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ICEL07 WCR Processed Data Directory Catalog

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Directory/Size/File	COMMENT
.....	
oct29 (tf01):	
total 321 MB	
41M WCR.ICEL07.20071029.182831_183638.PP6.nc	
8.2M WCR.ICEL07.20071029.183710_183956.PP4.nc	
19M WCR.ICEL07.20071029.184101_184502.PP6.nc	
11M WCR.ICEL07.20071029.184526_184730.PP6.nc	
16M WCR.ICEL07.20071029.184731_185040.PP6.nc	
55M WCR.ICEL07.20071029.185043_190135.PP6.nc	
16M WCR.ICEL07.20071029.190137_190436.PP6.nc	
78M WCR.ICEL07.20071029.190439_192000.PP6.nc	
79M WCR.ICEL07.20071029.192007_193548.PP6.nc	nadir ant. return from ground leak to up and nadir-aft ant. returns (exceed isolation)
.....	
nov01 (tf02):	
total 471 MB	
20M WCR.ICEL07.20071101.211236_211909.PP4.nc	
22M WCR.ICEL07.20071101.212013_212633.PP4.nc	
1.8M WCR.ICEL07.20071101.214043_214118.PP4.nc	
25M WCR.ICEL07.20071101.214119_214931.PP4.nc	
3.3M WCR.ICEL07.20071101.214934_215039.PP4.nc	
49M WCR.ICEL07.20071101.215412_220824.PP4.nc	
18M WCR.ICEL07.20071101.220826_221341.PP4.nc	
154M WCR.ICEL07.20071101.221406_224436.PP6.nc	
13M WCR.ICEL07.20071101.224506_224734.PP6.nc	
83M WCR.ICEL07.20071101.224736_230405.PP6.nc	
21M WCR.ICEL07.20071101.230406_230816.PP6.nc	
64M WCR.ICEL07.20071101.230847_233011.PP4.nc	
.....	
nov05 (tf03):	
total 672 MB	
102M WCR.ICEL07.20071105.203842_205848.PP6.nc	
17M WCR.ICEL07.20071105.205851_210201.PP6.nc	
34M WCR.ICEL07.20071105.210327_211005.PP6.nc	
41M WCR.ICEL07.20071105.211006_211806.PP6.nc	
22M WCR.ICEL07.20071105.211829_212246.PP6.nc	
3.0M WCR.ICEL07.20071105.212247_212322.PP6.nc	
65M WCR.ICEL07.20071105.212341_213627.PP6.nc	
48M WCR.ICEL07.20071105.213629_214559.PP6.nc	
120M WCR.ICEL07.20071105.214616_221002.PP6.nc	
144M WCR.ICEL07.20071105.221008_223841.PP6.nc	
81M WCR.ICEL07.20071105.223845_225439.PP6.nc	
.....	
nov07 (rf01):	
total 921 MB	
114M WCR.ICEL07.20071107.180735_183004.PP6.nc	
44M WCR.ICEL07.20071107.183039_183924.PP6.nc	

37M WCR.ICEL07.20071107.183925_184642.PP6.nc
127M WCR.ICEL07.20071107.184645_191150.PP6.nc
37M WCR.ICEL07.20071107.191218_191933.PP6.nc
12M WCR.ICEL07.20071107.192159_192412.PP6.nc
21M WCR.ICEL07.20071107.192442_193051.PP4.nc
14M WCR.ICEL07.20071107.193053_193449.PP4.nc
53M WCR.ICEL07.20071107.193511_194537.PP6.nc
21M WCR.ICEL07.20071107.194540_194947.PP6.nc down-aft 2nd trip ground return
78M WCR.ICEL07.20071107.195006_200532.PP6.nc down-aft 2nd trip ground return
54M WCR.ICEL07.20071107.200534_201613.PP6.nc down-aft 2nd trip ground return
8.0M WCR.ICEL07.20071107.201722_202329.SH1.nc
44M WCR.ICEL07.20071107.202409_203850.PP4.nc
153M WCR.ICEL07.20071107.203917_211229.PP6.nc down-aft 2nd trip ground return
7.0M WCR.ICEL07.20071107.211230_211401.PP6.nc
25M WCR.ICEL07.20071107.211422_211917.PP6.nc down-aft 2nd trip ground return
78M WCR.ICEL07.20071107.211919_213442.PP6.nc down-aft 2nd trip ground return

