
2/14/2002	3A15	Wet Control C	SED	805	1.75		0.00		316.0
4/4/2002	3A15	Rewet A	SED	1092	4.70		0.01		365.0
4/4/2002	3A15	Rewet B	SED	1093	3.98		0.04		288.3
4/4/2002	3A15	Rewet C	SED	1094	7.15		0.08		417.3
4/29/2002	3A15	Rewet A	SED	1469rr	4.77		0.04		410.3
4/29/2002	3A15	Rewet B	SED	1470rr	5.50		0.04		255.6
4/29/2002	3A15	Rewet C	SED	1471rr	2.93		0.01		195.9
5/13/2002	3A15	Rewet A	SED	1653rr	4.86		0.12		419.0
5/13/2002	3A15	Rewet B	SED	1654rr	4.76		0.06		474.3
5/13/2002	3A15	Rewet C	SED	1655rr	11.05		0.12		431.8

Table 10. Continued.

Date	Site	Treatment	Medium	Hg ng/gdw std	xs 201Hg ng/gdw avg	xs 201Hg ng/gdw std	% MeHg avg	%Me201Hg avg	Sample # AVS,CRS	AVS µmoles/ gdw	CRS µmoles/ gdw
2/6/2002	3A15	In situ	SED		-0.01		0.44		FL02 659	5.20	43.70
2/6/2002	3A15	In situ	SED		-0.17		1.45		FL02 660	0.76	34.15
2/6/2002	3A15	In situ	SED				1.77				
2/6/2002	3A15	In situ	SED				0.87				
2/14/2002	3A15	Wet Control A	SED		0.00		0.29		FL02 803	0.13	51.60
2/14/2002	3A15	Wet Control B	SED		0.00		0.40		FL02 804	0.54	95.10
2/14/2002	3A15	Wet Control C	SED	4.0	0.20		0.55		FL02 805	3.10	105.76
4/4/2002	3A15	Rewet A	SED		0.80		1.29	0.63	FL02 1092	0.21	113.88
4/4/2002	3A15	Rewet B	SED		1.09		1.38	3.31	FL02 1093	0.28	53.14
4/4/2002	3A15	Rewet C	SED		1.23		1.71	6.11	FL02 1094	0.08	99.58
4/29/2002	3A15	Rewet A	SED	2.2	0.58	0.28	1.16	6.09	FL02 1469	0.23	87.20
4/29/2002	3A15	Rewet B	SED		0.57		2.15	7.24	FL02 1470	0.08	38.33
4/29/2002	3A15	Rewet C	SED		0.06		1.50	24.98	FL02 1471	0.10	30.86
5/13/2002	3A15	Rewet A	SED		0.09		1.16	132.53	FL02 1653	2.45	69.50
5/13/2002	3A15	Rewet B	SED		1.22		1.00	5.14	FL02 1654	0.10	90.12
5/13/2002	3A15	Rewet C	SED		0.45		2.56	27.30	FL02 1655	5.62	106.00

Table 10. Continued.

Date	Site	Treatment	Medium	Sample # Hg, MeHg	MeHg ng/gdw avg	MeHg ng/gdw std	xs Me201Hg ng/gdw avg	xs Me201Hg ng/gdw std	Hg ng/gdw avg
2/6/2002	STA2	In situ	SED	691	2.09				147.8
2/6/2002	STA2	In situ	SED	692	4.97				104.9
2/6/2002	STA2	In situ	SED	693	4.19		-0.01		128.6
2/6/2002	STA2	In situ	SED	694	3.00	0.19	-0.02	0.012	133.1
2/14/2002	STA2	Wet Control A	SED	806	2.31		0.00		126.9
2/14/2002	STA2	Wet Control B	SED	807	2.15		0.00		101.0
2/14/2002	STA2	Wet Control C	SED	808	1.98		0.00		113.0
4/4/2002	STA2	Rewet A	SED	1095	11.25		0.03		130.1
4/4/2002	STA2	Rewet B	SED	1096	5.43		0.07		136.9
4/4/2002	STA2	Rewet C	SED	1097	8.89		0.03		144.3
4/29/2002	STA2	Rewet A	SED	1472	5.82		0.01		127.6
4/29/2002	STA2	Rewet B	SED	1473	7.94		0.04		118.7
4/29/2002	STA2	Rewet C	SED	1474	4.11		0.02		116.3
5/13/2002	STA2	Rewet A	SED	1656	10.77		0.12		99.8
5/13/2002	STA2	Rewet B	SED	1657	ND		ND		112.5
5/13/2002	STA2	Rewet C	SED	1658	6.28		0.07		126.3

Table 10. Continued.

Date	Site	Treatment	Medium	Hg ng/gdw std	xs 201Hg ng/gdw avg	xs 201Hg ng/gdw std	% MeHg avg	%Me201Hg avg	Sample # AVS,CRS	AVS µmoles/ gdw	CRS µmoles/ gdw
2/6/2002	STA2	In situ	SED				1.41		FL02 689	2.18	42.90
2/6/2002	STA2	In situ	SED	1.1			4.74		FL02 690	1.18	47.70
2/6/2002	STA2	In situ	SED		0.20		3.26				
2/6/2002	STA2	In situ	SED	7.0	0.00		2.26				
2/14/2002	STA2	Wet Control A	SED		0.14		1.82		FL02 806	0.36	66.79
2/14/2002	STA2	Wet Control B	SED		0.17		2.13		FL02 807	0.35	69.75
2/14/2002	STA2	Wet Control C	SED		-0.01		1.76		FL02 808	0.66	85.29
4/4/2002	STA2	Rewet A	SED		0.16		8.65	18.13	FL02 1095	0.00	33.35
4/4/2002	STA2	Rewet B	SED		0.09		3.96	76.12	FL02 1096	0.00	46.07
4/4/2002	STA2	Rewet C	SED		0.36		6.16	8.74	FL02 1097	0.01	50.79
4/29/2002	STA2	Rewet A	SED		0.30		4.56	3.19	FL02 1472	0.02	47.74
4/29/2002	STA2	Rewet B	SED		0.27		6.69	13.69	FL02 1473	0.02	55.29
4/29/2002	STA2	Rewet C	SED		0.10		3.53	18.64	FL02 1474	0.03	47.89
5/13/2002	STA2	Rewet A	SED		0.26		10.79	48.92	FL02 1656	0.03	48.70
5/13/2002	STA2	Rewet B	SED	0.3	0.16	0.25			FL02 1657	0.01	30.65
5/13/2002	STA2	Rewet C	SED	3.4	0.31	0.19	4.97	23.16	FL02 1658	0.03	43.70

Table 10. Continued.

Dry/Rewet Experiment - 2002
Elemental Data - Sediments

Site	Sample	FL #	Date	Organic C (%)		Total N (%)		Total S (%)	
				avg	std	avg	std	avg	std
3A15	In situ		2/6/2002						
3A15	Controls	809/810/811/812	2/14/2002	45.21	0.91	4.01	0.48	0.827	0.222
3A15	Rewet	1098/1099/1100	4/4/2002	55.01	1.73	4.11	0.15	0.686	0.107
3A15	Rewet	1475/1476/1477	4/29/2002	54.62	1.2	4.26	0.28	0.709	0.062
3A15	Rewet	1659/1660/1661	5/13/2002	54.28	2.09	4.49	0.3	0.795	0.123
STA2	In situ		2/7/2002						
STA2	Controls	813/814	2/14/2002	45.21	6	3.35	0.17	0.658	0.035
STA2	Rewet	1478/1479/1480	4/29/2002	49.85	2.33	3.27	0.09	0.672	0.04
STA2	Rewet	1662/1663/1664	5/13/2002	46.94	5.72	3.15	0.29	0.789	0.114

Table 10. Continued.

Site	Sample	FL #	Date	From AVS/CRS analysis: AVS µmoles/ gdw	AVS µmoles/ gdw std	CRS µmoles/ gdw	CRS µmoles/ gdw std	AVS mg S/ gdw avg	AVS mg S/ gdw std	CRS mg/ gdw avg	CRS mg/ gdw std
3A15	In situ		2/6/2002	2.98	3.14	38.93	6.76	0.0955	0.1008	1.2	0.2
3A15	Controls	809/810/811/812	2/14/2002	1.26	1.61	84.15	28.69	0.0402	0.0516	2.7	0.9
3A15	Rewet	1098/1099/1100	4/4/2002	0.19	0.10	88.87	31.76	0.0062	0.0032	2.8	1.0
3A15	Rewet	1475/1476/1477	4/29/2002	0.14	0.08	52.13	30.60	0.0044	0.0026	1.7	1.0
3A15	Rewet	1659/1660/1661	5/13/2002	2.72	2.77	88.54	18.30	0.0873	0.0889	2.8	0.6
STA2	In situ		2/7/2002	1.68	0.71	45.30	3.40	0.0538	0.0226	1.5	0.1
STA2	Controls	813/814	2/14/2002	0.46	0.18	73.94	9.94	0.0146	0.0058	2.4	0.3
				0.01	0.00	43.40	9.02	0.0002	0.0001	1.4	0.3
STA2	Rewet	1478/1479/1480	4/29/2002	0.02	0.01	50.31	4.32	0.0007	0.0002	1.6	0.1
STA2	Rewet	1662/1663/1664	5/13/2002	0.02	0.01	41.02	9.32	0.0007	0.0003	1.3	0.3

Table 10. Continued.

Site	Sample	FL #	Date	From CNS analysis TS mg S/gdw avg	TS mg S/gdw std	OS mg S/gdw avg	% of total S pool: AVS	CRS	OS
3A15	In situ		2/6/2002						
3A15	Controls	809/810/811/812	2/14/2002	8.3	2.2	5.53	0.49	32.62	66.89
3A15	Rewet	1098/1099/1100	4/4/2002	6.9	1.1	4.00	0.09	41.53	58.38
3A15	Rewet	1475/1476/1477	4/29/2002	7.1	0.6	5.41	0.06	23.57	76.37
3A15	Rewet	1659/1660/1661	5/13/2002	8.0	1.2	5.02	1.10	35.71	63.20
STA2	In situ		2/7/2002						
STA2	Controls	813/814	2/14/2002	6.6	0.4	4.19	0.22	36.03	63.75
STA2	Rewet	1478/1479/1480	4/29/2002	6.7	0.4	5.11	0.01	24.00	75.99
STA2	Rewet	1662/1663/1664	5/13/2002	7.9	1.1	6.57	0.01	16.67	83.32

Table 11. ACME 40-day dry/rewet experiment, spring 2002, sediment results, average values for all treatments.

Date	Site	Treatment	MeHg ng/gdw avg	MeHg ng/gdw std	xs Me201Hg ng/gdw avg [13]	xs Me201Hg ng/gdw std	Hg ng/gdw avg	Hg ng/gdw std	xs 201Hg ng/gdw avg [13]
					BDL				BDL
2/06/2002	3A15	In situ	2.21	0.80	0.00	0.00	221.0	75.8	-0.09
2/14/2002	3A15	Wet Control	1.26	0.43	0.00	0.00	307.9	74.3	0.07
4/4/2002	3A15	Rewet	5.27	1.67	0.04	0.04	356.9	64.9	1.04
4/29/2002	3A15	Rewet	4.40	1.32	0.03	0.01	287.3	110.7	0.40
5/13/2002	3A15	Rewet	6.89	3.60	0.10	0.04	441.7	28.9	0.59
2/7/2002	STA2	In situ	3.56	1.27	-0.01	0.01	128.6	17.8	0.10
2/14/2002	STA2	Wet Control	2.15	0.16	0.00	0.00	113.7	13.0	0.10
4/4/2002	STA2	Rewet	8.52	2.93	0.04	0.02	137.1	7.1	0.20
4/29/2002	STA2	Rewet	5.96	1.92	0.02	0.01	120.8	5.9	0.22
5/13/2002	STA2	Rewet	8.53	3.18	0.10	0.04	112.9	13.2	0.24

Dry/Rewet Experiment - 2002
Elemental Data - Sediments

Site	Sample	FL #	Date	Total C (%)	Organic C (%)	Total N (%)	Total S (%)
3A15	Controls	809/810/811/812	2/14/2002	46.48 (0.78)	45.21 (0.91)	4.01 (0.48)	0.663 (0.095)
3A15	Rewet	1098/1099/1100	4/4/2002	49.43 (2.41)	55.01 (1.73)	4.11 (0.15)	0.607 (0.056)
3A15	Rewet	1475/1476/1477	4/29/2002	49.37 (0.55)	54.62 (1.20)	4.26 (0.28)	0.665 (0.039)
3A15	Rewet	1659/1660/1661	5/13/2002	50.82 (0.35)	54.28 (2.09)	4.49 (0.30)	0.984 (0.104)
STA2	Controls	813/814	2/14/2002	44.51 (2.53)	45.21 (6.00)	3.35 (0.17)	0.571 (0.136)
STA2	Rewet	1478/1479/1480	4/29/2002	46.14 (0.51)	49.85 (2.33)	3.27 (0.09)	0.813 (0.10)
STA2	Rewet	1662/1663/1664	5/13/2002	44.70 (4.57)	46.94 (5.72)	3.15 (0.29)	1.03 (0.09)

[13] Grey shaded areas represent values that are below the detection limit (BDL) for the respective analyte.

Table 11. Continued.

Date	Site	Treatment	xs 201Hg ng/gdw std	% MeHg avg	% MeHg std	%Me201Hg avg	%Me201Hg std	AVS µmoles/ gdw	AVS µmoles/ gdw std	CRS µmoles/ gdw	CRS µmoles/ gdw std
2/6/2002	3A15	In situ	0.11	1.13	0.60			2.98	3.14	38.93	6.76
2/14/2002	3A15	Wet Control	0.12	0.42	0.13			1.26	1.61	84.15	28.69
4/4/2002	3A15	Rewet	0.22	1.46	0.22	3.35	2.74	0.19	0.10	88.87	31.76
4/29/2002	3A15	Rewet	0.30	1.60	0.50	12.77	10.59	0.14	0.08	52.13	30.60
5/13/2002	3A15	Rewet	0.57	1.57	0.86	54.99	68.06	2.72	2.77	88.54	18.30
2/7/2002	STA2	In situ	0.14	2.92	1.43			1.68	0.71	45.30	3.40
2/14/2002	STA2	Wet Control	0.10	1.90	0.20			0.46	0.18	73.94	9.94
4/4/2002	STA2	Rewet	0.14	6.26	2.34	34.33	36.50	0.01	0.00	43.40	9.02
4/29/2002	STA2	Rewet	0.11	4.93	1.61	11.84	7.89	0.02	0.01	50.31	4.32
5/13/2002	STA2	Rewet	0.08	7.88	4.11	36.04	18.22	0.02	0.01	41.02	9.32

Table 12. ACME 299-day dry/rewet experiment overlying water results, averages for all treatments.

Date	Site	Treatment	Medium	amb MeHg ng/L	amb MeHg ng/L std	xs Me201Hg ng/L	xs Me201Hg ng/L std	NH_4^+	PO_4^{3-}	NO_3^-	Cl^-
12/11/2002	3A15	Refill water	SW	0.15		0.05		9.69	22.8	5.81	0.33
12/11/2002	3A15	Rewet	SW	0.63	0.47	0.04	0.01	25.0	343	87.2	0.17
12/18/2002	3A15	Rewet	SW	5.09	3.66	6.55	6.45	72.5	745	1.04	0.21
1/31/2003	3A15	Rewet	SW	1.17	0.53	0.42	0.11	24.1	84.0	0.71	0.30
12/11/2002	STA2	Refill water	SW	0.15		0.05					
12/11/2002	STA2	Rewet	SW	0.17	0.01	0.02	0.00	18.5	783	175	353
12/18/2002	STA2	Rewet	SW	23.22	10.37	9.95	5.58	88.5	2351	1.36	366
1/31/2003	STA2	Rewet	SW	3.78	2.28	0.89	0.72	2.56	2442	2.77	250

Table 12. Continued.

Date	Site	Treatment	Medium	F^-	Br^-	SO_4^{2-}	Sulfide, uM	Sulfide, uM std	pH	pH std
12/11/2002	3A15	Refill water	SW	48.4	0.21	0.85	0.00		6.70	
12/11/2002	3A15	Rewet	SW	93.1	0.16	93.2	0.00		6.69	0.06
12/18/2002	3A15	Rewet	SW	109	<0.01	129	2.01	1.39	7.13	0.20
1/31/2003	3A15	Rewet	SW	82.6	0.31	6.90	0.42	0.30	6.83	0.35
12/11/2002	STA2	Refill water	SW				0.00		6.70	
12/11/2002	STA2	Rewet	SW	0.58	<0.01	224	0.00		7.15	0.09
12/18/2002	STA2	Rewet	SW	1.72	<0.01	130	15.62	14.54	7.42	0.13
1/31/2003	STA2	Rewet	SW	1.39	<0.01	6.43	0.87	0.27	7.40	0.16

Table 13. ACME 299-day dry/rewet experiment porewater results, averages for all treatments.

Date	Site	Treatment	Medium	sulfide, uM	sulfide, uM std
12/11/2002	3A15	Rewet	pw		
12/18/2002	3A15	Rewet	pw	4.7	2.6
1/31/2003	3A15	Rewet	pw	0.5	0.0
12/11/2002	STA2	Rewet	pw	0.0	
12/18/2002	STA2	Rewet	pw	11.0	11.2
1/31/2003	STA2	Rewet	pw	1.5	0.3

Table 14. ACME 299-day dry/rewet experiment sediment results, averages for all treatments.

Date	Site	Treatment	Medium	MeHg ng/gdw avg	MeHg ng/gdw std	xs Me198Hg ng/gdw avg	xs Me198Hg ng/gdw std	Hg ng/gdw avg	Hg ng/gdw std	xs 198Hg ng/gdw avg	xs 198Hg ng/gdw std
12/11/2002	3A15	Rewet	SW	1.33	0.21	0.00	0.01	410.24	34.76	0.35	0.04
12/18/2002	3A15	Rewet	SW	4.81	0.65	0.87	0.04	420.22	64.81	11.98	0.75
1/31/2003	3A15	Rewet	SW	3.96	1.42	0.51	0.10	337.50	82.67	13.58	1.61
12/11/2002	STA2	Rewet	SW	2.50	0.89	0.00	0.01	146.57	16.33	0.18	0.03
12/18/2002	STA2	Rewet	SW	9.33	1.91	1.28	0.43	123.36	7.96	5.66	0.03
1/31/2003	STA2	Rewet	SW	8.30	3.37	1.12	0.72	126.55	10.78	6.21	0.84

Date	Site	Treatment	Medium	% MeHg avg	% MeHg std	%Me198Hg	%Me198Hg std	Total C (%)	Organic C (%)	Total N (%)	Total S (%)
12/11/2002	3A15	Rewet	SW	0.33	0.07	1.37	0.04	47.9	46.7	3.47	0.510
12/18/2002	3A15	Rewet	SW	1.18	0.34	7.26	0.78	50.1	49.5	4.53	0.991
1/31/2003	3A15	Rewet	SW	1.18	0.32	3.78	1.03	49.3	49.8	4.53	0.854
12/11/2002	STA2	Rewet	SW	1.68	0.42	3.73	3.13	49.7	49.2	4.49	0.957
12/18/2002	STA2	Rewet	SW	7.55	1.36	22.55	7.61	48.5	48.1	3.46	1.10
1/31/2003	STA2	Rewet	SW	6.72	3.29	17.81	10.16	44.7	42.9	3.20	1.14

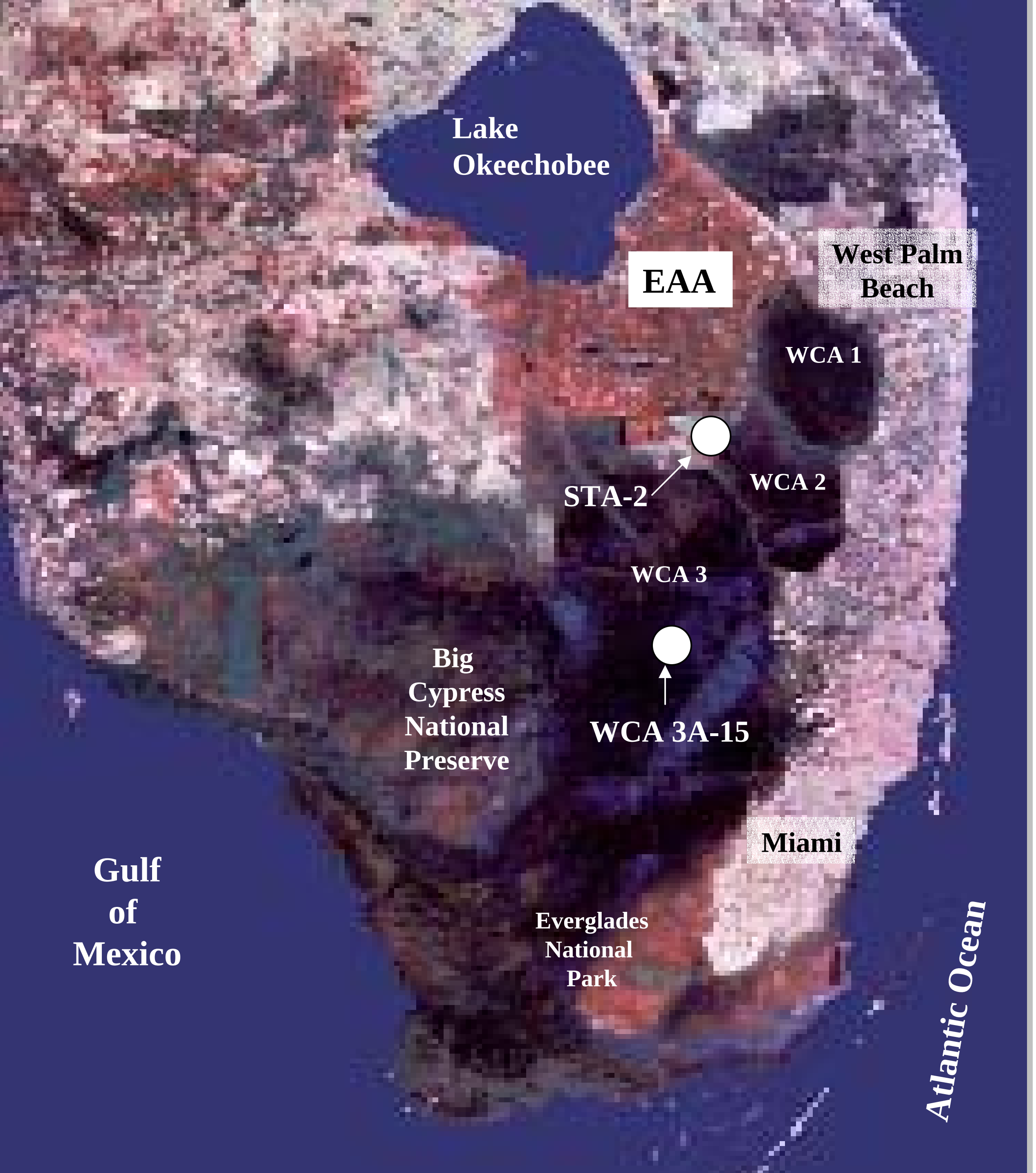


Fig. 1. Map of south Florida Showing the locations of sites WCA 3A-15 and STA-2 where Cores for the dry/rewet experiment Were collected.

