

AQRP Monthly Technical Report

PROJECT TITLE	Galveston Offshore Ozone Observations (GO3)	PROJECT #	20-004
PROJECT PARTICIPANTS	James Flynn (UH) Yuxuan Wang (UH) Paul Walter (St. Edward's University) Gary Morris (St. Edward's University)	DATE SUBMITTED	3/9/2021
REPORTING PERIOD	From: February 1, 2021 To: February 28, 2021	REPORT #	8

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 14th of the month following the reporting period shown above.

Detailed Accomplishments by Task for reporting period

- Continue testing first sampling packages
- Began testing of the second sampling system.
- Continue testing the Ceilometer CL-51 at the UH Launch Trailer site.
- Field test of the omnidirectional antenna was carried out. One telemetry setup using the omnidirectional antenna and one separate telemetry setup using a Yagi directional antenna were used to compare performance. The omnidirectional antenna mounted on a tripod is shown in Figure 1.
Both setups used an RSPdx SDRplay receiver. It was found that both telemetry setups tracked the flight well throughout the troposphere during the ascent (Figure 2) with the omnidirectional antenna typically receiving a better signal.



Figure 1: The Harsh/Synergetics 14A-N omnidirectional antenna mounted on a tripod.

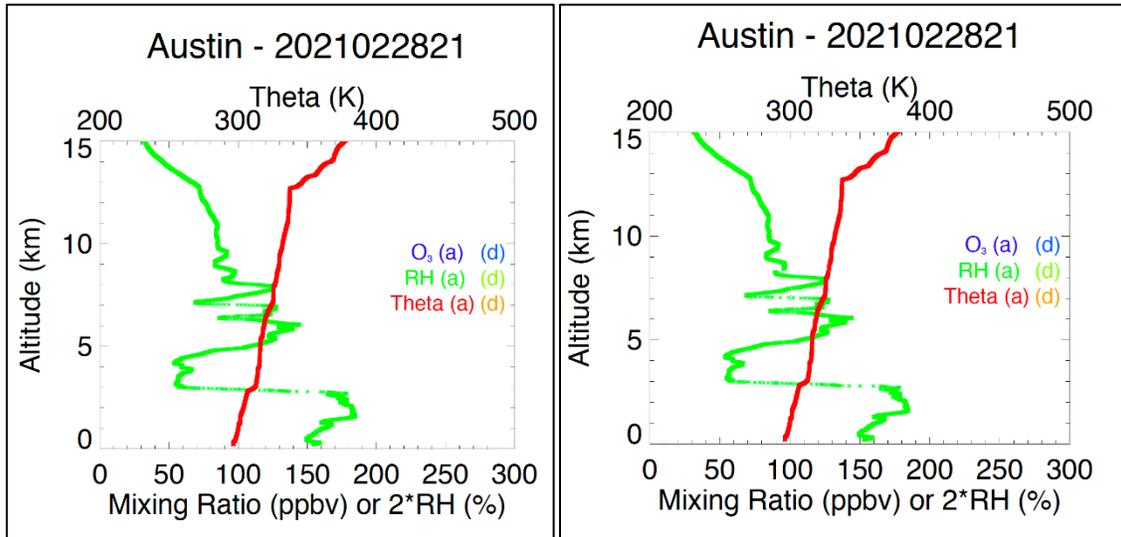


Figure 2: Left: Radiosonde tropospheric profile using omnidirectional antenna. Right: Same radiosonde tropospheric profile using Yagi antenna.

During the descent after the balloon burst, the omnidirectional antenna tracked the signal longer (Figure 3). The omnidirectional antenna continued to receive a signal until the radiosonde was 141 km away (approximately 10 km further than the Yagi antenna). The performance of the telemetry setup using the omnidirectional antenna was more than sufficient to meet the needs during the upcoming field campaign. The omnidirectional antenna will be mounted onto the pontoon boat used for ozonesonde launches in Galveston Bay. The omnidirectional antenna has the advantage that it is much smaller than the Yagi antenna and likely will not need to be repositioned as the pontoon boat is moving.

When the signal was weak during the descent, we may have observed some directional dependence when rotating the omnidirectional antenna. We will monitor signs of directional dependence affecting the signal strength during the field campaign.