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nov13 (rf02):
total 1007 MB

111M WCR.ICEL07.20071113.160707_162901.PP6.nc
112M WCR.ICEL07.20071113.162904_165118.PP6.nc
67M WCR.ICEL07.20071113.165234_170700.PP6.nc
111M WCR.ICEL07.20071113.170724_172916.PP6.nc
113M WCR.ICEL07.20071113.172918_175134.PP6.nc
17M WCR.ICEL07.20071113.175135_175447.PP6.nc
121M WCR.ICEL07.20071113.175454_181848.PP6.nc
107M WCR.ICEL07.20071113.181912_184025.PP6.nc
6.4M WCR.ICEL07.20071113.184026_184141.PP6.nc
84M WCR.ICEL07.20071113.184151_185827.PP6.nc
28M WCR.ICEL07.20071113.185829_190355.PP6.nc
102M WCR.ICEL07.20071113.190355_192408.PP6.nc
13M WCR.ICEL07.20071113.192409_192636.PP6.nc
20M WCR.ICEL07.20071113.192837_193226.PP6.nc

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nov16 (rf03):
total 549 MB

129M WCR.ICEL07.20071116.175430_192618.SH1.nc
226M WCR.ICEL07.20071116.192623_220718.SH1.nc
65M WCR.ICEL07.20071116.220722_225317.SH1.nc

.....
nov18 (rf04):
total 364 MB

3.0M WCR.ICEL07.20071118.192109_192316.SH1.nc
25M WCR.ICEL07.20071118.192318_194055.SH1.nc
19M WCR.ICEL07.20071118.194057_195401.SH1.nc
5.6M WCR.ICEL07.20071118.195402_195757.SH1.nc
38M WCR.ICEL07.20071118.195759_202449.SH1.nc
5.5M WCR.ICEL07.20071118.202451_202842.SH1.nc
51M WCR.ICEL07.20071118.202843_210448.SH1.nc
22M WCR.ICEL07.20071118.210452_211951.SH1.nc
29M WCR.ICEL07.20071118.211953_214029.SH1.nc
93M WCR.ICEL07.20071118.214032_224630.SH1.nc
26M WCR.ICEL07.20071118.224634_230439.SH1.nc
21M WCR.ICEL07.20071118.230442_231859.SH1.nc

30M WCR.ICEL07.20071118.231901_233945.SH1.nc

.....
nov20a (rf05):

total 196 MB

29M WCR.ICEL07.20071120.171245_173249.SH1.nc
53M WCR.ICEL07.20071120.173251_181016.SH1.nc
49M WCR.ICEL07.20071120.181017_184439.SH1.nc
49M WCR.ICEL07.20071120.184440_191927.SH1.nc
1.4M WCR.ICEL07.20071120.191928_192024.SH1.nc
16M WCR.ICEL07.20071120.193327_194441.SH1.nc

.....
nov20b (rf05):

total 260 MB

43M WCR.ICEL07.20071120.212024_215034.SH1.nc
26M WCR.ICEL07.20071120.215036_220844.SH1.nc
25M WCR.ICEL07.20071120.220845_222604.SH1.nc
49M WCR.ICEL07.20071120.222605_230017.SH1.nc
46M WCR.ICEL07.20071120.230018_233231.SH1.nc
75M WCR.ICEL07.20071120.233232_002526.SH1.nc

.....
nov29 (rf06):

total 1.3 GB

56M WCR.ICEL07.20071129.161853_162949.PP6.nc
84M WCR.ICEL07.20071129.162952_164627.PP6.nc
64M WCR.ICEL07.20071129.164629_165909.PP6.nc
46M WCR.ICEL07.20071129.165911_170808.PP6.nc
148M WCR.ICEL07.20071129.170809_173725.PP6.nc
130M WCR.ICEL07.20071129.173826_181634.PP4.nc
6.8M WCR.ICEL07.20071129.182136_182430.PP8.nc
62M WCR.ICEL07.20071129.182528_183742.PP6.nc

6.1M WCR.ICEL07.20071129.183807_184043.PP8.nc
60M WCR.ICEL07.20071129.184047_190639.PP8.nc
17M WCR.ICEL07.20071129.190642_191359.PP8.nc
24M WCR.ICEL07.20071129.191401_192416.PP8.nc
27M WCR.ICEL07.20071129.192418_193540.PP8.nc
128M WCR.ICEL07.20071129.193603_200122.PP6.nc