Fig. 2. Picture of the dry/rewet experimentsl apparatus at the Academy of Natural Sciences Estuarine Research Center (ANSERC) near St. Leonard, MD showing cores from sites WCA3A-15 and STA-2 in the Everglades drying.

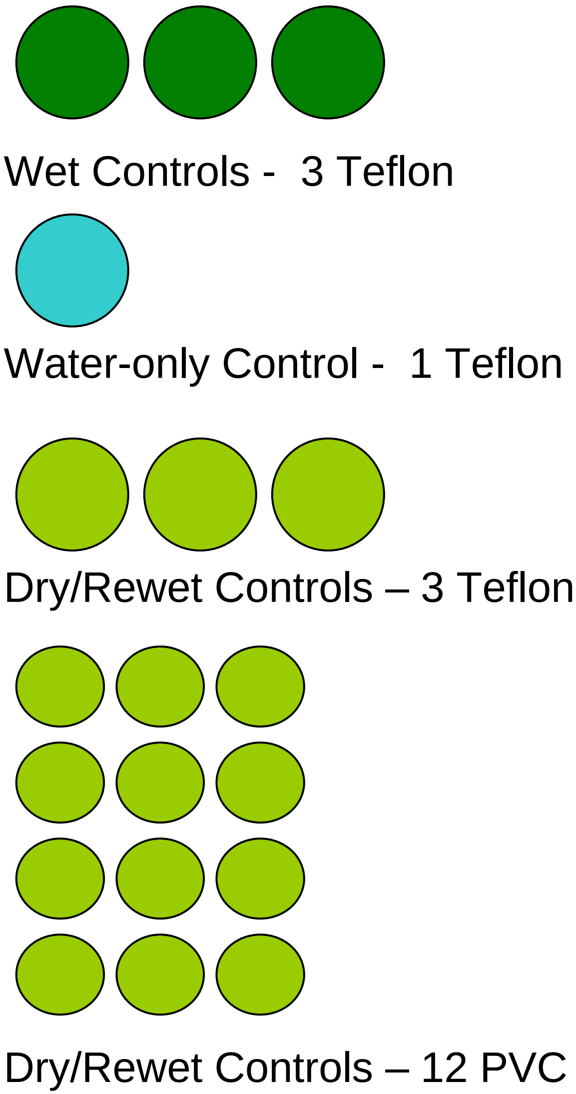
3A 15 Core

STA 2 Core

Feb 14, 2002

Fig. 3. Cores in teflon core barrels from sites WCA 3A-15 and STA-2 prior to the start of the dry/rewet experiment.

Dry/Rewet Experimental Design
Core sampled and used from each site:



Wet controls (3) 10 cm diameter Teflon tubes
These cores stayed wet throughout the experiment

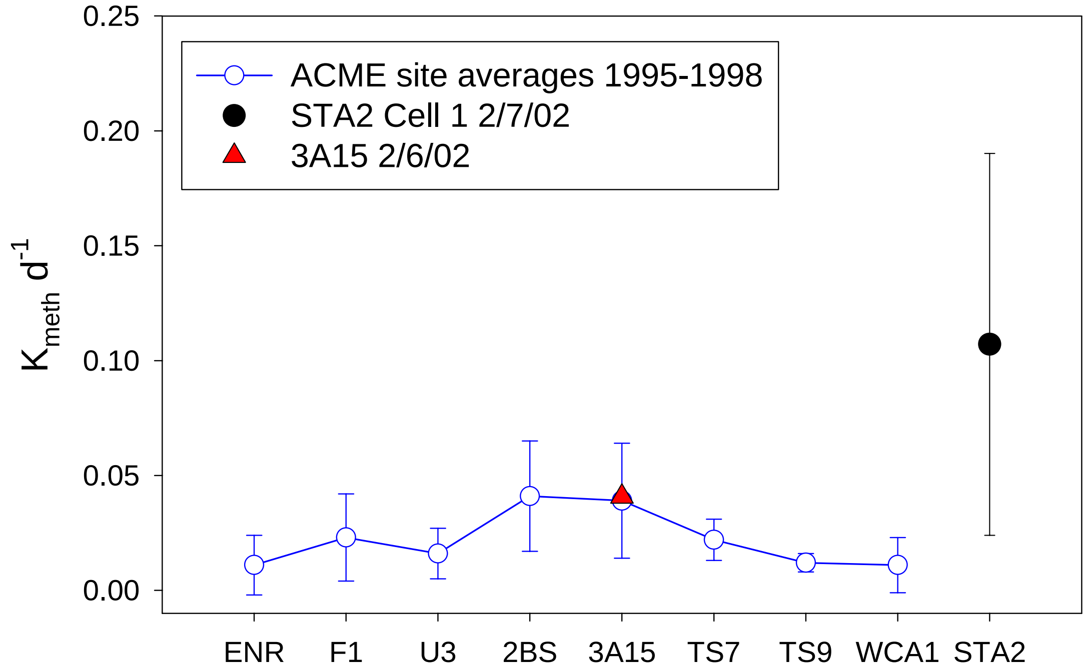
Water-only control (1) 10 cm diameter Teflon tube

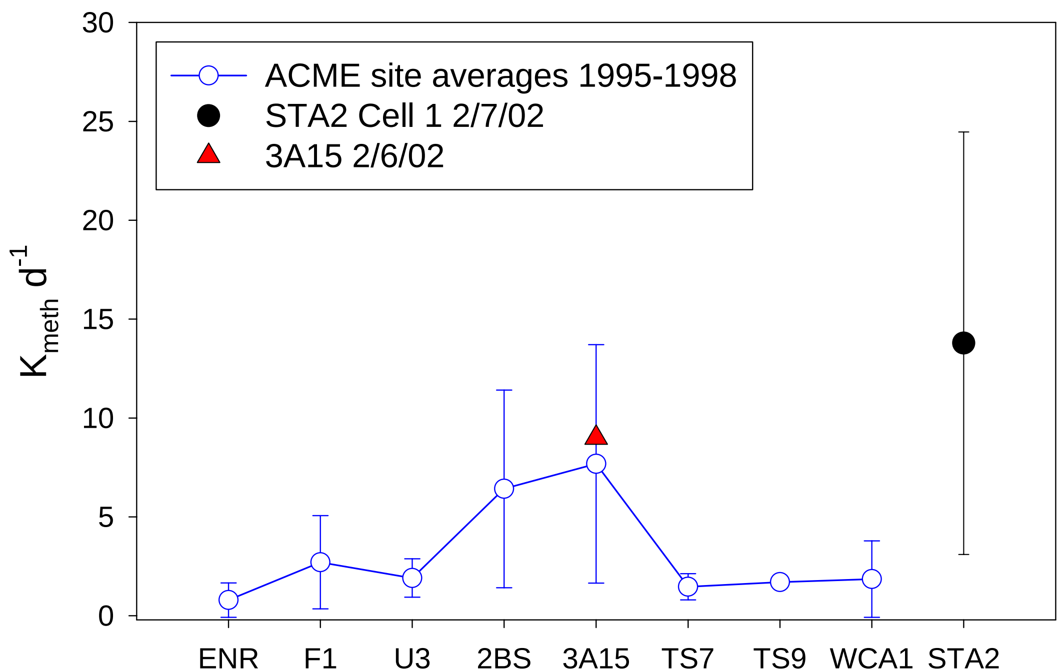
Dry/Rewet cores
(3) 10 cm diameter Teflon tubes
(12) 7 cm diameter PVC tubes

- These cores were allowed to dry from Feb 13 – March 27, and then rewet and maintained wet.
- Teflon cores were used throughout for overlying water samples.
- PVC cores were sacrificed through time for solid phase and pore water samples.
- Extra PVC cores were also used for microelectrode measurements

Fig. 4. Design for the 40-day dry/rewet experiment; the same design was used for the dry/rewet of cores from the WCA 3A-15 And the STA-2 sites.

Fig. 5. Comparison of methylation rate constants (top) and rates (bottom) between dry/rewet study sites (sampled Feb 2002) and the average methylation rates for ACME sites in the Everglades, between 1995 and 1998.





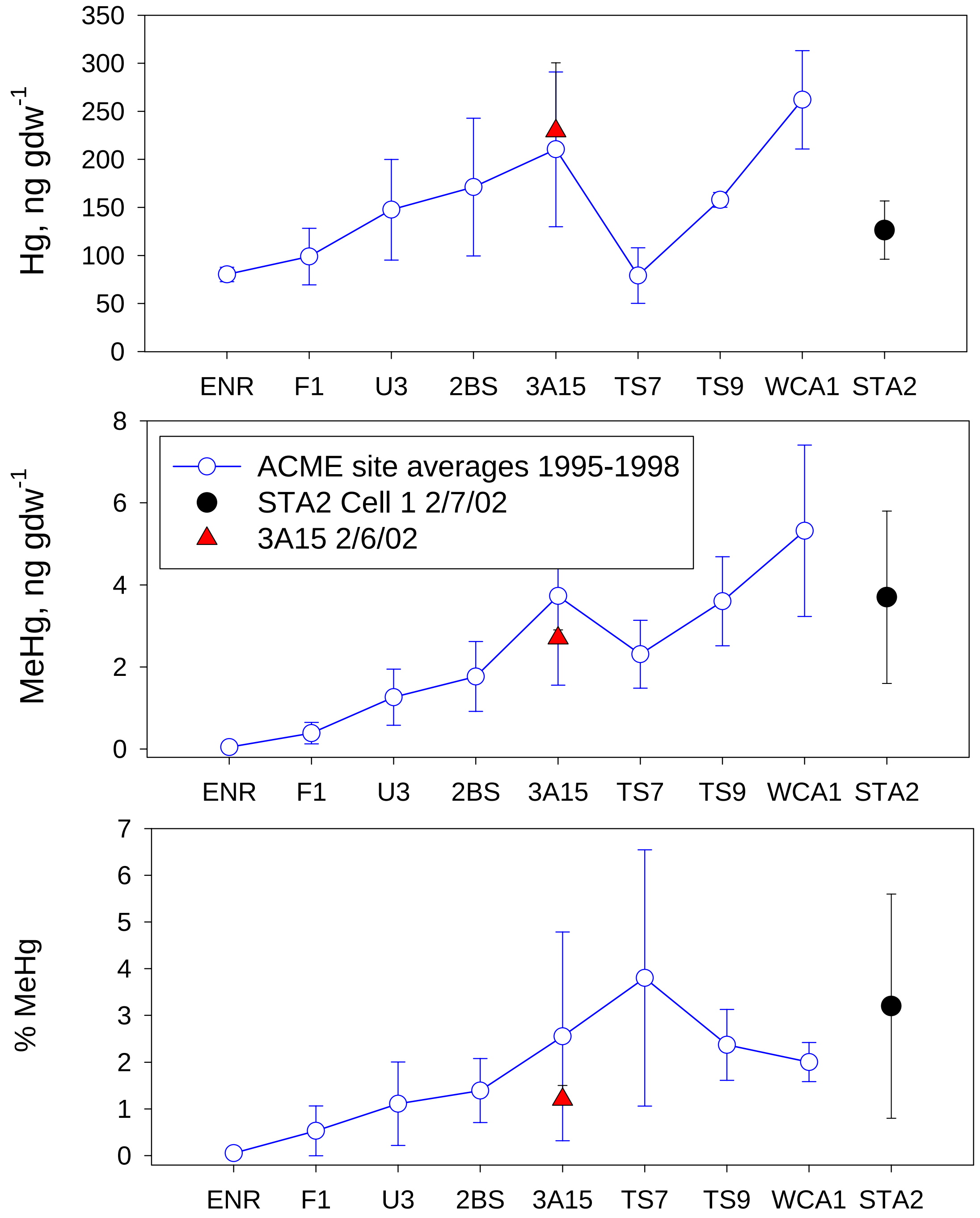


Fig. 6. Comparison of Hg, MeHg and %MeHg (MeHg/Hg * 100) in dry/rewet study sites (sampled Feb 2002) vs. the averages for ACME sites in the Everglades, between 1995 and 1998.

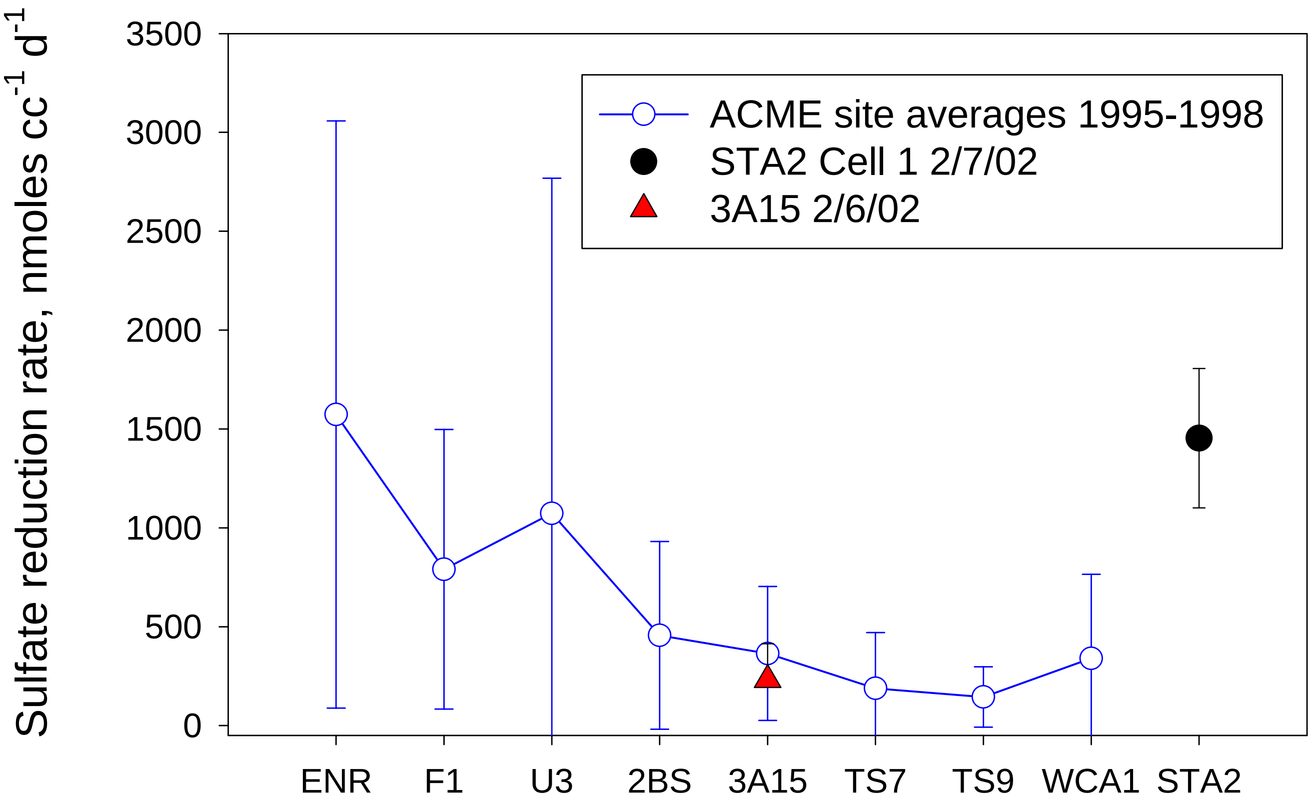


Fig. 7. Comparison of Hg, MeHg and %MeHg (MeHg/Hg * 100) in dry/rewet study sites (sampled Feb 2002) vs. the averages for ACME sites in the Everglades, between 1995 and 1998.

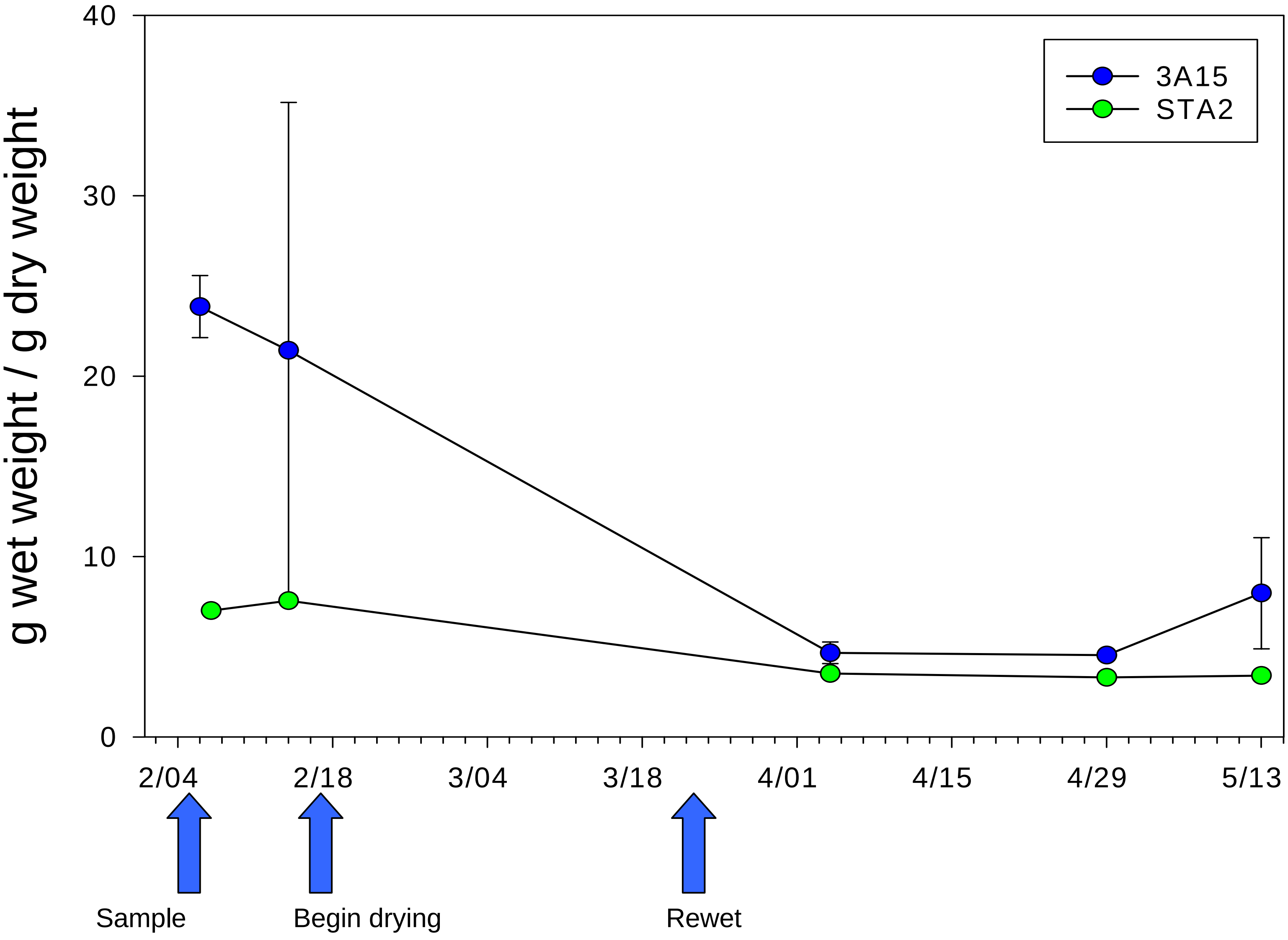


Fig. 8. Dry bulk density of dried and rewet cores from sites 3A-15 and STA-2.

