

Data Acquisition Standard Operating Procedures

A spatial model to improve site selection for seagrass restoration in shallow boating environments (ID# 4064)

Last Updated: 5/6/2023

Program Summary

Journal article in Journal of Environmental Management. In September of 2011, 50 points in the bay were selected in a random stratified manner to make sure that data collection sites were spread evenly but randomly throughout the bay. Data was collected over 2 days from as many of the 50 sites as possible every 3 weeks for a year. All sites could not be accessed during every collection period due to environmental and vessel/equipment limitations. At each site during each collection period three paired underwater and surface light readings were taken at least 30 seconds apart using two underwater LI-193 Spherical PAR sensors for Quantum Scalar Irradiance, which gives you PAR readings in $\mu\text{mol photons/m}^2/\text{s}$ from all directions, and a LI-1400 Datalogger (Fig.2). One of the paired light sensors rested 25 cm above the bay floor, so that existing seagrass beds would not shade out the sensor, and the other was held just above the water surface. An additional light reading was taken in the boat at the same time with a flat LI-190 quantum sensor so that data collected with spherical sensors could be compared with data collected by flat sensors. The time the readings were taken was recorded for all data collected. The water depth at the time and location of the light reading was recorded using a metric tape attached to the pole the Li-Cor sensors were on. In total 1,926 paired readings were taken. Data was collected at each site 10 to 15 times with most sites having data collected there 13 times. An YSI Pro2030 Dual Dissolved Oxygen/Conductivity Instrument was used to record water temperature, salinity, and dissolved oxygen at each site during each data collection period. At each of the 50 data collection sites a soil sample was taken and analyzed to determine the percent of water, organic matter, sand, and silt/clay.

URLs

- Program -
- DDI - <https://data.florida-seacar.org/programs/details/4064>

Contacts

Contact Name	Organization	Email	Phone
Althea Hotaling Hagan		theah@ufl.edu	

Data Tables

- Data_4064A_Final
- Data_4064A_Load
- Data_4064B_Final
- Data_4064B_Load
- Data_4064C_Final
- Data_4064C_Load

Data Stored Procedures

- usp_Data_4064A_Load_insert
- usp_Data_4064B_Load_insert
- usp_Data_4064C_Load_insert
- usp_combined_wq_wc_nut_insert_4064A

Data Acquisition Standard Operating Procedures: ProgramID 4064

Date Created: 11/19/2018

Created By: *Claude Kershaw*

Data File Paths:

1. Data: \\forest.usf.edu\data\PDive\CAS-WI\Misc\Projects\SEACAR_FDEP\Data\ID_4064_EsteroLiDAR\DataToLoad\Hotaling_Estero_LiDAR_Soil_Veg.xlsx
2. Worksheets: "Light Data", "Soils,", "Vegetation".

DDI URL: <http://dev.seacar.waterinstitute.usf.edu/datadiscovery/programs/details/4064>

Contact Information:

Contact Name: Althea Hotaling Hagan

Contact Organization: Program - A spatial model to improve site selection for seagrass restoration in shallow boating environments

Contact Email: theah@ufl.edu

Contact Phone:

Procedure Overview:

1. Remove/replace spaces and special characters from the column headers (the geodatabase creation process requires no spaces or non-alphanumeric characters except for underscores).
2. Use SQL Server Import Export Wizard to load data from worksheet "Light Data" into **Data_4064A_Load**.
3. Use SQL Server Import Export Wizard to load data from worksheet "Soils" into **Data_4064B_Load**.
4. Use SQL Server Import Export Wizard to load data from worksheet "Vegetation" into **Data_4064C_Load**.
5. Execute procedure `usp_Data_4064A_Load_insert` to load the data into table **Data_4064A_Final**.
6. Execute procedure `usp_Data_4064B_Load_insert` to load the data into table **Data_4064B_Final**.
7. Execute procedure `usp_Data_4064C_Load_insert` to load the data into table **Data_4064C_Final**.
8. The Monitoring Location information can be found in the Load tables **Data_4064A_Load** or **Data_4064B_Load** or **Data_4064C_Load**
9. Add new Monitoring Locations into the **SampleLocation_Point** table.
10. Add new Monitoring Locations into the **SampleLocation** table. This will generate a LocationID for each Monitoring Location.
11. Update the **SampleLocation_Point** table with the LocationID generated in the **SampleLocation** table. Run procedure `usp_SampleLocation_Point_update` to do this.