65M WCR.ICEL07.20071129.202825_204109.PP6.nc
40M WCR.ICEL07.20071129.204216_204635.PP4.nc
139M WCR.ICEL07.20071129.204637_210145.PP4.nc
131M WCR.ICEL07.20071129.210133_211548.PP4.nc
20M WCR.ICEL07.20071129.211612_212143.PP4.nc
47M WCR.ICEL07.20071129.212146_213443.PP4.nc

nadir ant. return from ground
leak to nadir-aft ant. return

nadir ant. return from ground
leak to nadir-aft ant. return

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nov30 (rf07):

total 1.2 GB

102M WCR.ICEL07.20071130.160626_164103.PP4.nc
135M WCR.ICEL07.20071130.164140_170825.PP6.nc
122M WCR.ICEL07.20071130.170932_173335.PP6.nc
82M WCR.ICEL07.20071130.173403_180140.PP4.nc

nadir ant. return from ground
leak to nadir-aft ant. return
see comment above; also to up
see comment above; also to up
see comment above

45M WCR.ICEL07.20071130.180206_181051.PP6.nc see comment above; also to up
47M WCR.ICEL07.20071130.181146_182059.PP6.nc see comment above
147M WCR.ICEL07.20071130.182124_185029.PP6.nc see comment above; also to up
1.1M WCR.ICEL07.20071130.185032_185044.PP6.nc see comment above; also to up
122M WCR.ICEL07.20071130.185044_191448.PP6.nc see comment above; also to up
128M WCR.ICEL07.20071130.191449_194014.PP6.nc see comment above; also to up
88M WCR.ICEL07.20071130.194017_195741.PP6.nc see comment above; also to up
42M WCR.ICEL07.20071130.195744_200556.PP6.nc see comment above; also to up
115M WCR.ICEL07.20071130.200557_202847.PP6.nc see comment above; also to up

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dec04 (rf08):

total 463 MB

122M WCR.ICEL07.20071204.173533_175938.PP6.nc
47M WCR.ICEL07.20071204.180138_181048.PP6.nc
9.5M WCR.ICEL07.20071204.181127_181533.PP8.nc
45M WCR.ICEL07.20071204.181536_183454.PP8.nc
6.0M WCR.ICEL07.20071204.183455_183729.PP8.nc
8.4M WCR.ICEL07.20071204.183732_184107.PP8.nc
38M WCR.ICEL07.20071204.184111_185713.PP8.nc
60M WCR.ICEL07.20071204.185716_192305.PP8.nc
34M WCR.ICEL07.20071204.193018_193656.PP6.nc
13M WCR.ICEL07.20071204.193657_193920.PP6.nc Txshut down 19:37:45-19:38:08
75M WCR.ICEL07.20071204.194322_195805.PP6.nc
11M WCR.ICEL07.20071204.195808_200010.PP6.nc

.....
dec10 (rf09):

total 608 MB

74M WCR.ICEL07.20071210.170415_173613.PP8.nc
151M WCR.ICEL07.20071210.173701_180651.PP6.nc
89M WCR.ICEL07.20071210.180749_184610.PP8.nc
26M WCR.ICEL07.20071210.184618_185728.PP8.nc
136M WCR.ICEL07.20071210.185751_192442.PP6.nc
134M WCR.ICEL07.20071210.192443_195111.PP6.nc

.....
dec11 (rf10):

total 1.3 GB

88M WCR.ICEL07.20071211.191243_193007.PP6.nc
15M WCR.ICEL07.20071211.193011_193259.PP6.nc
55M WCR.ICEL07.20071211.193300_194353.PP6.nc
50M WCR.ICEL07.20071211.194356_195345.PP6.nc nadir ant. return from ground
leak to nadir-aft ant. return
68M WCR.ICEL07.20071211.195347_200708.PP6.nc see comment above
105M WCR.ICEL07.20071211.200709_202751.PP6.nc see comment above
134M WCR.ICEL07.20071211.202751_205418.PP6.nc see comment above
43M WCR.ICEL07.20071211.205418_210243.PP6.nc see comment above
125M WCR.ICEL07.20071211.210243_212727.PP6.nc see comment above
173M WCR.ICEL07.20071211.212729_220149.PP6.nc see comment above
148M WCR.ICEL07.20071211.220150_223103.PP6.nc see comment above
103M WCR.ICEL07.20071211.223108_225127.PP6.nc see comment above
155M WCR.ICEL07.20071211.225128_232211.PP6.nc