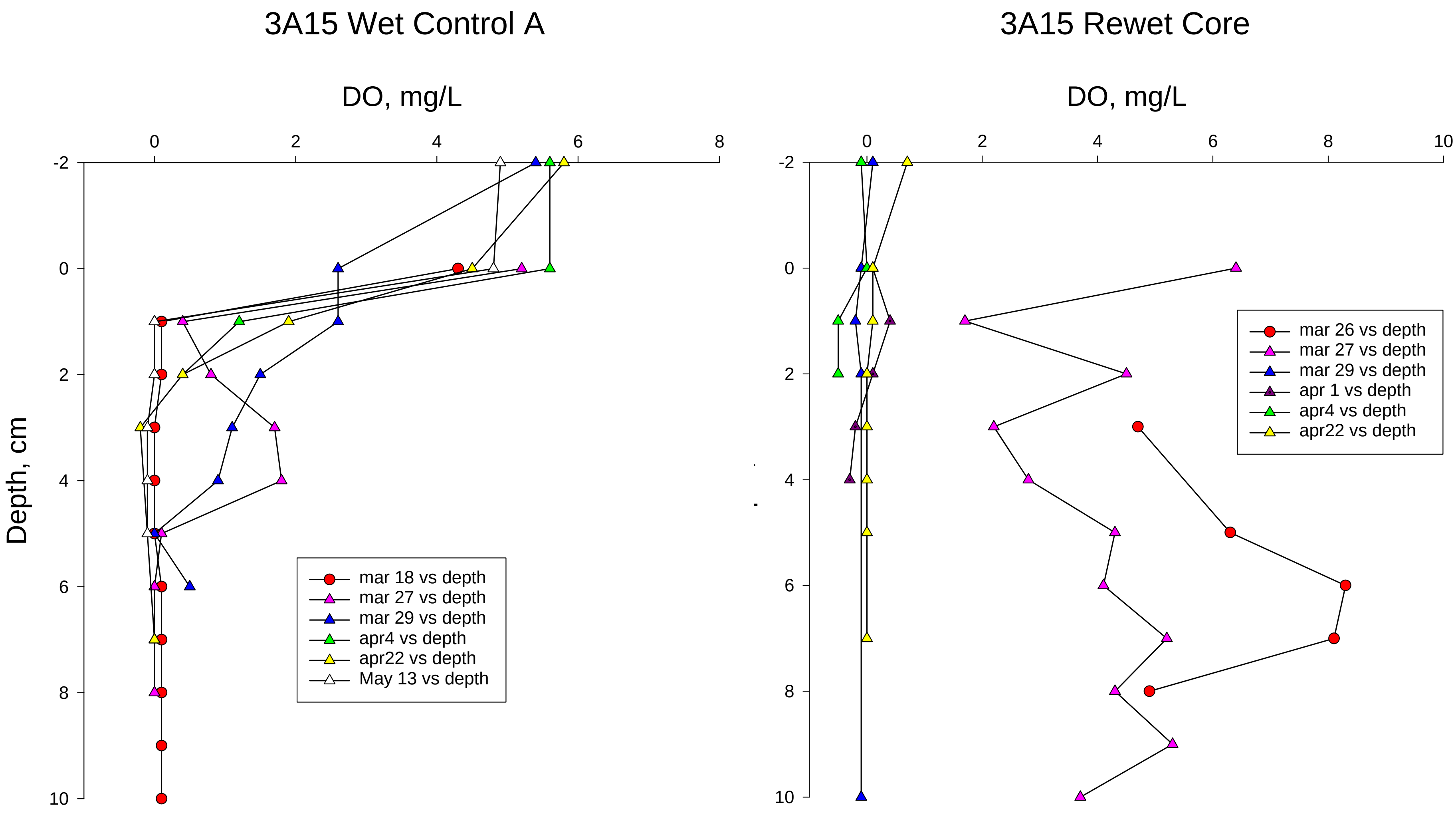


Fig. 9. Dissolved oxygen in wet control cores and dry/rewet cores from site 3A-15.

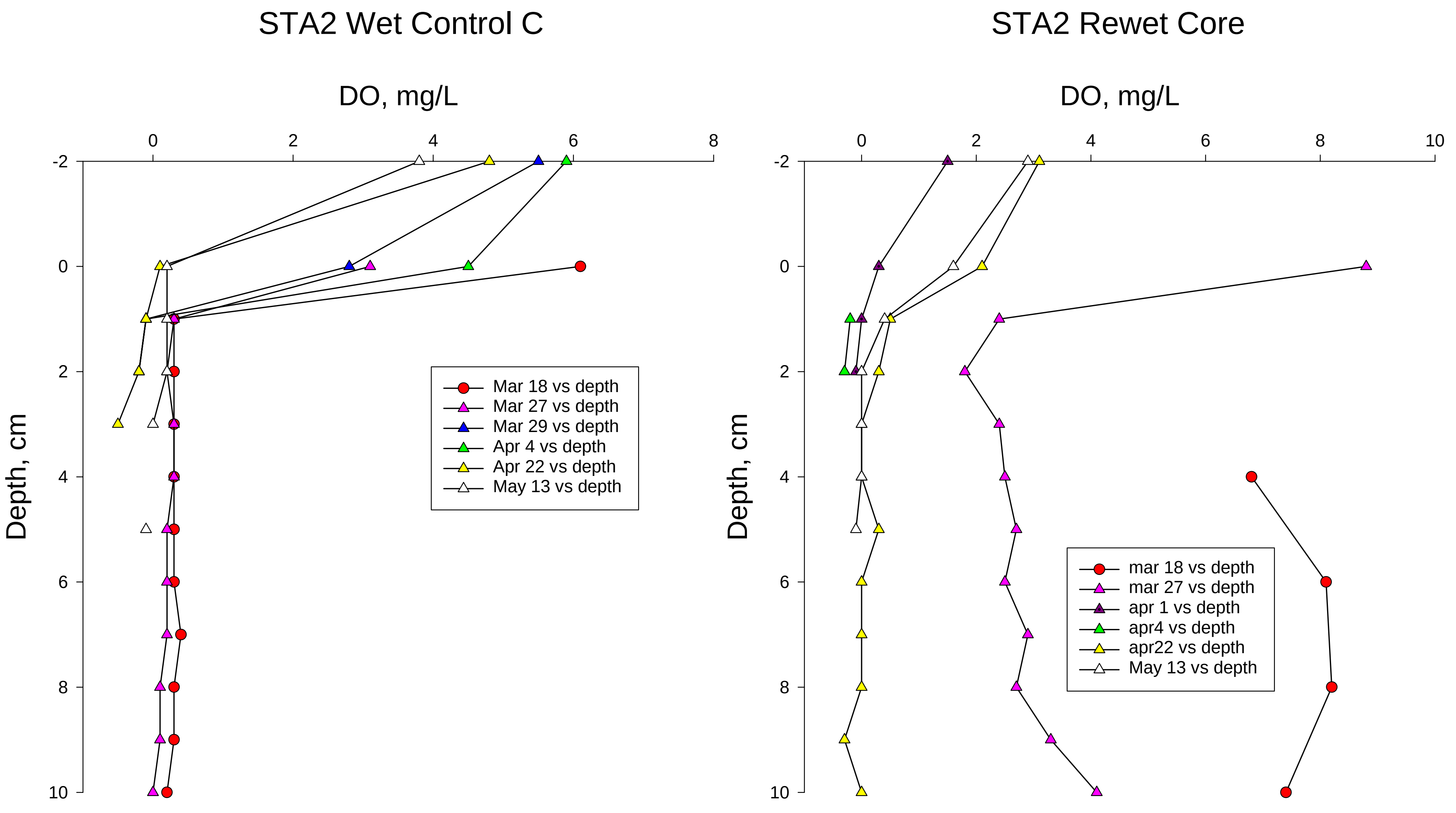
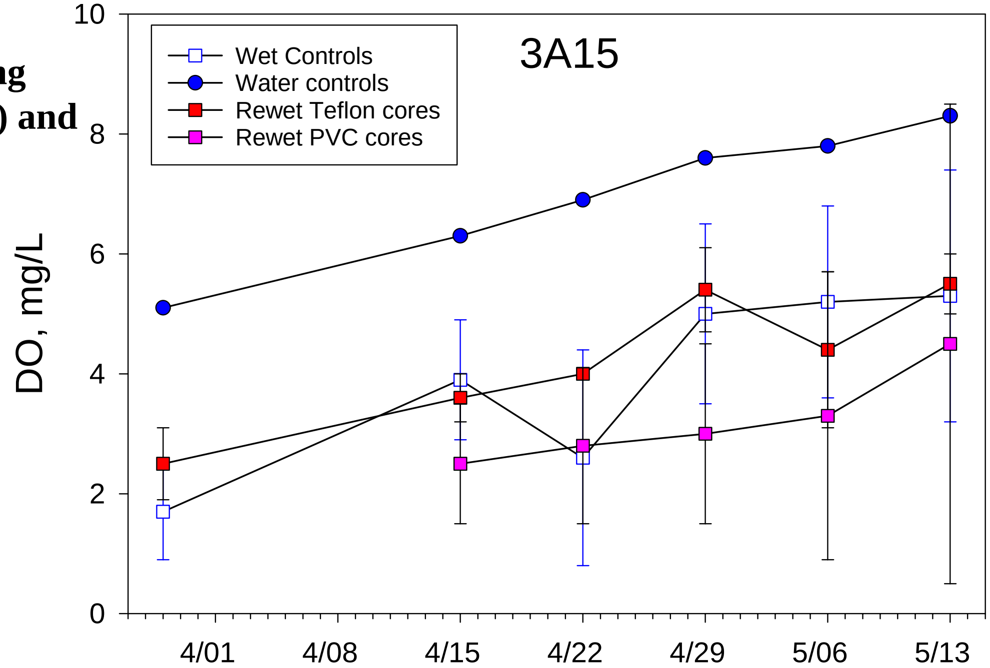


Fig. 10. Dissolved oxygen in wet control cores and dry/rewet cores from site STA-2.

Fig. 11. Dissolved oxygen in overlying water of cores from sites 3A-15 (top) and STA-2 (bottom).



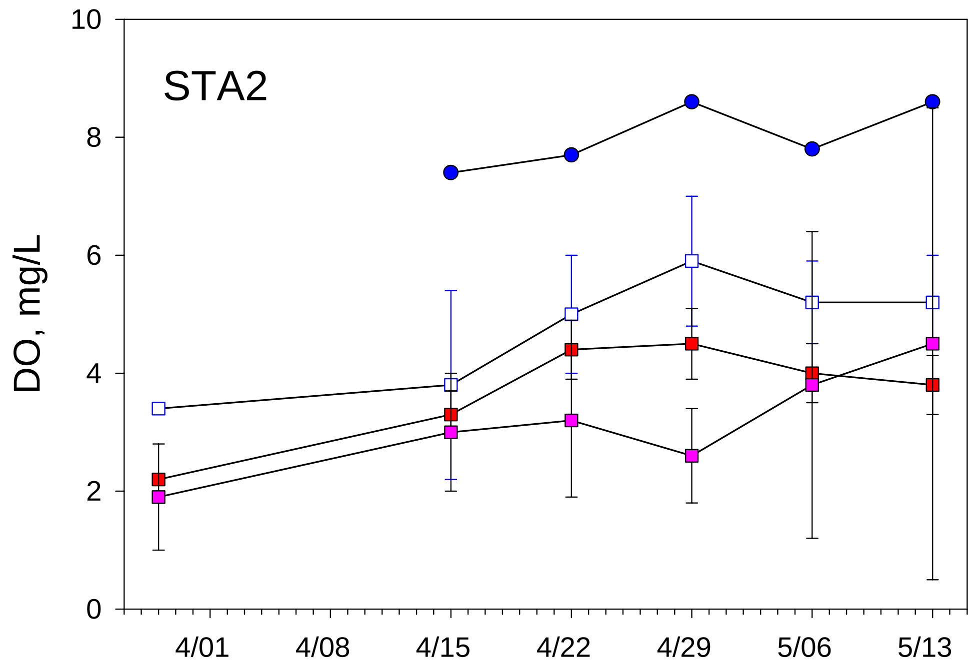


Fig. 12. Average concentrations of MeHg (top) and mercury (bottom) in soils from dry.rewet cores at site 3A-15.

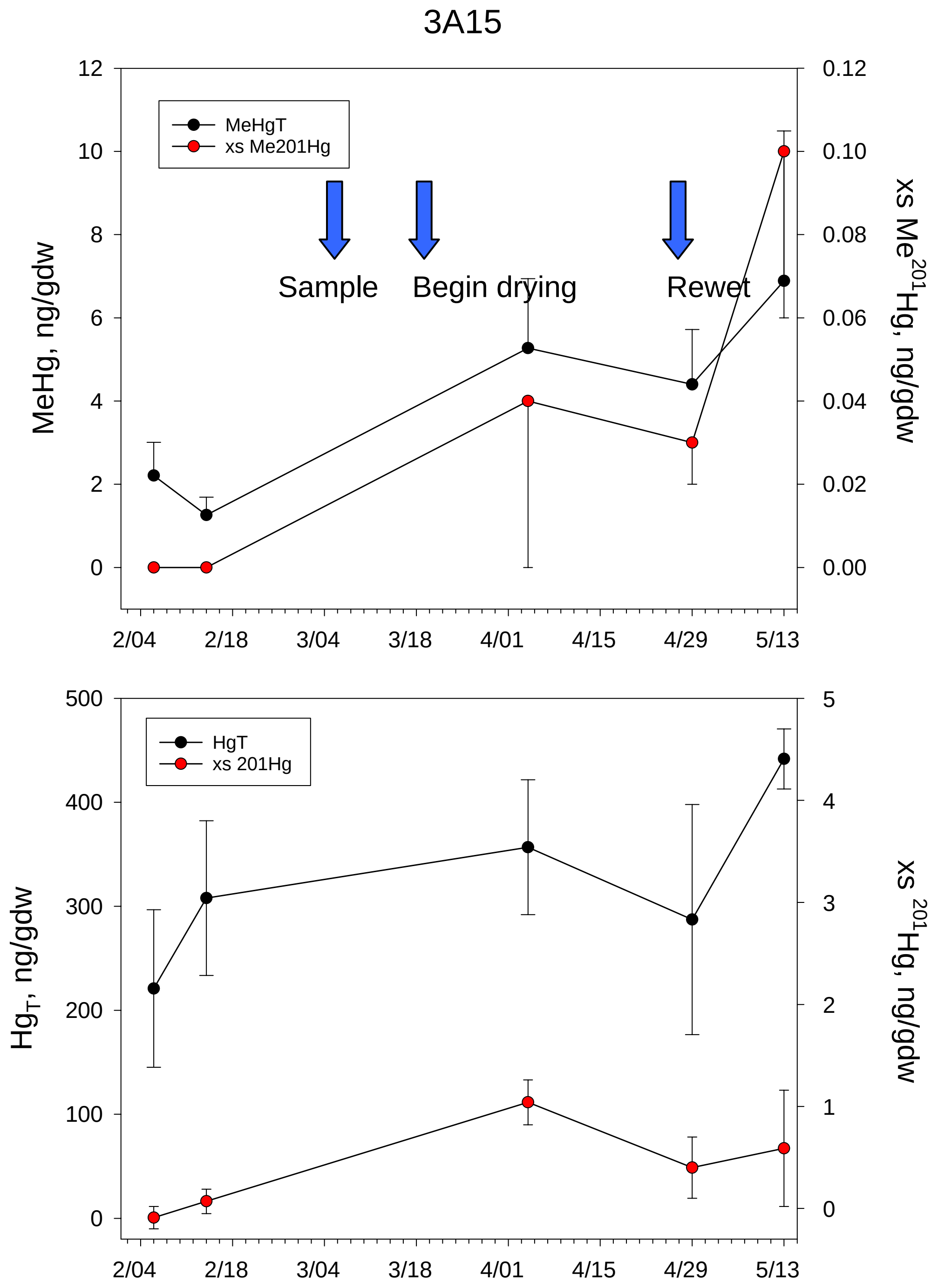


Fig. 13. Individual measurements of MeHg (top) and mercury (bottom) in sediments from dry/rewet cores from site 3A-15.

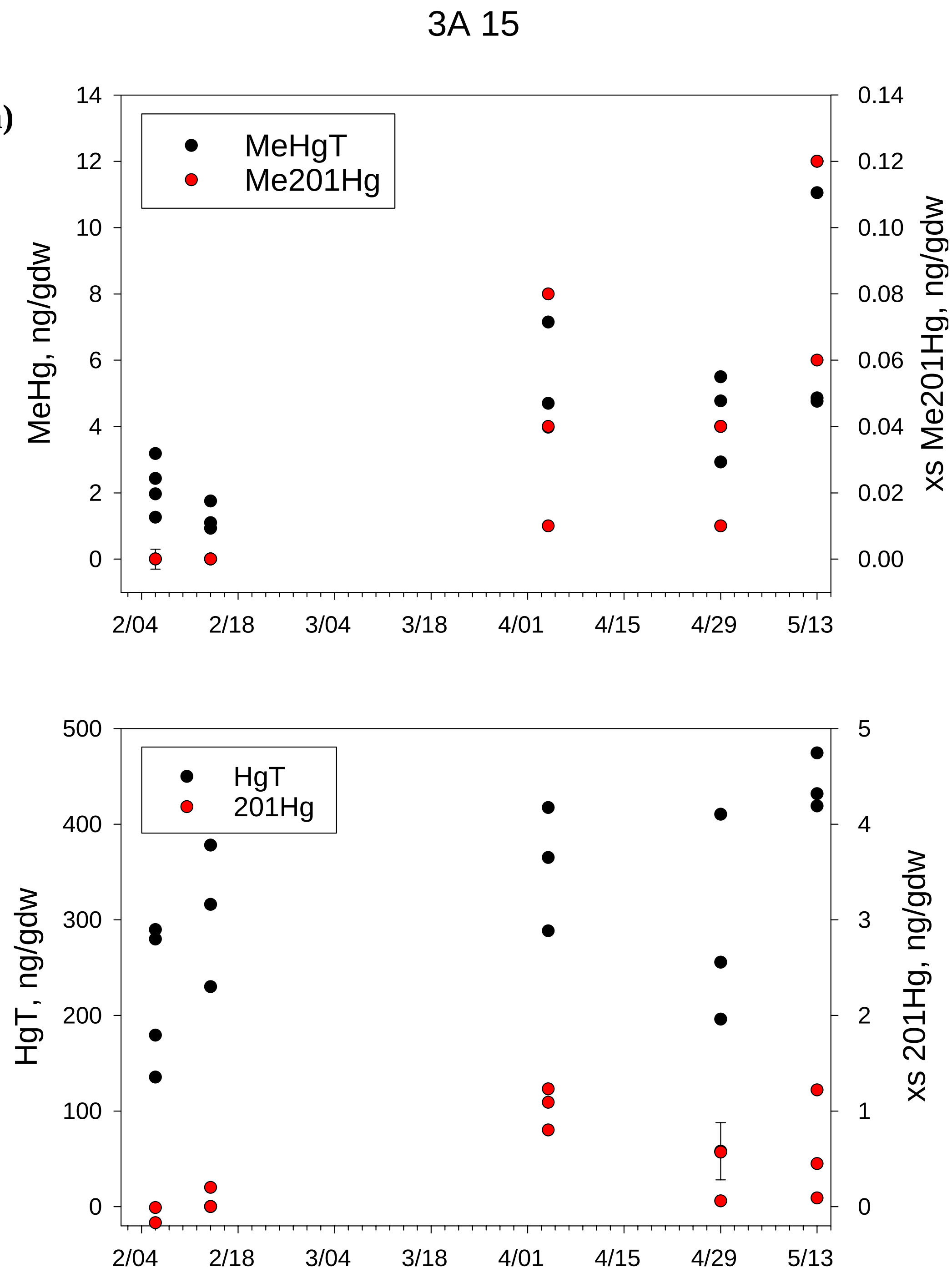


Fig. 14. Average concentrations of MeHg (top) and mercury (bottom) in soils from dry.rewet cores at site STA-2.

