

C-IMAGE III

RESEARCH CONSORTIUM INFORMATION

Project Title

Please provide the title of project.

The Center for Integrated Modeling and Analysis of Gulf Ecosystems III

Lead Principal Investigator and Contact Information

Please provide the first name, last name, email address, institutional address, and phone number of the Lead Principal Investigator.

Dr. Steven Murawski
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USF - College of Marine Science
MSL 118
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St. Petersburg, FL 33701
727-553-3367

Data Manager and Contact Information

Please provide the first name, last name, email address, institutional address, and phone number of the Data Manager.

Jason Boczar
jboczar@usf.edu
USF-Libraries
4202 E. Fowler Ave
LIB120A
Tampa, FL 33620
813-974-5505

Data Manager Roles and Responsibilities

Include a brief description of the expected roles and responsibilities of the RC data manager. Please provide the percent effort that the data manager will devote to RC data management responsibilities. Outline any specialized skills or training the data manager will require to complete their duties.

The role of the Data Management Team (DMT) is to be the liaison between the GRIIDC team and the C-IMAGE III researchers. The team of three includes Todd Chavez, who is ultimately responsible for overseeing the DMT. Mr. Jason Boczar (1 month per year) and Mr. Richard McKenzie (1 months per year) are responsible for the day to day operations of the data submission process. Jason and Richard work with the consortium program manager directly to ensure C-IMAGE III researchers are aware of the requirements and timeline during the program. They are also responsible for providing the program manager with any procedural changes or updates to the GRIIDC process. Jason and Richard are supervised by Todd Chavez for any internal USF Libraries related matters.

Data Submission to GRIIDC

Please describe your process for submitting Dataset Information Forms (DIFs) and Datasets to GRIIDC, including the role of the data manager in preparing, reviewing, submitting, and responding to requests for revisions to DIFs and datasets.

Data generated by C-IMAGE III researchers is managed by the USF Tampa Library's Geoportal & Data Repository (GDR) team and deposited with GRIIDC in accordance with section 4.3 of the GoMRI Research Board's Master Research Agreement as clarified in the "Compliance with Master Research Agreement Data Policies" memorandum dated December 2, 2013 (revised September 4, 2015 and August 29, 2017). Project data will be deposited with GRIIDC with minimal delay and in compliance with the timeline described in the GoMRI memorandum. The Research Board requires that:

- all data be available within the Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC) system and accessible to the public at the time of publication and/or within 1 year of collection (whichever is sooner);
- all research publications include direct links to the publication's supporting data; and
- all research publications include the GoMRI data attribution statement.

C-IMAGE III researchers will be responsible for providing data managers with as many Dataset Information Forms (DIFs) at the beginning of the Research Funding Period as possible. DIFs will be requested by C-IMAGE III data managers once they have received dataset information from the researchers. Alternatively, C-IMAGE III researchers have the option to request their own DIFs if they want.

C-IMAGE III dataset submission will be handled the same way as DIF requests are. The researcher has the option to either provide C-IMAGE III data managers with their dataset and metadata for submission to GRIIDC, or the researcher can submit their data to GRIIDC on their own.

Any data or metadata requests made by GRIIDC will be sent to C-IMAGE III data managers. The data managers will then follow up with the researchers as soon as possible to ensure that there is minimal delay in satisfying data and metadata requests made by GRIIDC.

Data Management Training

Please describe any plans for providing data management training to members of your research consortium.

In order to comply with the August 29, 2017 update to the GoMRI Research Board's Master Research Agreement, all C-IMAGE III Principal Investigators, co- Principal Investigators, and Data Managers will be required to attend the "Introduction to the GoMRI Data Management Program" training session within 90 days of the effective date of the grant agreement. The following training sessions will be completed by the same individuals within 180 days of the grant agreement:

- Organizing Data – Best Practices and GRIIDC Submission
- How to Submit Data to GRIIDC

C-IMAGE III consortium members required to take GRIIDC data management training had the option to do so in person at the 2018 Gulf of Mexico Oil Spill & Ecosystem Science (GoMOSES) Conference. Individuals that were unable to attend the required training sessions in person will be able to complete them online. C-IMAGE III is currently working with GRIIDC to set up a webinar that will cover all three training sessions. As of Wednesday, 23 May 2018, all C-IMAGE III co-PIs, data managers and lead PI have completed all three GRIIDC data webinars.

