

## University of Georgia

Gray's Reef Ocean Acidification Offshore Mooring (NDBC ID#41008)

### 1. Provider Overview

a. Provide a contextual statement describing the data you are collecting in your research

The data collected at the Gray's Reef National Marine Sanctuary buoy is a combination of atmospheric and seawater parameters and contains pCO<sub>2</sub> for surface sea water and air; high resolution pH; dissolved oxygen, salinity, temperature, turbidity, and chlorophyll.

b. Provide a curriculum vitae for the individual(s) responsible for maintaining the data stream from the instrument(s).

Dr. Scott Noakes is responsible for maintaining the offshore instrumentation at the GRNMS monitoring site.

c. What data types will you be creating or capturing?

The data collected at GRNMS is from the air-sea interface and slightly below the surface. Data collected include air/sea pCO<sub>2</sub>, ph, dissolved oxygen, salinity, temperature, turbidity, and chlorophyll.

d. Provide citations for any published works involving the data you are collecting in your research.

Sutton, Adrienne; Noakes, Scott (2018): Time series of physical oceanography and carbon dioxide measurements at mooring site GraysRf\_81W\_31N cruise 316420141024. *NOAA-Pacific Marine Environmental Laboratories, Seattle, Washington, PANGAEA*, <https://doi.org/10.1594/PANGAEA.892158>,

*In:* Bakker, Dorothee C E; Lauvset, Siv K; Wanninkhof, Rik; Castaño-Primo, Rocío; Currie, Kim I; Jones, Steve D; Landa, Camilla S; Metzl, Nicolas; Nakaoka, Shin-Ichiro; Nojiri, Yukihiro; Nonaka, Isao; O'Brien, Kevin M; Olsen, Are; Pfeil, Benjamin; Pierrot, Denis; Schuster, Ute; Smith, Karl; Sullivan, Kevin; Sutton, Adrienne; Tilbrook, Bronte; Alin, Simone; Becker, Meike; Benoit-Cattin, Alice; Bott, Randy; Bozec, Yann; Bozzano, Roberto; Burger, Eugene; Burgers, Tonya; Cai, Wei-Jun; Chen, Liqi; Chierici, Melissa; Corredor, Jorge; Cosca, Catherine E; Cross, Jessica; Dandonneau, Yves; De Carlo, Eric Heinen; Dietrich, Colin; Else, Brent; Emerson, Steven R; Farias, Laura; Fransson, Agneta; Garreaud, René D; Gkritzalis, Thanos; Glockzin, Michael; González-Dávila, Melchor; Gregor, Luke; Hartman, Sue E; Hermes, Rudolf; Hoppema, Mario; Howden, Stephan; Hunt, Christopher W; Hydes, David; Ibánhez, J Severino P; Kitidis, Vassilis; Körtzinger, Arne; Kozyr, Alexander; Kuwata, Akira; Lampitt, Richard Stephen; Lefèvre, Nathalie; Lo Monaco, Claire; Maenner, Stacy M; Manke, Ansley; Manzello, Derek P; McGillis, Wade; Mickett, John; Monteiro, Pedro M S; Morell, Julio; Morrison, Ru; Mucci, Alfonso; Munro, David R; Musielewicz, Sylvia; Negri, Ruben M; Newberger, Timothy;

Newton, Jan; Noakes, Scott; O'Brien, Chris; Ólafsdóttir, Sólveig Rósa; Ólafsson, Jón; Ono, Tsuneo; Osborne, John; Ouyang, Zhangxian; Padín, Xose Antonio; Papakyriakou, Tim N; Plüddemann, Albert J; Rehder, Gregor; Sabine, Christopher L; Sakurai, Keizo; Salisbury, Joe; Santana-Casiano, Juana Magdalena; Schlitzer, Reiner; Schneider, Bernd; Send, Uwe; Skjelvan, Ingunn; Steinhoff, Tobias; Sulpis, Olivier; Sutherland, Stewart C; Sweeney, Colm; Tadokoro, Kazuaki; Takahashi, Taro; Telszewski, Maciej; Thomas, Helmuth; Tomlinson, Michael; Trull, Tom W; Valdimarsson, Héðinn; van Heuven, Steven; Vandemark, Doug; Wada, Chisato; Wallace, Douglas WR; Watson, Andrew J; Weller, Robert A; Xu, Suqing (2018): Surface Ocean CO2 Atlas (SOCAT) V6. PANGAEA, <https://doi.org/10.1594/PANGAEA.890974>