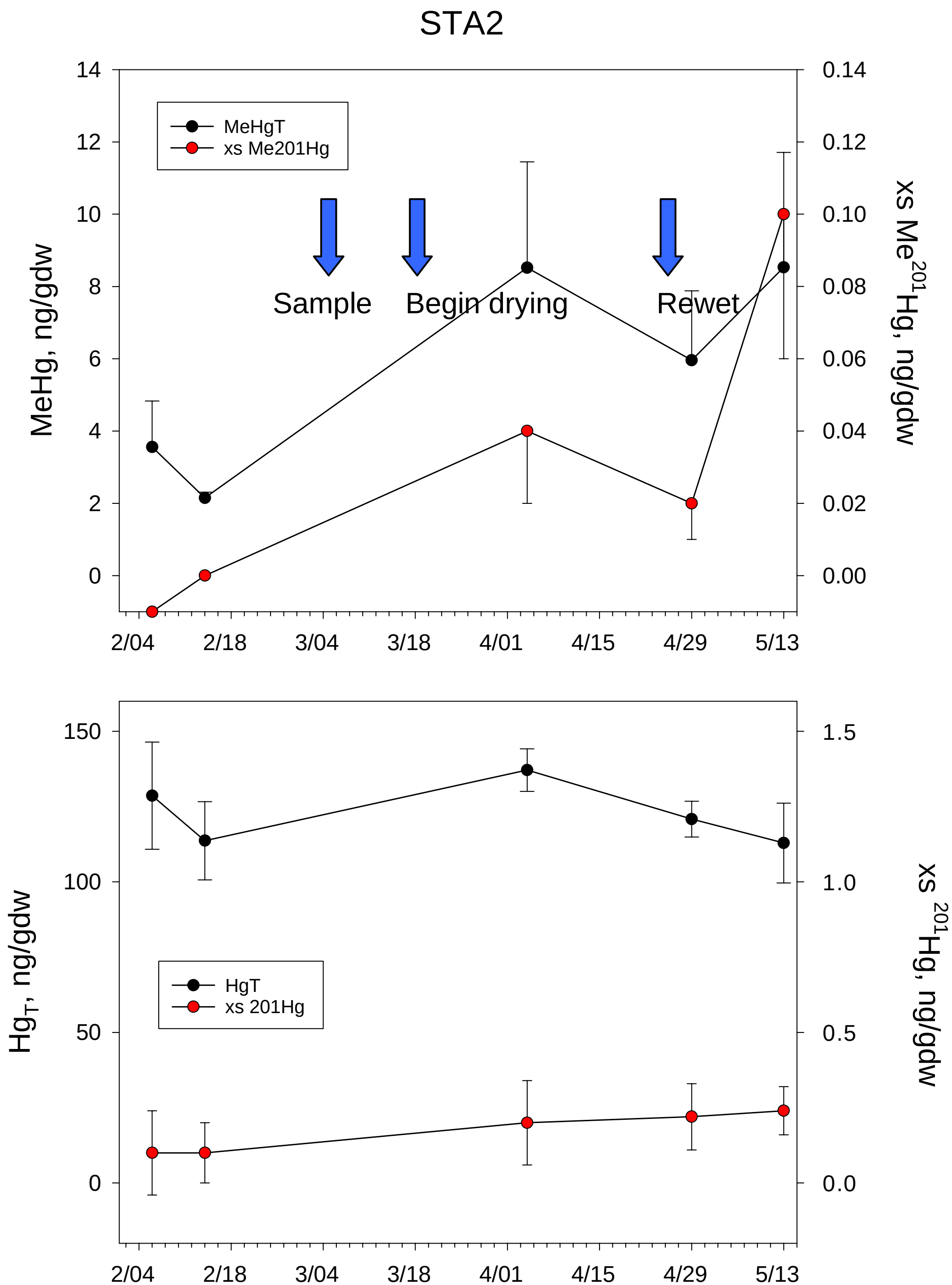


Fig. 15. Individual measurements of MeHg (top)and mercury (bottom) in sediments from dry/rewet cores from site STA-2.

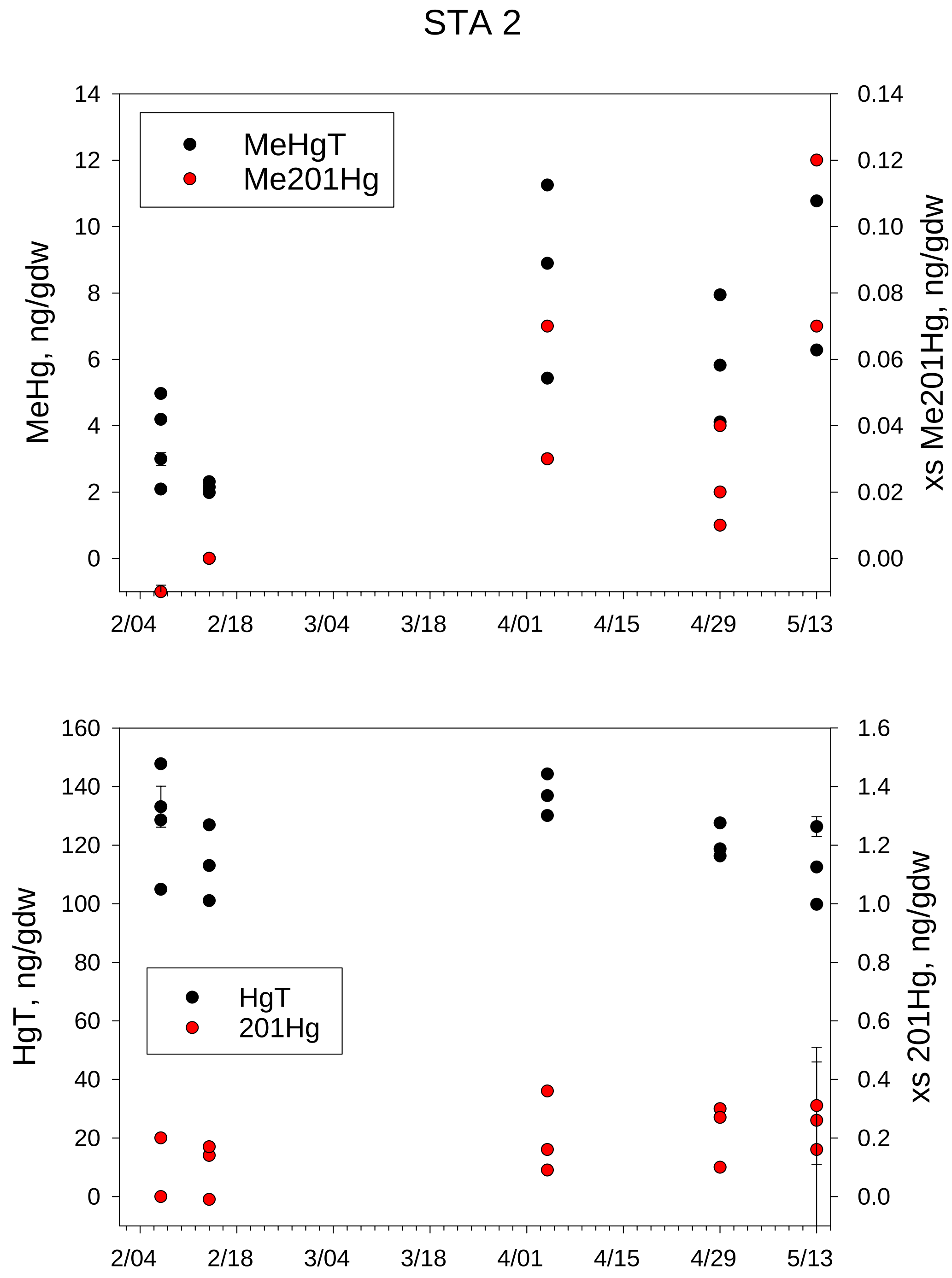


Fig. 16. The % MeHg of total mercury in sediments from the dry/rewet cores at site 3A-15 (top) and the %methylation of added mercury isotope (201Hg) in these same cores (bottom).

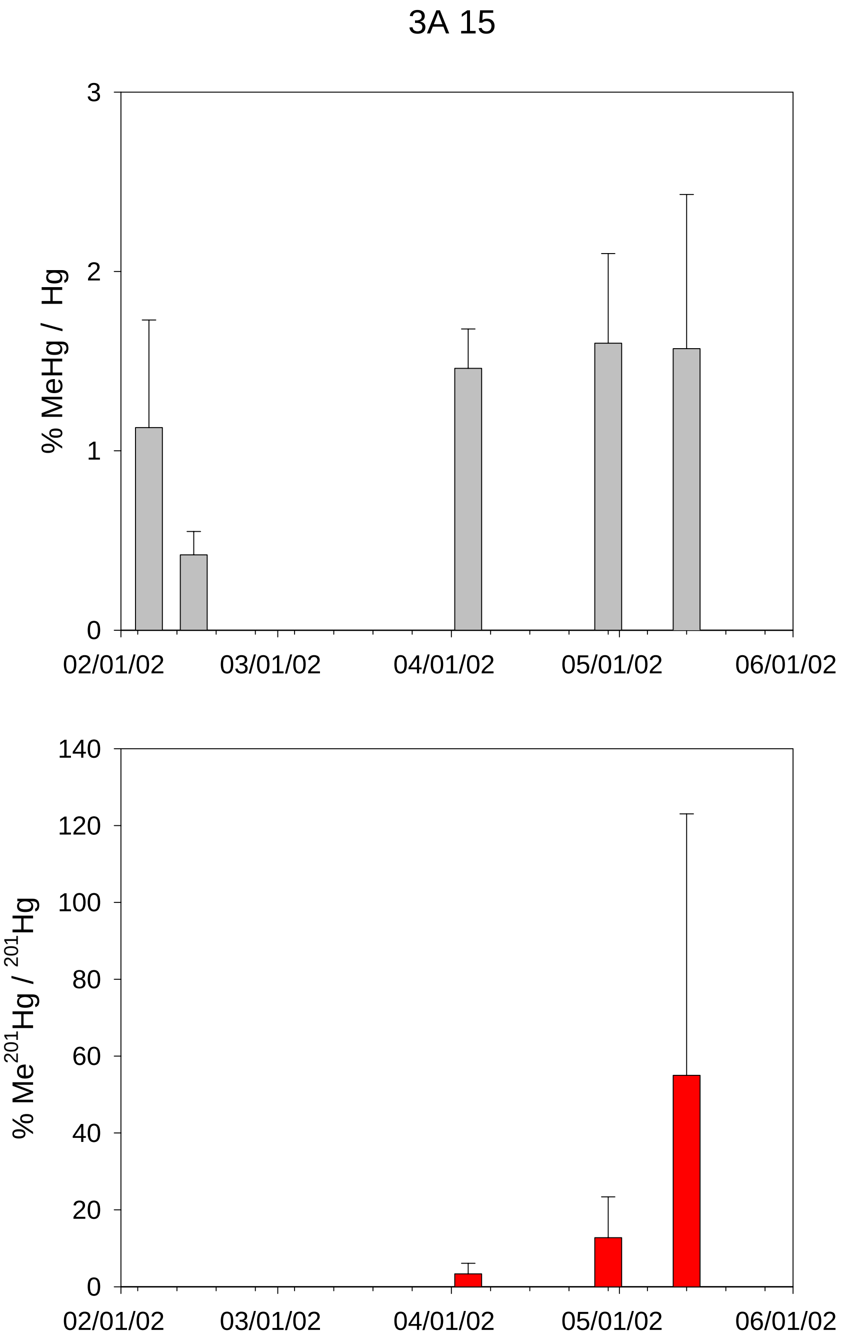


Fig. 17. The % MeHg of total mercury in sediments from the dry/rewet cores at site STA-2 (top) and the %methylation of added mercury isotope (201Hg) in these same cores (bottom).

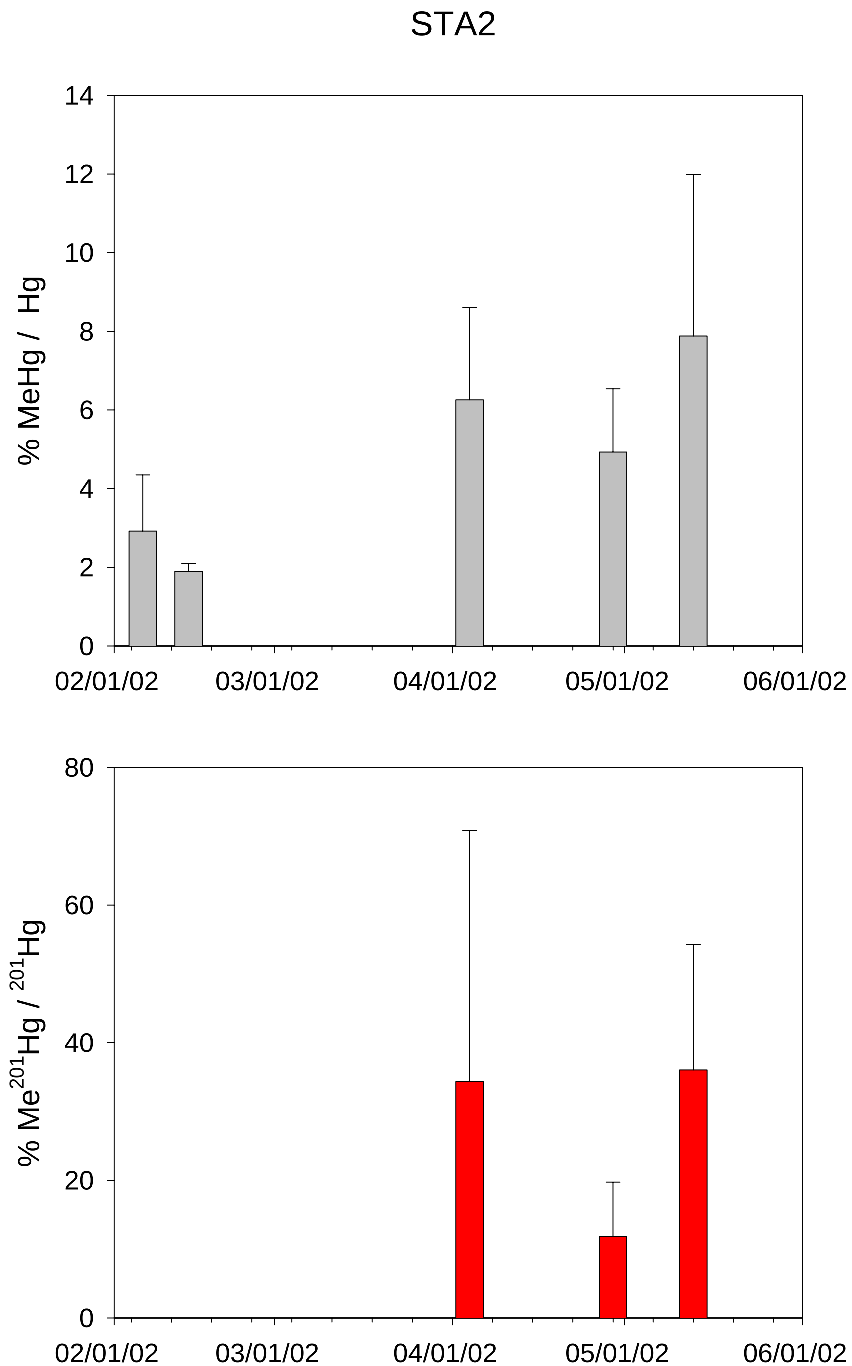


Fig. 18. Concentrations of acid volatile sulfides or AVS (top) and chromium reducible sulfides or CRS (representing disulfides including pyrite) in sediments of the dry/rewet cores from site 3A-15.

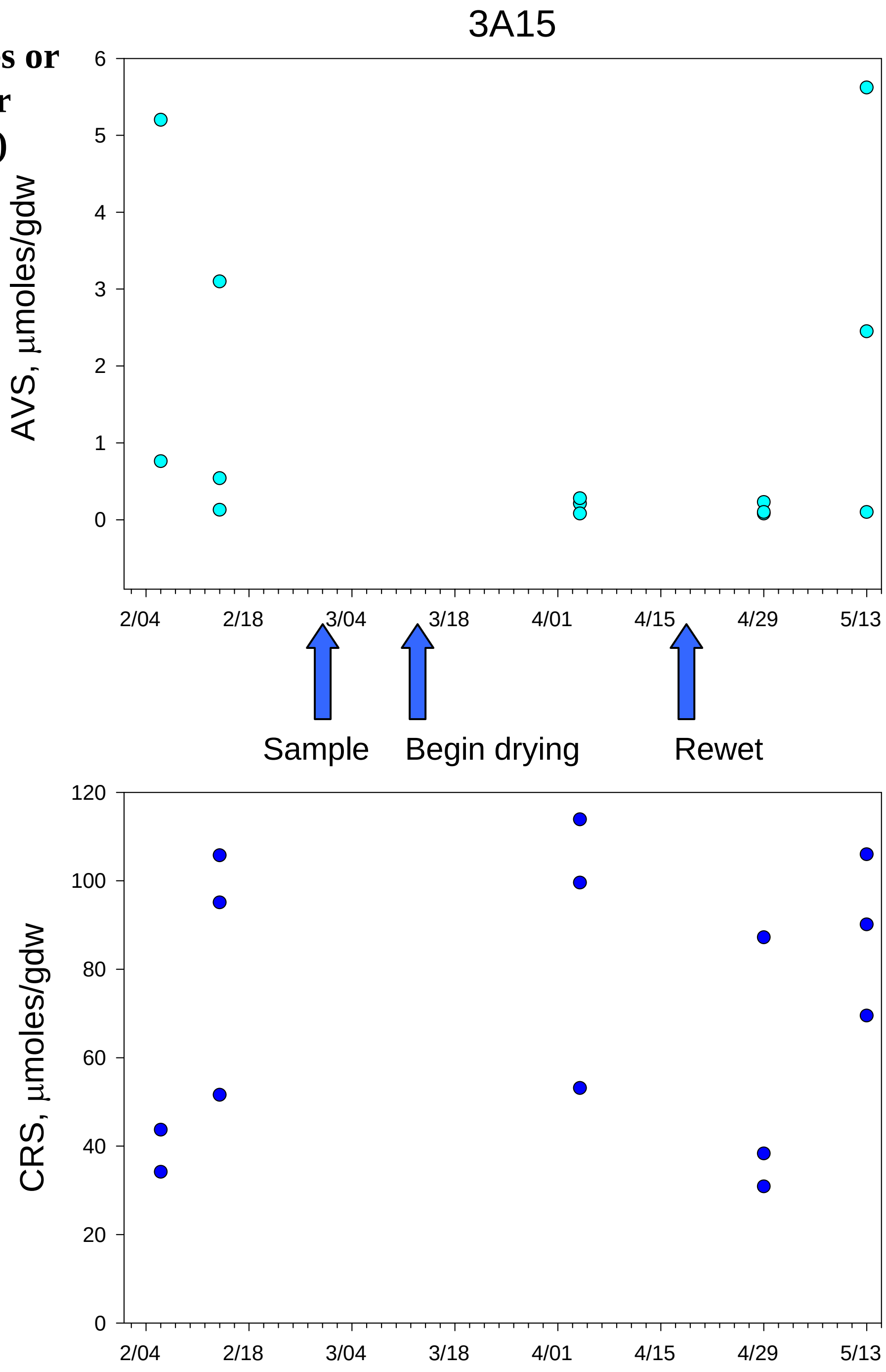
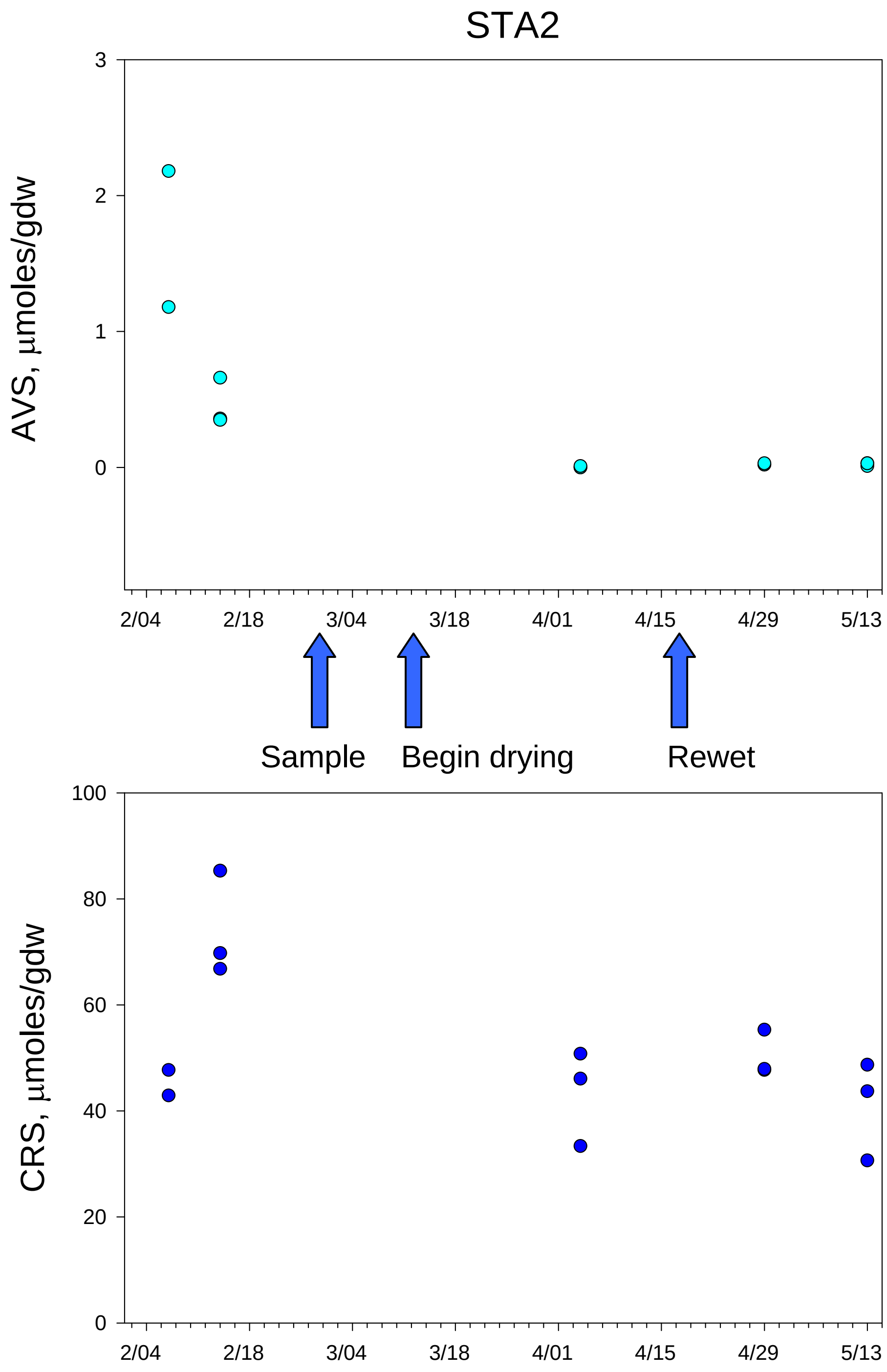


Fig. 19. Concentrations of acid volatile sulfides or AVS (top) and chromium reducible sulfides or CRS (representing disulfides including pyrite) in sediments of the dry/rewet cores from site 3A-15.