Communicating Data Submission Requirements

Please describe how you will disseminate GRIIDC dataset submission guidance for genetics, model, CTD, video, images, and other data types, to members of your research consortium.

Data submission guidance documents are distributed to C-IMAGE III researchers as they are made available by GRIIDC. Any updates to these documents are also distributed to C-IMAGE III researchers. Additionally, if data submission guidance documents are attached to a data request made by GRIIDC, the guidance documents will be included in the correspondence from the data manager to the researcher.

Data Storage and Backup

Please describe the research consortium requirements for the backup and storing of data by project participants before submission to GRIIDC.

The USF Library's GDR will retain electronic data submitted to GRIIDC, when possible, for an indefinite period not less than five years. Preliminary/early versions of electronic files will not be preserved unless they are used in the preparation of publications or reports. We encourage C-IMAGE PIs to follow GRIIDC suggestions of multiple backup locations and constant backup frequency to prevent data loss throughout their data collection, processing, and analysis.

Ethics and Compliance Information – Data Involving Human Research Subjects

Do any components of the research project require Institutional Review Board approval? Are there any Institutional Review Board (IRB) or HIPPA (Health Insurance Portability and Accountability Act) issues that might preclude sharing data?

The C-IMAGE III project does not include any research initiatives that mandate IRB approval. We do not anticipate any issues that preclude sharing data via GRIIDC

RESEARCH CRUISES

Organization and Participation in Cruises

Please indicate if your research consortium will be organizing or participating in research cruises.

We do not anticipate participating in any research cruises for the C-IMAGE III project.

NON-CRUISE FIELD WORK

Non-cruise Field Work

If your research consortium is not participating in research cruises, will any field work be performed?

Mote Marine Laboratory plans to carry out field collections of fish from impacted and unimpacted oil spill areas of Louisiana for genomics, epigenetics and sublethal effects research efforts. Several fish species, gafftopsail catfish, red fish and southern flounder will be collected. Samples will be analyzed for biomarkers, body burdens of PAHs, gene expression and genomics/epigenetics. (Mote)

Environmental Data

If your research consortium is performing field work, will you be collecting environmental data while in the field (e.g. salinity, air temperature, water temperature etc.)

There will be no environmental data collection during C-IMAGE III field work.

ENVIRONMENTAL SAMPLE LAB ANALYSIS

Lab Analysis of Samples

Will your research consortium be collecting any samples in the field that will then be analyzed in the lab?

Analyses will be performed by C-IMAGE III on sediment cores and fish specimens collected throughout the Gulf of Mexico (US, Mexico, Cuba) during C-IMAGE II.

Additionally, Mote Marine Laboratory and Texas A&M University Corpus Christi will be analyzing fish captured in the impacted and unimpacted areas of coastal Louisiana.

Types of Samples and Analysis

If your research consortium will be collecting samples in the field that will then be analyzed in the lab please list what types of samples will be collected and what types of analysis will be performed on each sample type. (e.g. fish muscle tissue analyzed for mercury, fish otoliths for age, fish fin clips for next generation DNA sequencing, water for dissolved inorganic carbon, sediment grain size from cores, etc.)