12. Update the LocationID column in table **Data_4064A_Final** with the LocationID in the **SampleLocation** table. Join on the [Site] column in **Data_4064A_Final** and the ProgramLocationID column in **SampleLocation**.
13. Update the LocationID column in table **Data_4064B_Final** with the LocationID in the **SampleLocation** table. Join on the [Sample] column in **Data_4064B_Final** and the ProgramLocationID column in **SampleLocation**.
14. Update the LocationID column in table **Data_4064C_Final** with the LocationID in the **SampleLocation** table. Join on the [Sample] column in **Data_4064C_Final** and the ProgramLocationID column in **SampleLocation**.

Data Tables

1. Data_4064A_Load
2. Data_4064A_Final
3. Data_4064B_Load
4. Data_4064B_Final
5. Data_4064C_Load
6. Data_4064C_Final

Data Stored Procedures

1. usp_Data_4064A_Load_insert
2. usp_Data_4064B_Load_insert
3. usp_Data_4064C_Load_insert
4. usp_SampleLocation_Point_update

GIS Procedures

1. The Monitoring Location information can be found in the Load tables **Data_4064A_Load** or **Data_4064B_Load** or **Data_4064C_Load**.
2. Complete steps 8 through 14 in the “Procedure Overview” section of this document.

```
SET ANSI_NULLS ON
SET QUOTED_IDENTIFIER ON
```

```
CREATE PROC [dbo].[usp_combined_wq_wc_nut_insert_4064A]
AS
BEGIN
SET NOCOUNT ON;
SET XACT_ABORT ON;
```

```
/*
UPDATE Data_4064A_Final
SET SECCHI = REPLACE(SECCHI, '>', '')
*/
```

```
-- Constants - PLEASE SET NOW!!
```

```
DECLARE @dataLoadCode varchar(10) = '4064A';
DECLARE @combinedTable varchar(50) = 'Combined_WQ_WC_NUT';
DECLARE @ParameterID int;
```

```

-- Setup data load
DECLARE @runBy varchar(50) = SYSTEM_USER;
DECLARE @programID int, @dataStreamID int;
```

```
SELECT @dataStreamID = DataStreamID,
@programID = ProgramID
FROM DataStreamProcedure
WHERE DataLoadCode = @dataLoadCode;
```

```
PRINT(@dataStreamID)
```

```
-- Insert data
```

```
Set @ParameterID = 1-- Dissolved Oxygen
```

```
INSERT INTO Combined_WQ_WC_NUT (ProgramID, DataStreamID, ParameterID, LocationID,
Activity_Start_Date_Time, TOTAL_DEPTH, Total_Depth_Unit, RELATIVE_DEPTH, Org_Result_Value,
VALUE_QUALIFIER, DateAdded)
SELECT @programID, @dataStreamID, @ParameterID, a.LocationID, CAST(a.Date as datetime),
Water_Depth_cm/100, 'm', 'Surface', dbo.[udf_convert_units]('mg/L', 'mg/L', a.DO_mgL), NULL, GETDATE()
FROM Data_4064A_Final a
Where a.DO_mgL is not null
and a.LocationID is not null
and ISDATE(Date) = 1
```

```
exec usp_combined_data_tracking_insert @parameterID = @ParameterID, @ProgramID = @programID,
@dataStreamID = @dataStreamID, @CombinedTableName = @combinedTable, @NumRowsFinal = @@ROWCOUNT,
@LastUpdateBy = @runBy
```

```
-- Insert data
```

```
Set @ParameterID = 5-- Dissolved Oxygen Sat
```

```
INSERT INTO Combined_WQ_WC_NUT (ProgramID, DataStreamID, ParameterID, LocationID,
Activity_Start_Date_Time, TOTAL_DEPTH, Total_Depth_Unit, RELATIVE_DEPTH, Org_Result_Value,
VALUE_QUALIFIER, DateAdded)
SELECT @programID, @dataStreamID, @ParameterID, a.LocationID, CAST(a.Date as datetime),
Water_Depth_cm/100, 'm', 'Surface', dbo.[udf_convert_units]('%', '%', a.DO_Perc), NULL, GETDATE()
FROM Data_4064A_Final a
Where a.DO_Perc is not null
and a.LocationID is not null
and ISDATE(Date) = 1
```

```
exec usp_combined_data_tracking_insert @parameterID = @ParameterID, @ProgramID = @programID,
@dataStreamID = @dataStreamID, @CombinedTableName = @combinedTable, @NumRowsFinal = @@ROWCOUNT,
@LastUpdateBy = @runBy
```

```
-- Insert data
```