Sutton, A. J., Feely, R. A., Maenner-Jones, S., Musielwicz, S., Osborne, J., Dietrich, C., Monacci, N., Cross, J., Bott, R., Kozyr, A., Andersson, A. J., Bates, N. R., Cai, W.-J., Cronin, M. F., Carlo, E. H. D., Hales, B., Howden, S. D., Lee, C. M., Manzello, D. P., McPhaden, M. J., Meléndez, M., Mickett, J. B., Newton, J. A., Noakes, S. E., Noh, J. H., Olafsdottir, S. R., Salisbury, J. E., Send, U., Trull, T. W., Vandemark, D. C., and Weller, R. A.: Autonomous seawater pCO<sub>2</sub> and pH time series from 40 surface buoys and the emergence of anthropogenic trends, *Earth Syst. Sci. Data Discuss.*, <https://doi.org/10.5194/essd-2018-114>, 2018.

Reimer, J., Cai, WJ, Xue, L., Vargas, R., Noakes, S., Hu, X., Signorini, S., Mathis, J., Feely, R., Sutton, A., Sabine, C., Musielewicz, S., Chen, B., Wannikhof, R. Time Series pCO<sub>2</sub> at a coastal mooring: Internal consistency, seasonal cycles, and interannual variability, *Continental Shelf Research*, Vol. 145, p. 95-108, DOI 10.1016/j.csr.2017.06.022, August 2017.

## 2. DMAC

### a. How is the raw data captured, retrieved, or created?

The data is stored electronically on internal memory for the MAPCO<sub>2</sub> system, SAMI-pH and Seabird water quality sonde. The data is transmitted electronically daily from the buoy to PMEL. The data is also stored internally on the MAPCO<sub>2</sub>, SAMI-pH, and Seabird water quality sonde.

### b. Describe any modifications made to the raw or modified data stream between collection and submission to the SECOORA DMAC team or dissemination through other channels.

The Pacific Marine Environmental Lab (PMEL) reviews the data and does quality control measures prior to releasing the data to the public.

### c. Describe how you make your data available to the SECOORA DMAC team

Once cleared by PMEL the data is available online at [http://cdiac.ornl.gov/oceans/Moorings/Grays\\_Reef.html](http://cdiac.ornl.gov/oceans/Moorings/Grays_Reef.html)

### d. Describe any public or private dissemination or access mechanism outside of the SECOORA DMAC system that you make your data available to (National IOOS DACs, GTS, NDBC, etc.)

The data is available through the Carbon Dioxide Information Analysis Center (CDIAC). From there, the data can be linked to other data portals.

### **3. Quality Control**

- a. Describe any quality control procedures applied to the data stream between raw data collection and submission to the SECOORA DMAC team. Include calibration information, documentation, and procedure references as needed.

This is handled by PMEL. The QA/QC and data evaluation procedures followed by PMEL are outline in the following publication:

A high-frequency atmospheric and seawater pCO<sub>2</sub> data set from 14 open-ocean sites using a moored autonomous system. Earth Syst. Sci. Data, 6, 353–366, 2014

[www.earth-syst-sci-data.net/6/353/2014/](http://www.earth-syst-sci-data.net/6/353/2014/) doi:10.5194/essd-6-353-2014

### **4. Data Sharing Directive**

- a. Describe the schedule for data sharing (how often is data made available to the SECOORA DMAC team, how often is the data updated on your own hosted web-pages?)

The data is updated to the CDIAC website as it is released from QA measures at PMEL.

- b. How long will you (the original data collector/creator/principal investigator) retain the right to use the data before allowing it to be made available for wider use? Explain if different data products will become available on different schedules (Ex: raw data vs processed data, observations vs models, etc.)

The data typically clears QA measures within six months to one year and then is available to the public on the CDIAC website (<https://cdiac.ess-dive.lbl.gov/>).

- c. Completely explain any details of any embargo periods for political, commercial, and/or patent reasons.

None