The following analyses will be performed by C-IMAGE III researchers on sediment cores and fish specimens collected throughout the Gulf of Mexico (US, Mexico, Cuba) during C-IMAGE II (POC = Points of Contact):

Sediment Analyses (PI POC: Hollander)

Pennsylvania State University

- Extracted lipids from sediments ultrasonically using 3:1 dichloromethane:methanol; analyzed using high performance liquid chromatography - mass spectrometry (HPLC-MS) (POC: Lincoln) R6.x806.000:0054

Eckerd College:

1. Sediment texture (grain size) and composition (TOM, Carbonate %) (POC: Brooks) R6.x805.000:**0043**, R6.x805.000:**0044**
2. Short-lived radioisotope dating (POC: Brooks, Schwing, Larson, Ruiz-Fernandez, Sanchez Cabeza) R6.x805.000:**0007**, R6.x805.000:**0041**, R6.x805.000:**0042**
3. Redox sensitive metals (POC: Hastings) R6.x805.000:**0037**, R6.x805.000:**0038**

University of South Florida College of Marine Science:

4. Benthic foraminifera assemblage and stable isotope measurements (POC: Schwing, Machain-Castillo) R6.x805.000:**0006**
5. Gulf-wide Seafloor Surface Benthic Foraminifera Assemblages (POC: Schwing, Hollander) R6.x805.000:**0056**
6. Organic geochemistry (POC: Hollander, Romero, Oldenburg, Lincoln) R6.x805.000:**0036**

Georgia Institute of Technology:

7. Microbial community characterization and hydrocarbon degradation incubations (POC: Kostka) R6.x805.000:**0035**
 - o Nucleic acid extraction of sediment and filtered seawater samples.
 - o PCR amplification and next generation sequencing of SSU rRNA genes on an Illumina MiSeq sequencer.
 - o Analysis of the diversity and composition of microbial communities using the Quantitative Insights into Microbial Ecology (QIIME2) bioinformatics platform.
8. Impacts of High Pressure on Hydrocarbon Biodegradation (POC: Kostka) R6.x805.000:**0057**

Florida State University:

9. Stable isotope d13C and Radiocarbon (delta14C) (POC: Chanton) R6.x805.000:**0019**

Universidad Nacional Autónoma de México

10. Inorganic trace elements (POC: Ruiz-Fernandez, Hastings) R6.x805.000:**0021**

Fish Analyses (PI POC: Murawski)

University of South Florida College of Marine Science

11. Biliary PAHs (POC: Pulster, Snyder) R6.x805.000:**0048**
12. Tissue PAHs (liver, muscle, gonad) (POC: Pulster, Snyder, Wetzel) R6.x805.000:**0049**
13. Tissue PCBs (Polychlorinated Biphenyl) and OCP (Organichlorine Pesticides) (POC: Pulster, Carr) R6.x805.000:**0050**
14. Pathohistological Analyses of Tissues (lesions and liver histology) (POC: Pulster, Snyder) R6.x805.000:**0051**, R6.x805.000:**0052**

Harte Research Institute/Texas A&M-Corpus Christi

15. Fin clip collection for genetic studies for population dynamics and connectivity (POC: Portnoy, O'Leary) R6.x805.000:**0005**

Mote Marine Laboratory

16. Transcriptomics (POC: Wetzel) R6.x805.000:**0030**

17. Metagenomics (POC: Wetzel) R6.x805.000:0055
18. Genetics and Epigenetics-(POC: Wetzel and Portnoy) R6.x805.000:0032
19. Biomarkers in fish tissue and blood (POC: Wetzel) R6.x805.000:0033
20. Tissue PAHs (liver, whole body) (POC: Wetzel) R6.x805.000:0034

MICROCOSMS/MESOCOSMS

Microcosms/Mesocosm

Will your research consortium be performing any microcosm or mesocosm experiments?

Yes

Detailed Microcosm/Mesocosm Information

If your research consortium will be performing microcosms or mesocosm experiments, please list what microcosm or mesocosm experiments that will be performed.

