

HIAPER cloud radar (HCR)

HCR is an airborne, polarimetric, millimeter-wavelength (94.4 GHz) radar. For more information, see www.eol.ucar.edu/instruments/hiaper-cloud-radar-hcr

Specifications

HIAPER Cloud Radar Specifications	
Parameter	Specification
Antenna	0.3 m, Cassegrain
Antenna gain	46.21 dB
Antenna 3 dB beam width	0.68°
Polarization	Linear (H)
Transmit frequency	94.40625 GHz
Transmitter	Klystron
Peak transmit power	1.6 kW
Pulse width	0.2 – 1.0 μ s
PRF	10 kHz
System noise power	-104 dBm
Receiver noise figure	8.9 dB
Receiver Bandwidth	20 MHz
Receiver Dynamic Range	76 dB
First IF	156.25 MHz
Second IF	1406.25
Range resolution	30 - 150 m
Unambiguous range	15 km
Along-flight track resolution at 5km range	50 m
Typical reflectivity uncertainty	0.4 dB
Sensitivity (0 dB SNR)	-39.6 dBZ at 1 km
Unambiguous velocity	\pm 7.75 m/s
Typical radial velocity uncertainty	0.2 m/s at $W=2$ m/s
Dwell time	100 ms

SOCRATES

The Southern Ocean Clouds, Radiation, Aerosol Transport Experimental Study (SOCRATES) took place from January 15, 2018 to February 26, 2018 in the Southern Ocean south of Australia. For more information, see www.eol.ucar.edu/field_projects/socrates

Flights

Flight	Start date	Start time	End date	End time
RF01	20180115	21:50	20180116	05:30
RF02	20180119	00:00	20180119	07:15
RF03	20180122	19:25	20180123	03:45
RF04	20180123	21:20	20180124	06:10
RF05	20180125	21:55	20180126	05:30
RF06	20180128	21:25	20180129	06:10
RF07	20180130	23:30	20180131	07:50
RF08	20180203	21:40	20180204	06:45
RF09	20180204	22:10	20180205	06:55
RF10	20180207	19:25	20180208	05:00
RF11	20180216	23:35	20180217	06:20
RF12	20180217	22:10	20180218	07:45
RF13	20180219	21:25	20180220	06:25
RF14	20180221	22:10	20180222	06:40
RF15	20180224	01:50	20180224	08:35

SOCRATES data

Time series data is available at <http://data.eol.ucar.edu/dataset/552.022>. If you do not know what radar time series data is, you probably want the cfRadial 10Hz moments data available here <http://data.eol.ucar.edu/dataset/552.007>.

Version 0.1 preliminary processed data are made available to facilitate initial instrument inter-comparisons, quality control checks and calibrations, as well as early interpretation of the combined dataset. Preliminary datasets are password protected. Users of these preliminary data agree NOT to share these data with third parties without first notifying the responsible data provider. These data have NOT received final quality control and are NOT final research data.

As such, they are NOT publication ready and users agree NOT to publish with these data. When publication-ready data are available, users who have previously downloaded these preliminary data will be notified.

Planned quality control steps include e.g. noise calibration and calibration with ocean scan data.

For questions, please contact EOL Data Support at eol-datahelp@ucar.edu.

UCAR/NCAR - Earth Observing Laboratory
Remote Sensing Facility
HIAPER Cloud Radar
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