3A15

Fig. 20. Concentrations of MeHg (top) and isotopically labeled ($Me^{201}Hg$) MeHg in water overlying dry/rewet cores from site 3A-15.

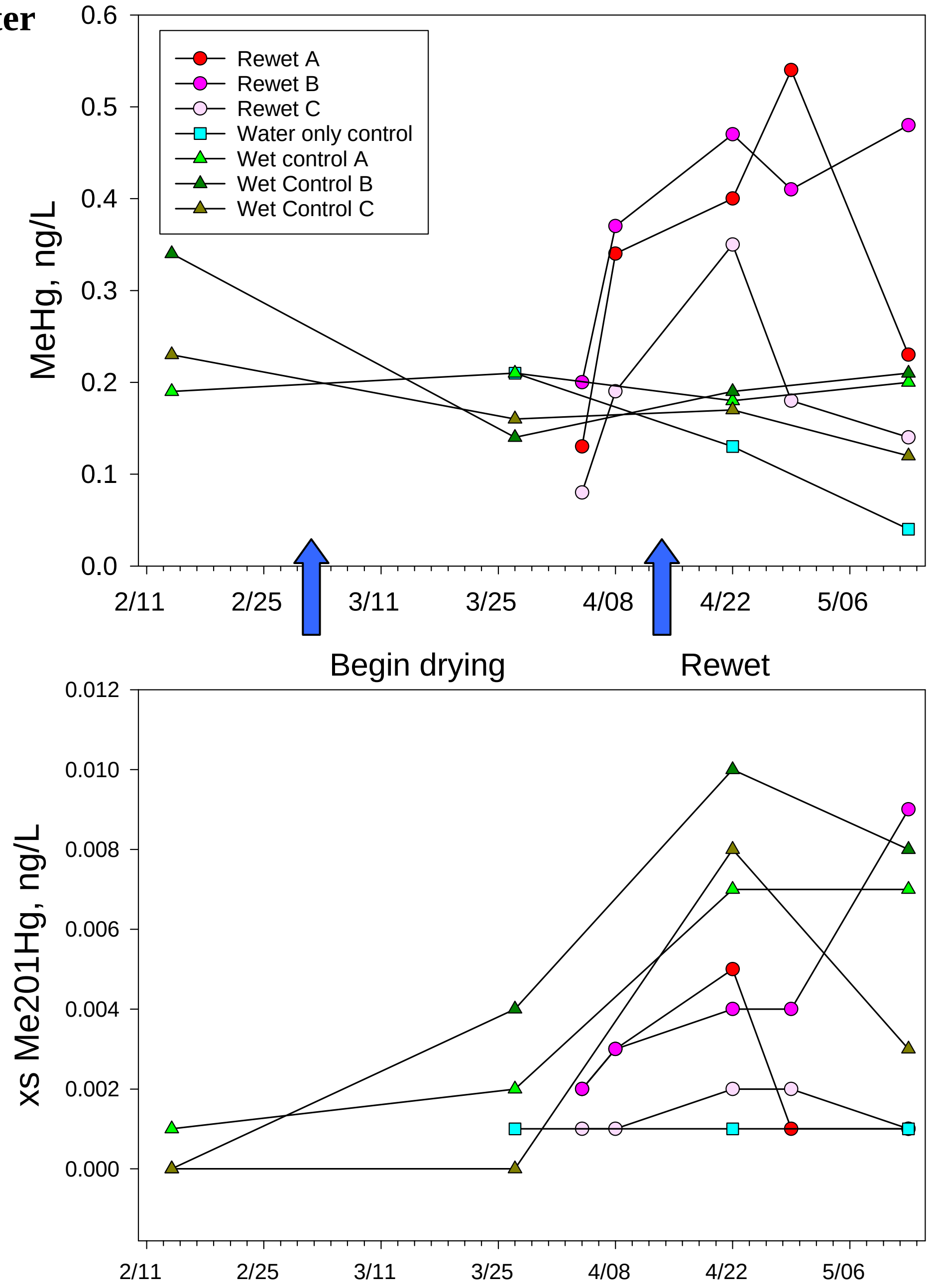


Fig. 21. Average concentrations by treatment of native MeHg (top) and labeled $Me^{201}Hg$ (bottom) in overlying water of dry/rewet cores from site 3A-15.

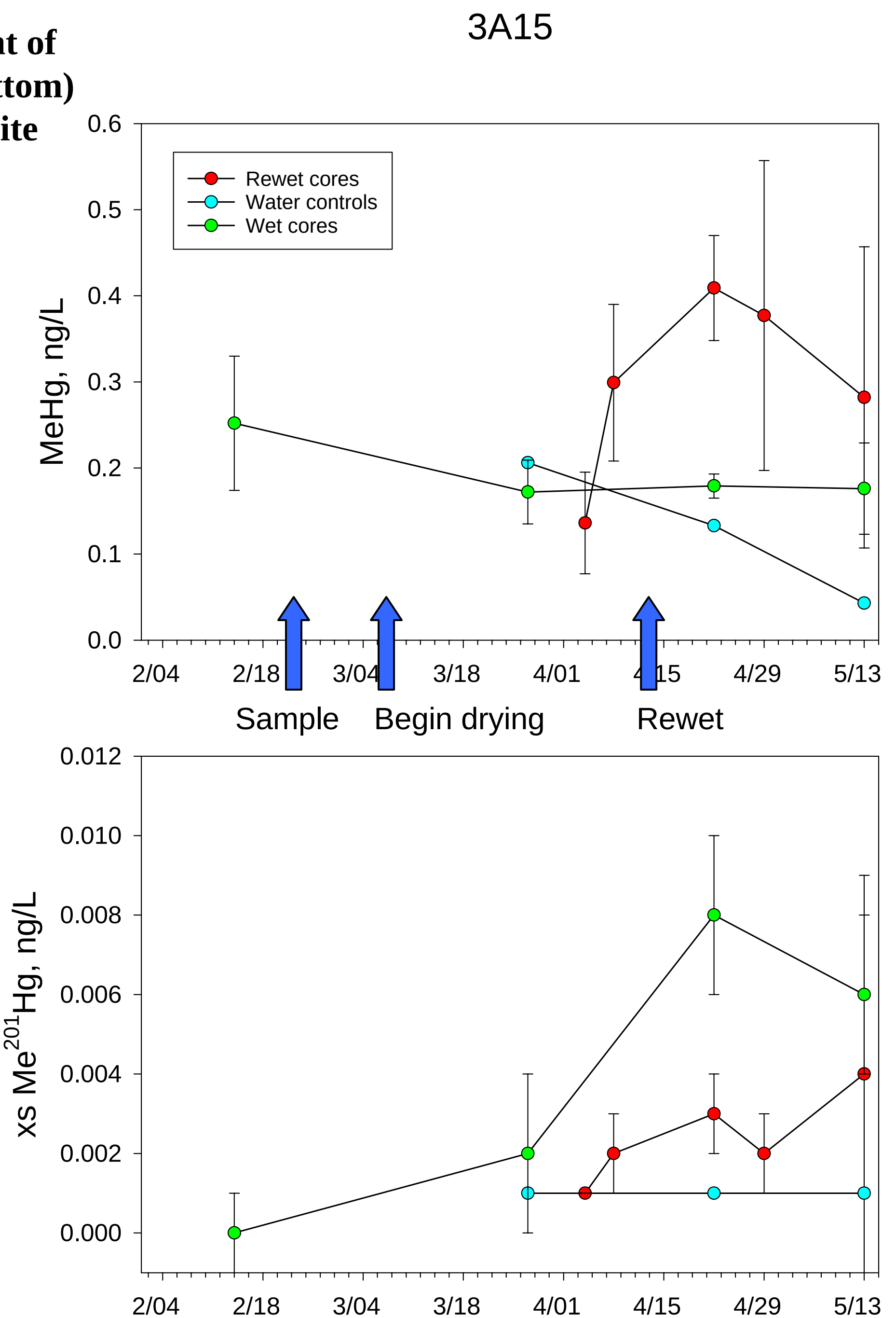


Fig. 22. Concentrations of MeHg (top) and isotopically labeled ($Me^{201}Hg$) MeHg in water overlying dry/rewet cores from site STA-2.

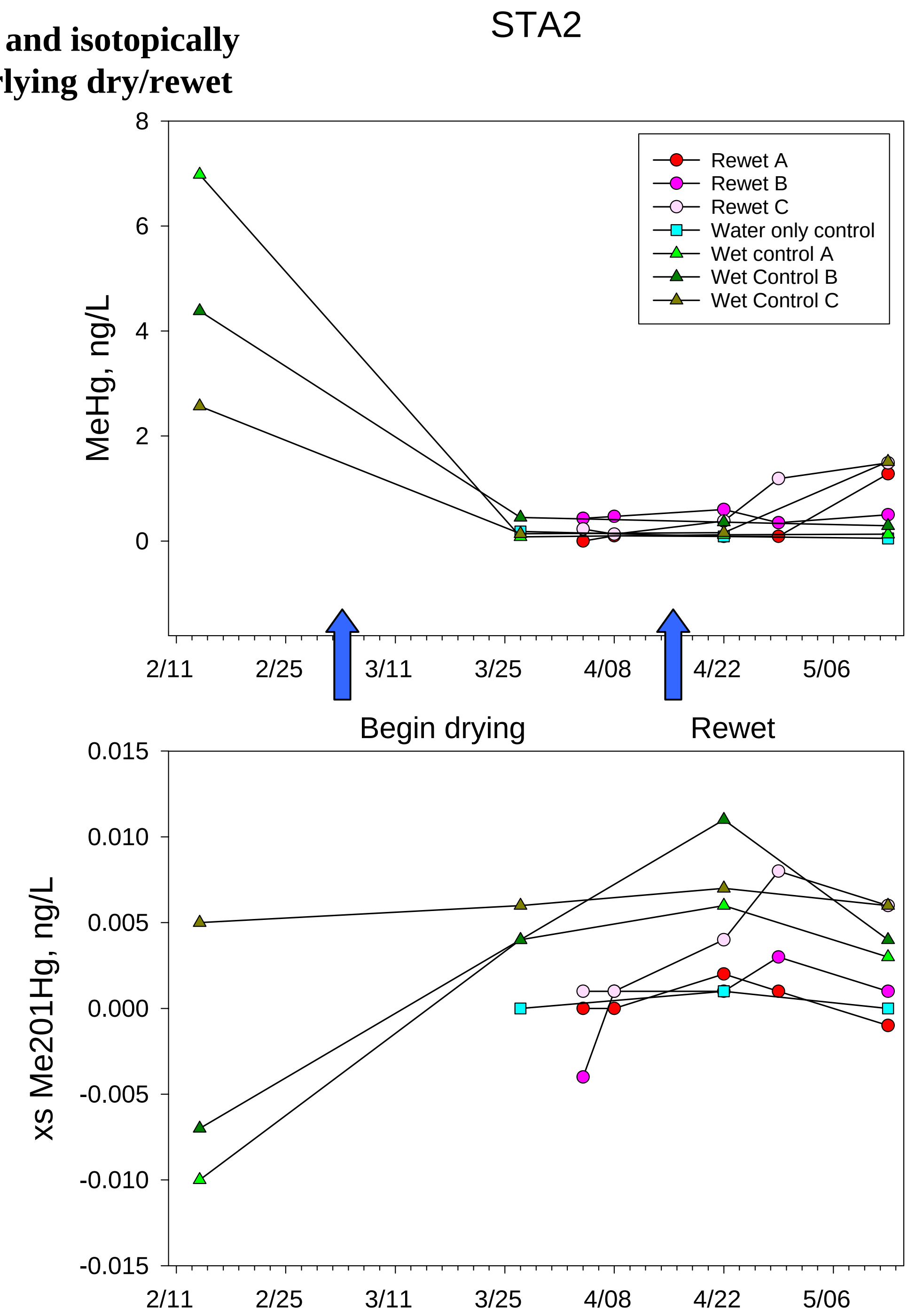


Fig. 23. Average concentrations by treatment of native MeHg (top) and labeled $Me^{201}Hg$ (bottom)in overlying water of dry/rewet cores from site 3A-15.

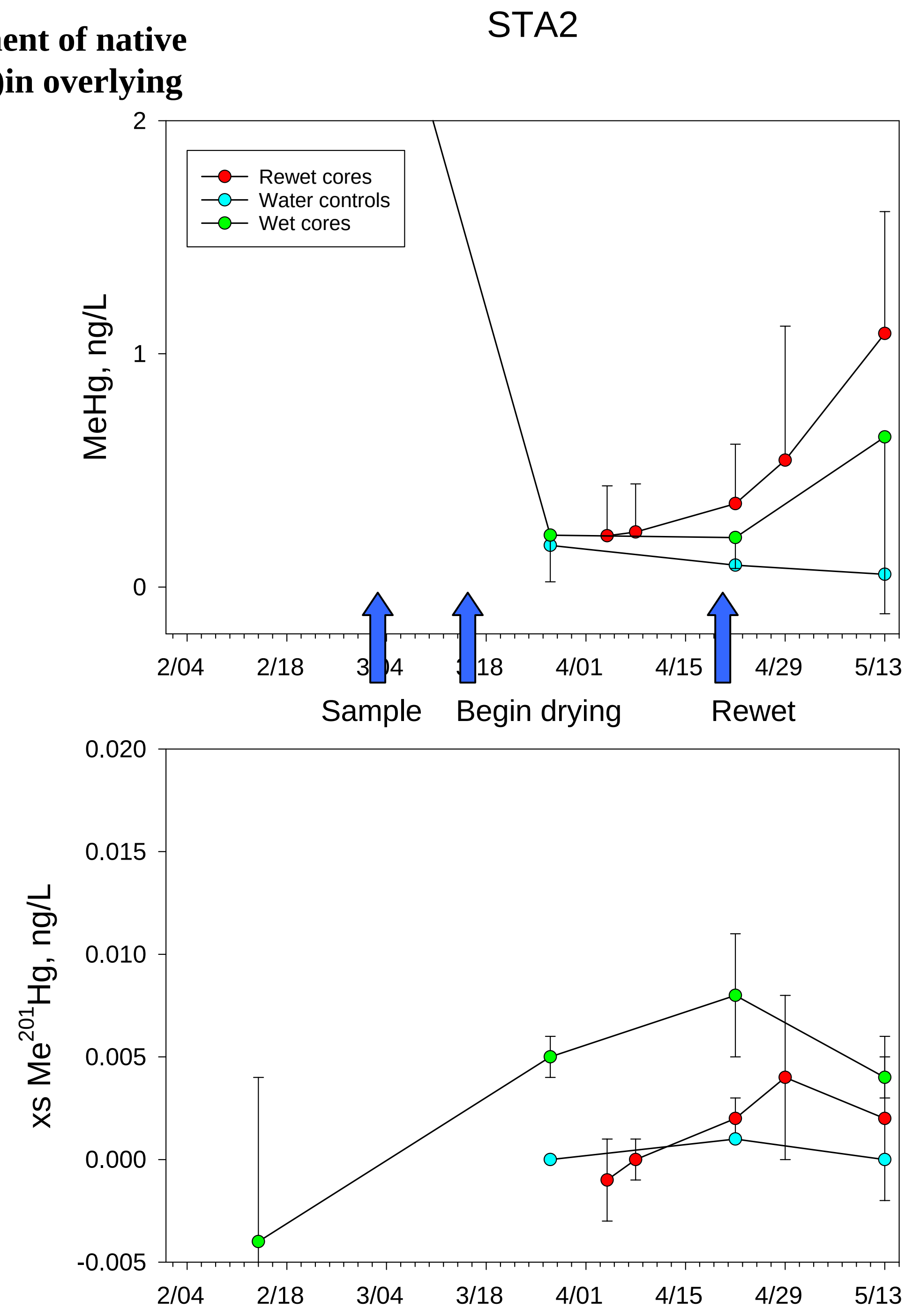


Fig. 24. Average dissolved organic carbon concentrations and related measures by treatment and date in overlying water of dry/rewet cores from site 3A-15. Some porewater information is also shown for dry/rewet cores.

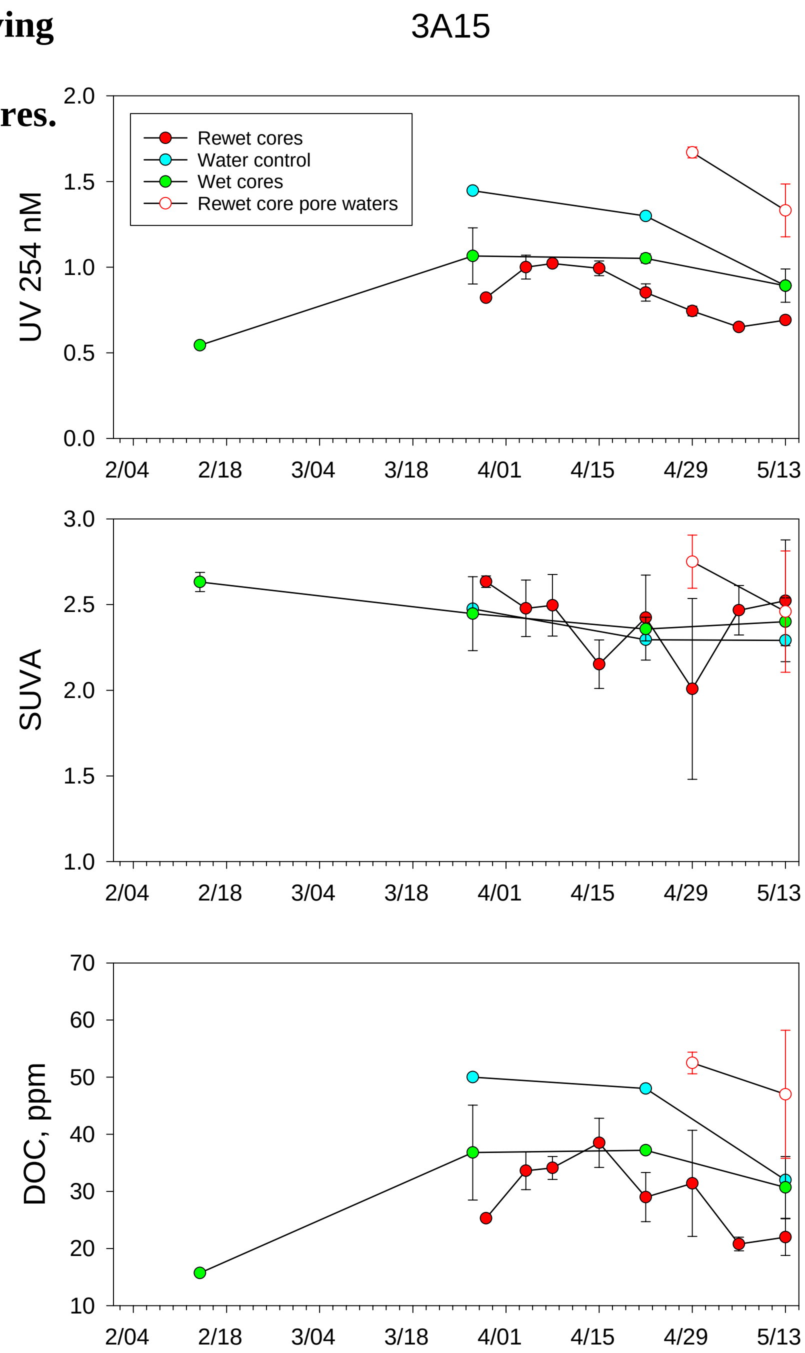


Fig. 25. Average dissolved organic carbon concentrations and related measures by treatment and date in overlying water of dry/rewet cores from site 3A-15. Some porewater information is also shown for dry/rewet cores.

