

# HamSCI 2017 Solar Eclipse QSO Party (SEQP) Data

The 2017 Solar Eclipse QSO Party (SEQP) was a ham radio contest-like experiment designed to study the effects of the 21 August 2017 Total Solar Eclipse on the ionosphere and radio propagation. The SEQP was coordinated by the Ham Radio Science Citizen Investigation (hamsci.org). This archive contains the locations, logs, and station descriptions submitted by operators to hamsci.org following the SEQP, as well as an aggregated, geolocated archive in CSV format of all Reverse Beacon Network (RBN), WSPRNet, PSKReporter, DXCluster, and SEQP log QSOs. The final rules of the SEQP have also been archived here.

More information about the SEQP can be found at <http://hamsci.org/seqp>, and a published analysis of RBN observations over the United States by Frissell et al. (2018) may be found at <https://doi.org/10.1029/2018GL077324>.

## SEQP Log Data

The SEQP data submitted to hamsci.org consists of three parts: `station_info.csv`, `log_files.tar.bz2`, and the `station_descriptions.tar.bz2`. Both `tar.bz2` archives expand into directories containing log and station description files submitted by participants. `station_info.csv` is described in the table below.

| Column Name                               | Description  |
|---|--|
| <code>index</code>                        | Incremental index of records.  |
| <code>callsign</code>                     | Radio Callsign of Station  |
| <code>gridsquare_submitted</code>         | Location of station as submitted to hamsci.org as <a href="#">Maidenhead grid square</a> |
| <code>lat_calculated</code>               | Geographic Latitude calculated at center of <code>gridsquare_submitted</code>            |
| <code>lon_calculated</code>               | Geographic Longitude calculated at center of <code>gridsquare_submitted</code>           |
| <code>radio_model</code>                  | Radio Model and Comments on Station  |
| <code>tx_power_watts</code>               | Transmitter Power [W]  |
| <code>log_filename</code>                 | Filename of associated file in <code>log_files</code> directory.                         |
| <code>station_description_filename</code> | Filename of associated file in <code>station_descriptions</code> directory.              |

## seqp\_all\_ctyChecked.csv.bz2

seqp\_all\_ctyChecked.csv.bz2 is a bzip2 comma separated value (CSV) archive containing all Reverse Beacon Network (RBN), WSPRNet, PSKReporter, DXCluster, and SEQP log QSOs during the SEQP (21 August 2017 1400-2200 UTC), including high-time resolution RBN spots that may not appear in the standard RBN public archive.

| Column Name | Description   |
|-------------|---|
| datetime    | [UT]  |
| frequency   | [MHz]   |
| mode        | CW/SSB/PSK31/FT8/WSPR   |
| call_0      | Receiving (de) Station Callsign   |
| srpt_0      | Receiving Station Signal Report <ul style="list-style-type: none"><li>• dB for WSPR/PSKReporter/RBN</li><li>• RST for SEQP Submitted Log</li><li>• NaN if Not Reported/Not Valid</li></ul>  |
| grid_0      | Receiving Station Maidenhead Grid Square  |
| lat_0       | Receiving Station Latitude  |
| lon_0       | Receiving Station Longitude   |
| grid_src_0  | Source of Receiving Station Location Data <ul style="list-style-type: none"><li>• wspr: WSPRNet Reported Grid Square</li><li>• seqp_rx: location from received gridsquare exchange in SEQP log file</li><li>• pskr: Location provided by PSKReporter</li><li>• seqp_submitted: Location reported by operator to hamsci.org</li><li>• seqp_sent: location from sent</li><li>• qrz: Location determined by qrz.com lookup</li></ul> |
| call_1      | Transmitting (dx) Station Callsign  |
| srpt_1      | Transmitting Station Signal Report <ul style="list-style-type: none"><li>• dB for WSPR/PSKReporter</li><li>• RST for SEQP Submitted Log</li><li>• NaN if Not Reported/Not Valid</li></ul>   |
| grid_1      | Transmitting Station Maidenhead Grid Square   |
| lat_1       | Transmitting Station Latitude   |
| lon_1       | Transmitting Station Longitude  |
| grid_src_1  | Source of Transmitting Station Location Data  |
| source      | 'wspr', 'pskreporter', 'rbn', 'seqp_logs', 'dxcluster'  |

## seqp\_final\_rules.pdf

seqp\_final\_rules.pdf is a PDF file of the final rules of the Solar Eclipse QSO Party.

## Data Rules of the Road

Please acknowledge the HamSCI project and Nathaniel Frissell, W2NAF, when using data from this archive in presentations and publications. Also, please be sure to acknowledge the upstream data providers (Reverse Beacon Network, PSKReporter, WSPRNet, and DX Cluster) as appropriate.

## Questions

Please contact Nathaniel Frissell, W2NAF, at [w2naf@arrl.net](mailto:w2naf@arrl.net) or [hamsci@hamsci.org](mailto:hamsci@hamsci.org).

## Acknowledgments

Support for the Solar Eclipse QSO Party is in part thanks to NSF Grant AGS-1552188/479505-19C75 and the New Jersey Institute of Technology Center for Solar Terrestrial Research. Special thanks to the operators and participants of numerous ham radio observation networks contributing data to this project. RBN data are provided by <http://reversebeacon.net>, with thanks to Felipe Ceglia (PY1N/CT7ANO), Pete Smith (N4ZR), and Dick Williams (W3OA). Thanks to Philip Gladstone (N1DQ) for PSKReporter (<http://pskreporter.info>) observations. WSPRNet observations were downloaded from <http://wspnet.org>. Thanks to Bill Engelke (AB4EJ) for providing DXCluster data. We thank the global amateur radio community, Ward Silver (N0AX), and the ARRL for making the SEQP possible. Select geolocation data is provided by <http://qrz.com>. We acknowledge the use of the Free Open Source Software projects used in this analysis: Ubuntu Linux, python, matplotlib, NumPy, SciPy, pandas, and others.

## References

Frissell, N. A., Katz, J. D., Gunning, S. W., Vega, J. S., Gerrard, A. J., Earle, G. D., et al. (2018). Modeling amateur radio soundings of the ionospheric response to the 2017 great American eclipse. *Geophysical Research Letters*, 45, 4665–4674. <https://doi.org/10.1029/2018GL077324>