Contacts
Research Coordinator: James Drummond
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NOAA Data Manager, Logistics: Sara Crepinsek
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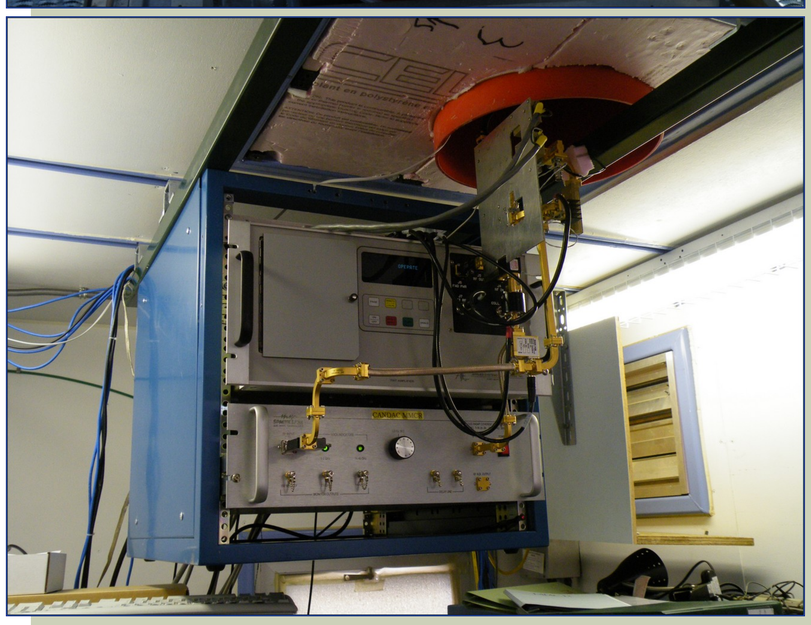
Datagrams: Eureka

mmcr: Millimeter Wavelength Cloud Radar

Contacts
Project Lead: Taneil Uttal
taneil.uttal@noaa.gov
Site Manager: Pierre Fogal
pierre.fogal@utoronto.ca

mmcr sub-folder	File Names	File Location NOAA ftp
caltable	YYYYJJJhhhhCalTable.nc.zip	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/raw/caltable/YYYY/
elog	YYYYJJJhhhhElog.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/raw/elog/YYYY/
health	YYYYJJJhhhhHealth.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/raw/health/YYYY/
mom	YYYYJJJhhhhMMCRMom.nc.zip	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/raw/mom/YYYY/
spc	YYYYJJJhhhhMMCRSpecMom.nc.gz	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/raw/spc/YYYY/

Data | Diagnostics | Logger Info



Instrument Details	
Specifications	**1**
Measurement	Reflectivity, mean Doppler velocity, Doppler spectrum width, Doppler spectra
Serial #	Cloud boundaries, phase, microphysics, cloud-scale dynamics
Instrument Manufacturer	In-house build; no serial #
Type	In-house build; NOAA ETL (PSD)
Calibration factors	There is a complete internal calibration that is already applied to the data stream