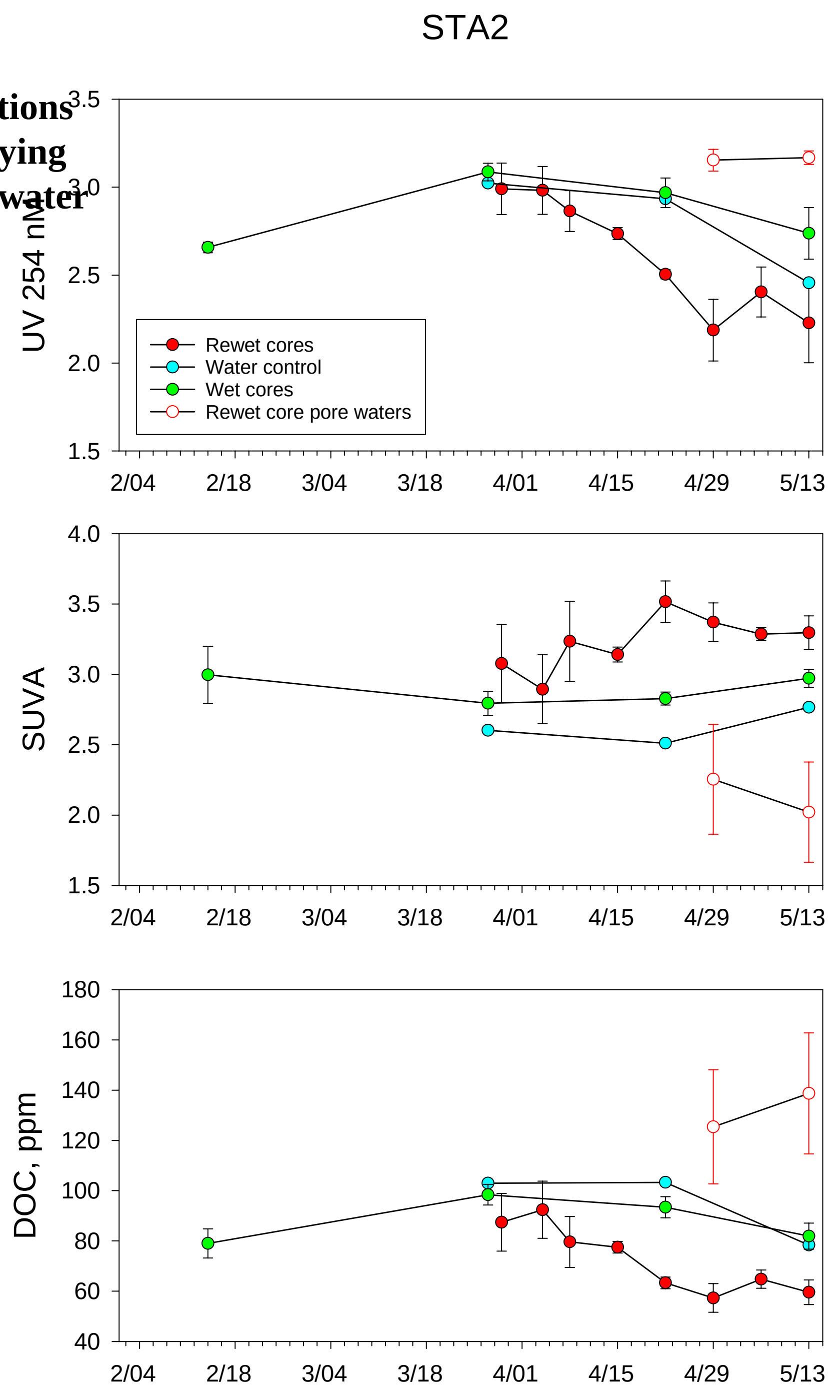


Fig. 26. Chloride concentrations in overlying water of dry/rewet cores.

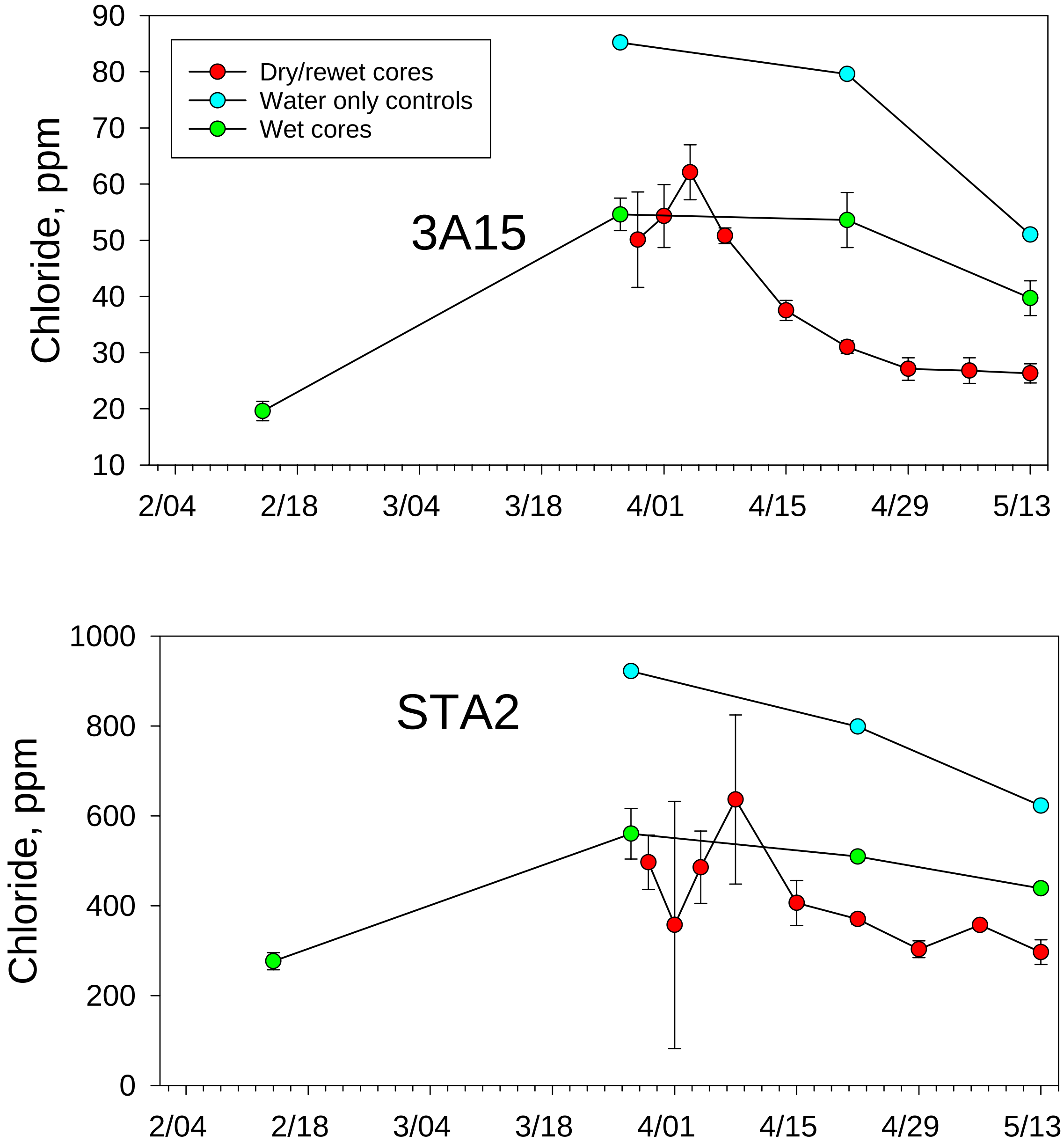


Fig. 27. Average nutrient concentrations in overlying water of dry/rewet cores from site 3A-15.

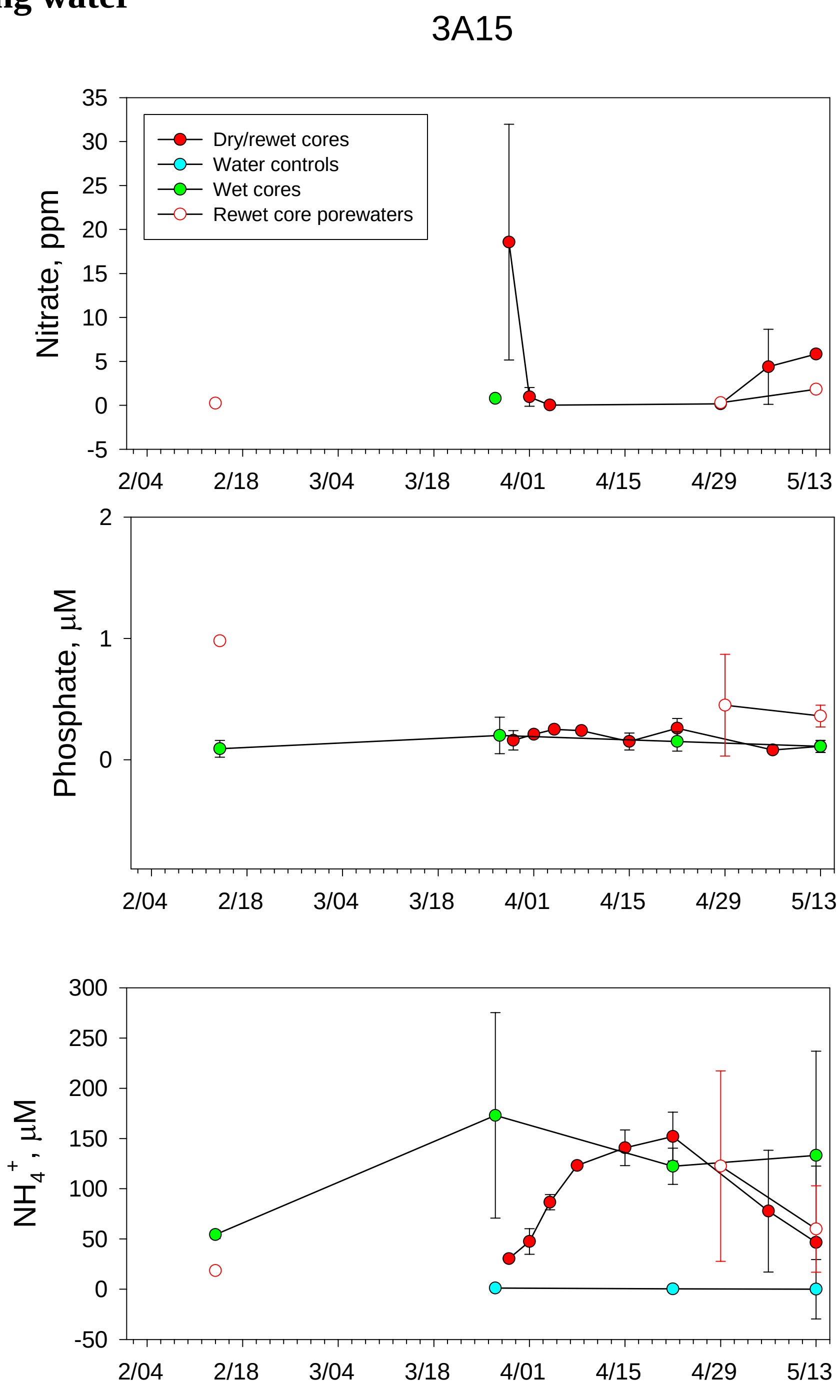


Fig. 28. Average nutrient concentrations in overlying water of dry/rewet cores from site STA-2.

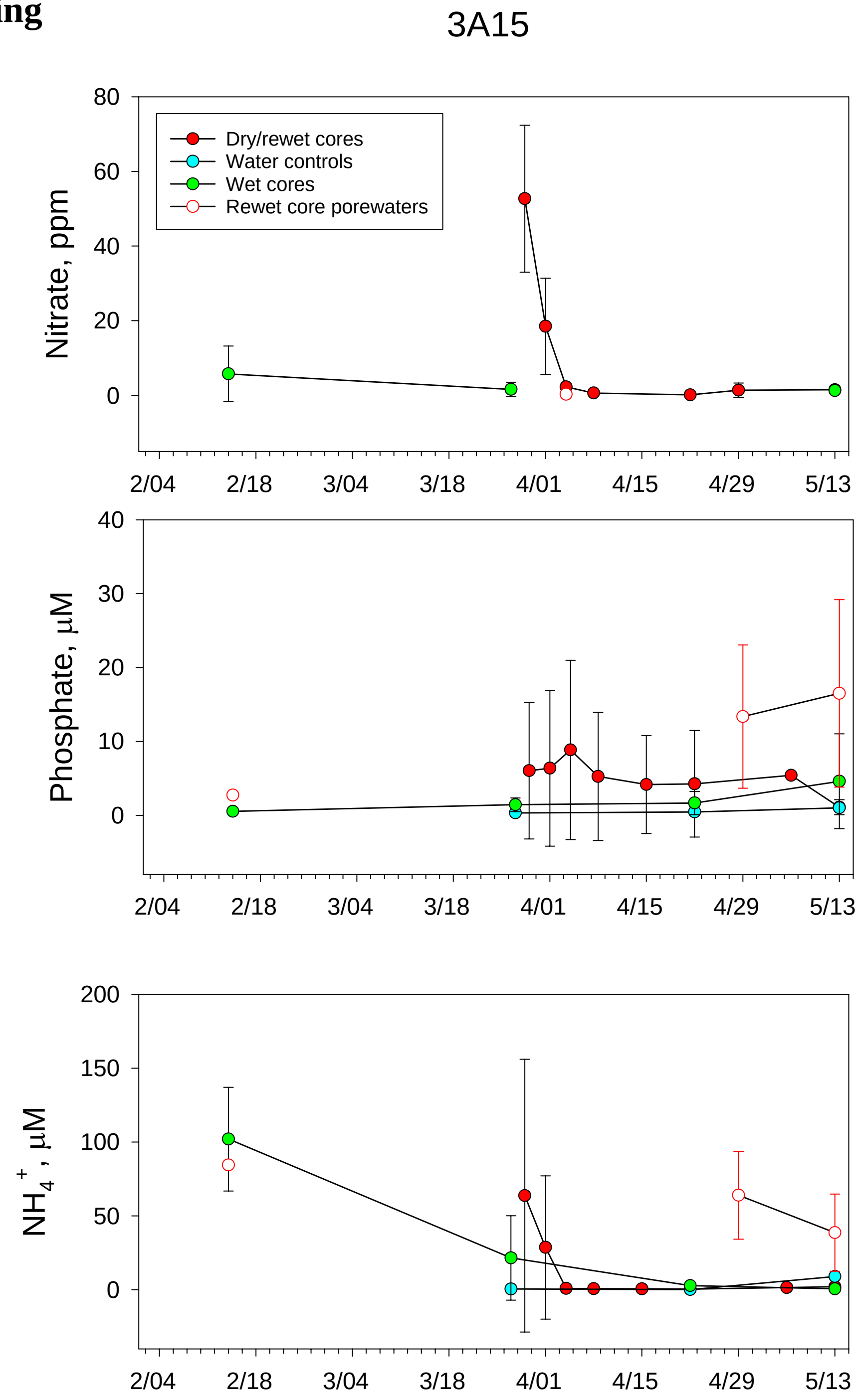


Fig. 29. Sulfate and sulfide concentrations in overlying water and porewater of dry/rewet cores from site 3A-15.

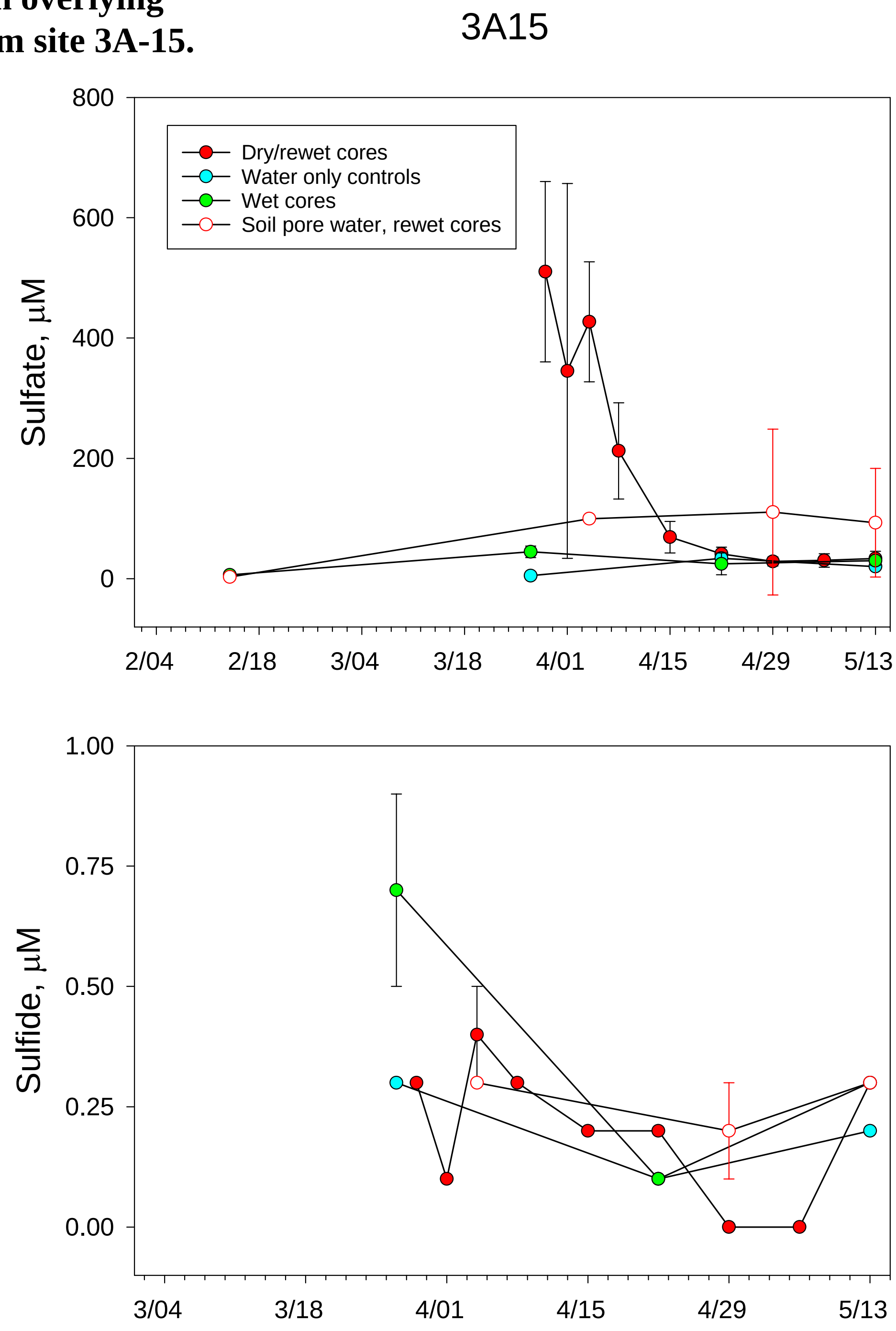


Fig. 30. Sulfate and sulfide concentrations in overlying water and porewater of dry/rewet cores from site STA-2.