Mote Marine Laboratory (POC: Wetzel)

In vitro studies at Mote Aquaculture Park will evaluate sub-lethal responses to oil and will continue analyses on exposed fish samples during the C-IMAGE II project. Additionally, in vitro studies will be performed by Mote Marine Laboratory in collaboration with Gulf Coast Research Laboratory on disease challenge and oil exposure using Red Snapper exposed to CEWAF. The goal of this mesocosm exposure study is to elicit an immunosuppression response, and characterizing the resulting adverse outcomes of oil and pathogen exposure to an important GoM fish species. A suite of markers of assessing organismal and immune health will be done using approaches including the combination of transcriptional and protein level endpoints correlating disease and oil exposure. To do this, a series of controlled exposures to oil will be carried out on hatchery reared juvenile red snapper (*Lutjanus campechanus*), followed by challenges with a known fish pathogenic bacteria, *Vibrio anguillarum*, ubiquitous in the Gulf of Mexico. There will be 4 treatments, each performed in quadruplicate, with 4-20 fish per tank (depending on fish size). The four treatments will be: A) Control, no bacteria; B) Control, Bacteria Challenged; C) Oil-exposed, no bacteria and D) Oil exposed, bacteria challenged. Each exposure will also follow a similar temporal pattern, with 1) an initial oil exposure period followed by 2) a bacterial challenge, and 3) an observation period during which fish will be sampled to observe responses at multiple levels of exposure.

1. Immune function & gene expression R6.x805.000:0027
2. Lipid class composition R6.x805.000:0028
3. Oxidative stress and DNA damage R6.x805.000:0029
4. RNA-seq transcriptomics in tissues R6.x805.000:0030
5. Total PAH exposure R6.x805.000:0031

University of West Florida (POC: Jeffrey)

6. No new experiments will be conducted, however we will complete sample analysis from microcosm experiments conducted in 2017 focusing on DNA sequencing and analyses of bacterial communities grown on different sources of crude oil. R6.x805.000:0046

University of South Florida/Wageningen University (POC: Schwing)

7. This study utilized microcosm experiments to determine the relative control of sedimentation (clay vs. marine snow) and oil concentration on benthic foraminifera abundance, diversity and stable isotopes ($\delta^{13}C$, $\delta^{18}O$). Stained, unstained, and total (stained+unstained) benthic foraminifera counts were reported for greater than 300 individuals per sample and identified to species. Multiple indices were applied to each assemblage including Shannon, Evenness and Fisher's Alpha (Hammer and Harper, 2006). Total foraminifera

abundance was reported as individuals per unit mass (indiv./g). $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ (3 replicates of 50 μg CaCO_3) were measured with a ThermoFisher MAT253 stable isotope ratio mass spectrometer coupled to a GasBench-II peripheral in continuous-flow mode. R6.x805.000:0012

PURE LAB-BASED STUDIES

Pure Lab-Based Studies

Will your research consortium be performing any purely lab based worked (e.g. measuring properties of chemicals, developing new dispersants, measuring flow rates of jets).

Yes.

Detailed Lab-Based Study Information

If your research consortium is performing pure lab-based studies, what purely lab-based experiments will be performed?

TUHH:

1. Investigation of crude oil degradation and methane degradation by GOM bacteria in pressure reactors. Application of GOM sediments and isolated bacterial strains (POC: Liese) R6.x805.000:0053
2. Experimental investigation of gas bubble nucleation in sessile methane-saturated crude oil droplets under high pressure at varying temperatures (POC: Schlüter) R6.x805.000:0017
3. Experimental investigation of rising gas-saturated crude oil droplets in counter-current flow under high pressure (0-150 bar) (POC: Schlüter, Krause) R6.x805.000:0018
4. Determination of droplet size distribution for varying conditions (flow rate, nozzle size, pressure) – evaluation using particle image velocimetry (PIV) and endoscopic DSD capturing (POC: Schlüter, Krause) R6.x805.000:0013, R6.x805.000:0014

University of Calgary:

5. Partitioning behavior of low molecular weight organic species (POC: Oldenburg):
In-house custom built partition device was used to carry out experiments under high pressure (2-15 MPa) and temperature (4-20°C) conditions between the oil and water phase. The construction and operation of the device is published in Jaggi, et al. (2017) [Experimental simulation of crude oil-water partitioning behavior of BTEX compounds during a deep submarine oil spill. Organic geochemistry, 108, 1-8]. The target organic analytes in water and oil phase were measured and quantified using gas chromatography-mass spectrometry (GC-MS). R6.x805.000:0045

MODELING

Numerical and Computational Modeling

Will your research consortium be conducting any numerical or computational modeling?