Eureka Data Center

NOAA

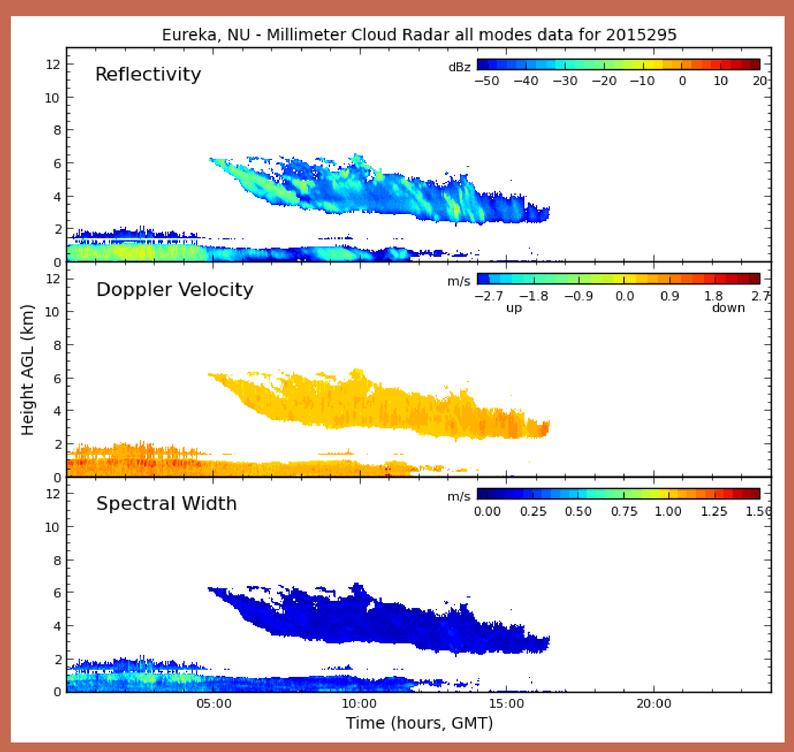
FTP File locations at NOAA:
From Eureka Data Center to:
ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/

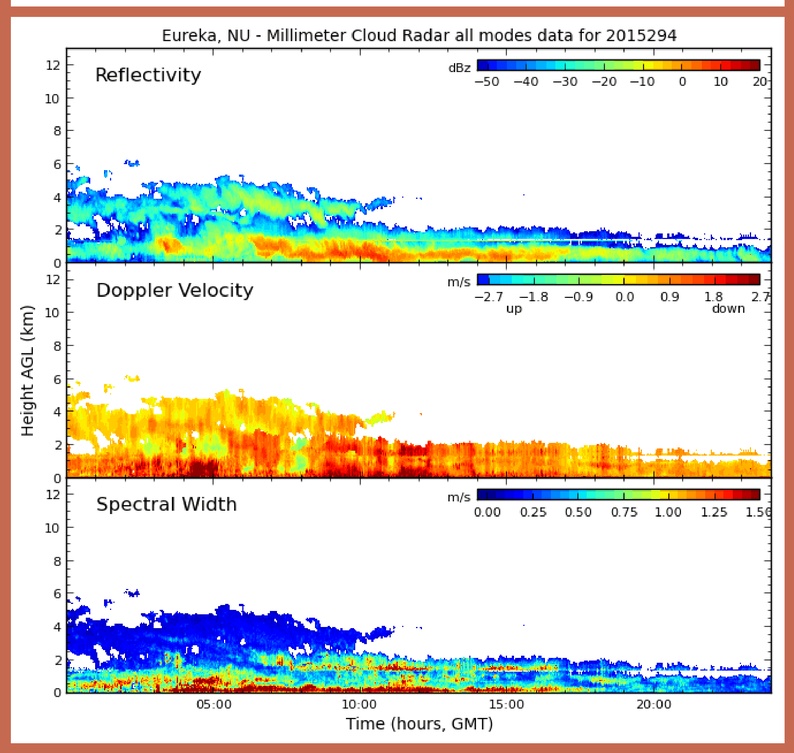
Processing

Metadata information on following pages, direct from netCDF file information

Quicklooks

Example Plots:
Plots located here: http://www.candac.ca/candacweb/content/mmcr





Product

IASOA Portal

Home:
http://www.esrl.noaa.gov/psd/iasoa/
Data:
http://www.esrl.noaa.gov/psd/iasoa/dataatglance

Example Product File:

mmcr sub-folder	File Names	File Location NOAA ftp
products	eurmmcrmerge.C1.c1.YYYYMMDD.hhmmss.cd	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/products/
quicklooks	eurmmcrm3ql.YYYYMMDD.hhmmss.png	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/quicklooks/
processed_images	eur.mmcr.YYYYMMDD.hhmmss.png	ftp://ftp.etl.noaa.gov/psd3/arctic/eureka/cloud_properties/macrophysical/mmcr/quicklooks/processed_images/