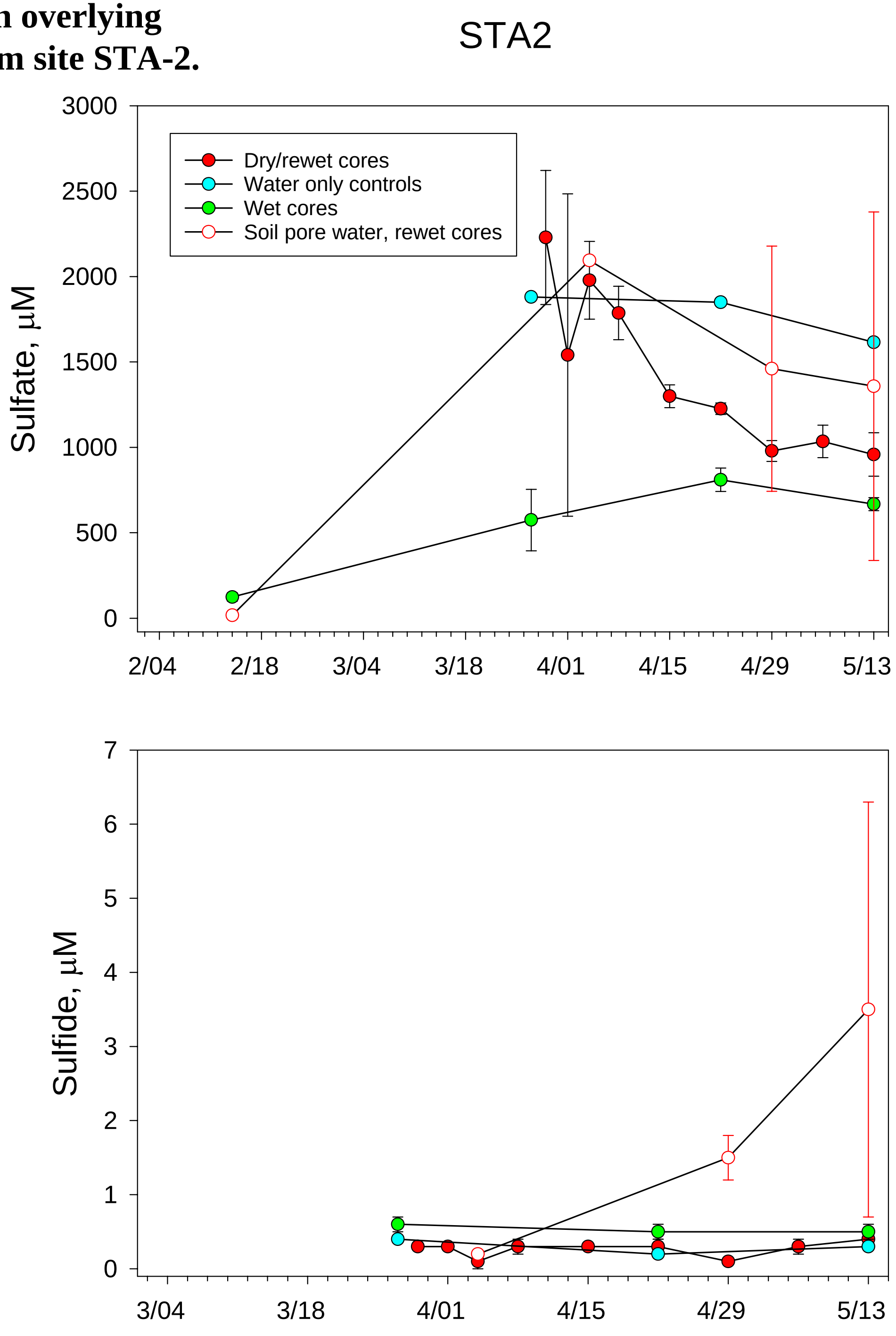
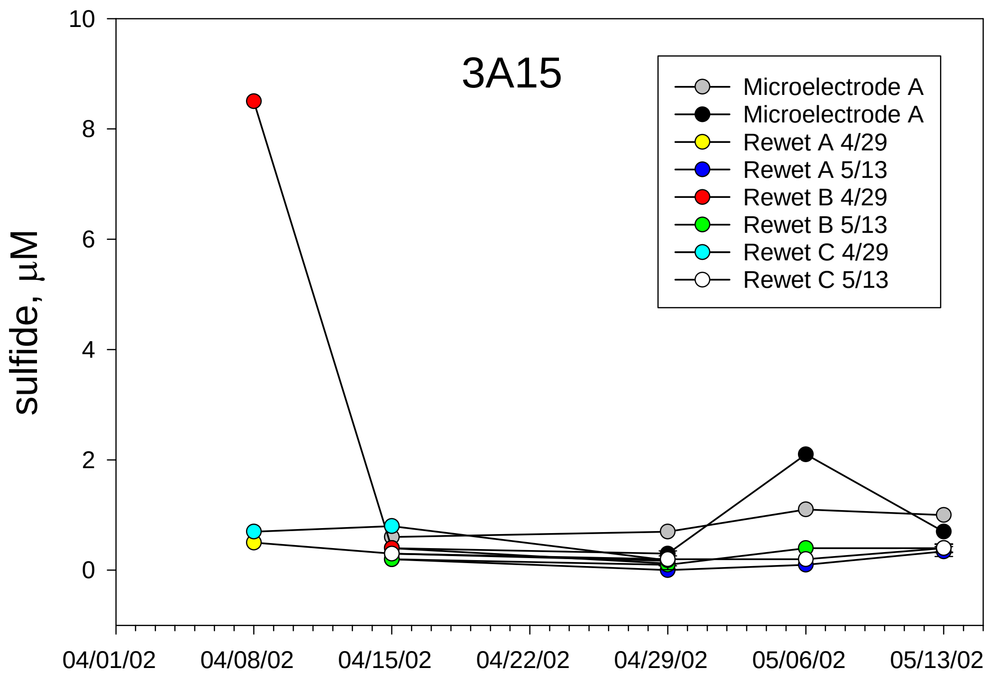


Fig. 31. Detailed porewater sulfide concentrations of dry/rewet cores from sites 3A-15 (top) and STA-2 (bottom).



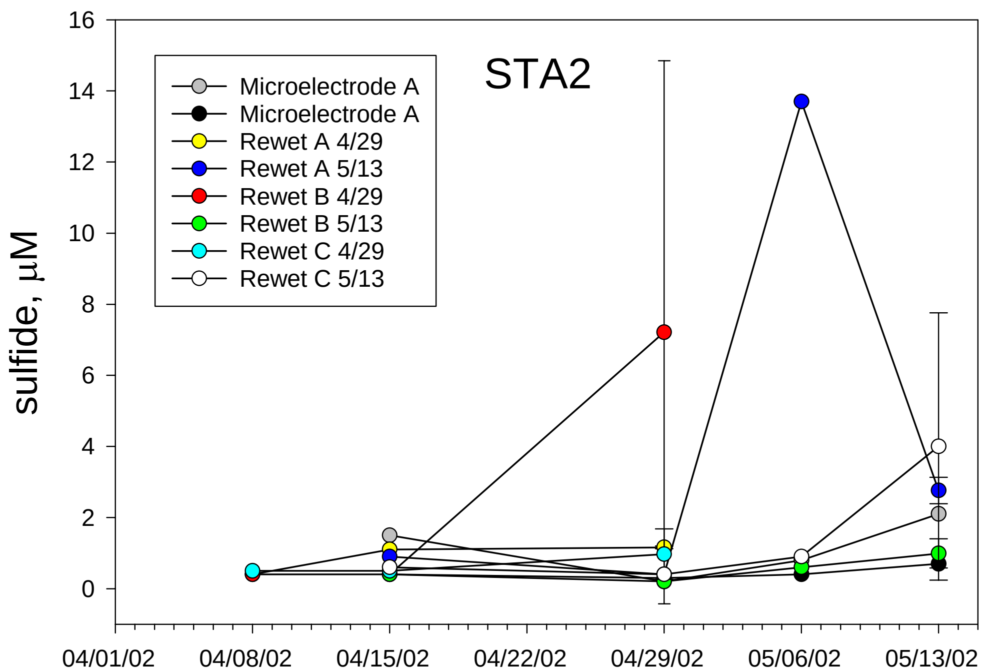


Fig. 32. Comparison of porewater sulfide concentrations in dry/rewet cores and at ACME sites in the Everglades.

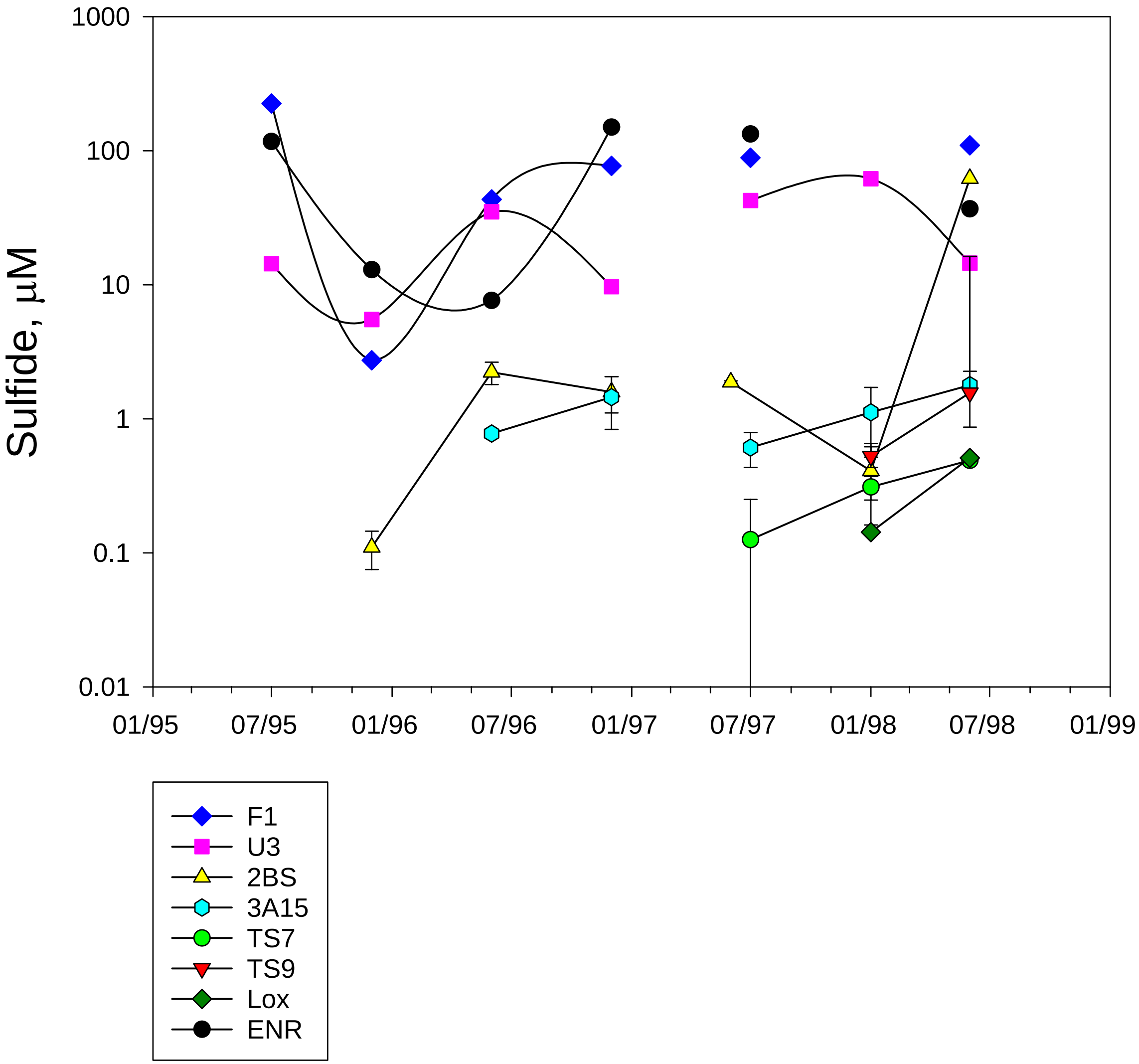


Fig. 33. Average iron and manganese concentrations in water overlying dry/rewet cores from site 3A-15 by treatment and date. Selected porewater data is also shown.

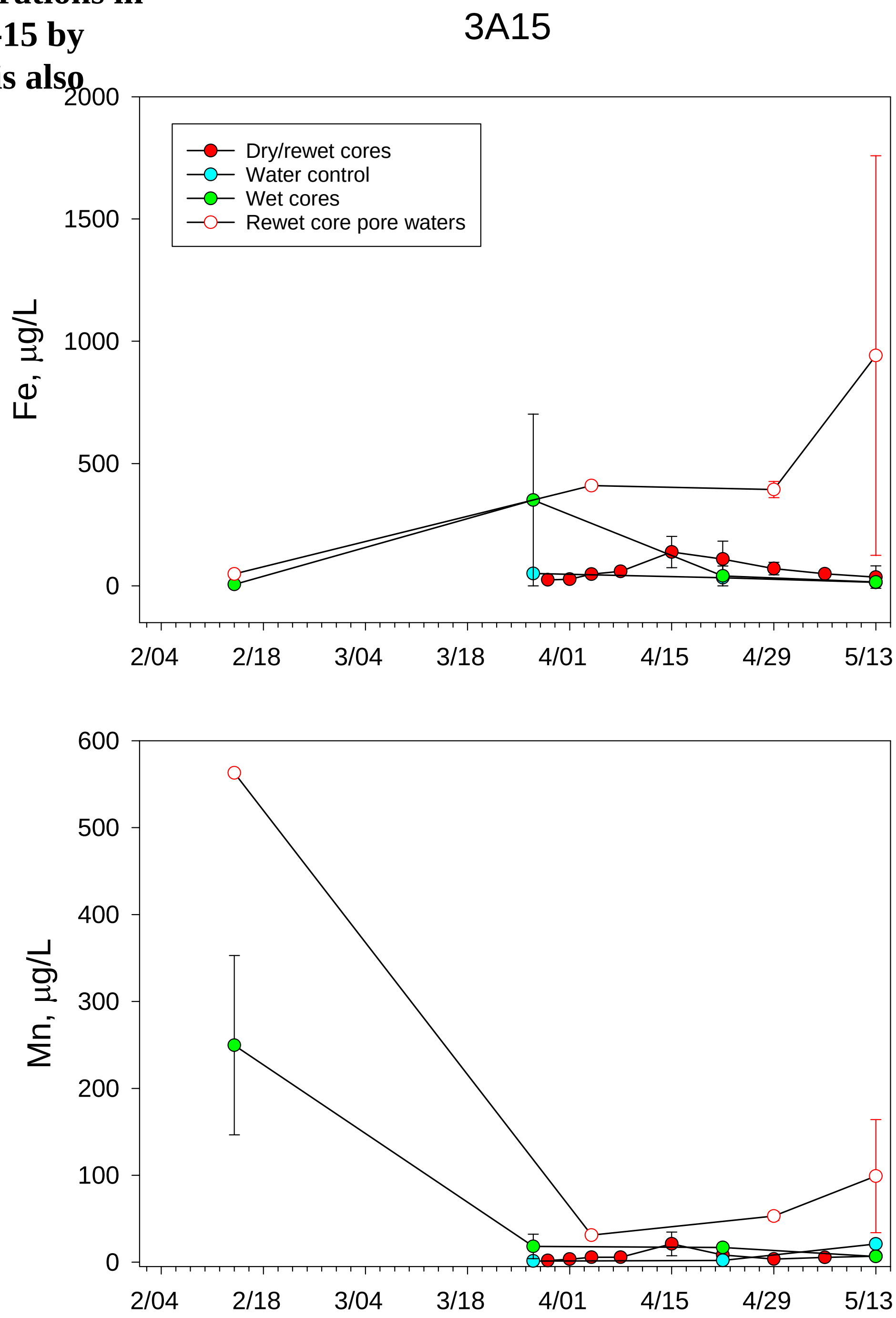


Fig. 34. Average iron and manganese concentrations in water overlying dry/rewet cores from site STA-2 by treatment and date. Selected porewater data is also shown.

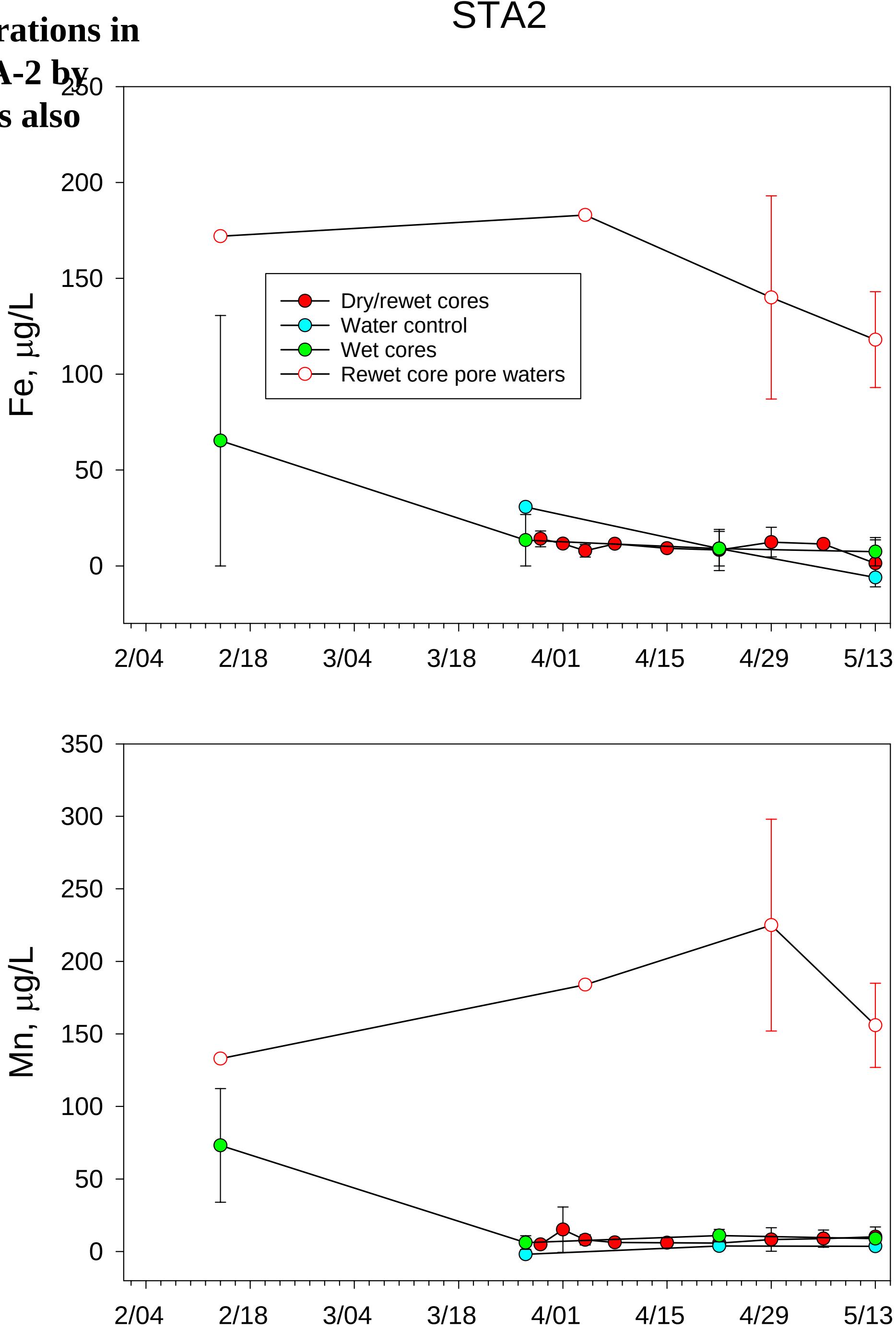


Fig. 35. Plots of %MeHg, rates of mercury methylation, sulfur chemistry, and modeled dissolved mercury complexation along the north (left) to south (right) transect of ACME sites sampled from 1995-1998.

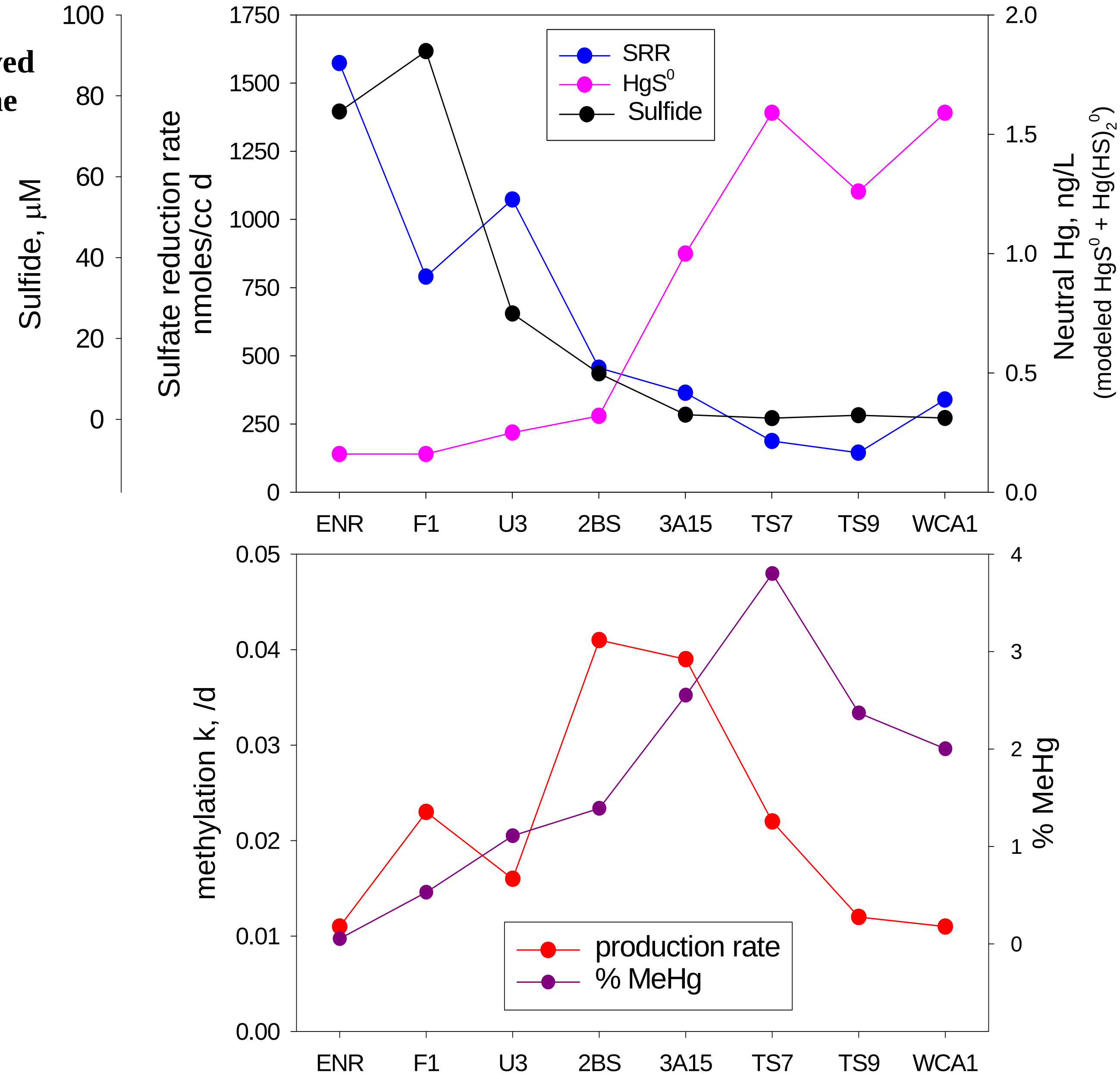


Fig. 36. Plots of total mercury, MeHg, and %MeHg in Everglades sediments along the ACME transect, with north on the left and south to the right.