Yes

Detailed Modeling Information

If your research consortium will be conducting numerical or computational modeling, what modeling activities will be performed?

University of Miami:

1. We are planning to run a realistic hindcast of the Macondo blowout as well as alternate scenarios of oil spills in the Gulf of Mexico:
 - a. West central Gulf of Mexico in April. R6.x805.000:0047
 - b. South eastern Gulf of Mexico in April. R6.x805.000:0060
 - c. Senegal (West Africa) coast. R6.x805.000:0059
 - d. Brazil coast. R6.x805.000:0058

Texas A&M University:

2. We will run the Texas A&M Oil spill Calculator (TAMOC) to simulate cases related to the Deepwater Horizon accident or the API Model Intercomparison Study. These runs will be conducted to show the range of behavior possible with different management scenarios, and can be classified as sensitivity analysis. A maximum of three new model runs will be conducted; these will be submitted to GRIIDC as a single blowout sensitivity dataset. (POC: Socolofsky) R6.x805.000:0011

University of South Florida College of Marine Science

3. The Ainsworth lab will compile data collected across C-IMAGE and GoMRI studies to incorporate into the Atlantis ecosystem model. Ecosystem impacts of the alternate scenarios will be evaluated using the Atlantis model. R6.x805.000:0001
4. Continuing diet matrix work from C-IMAGE II will investigate the uncertainty of the Atlantis outputs. This was a sensitivity analysis of the oil spill simulations in *Ainsworth CH, Paris CB, Perlin N, Dornberger LN, Patterson WF III, Chancellor E, et al. (2018) Impacts of the Deepwater Horizon oil spill evaluated using an end-to-end ecosystem model. PLoS ONE 13(1): e0190840.* The diet matrices can be used wherever a probabilistic representation of Gulf of Mexico diet is needed such as in a Monte Carlo analysis of specific or ecosystem-scale predator-prey linkages. The oil range impacts (statistical emulator output or catch or biomass of Atlantis simulations) can be used for injury assessment, comparison with other oil spills, or other application requiring absolute estimates of population changes due to the Deepwater Horizon oil spill. R6.x805.000:0002
5. Atlantis ecosystem model outputs will include fishes and invertebrate effects of simulated oil spills. R6.x805.000:0003
6. Combining the Campeche Bay model with the Ixtoc simulated oil spill will result in predicted effects of the 1979 oil spill. R6.x805.000:0004

Penn State University

7. Python code for hydrocarbon degrading genes in metagenomic datasets (POC: Lincoln). This code will be using hidden Markov models to generate profiles for genes (alkane monooxygenase (alkB) and ring-hydroxylating oxygenases (RHOs)) associated with hydrocarbon degradation, in order to query metagenomic datasets (>400 marine metagenomic datasets available on Joint Genome Institute portals <https://jgi.doe.gov/data-and-tools/genome-portal/>) and determine their relative abundance in different oceanographic provinces. In addition, we are using lowest common ancestor algorithms to assign metagenomic reads to microbial taxa. R6.x805.000:0020

Code Availability

If your research consortium will be conducting any numerical or computation modeling, do any of the models use non-publicly available code?

Atlantis ecosystem model is freely available; it requires registration for download. Some tools for data manipulation and visualization are also available upon request.

Oil fate models (Paris) will be made available with any new module created for the oil-application of CMS, initially developed with a National Science Foundation Rapid Award to PI Paris.

MAPPING

Mapping

Will your research consortium be conducting any mapping activities?

