

Commercial Weather Data Pilot (also a presentation)

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1. Introduction

The NOAA Commercial Space Policy calls for NOAA to undertake demonstration projects as appropriate to demonstrate the viability of assimilating commercial data into NOAA meteorological models. The NESDIS Commercial Space Activities Assessment Process calls for these demonstration projects to be completed prior to the purchase of commercial data for operational use.

The CWDP is a pilot of the demonstration projects called for in these documents, and is serving two roles for NESDIS. The first is to provide an understanding of procedures and formulate best practices that will serve as a foundation to any future commercial data demonstration projects and operational data purchases. These procedures include the following:

- Contract writing for commercial data purchases
- Data quality assessment
- Real time secure data ingest
- Numerical weather prediction impact assessment
- Data rights negotiation
- Data archive

The second role of the CWDP is to potentially serve as a demonstration project itself, informing decisions on procurement of certain data sets operationally. This would be done given adequate funding levels and quantities of data available from the commercial sector.

2. Background

CWDP Round 1

Based on input from the community and commercial sector via recent market research and Federal Acquisition Regulation (FAR) processes, NOAA focused on radio occultation as the most suitable data type for CWDP Round 1. On May 24, 2016, NESDIS released a Request for Information (RFI), which was the first step to bring radio occultation data from commercial companies to NOAA. The RFI sought pre-launch radio occultation data on a no-cost basis. This was done to facilitate broad industry participation, as different vendors were expected to have

candidate data at different levels of technical maturity. The RFI was tailored to take into account the full range of potentially viable vendors, including those with satellites already on-orbit and those with systems not yet deployed but in the advanced stages of instrument, satellite, and mission development. While on-orbit data are needed to conduct a demonstration project for commercial data, for missions not yet deployed on-orbit evaluating pre-launch data are useful to aid NOAA in understanding and scoping the expectations for what the on-orbit data stream might look like, and to providing insight to commercial entities as they finalize their flight activities.

The response period for the RFI closed on June 13, 2016, and NESDIS received four responses. NESDIS has received pre-launch (i.e. ground-based) radio occultation data from vendors for format assessment by the National Center for Atmospheric Research (NCAR) in preparation for on-orbit data assessment. The RFI also gathered the latest industry input as NOAA considered what criteria to include in a Request for Quotation (RFQ), the next step in carrying out the CWDP.

On June 21, 2016, NESDIS released a draft RFQ for on-orbit radio occultation data from commercial sources, seeking public comment by July 15, 2016. Comments that were received informed development of the final RFQ. In conjunction with the draft RFQ open comment period, on July 7, 2016, NESDIS held the third in its series of Community Engagements with the commercial space industry.

On July 28, 2016, based on the draft RFQ and public comments received, NESDIS released an RFQ seeking on-orbit radio occultation data from commercial sources for the purpose of demonstrating data quality and potential value to NOAA's weather forecasts and warnings. Responses to the solicitation were due August 12, 2016. Like the RFI, this RFQ was designed to allow for broad industry participation in the CWDP. The RFQ sought 3-6 months of radio occultation data without setting minimum requirements for data latency, distribution around the globe, or number of occultations per day.

Based on the three RFQ responses received, NESDIS awarded contracts for delivery of on-orbit radio occultation data to:

- GeoOptics, Inc. of Pasadena, CA, valued at \$695,000 and
- Spire Global, Inc. of San Francisco, CA valued at \$370,000.

Per the RFQ, the on-orbit data delivery period opened October 1, 2016, and companies have until April 30, 2017 to provide the data contracted for. NESDIS has received no on-orbit data as of March 21, 2017.

NOAA entered into an interagency agreement with NCAR -- through its sponsor organization the National Science Foundation -- to provide on-orbit data quality assessment and processing. The multi-agency Joint Center for Satellite Data Assimilation (JCSDA) was also funded through the CWDP to evaluate the value of the processed on-orbit radio occultation data in NOAA's

numerical weather prediction models. JCSDA’s ability to complete an operational assessment is dependent on amount of data received.

Round 1 evaluation of the demonstration data purchased from GeoOptics and Spire by NCAR and JCSDA will take place through FY 2017, and NESDIS will document the results of NOAA’s Round 1 activities in a report to be issued in early FY 2018.

3. Way Ahead

CWDP Round 2

NOAA has also requested additional funds in the FY 2017 President’s Budget to extend the CWDP. With the FY 2016 CWDP funds, NESDIS was able to better understand several key issues related to future operational data purchases. NESDIS plans to use the additional FY 2017 funds to address key issues that remain, as show in the table below.

Commercial data purchase procedure	Round 1	Round 2 (pending FY 2017 funding)
Contract writing	x	x
Data quality assessment	x	x
Real time secure data ingest		x
Numerical weather prediction impact assessment		x
Data rights negotiation		x
Data archive		x

Pending FY 2017 appropriations and results of Round 1 data assessment, Round 2 may include a second RFQ and assessment period for commercial radio occultation data, or it may extend the CWDP to data types other than radio occultation data. If focused on radio occultation data, NESDIS would seek to conduct an evaluation of the data’s impact on NOAA’s numerical weather prediction models that would further support the demonstration of radio occultation data and the development of internal infrastructure needed to pursue procurement of commercial radio occultation data operationally. This would include addressing the internal procedures as identified in the table above and setting operational-like requirements in the RFQ such as latency and global geographical distribution of observations.

We look forward to completing CWDP Round 1 and initiating Round 2 when final FY 2017 appropriations funding is provided.