3A15

Fig. 37. Mercury and MeHg through time in 3A15 cores rewet after 299 days of drying. Native MeHg and xs $Me^{198}Hg$ (top), and native Hg and xs 198Hg (bottom) for 3A15 cores are plotted by date. Each data point represents the average and standard deviation of 3 separate cores.

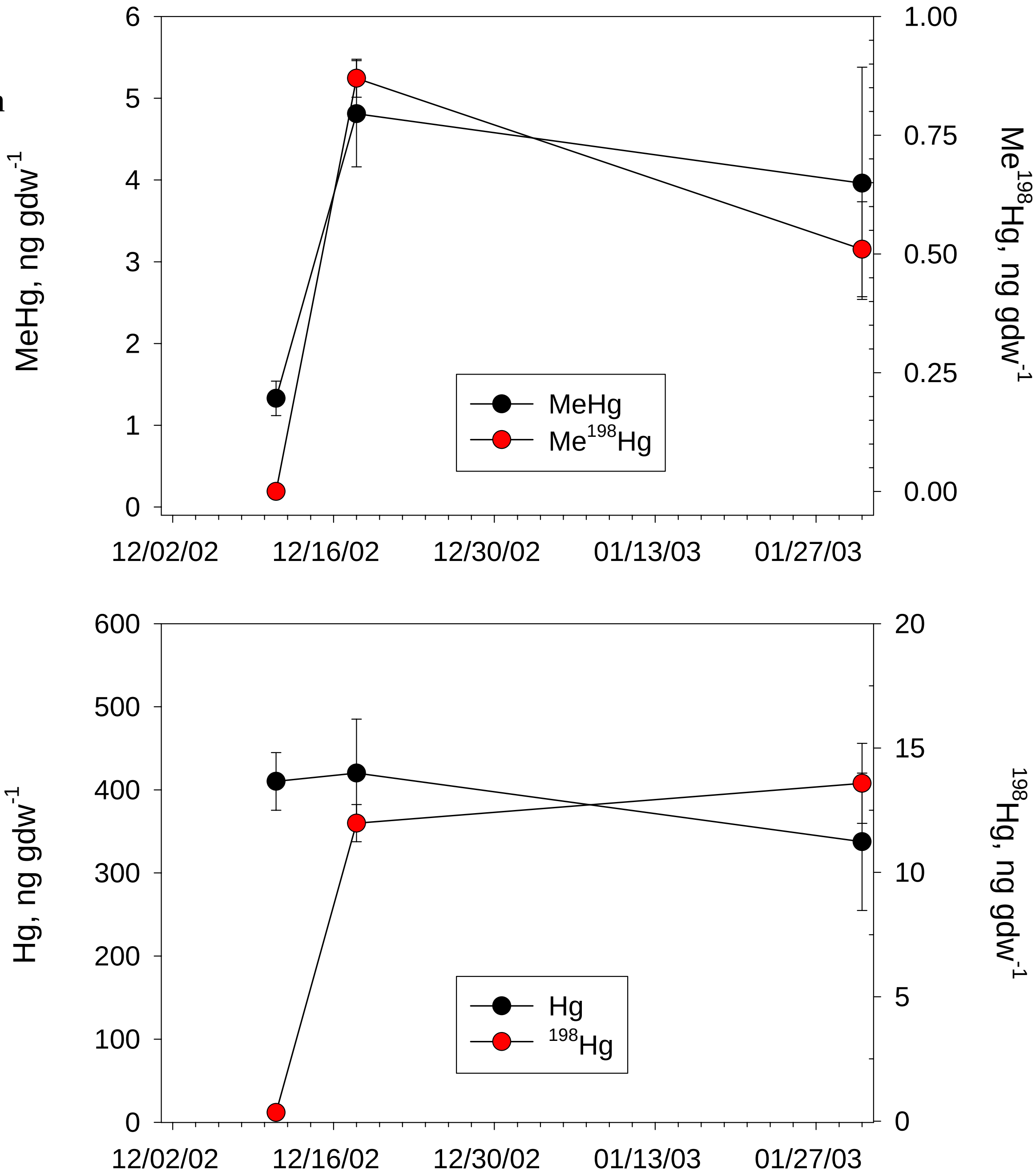


Fig. 38. Mercury and MeHg through time in STA2 Cell 1 cores rewet after 299 days of drying. Native MeHg and xs $Me^{198}Hg$ (top), and native Hg and xs 198Hg (bottom) for STA2 cores are plotted by date. Each data point represents the average and standard deviation of 3 separate cores.

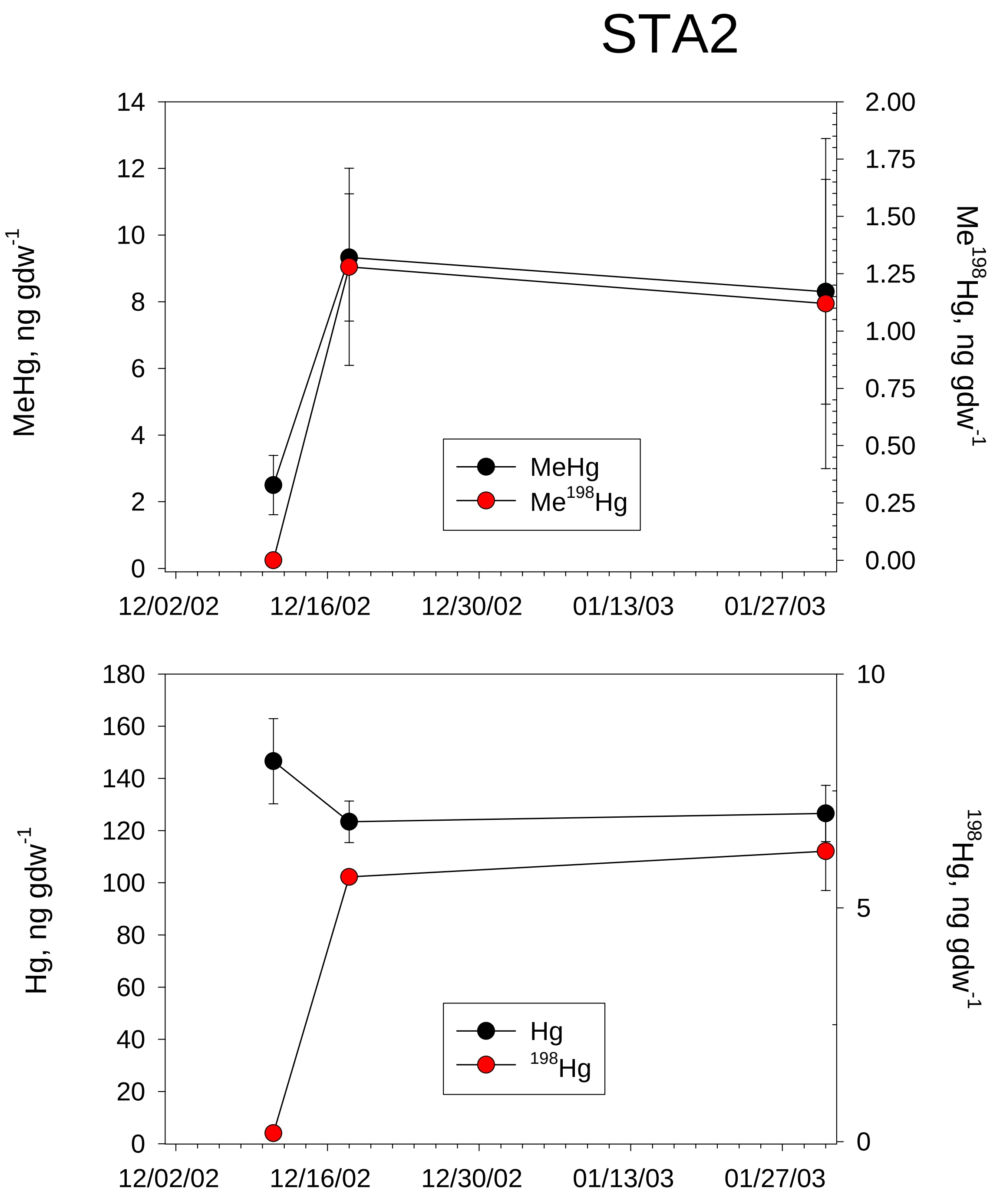


Fig. 39. %MeHg through time in 3A15 and STA2 Cell 1 cores rewet after 299 days of drying. MeHg is expressed as a % of total Hg (MeHg/Hg X 100) through time in the rewet sediment cores.

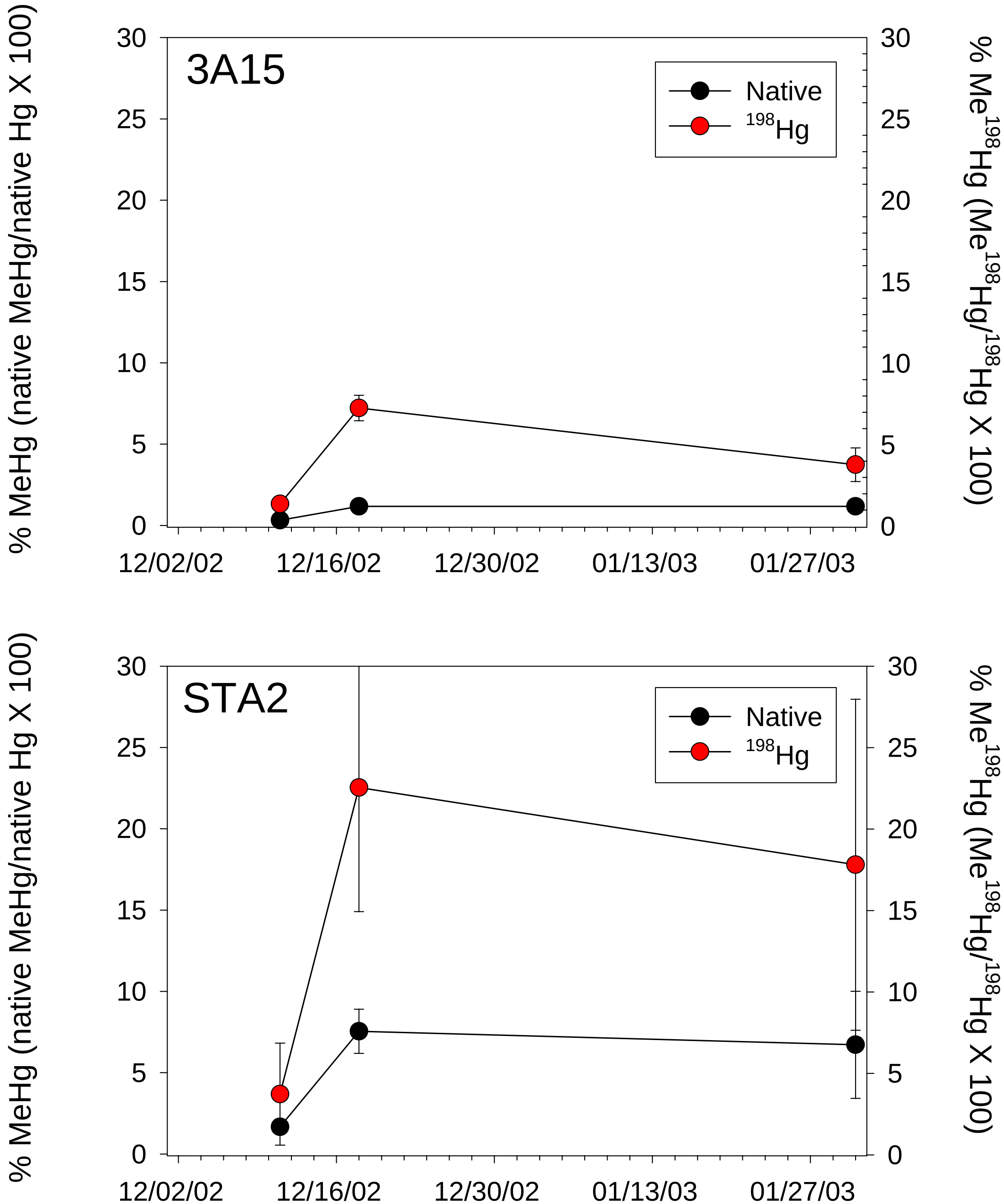


Fig. 40. Mercury and MeHg through time in water overlying 3A15 and STA2 cores rewet after 299 days of drying. Each data point represents the average and standard deviation of 3 separate cores.

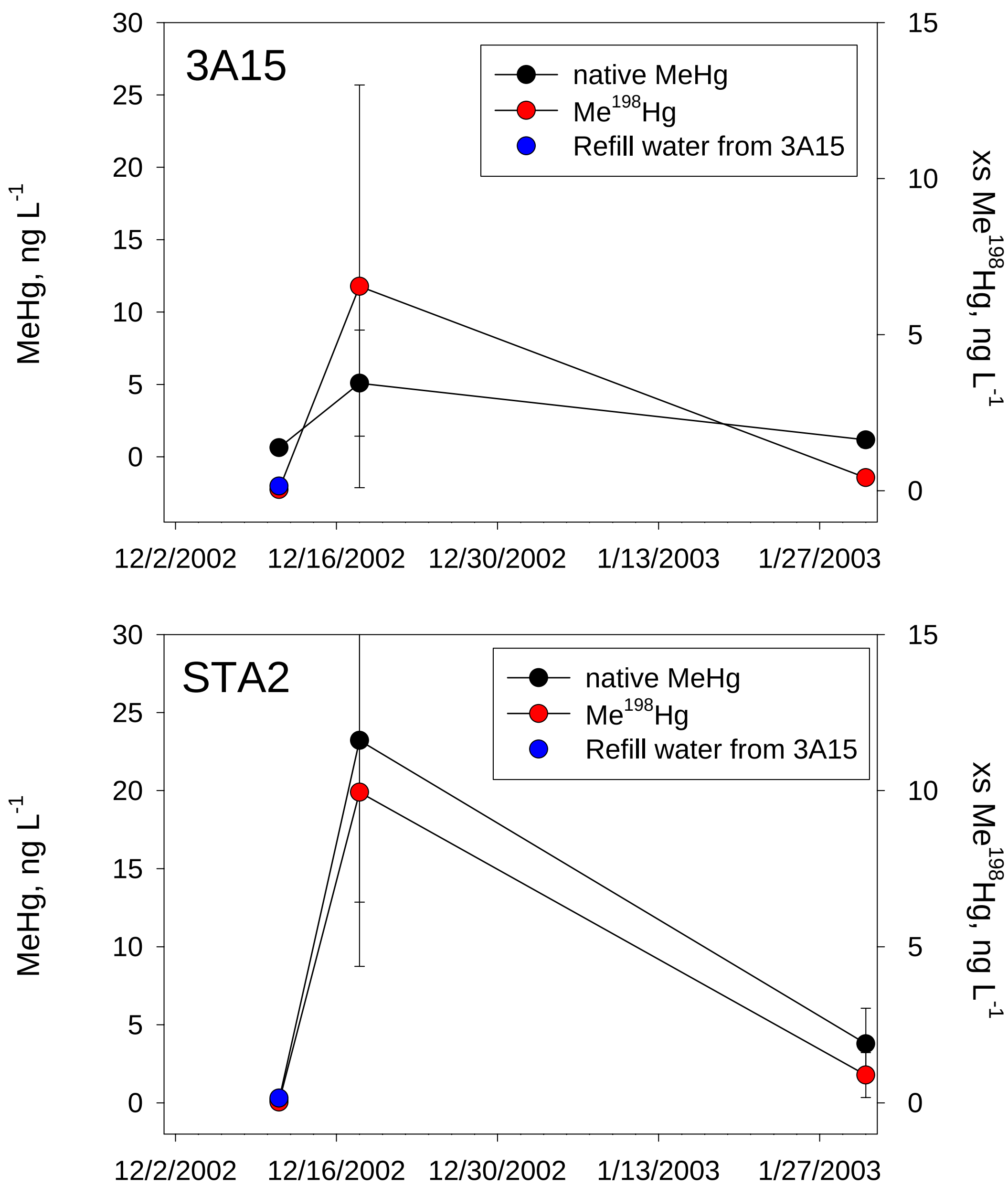


Fig. 41. Averages concentrations of SO4 in water overlying rewet cores, through time. Each data point represents the average of 3 separate cores.

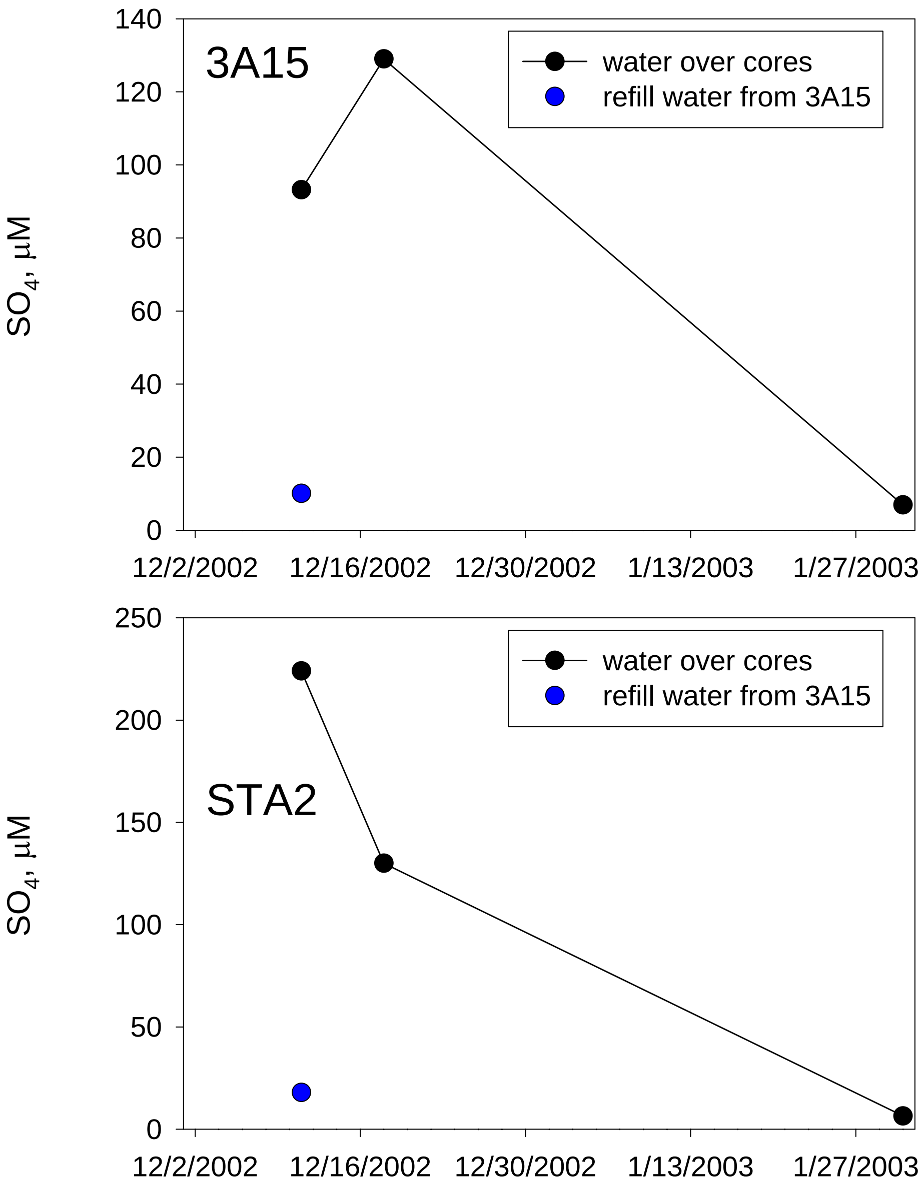


Fig. 42. Averages concentrations of sulfide in water overlying rewet cores and in pore waters, through time. Each data point represents the average of 3 separate cores.