C-IMAGE III will be mapping surface sediment characteristics and contaminant loading for fish species collected during longlining surveys in C-IMAGE I and II.

Paris lab (RSMAS-UM) will create dynamic mass-conserved maps one oil concentrations for various oceanic layers (0-1 m, 1-20 m, 20-400 m, 400-1200 m, and >1200 m).

Detailed Mapping Information

If your research consortium will be conducting mapping activities, what mapping activities will be performed?

1. Habitat prediction maps will be produced for Gulf of Mexico marine mammal species including sperm whales, pilot whales, beaked whales, Kogia sp., Risso's dolphins and Stenellid dolphins (POF: Frasier) R6.x805.000:0015

The surface sedimentary characteristics to be included in the C-IMAGE III mapping effort include:

2. Contour maps of Sediment texture (grain size) and composition (TOM, Carbonate %) in the Gulf of Mexico from sediments collected from 2010-2017 (POC: Brooks)
3. Concentrations of Short-lived radioisotope activity in the Gulf of Mexico (2011-2017) (POC: Brooks, Schwing, Larson, Ruiz-Fernandez, Sanchez Cabeza)
4. Contour maps of Benthic foraminifera assemblage and stable isotope concentrations (2011-2017) (POC: Schwing, Machain-Castillo)
5. Gulf-wide microbial populations and community structures and oxygen profiles from sediments in the Gulf of Mexico (2011-2017) (POC: Kostka)
6. Gulf wide concentrations of Radiocarbon ($\delta^{14}C$) in sediments collected 2011-2017 (POC: Chanton)
7. Regional maps of hydrocarbon biomarker distributions in sediments collected in the Gulf of Mexico (2011-2017) (POC: Lincoln, Romero, Oldenburg)

The fish contaminant characteristics to be included in the C-IMAGE III mapping effort include:

8. Gulf-wide Biliary Concentration of PAHs in fish bile samples collected in the Gulf of Mexico 2011-2017 (POC: E. Pulster, S. Snyder)
9. Gulf-wide PAH Concentrations in fish liver, muscle, and gonads collected in the Gulf of Mexico 2011-2017 (POC: Pulster, Snyder, Wetzel)
10. Concentrations of PCBs (Polychlorinated Biphenyl) and OCP (Organichlorine Pesticides) in fish tissue along the Cuban coastline in 2017 (POC: Pulster, Carr)

REMOTE SENSING AND AERIAL IMAGERY

Remote Sensing and Aerial Imagery

Will your research consortium be using or acquiring any remotely sensed or other aerial imagery data?

Yes

Types of Remote Sensing and Aerial Imagery data

If your research consortium is using or acquiring remotely sensed or other aerial imagery data, what types of remote sensing or aerial imagery data will be used or acquired?

Ocean color and sea surface temperature data collected by NASA and NOAA satellites. R6.x805.000:0008, R6.x805.000:0009, R6.x805.000:0010. High-resolution imagery from Landsat and other sensors. Landsat imagery will be used to map oil spills around the Taylor oil platform, and possibly other oil platforms. Depending on the spill history, time-series imagery may also be used. The delineated maps will be provided in GeoTiff format in order to be used in GIS-compatible software.

Proprietary Remote Sensing or Aerial Imagery Data

If your research consortium is using or acquiring remotely sensed or other aerial imagery data, are any of these data proprietary (i.e. cannot be freely distributed)?

No

IMAGES

Images

Will any of your research consortium activities produce images as data? (NOTE: This does not include images taken through education or outreach activities or photos of research work that are taken for use in presentations, etc)

Yes

Detailed Image Information

If your research consortium activities will produce images as data, what activities will produce images as data (e.g. light microscopy)?

