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The Naval Research Laboratory collaborated with NOAA and other U.S. partners in an evaluation of the GNSS-RO data from NOAA Commercial Radio Occultation Purchase using the NRL global NWP system. The NOAA commercial purchase was from the vendors GeoOptics and Spire Global, and the data to be evaluated was for the first phase, referenced as Delivery Order 1 (DO1). There was a near real-time feed established starting on 03Dec2021; however, the full dataset is available to the public from 15Dec2020 – 15Jan2021. This full dataset was considered for the results shown. In general both data sets provide good quality radio occultations and benefit to the system. Though the forecast metrics such as 500hPa anomaly correlation show very little change, a small but positive impact is seen on global radiosonde statistics in the temperature field between 300-200hPa. In addition a small but statistically significant improvement in the standard deviation of the fit for the radiances for ATMS ch07 which peaks roughly in the same vertical region is noted. Overall, the addition of these measurements would be of benefit to global NWP systems and their use would be recommended to all centers able to receive them in near real time.

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