Official Data Submission to an Archive | Data Cable | rsync | NOAA server

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Eureka

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Spectral netCDF Metadata

File name: 20150771100MMCRSpecMom.nc	Path: eureka\cloud_properties\macrophysical\mmcr\raw\spc	
Attributes		
Name	Value	
'site_id'	'Eureka'	
'facility_id'	'Eureka'	
'radar_operating_frequency'	'34.86 GHz'	
'radar_wavelength'	'8.600115e-003 m'	
'peak_transmitted_power'	'52.31 dBm'	
'peak_transmitted_power_timestamp'	'-1324065421 s'	
'antenna_diameter'	'1.81 m'	
'twt_status_code'	'78000000'	
'comment'	'DOE/ARM SGP MMCR netcdf raw file'	
'resolution_description'	The resolution field attributes refer to the number of significant digits relative to the decimal point that should be used in calculations. Using fewer digits might result in greater uncertainty using a larger number of digits should have no effect and thus is unnecessary. However, analyses based on differences in values with a larger number of significant digits than indicated could lead to erroneous results or misleading scientific conclusions, resolution for lat = 0.001, resolution for lon = 0.001, resolution for alt = 1	
'proc_level'	'a1'	
'history'	'created by LAP-XM'	
'comment_on_time'	'The time stamp comes at the beginning and end of the sample period. Sample period is made up of data collection and processing time'	
Dimensions		
Name	Length	
'mode'	10	
'namelength'	32	
'heights'	228	
'speclength'	256	
'time'	2442	
Variables		
Name	Long name	Units
base_time	Base Time in Epoch	seconds since 1970-1-1 0:00:00 0:00
time_offset	Time offset from base_time	seconds since 2015-03-18 11:00:00 0:00
ModeDescription	radar mode char identifier	0
RxCalTimeStamp	Receiver Cal Time Stamp	s
RxGain	Receiver Gain	dB
SkyNoiseLevel	Receiver Sky Noise	dB
Rx290KLevel	Receiver 290K Level	dB
CalCheckLevel	Receiver Cal Check Level	dB
CalCheckTime	Receiver Cal Check Time Stamp	s
RadarConstant	Radar Constant	dB
MinimumDetectableReflectivity	Minimum detectable reflectivity	dBZ
InterPulsePeriod	Inter-Pulse Period	ns
PulseWidth	Pulse Width	ns
StartGateDelay	Delay to First Range Gate	ns
GateSpacing	Gate Spacing	ns
NumCoherentIntegrations	Number of Coherent Integrations	count
NumSpectralAverages	Number of Spectral Averages	count
NumFFT	Number of Points in FFT	count
NumHeights	Number of Range Gates	count
NumCodeBits	Number of Code Bits	count
NumReceivers	Number of Receiver	count
ReceiverMode	Receiver Mode	count
ReceiverNumber	Current Receiver Number	count
NyquistVelocity	Nyquist Velocity	m/s
DCFilterONOFF	DC Filtering ON-OFF Status	count
WindowingONOFF	Windowing ON-OFF Status	count
ClutterHeight	Max. height of clutter removal	meters
Heights	Range Heights (center of radar sample volume)	meters AGL
CalibrationConstant	First Order Estimate of Spectral Count Calibration	ADC/dBZ
ModeNum	Operating Set for this Record	count
lat	Latitude	degrees
lon	Longitude	degrees
alt	Altitude	meters above Mean Sea Level
Azimuth	Azimuth	degrees
Elevation	Elevation	degrees
DataQualityStatus	Data Quality Status	code
MeanDopplerVelocity	Mean Doppler Velocity	meters/sec
SignalToNoiseRatio	Signal to Noise Ratio	dB
Power	Power (uncalibrated)	dB
SpectralWidth	Spectral Width	meter/sec
NoiseLevel	Mean Noise Level	dB
Reflectivity	Reflectivity	dBZ
RangeCorrectedPower	Range Corrected Calibrated Power	dBm
CircularDepolarizationRatio	Circular Depolarization Ratio	dB
AvgNoiseLevel	Average Noise Level (S/N<0)	dB
Spectra	Spectra Dat	units