- 1. Statistical analysis to produce climatology and anomaly maps of ocean properties (POC: Hu).
R6.x805.000:0008, R6.x805.000:0010
- 2. Oil spill mapping to product delineated oil spill maps. (POC: Hu) R6.x805.000:0009
- 3. Gulf of Mexico sediment core photographs from northern Gulf of Mexico and Cuba (POC: Brooks)
R6.x805.000:0039, R6.x805.000:0040

VIDEO

Video

Will any of your research consortium activities produce videos as data? (NOTE: This does not include videos taken through education or outreach activities or videos of research work that are taken for use in presentations, etc.)

Yes

Detailed Video Information

If your research consortium will produce videos as data, what activities will produce this video (e.g. video of bubble rising in lab experiment)?

- 1. RSMAS-UM: We will produce animations of selected 3-D oil concentration iso-surfaces for the DWH hindcast and all planned alternative simulation runs. R6.x805.000:0047

OTHER METHODS

Describe Other Methods

Please describe any research methods that will be employed by members of your research consortium that are not reflected in the answers to the previous questions and what types of data will be generated using each method.

University of California San Diego

- 1. Time series of echolocation click detections will be produced from analysis of existing records for sperm whales, pilot whales, beaked whales, Kogia sp., Risso's dolphins and Stenellid dolphins (POC: Frasier)
R6.x805.000:0016

DATASET INFORMATION FORMS

List Dataset Information Forms

Please list the dataset title and GRIIDC Unique Dataset Identifier (UDI) for approved Dataset Information Forms (DIF).

R6.x805.000:0001	Input, output and complete run files for the Atlantis ecosystem model Deepwater Horizon oil spill simulations
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R6.x805.000:0002	Evaluation of diet matrix uncertainty for the Atlantis model
R6.x805.000:0003	Input, output and complete run files for the Atlantis ecosystem model Deepwater Horizon oil spill simulations including fish and invertebrate effects
R6.x805.000:0004	Input, output and complete run files for the Atlantis ecosystem model IXTOC oil spill simulations from Campeche Bay Atlantis model
R6.x805.000:0005	Population Genomic Data Set Gafftopsail Catfish
R6.x805.000:0006	Gulf-wide Seafloor Surface Benthic Foraminifera Stable Isotopes
R6.x805.000:0007	Gulf-wide Seafloor Surface, Short-lived Radioisotopes
R6.x805.000:0008	MODIS-derived chlorophyll-a concentration in the Gulf of Mexico between 2012 - 2018
R6.x805.000:0009	Landsat-derived oil spill maps
R6.x805.000:0010	MODIS-derived sea surface temperature in the Gulf of Mexico between 2012 - 2018
R6.x805.000:0011	Sensitivity analysis runs of the Texas A&M Oil spill calculator (TAMOC)
R6.x805.000:0012	Wageningen Aquaria/microcosm Experiments, Benthic Foraminifera assemblage and stable isotope measurements
R6.x805.000:0013	Droplet Size Distribution of Turbulent Oil-in-Water Jets
R6.x805.000:0014	Droplet size distributions of oil jets entering into seawater at elevated hydrostatic pressure
R6.x805.000:0015	Gulf of Mexico Marine Mammal Habitat Maps
R6.x805.000:0016	Gulf of Mexico marine mammal passive acoustic detections: 2010-2017
R6.x805.000:0017	Bubble Nucleation in Gas-Saturated Crude Oil