Set @ParameterID = 12-- Light Extinction Coefficient

```
INSERT INTO Combined_WQ_WC_NUT (ProgramID, DataStreamID, ParameterID, LocationID,
Activity_Start_Date_Time, TOTAL_DEPTH, Total_Depth_Unit, RELATIVE_DEPTH, Org_Result_Value,
VALUE_QUALIFIER, DateAdded)
SELECT@programID, @dataStreamID, @ParameterID, a.LocationID, CAST(a.Date as datetime),
Water_Depth_cm/100, 'm', 'Surface', dbo.[udf_convert_units]('m^-1', 'm^-1', a.avg_Kd), NULL, GETDATE()
FROM Data_4064A_Final a
Wherea.avg_Kd is not null
anda.LocationID is not null
andISDATE(Date) = 1
```

```
exec usp_combined_data_tracking_insert @parameterID = @ParameterID, @ProgramID = @programID,
@dataStreamID = @dataStreamID, @CombinedTableName = @combinedTable, @NumRowsFinal = @@ROWCOUNT,
@LastUpdateBy = @runBy
```

-- Insert data

Set @ParameterID = 2-- Salinity

```
INSERT INTO Combined_WQ_WC_NUT (ProgramID, DataStreamID, ParameterID, LocationID,
Activity_Start_Date_Time, TOTAL_DEPTH, Total_Depth_Unit, RELATIVE_DEPTH, Org_Result_Value,
VALUE_QUALIFIER, DateAdded)
SELECT@programID, @dataStreamID, @ParameterID, a.LocationID, CAST(a.Date as datetime),
Water_Depth_cm/100, 'm', 'Surface', dbo.[udf_convert_units]('ppt', 'ppt', a.Salinity_ppt), NULL,
GETDATE()
FROM Data_4064A_Final a
Wherea.Salinity_ppt is not null
anda.LocationID is not null
andISDATE(Date) = 1
```

```
exec usp_combined_data_tracking_insert @parameterID = @ParameterID, @ProgramID = @programID,
@dataStreamID = @dataStreamID, @CombinedTableName = @combinedTable, @NumRowsFinal = @@ROWCOUNT,
@LastUpdateBy = @runBy
```

-- Insert data

Set @ParameterID = 3-- Water Temperature

```
INSERT INTO Combined_WQ_WC_NUT (ProgramID, DataStreamID, ParameterID, LocationID,
Activity_Start_Date_Time, TOTAL_DEPTH, Total_Depth_Unit, RELATIVE_DEPTH, Org_Result_Value,
VALUE_QUALIFIER, DateAdded)
SELECT@programID, @dataStreamID, @ParameterID, a.LocationID, CAST(a.Date as datetime),
Water_Depth_cm/100, 'm', 'Surface', dbo.[udf_convert_units]('deg c', 'deg c', a.Water_Temp_C), NULL,
GETDATE()
FROM Data_4064A_Final a
Wherea.Water_Temp_C is not null
anda.LocationID is not null
andISDATE(Date) = 1
```

```
exec usp_combined_data_tracking_insert @parameterID = @ParameterID, @ProgramID = @programID,
@dataStreamID = @dataStreamID, @CombinedTableName = @combinedTable, @NumRowsFinal = @@ROWCOUNT,
@LastUpdateBy = @runBy
```