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Moment netCDF Metadata

File name: 20150771100MMCRMom.nc	Path: eureka\cloud_properties\macrophysical\mmcr\raw\mom	
Attributes		
Name	Value	
'site_id'	'Eureka'	
'facility_id'	'Eureka'	
'radar_operating_frequency'	'34.86 GHz'	
'radar_wavelength'	'8.600115e-003 m'	
'peak_transmitted_power'	'52.31 dBm'	
'peak_transmitted_power_timestamp'	'-1324065421 s'	
'antenna_diameter'	'1.81 m'	
'twt_status_code'	'78000000'	
'comment'	'DOE/ARM SGP MMCR netcdf raw file'	
'resolution_description'	The resolution field attributes refer to the number of significant digits relative to the decimal point that should be used in calculations. Using fewer digits might result in greater uncertainty using a larger number of digits should have no effect and thus is unnecessary. However, analyses based on differences in values with a larger number of significant digits than indicated could lead to erroneous results or misleading scientific conclusions, resolution for lat = 0.001, resolution for lon = 0.001, resolution for alt = 1	
'proc_level'	'a1'	
'history'	'created by LAP-XM'	
'comment_on_time'	'The time stamp comes at the beginning and end of the sample period. Sample period is made up of data collection and processing time'	
Dimensions		
Name	Length	
'mode'	10	
'namelength'	32	
'heights'	228	
'speclength'	256	
'time'	2442	
Variables		
Name	Long name	Units
base_time	Base Time in Epoch	seconds since 1970-1-1 0:00:00 0:00
time_offset	Time offset from base_time	seconds since 2015-03-18 11:00:00 0:00
ModeDescription	radar mode char identifier	0
RxCalTimeStamp	Receiver Cal Time Stamp	s
RxGain	Receiver Gain	dB
SkyNoiseLevel	Receiver Sky Noise	dB
Rx290KLevel	Receiver 290K Level	dB
CalCheckLevel	Receiver Cal Check Level	dB
CalCheckTime	Receiver Cal Check Time Stamp	s
RadarConstant	Radar Constant	dB
MinimumDetectableReflectivity	Minimum detectable reflectivity	dBZ
InterPulsePeriod	Inter-Pulse Period	ns
PulseWidth	Pulse Width	ns
StartGateDelay	Delay to First Range Gate	ns
GateSpacing	Gate Spacing	ns
NumCoherentIntegrations	Number of Coherent Integrations	count
NumSpectralAverages	Number of Spectral Averages	count
NumFFT	Number of Points in FFT	count
NumHeights	Number of Range Gates	count
NumCodeBits	Number of Code Bits	count
NumReceivers	Number of Receiver	count
ReceiverMode	Receiver Mode	count
ReceiverNumber	Current Receiver Number	count
NyquistVelocity	Nyquist Velocity	m/s
DCFilterONOFF	DC Filtering ON-OFF Status	count
WindowingONOFF	Windowing ON-OFF Status	count
ClutterHeight	Max. height of clutter removal	meters
Heights	Range Heights (center of radar sample volume)	meters AGL
ModeNum	Operating Set for this Record	count
lat	Latitude	degrees
lon	Longitude	degrees
alt	Altitude	meters above Mean Sea Level
Azimuth	Azimuth	degrees
Elevation	Elevation	degrees
DataQualityStatus	Data Quality Status	code
MeanDopplerVelocity	Mean Doppler Velocity	meters/sec
SignalToNoiseRatio	Signal to Noise Ratio	dB
Power	Power (uncalibrated)	dB
SpectralWidth	Spectral Width	meter/sec
NoiseLevel	Mean Noise Level	dB
Reflectivity	Reflectivity	dBZ
RangeCorrectedPower	Range Corrected Calibrated Power	dBm
CircularDepolarizationRatio	Circular Depolarization Ratio	dB
AvgNoiseLevel	Average Noise Level (S/N<0)	dB