R6.x805.000:0018	Behavior of Gas-Saturated Crude Oil Droplets Rising in Seawater
R6.x805.000:0019	Sediment isotope samples additions
R6.x805.000:0020	Python scripts for determining the abundance and taxonomic affiliation of hydrocarbon-degrading genes in metagenomic data sets from global oceans
R6.x805.000:0021	Trace metals and minor elements in Northern Gulf of Mexico sediments following the Deepwater Horizon marine oil blow out event, 2010
R6.x805.000:0027	CEWAF and pathogen exposed Red Snapper: Immune Function Assays & Gene Expression
R6.x805.000:0028	CEWAF and pathogen exposed Red Snapper: Lipid Class Composition
R6.x805.000:0029	CEWAF and pathogen exposed Red Snapper: Oxidative Stress Assays and DNA Damage
R6.x805.000:0030	RNA-seq transcriptome characterization of tissue from red snapper CEWAF and pathogen exposure
R6.x805.000:0031	tPAH results CEWAF and pathogen exposed Red Snapper
R6.x805.000:0032	Field Collected Red fish and Southern Flounder: Immune Function Assays & Gene Expression
R6.x805.000:0033	Field Collected Red fish and Southern Flounder: Oxidative Stress Assays and DNA Damage
R6.x805.000:0034	Field Collected Red fish and Southern Flounder: tPAH tissue results
R6.x805.000:0035	Microbial community composition in sediments from the southern Gulf of Mexico
R6.x805.000:0036	Geochemical dataset for offshore cores in the Southern Gulf of Mexico
R6.x805.000:0037	Bulk Density/Porewater sediment measurements from the coast of Cuba, 2017
R6.x805.000:0038	Bulk Density/Porewater sediment measurements from the northern Gulf of Mexico coast, 2017

R6.x805.000:0039	Sediment core photographs from the coast of Cuba, 2017
R6.x805.000:0040	Sediment core photographs from the northern Gulf of Mexico coast, 2017
R6.x805.000:0041	Short-lived Radioisotope (SLRad) Data collected from the from the coast of Cuba, 2017
R6.x805.000:0042	Short-lived Radioisotope (SLRad) Data collected from the northern Gulf of Mexico coast, 2017
R6.x805.000:0043	Sediment Texture & Composition data collected from the from the coast of Cuba, 2017
R6.x805.000:0044	Sediment Texture & Composition collected from the northern Gulf of Mexico coast, 2017
R6.x805.000:0045	Experimental simulation of partitioning behavior of low molecular weight organic species between oil and water throughout the water column following dispersant addition
R6.x805.000:0046	Bacterial communities growing on different crude oils
R6.x805.000:0047	Three-dimensional daily hindcast of oil concentrations and oil mass estimates from the far-field modeling of the Deepwater Horizon 2010 oil spill, and other deep water spills scenarios in the Gulf of Mexico, using the Connectivity Modeling System on a probabilistic approach.
R6.x805.000:0048	Biliary PAHs
R6.x805.000:0049	Tissue PAHs (liver, muscle, gonad)
R6.x805.000:0050	Tissue PCBs (Polychlorinated Biphenyl) and OCP (Organochlorine Pesticides): POP concentrations in fish collected along Cuba's coastline
R6.x805.000:0051	Prevalence of hepatic lesions in golden tilefish
R6.x805.000:0052	Prevalence of hepatic lesions in red snapper
R6.x805.000:0053	Biodegradation under deep sea conditions
R6.x805.000:0054	Bacteriohopanetetrol and bacteriohopanetetrol II in a southern Gulf of Mexico sediment core, August 2015

R6.x805.000:0055	Metagenomics characterization of red snapper microbiome following CEWAF and pathogen exposure
R6.x805.000:0056	Gulf-wide Seafloor Surface Benthic Foraminifera Assemblages
R6.x805.000:0057	Impacts of High Pressure on Hydrocarbon Biodegradation
R6.x805.000:0058	Three-dimensional daily hindcast of oil concentrations and oil mass estimates from the far-field modeling of a deep water spill scenario in the Northern Brazilian Continental Shelf, using the Connectivity Modeling System on a probabilistic approach.
R6.x805.000:0059	Three-dimensional daily hindcast of oil concentrations and oil mass estimates from the far-field modeling of a deep water spill scenario in the Northwest African continental Shelf, using the Connectivity Modeling System on a probabilistic approach.
R6.x805.000:0060	Three-dimensional daily hindcast of oil concentrations and oil mass estimates from the far-field modeling of a deep water spill scenario in the Cuban Continental Shelf, using the Connectivity Modeling System on a probabilistic approach.