/*

```
SELECT *
FROM Combined_WQ_WC_NUT
```

```
SELECT *
FROM Data_4064A_Final
```

```
SELECT *
FROM Combined_Parameters a
join Indicator b on a.IndicatorID = b.IndicatorID
where b.Habitat = 'Water Column'
and b.IndicatorName <> 'Nekton'
```

```
SELECT *  
FROM DataStreamProcedure  
WHERE ProgramID = 4064
```

```
SELECT *  
FROM Combined_Data_tracking  
where programid = 4064  
ÿ  
exec usp_delete_combined 34, 'Combined_WQ_WC_NUT'  
exec [usp_combined_wq_wc_nut_insert_4064A]  
*/
```

```
END
```

```
GO
```

```
SET ANSI_NULLS ON
SET QUOTED_IDENTIFIER ON
CREATE PROC usp_Data_4064A_Load_insert
AS
BEGIN
SET NOCOUNT ON
SET XACT_ABORT ON

INSERT INTO Data_4064A_Final (Date, Site, Lat, Long, Time, [Water_Temp_C], Salinity_ppt, DO_Perc,
DO_mgL, Water_Depth_cm, Surface_Spherical_1_Light_μmol_photonsm2s, Surface_Spherical_Light_2,
Surface_Spherical_3, Flat_Boat_Light_1, Flat_Boat_Light_2, Flat_Boat_Light_3,
Underwater_Spherical_Light_1, Underwater_Spherical_Light_2, Underwater_Spherical_Light_3,
Perc_light_at_depth_1, Kd_1, Perc_light_at_depth_2, Kd_2, Perc_light_at_depth_3, Kd_3,
avg_Perc_light, avg_Kd, Collectors, Weather, Comments)
SELECTDate, Site, Lat, Long, Time, [Water_Temp_C], Salinity_ppt, DO_Perc, DO_mgL,
Water_Depth_cm, Surface_Spherical_1_Light_μmol_photonsm2s, Surface_Spherical_Light_2,
Surface_Spherical_3, Flat_Boat_Light_1, Flat_Boat_Light_2, Flat_Boat_Light_3,
Underwater_Spherical_Light_1, Underwater_Spherical_Light_2, Underwater_Spherical_Light_3,
Perc_light_at_depth_1, Kd_1, Perc_light_at_depth_2, Kd_2, Perc_light_at_depth_3, Kd_3,
avg_Perc_light, avg_Kd, Collectors, Weather, Comments
FROMData_4064A_Load
END
GO
```

```
SET ANSI_NULLS ON
SET QUOTED_IDENTIFIER ON
CREATE PROC usp_Data_4064B_Load_insert
AS
BEGIN
SET NOCOUNT ON
SET XACT_ABORT ON

INSERT INTO Data_4064B_Final (Sample, Lat, Long, Depth_cm, Perc_Soil_Water, Avg_Perc_OM, Perc_Sand,
Perc_Silt_Clay, Soil_Description)
SELECT Sample, Lat, Long, Depth_cm, Perc_Soil_Water, Avg_Perc_OM, Perc_Sand, Perc_Silt_Clay,
Soil_Description
FROM Data_4064B_Load
END
GO
```

```
SET ANSI_NULLS ON
SET QUOTED_IDENTIFIER ON
CREATE PROC usp_Data_4064C_Load_insert
AS
BEGIN
SET NOCOUNT ON
SET XACT_ABORT ON
```

```
INSERT INTO Data_4064C_Final (Sample, lat, long, Date, Vegetation, Density)
SELECT Sample, lat, long, Date, Vegetation, Density
FROM Data_4064C_Load
END
GO
```