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Caltable netCDF Metadata

File name: 20150770100CalTable.nc	Path: eureka\cloud_properties\macrophysical\mmcr\raw\caltable\	
Attributes		
Name	Value	
'site_id'	'Eureka'	
'facility_id'	'Eureka'	
'comment'	'DOE/ARM MMCR - template'	
'proc_level'	'a1'	
history'	'CalTable ver 0.5 (Jan 2004), Created by LAP-XM ver 5.8'	
Dimensions		
Name	Length	
'nrec'	2	
'mode'	10	
'bandwid'	4	
'RFattnrange'	5	
'IFattnrange'	22	
'crvdim'	60	
'rfcalval'	22	
'nforpow'	3	
Variables		
Name	Long name	Units
base_time	Base time in Epoch	seconds since 1970-1-1 0:00:00 0:00
SystemParamT	System Parameters Time Stamp	seconds
TxPathLoss	Tx Waveguide Path Loss	dB
RxPathLoss	Rx waveguide path loss	dB
AddedRFLoss	Added RF Receiver Loss	dB
FFAntGain	Antenna Gain	dB
PeakTxPower	Peak Transmitted Power (dBm) - default	dBm
AntBeamWidTh	Antenna Beamwidth - Theta	degrees
AntBeamWidP	Antenna Beamwidth - Phi	degrees
AntennaDiameter	Antenna Diameter	meters
DiodePathLoss	RF Calibration Diode Path Loss	dB
NoiseDiodeENR	ENR of Calibration Source	dB
NoiseDiodeSN	Noise Diode - Serial Number	count
RxBandWid	Calibrated Bandwidth (MHz)	MHz
SysPulseWid	System Pulse Width	ns
SystemDelay	Calibrated Receiver Delay	ns
RxCalTimeStamp	Receiver Calibration Time Stamp	seconds
RxGain	Receiver Gain	dB
RxNoisePower	Receiver Noise Power (dB)	dB
StartRxSaturation	Start Rx Saturation (dB)	dB
RxNoiseFig	Receiver Noise Figure (dB)	dB
SkyNoiseLevel	Receiver Sky Noise Level	dB
Rx290KLevel	Receiver Noise Level - 290 K	dB
CalCheckLevel	Quick Calibration Check - Noise Level	dB
CalCheckTime	Quick Calibration - Time Stamp	seconds
RadarConstant	Radar Constant - default	dB
CalibrationConstant	Spectral A/D Counts-Calibration	AD Units^2/dBZ
MinimumDetectableSignal	Minimum Detectable Signal	dBm
ParamModeTimeStamp	Parameter mode - Time Stamp	s
InterPulsePeriod	Inter-Pulse Period	ns
PulseWidth	Pulse Width	ns
StartGateDelay	Delay to First Range Gate	ns
GateSpacing	Range Gate Spacing	ns
NumCoherentIntegrations	Number of Coherent Integrations	count
NumSpectralAverages	Number of Spectral Averages	count
NumFFT	Number of Points in the FFT	count
NumHeights	Number of Range Gates	count
NumCodeBits	Number of Code Bits	count
NumReceivers	Number of Receivers	count
ReceiverNumber	Current Receiver Number	count
ReceiverMode	Receiver Mode	count
CalSetTime	Calibration Settings - Time Stamp	s
RFLevel	RF Noise Levels	dB
RFAttenSet	RF Atten Settings	dB
IFLevel	IF Power Levels	dB
IFAttenSet	IF Atten Settings	dB
RxCalNoiseCrvSig	Calibrated Input Power (dBm)	dBm
RxCalNoiseCrv	Measured Noise Power	dB
RFAttenCalT	RF Attenuator Calibration Time Stamp	seconds
RFAttenVal	RF Attenuation for each Driver Settings	dB
RFAttenCal	RF Attenuator - Calibrated Driver Settings	dB
RFAttenSN	RF Attenuator Serial Number	number
ForwardPowerCoefT	Forward Power Calibration - Time Stamp	seconds
ForwardPowerCoef	Forward Power Calibration	Watts