

AQRP Monthly Technical Report

PROJECT TITLE	Improve Cloud Modeled by WRF using COSP and Generative Adversarial Network	PROJECT #	20-026
PROJECT PARTICIPANTS	PI: Zheng Lu	DATE SUBMITTED	July. 11, 2021
REPORTING PERIOD	From: June. 12, 2021 To: July. 09, 2021	REPORT #	11

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 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task for reporting period

During this period, we focused on two subtasks: subtask #1. improving the performance of generative adversarial network (GAN) by performing training with different hyperparameters: e.g. increasing epoch number and changing learning rate. We also found that the gaps among MODIS/Aqua granules over Gulf of Mexico can significantly worsen the performance of GAN; therefore, we plan to add MODIS/Terra data and regenerate the MODIS cloud fields. Subtask #2: we are examining the python code tool that extracts data from fake cloud field figures that are generated by GAN. The data will be processed using statistical tools.

Preliminary Analysis

N.A.

Data Collected

Preliminary training results:

<https://drive.google.com/drive/folders/1M6MHnBa4zymX5Fc1P3LOoLEWB9BgjiC5?usp=sharing>

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

N.A.

Goals and Anticipated Issues for the Succeeding Reporting Period

Perform GAN training with large datasets, for both CF, cloud liquid water path, and cloud optical properties.

Detailed Analysis of the Progress of the Task Order to Date

100% of Task 1& 2. 75% of Task 3

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

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

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

Submitted to AQRP by
[Zheng Lu]