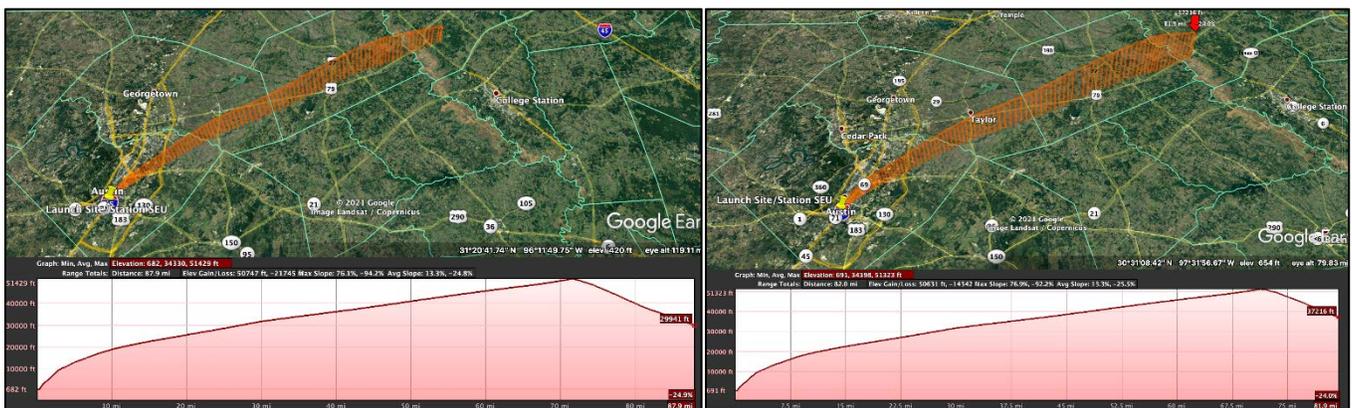


Figure 3: Left: Omnidirectional antenna tracking of the radiosonde flight path. Right: Yagi directional antenna tracking of the radiosonde flight path.

Data Collected

No additional sampling data was collected during this period.

Preliminary Analysis

No additional analysis was performed

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

No major problems were encountered during this period

Goals and Anticipated Issues for the Succeeding Reporting Period

- Test both sampling system next to each other out in the field for comparison.
- Testing GSPs with the sampling systems.
- Work with Vaisala to get be able to switch license from instrument laptop to sampling system.
- Continue to prepare for deployment of sampling packages to be ready in April start of O₃ (ozone) season. Deployment schedule is dependent on receipt and successful testing of the GSP.

Detailed Analysis of the Progress of the Task Order to Date

The project is moving forward quite well with respect to the Task Order issue date. With the request from AQRP and TCEQ to delay deployment into the 2021 O₃ season the timeline has shifted which will allow more time for preparation and coordination.

Do you have any publications related to this project currently under development? If so, please provide a working title, and the journals you plan to submit to.

Yes No

Do you have any publications related to this project currently under review by a journal? If so, what is the working title and the journal name? Have you sent a copy of the article to your AQRP Project Manager and your TCEQ Liaison?

Yes No

Do you have any bibliographic publications (ie: publications that cite the project) related to this project that have been published? If so, please list the reference information. List all items for the lifetime of the project.

Yes No

Do you have any presentations related to this project currently under development? If so, please provide working title, and the conference you plan to present it (this does not include presentations for the AQRP Workshop).

Yes No

Do you have any presentations related to this project that have been published? If so, please list reference information. List all items for the lifetime of the project.

Yes No

Have any personnel changes occurred that were not listed in the original proposal? If so, please include a detailed description of the personnel change(s) below.

Yes No

Are any delays expected in the progress of the research? If so, please include a detailed description of the potential delay below.

Yes No

The AQRP and TCEQ have requested the deployment to be delayed into CY2021.

Describe any possible concerns/issues (technical or non-technical) that AQRP should be made aware of.

Yes No

Are you anticipating using all the available funds allocated to this project by the end date? If not, why and approximately what is the amount to be returned?

Yes No

Acronyms/Abbreviations:

O₃: Ozone

Submitted to AQRP by

James Flynn