dec13 (rf11):
total 931 MB

124M	WCR.ICEL07.20071213.161152_163622.PP6.nc	nadir ant. return from ground leak to nadir-aft ant. return
42M	WCR.ICEL07.20071213.163700_164921.PP4.nc	
122M	WCR.ICEL07.20071213.165025_174311.PP8.nc	
91M	WCR.ICEL07.20071213.174313_182227.PP8.nc	
74M	WCR.ICEL07.20071213.182227_185417.PP8.nc	
36M	WCR.ICEL07.20071213.185420_190944.PP8.nc	
167M	WCR.ICEL07.20071213.191018_195927.PP4.nc	
178M	WCR.ICEL07.20071213.195929_205156.PP4.nc	
99M	WCR.ICEL07.20071213.205156_212102.PP4.nc	

.....
dec16 (rf12):
total 392 GB

57M	WCR.ICEL07.20071216.164737_170641.PP4.nc	
143M	WCR.ICEL07.20071216.170722_174935.PP4.nc	
107M	WCR.ICEL07.20071216.175000_183613.PP8.nc	
13M	WCR.ICEL07.20071216.183635_184047.PP4.nc	nadir ant. return from ground leak to nadir-aft ant. return
11M	WCR.ICEL07.20071216.184110_184314.PP6.nc	see comment above
63M	WCR.ICEL07.20071216.184343_191035.PP8.nc	

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18K ICEL07.20080204.cdl Processing cdl file
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ICEL07 WCR Processed Data Files Release Notes
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- * All WCR data product files (processed data) are in NetCDF and are cataloged above. Additional information about the variables and attributes in the files is provided in the netcdf prototype file ICEL07.20080204.cdl.
- * The data files are saved in directories (mmmDD) representing the month and date of the flight using the WCR. If there is more than one flight a day with WCR data they are ordered by adding a,b,... to the directory name. ATTENTION: If you are reading these notes via the WCR project web page the processed data directories/files are available for download via the web. The access may be password protected. Contact the PI(s) for user/password information.
- * Two sets of processed data are available. One contains reflectivity recorded in mm⁶/m³ (Z) and no radar profiles are averaged (generally ~30 ms dwell time corresponding to 3-5 meters along-flight sampling per profile). This data set is under directories named mmmDD_Z. The 2nd data set contains reflectivity recorded in dBZ and 25 profiles are averaged (about 0.8 sec integration time and about 100 m sampling along flight). The second set is stored in directories named mmmDD_dBZ.
- * Revision history:
 - = RevisionDate: 4 February 2008
 - = RevisionNumber = 1
 - = Revision_1: Reflectivity and Corrected Doppler velocity

= ProcessAuthor: Samuel Haimov (haimov@uwyo.edu, atsc-cc@uwyo.edu)

* Known specifics of the data in this revision:

- = The Doppler data occasionally may exhibit folded velocity regions. In many cases the IDL routine wcrwunfold.pro from WCRTTOOLS library (<http://www-das.uwyo.edu/wcr/idl/WCRTTOOLS.htm>) can be successfully used to unfold the velocity in a specific data segment.
- = Corrected Doppler velocity from the down-pointing beams may have bias of up to +/- 1 m/s and uncertainty of up to +/-0.5 m/s. It is our belief that the bias is due to changes in the antennas pointing angles caused by flexing of the aircraft fuselage not represented in the IRS data
- = Corrected Doppler velocity accuracy from the up-pointing antenna was not quantified with a known reference target. The use of appropriate weather targets suggests a bias of less than 0.5 m/s.
- = Reflectivity absolute accuracy for the two down antennas is within +/- 2.5 dB; the absolute accuracy for the up-antenna measured reflectivity is not well established due to lack of good absolute reference but is estimated to be within +/-3 dB.

* Note on Transmitter leakage effect in the data

During transmission, the radar 2 receivers are isolated by more than 60dB from the transmitted pulse. This is still not enough to prevent some of the transmitted signal to leak into the receivers and contaminate a few of the first range gates. The raw data is affected by the leak (leak signal above the mean system noise) for the first 100 to 150 m (1-3 range gates) depending on the level of the transmitted power (pulse width), which antenna port is used, etc. Post-processed averaging of the received power reduces the system noise but does not reduce the leak. Thus when the received power is averaged the Tx leak signal becomes the limiting factor to detect clouds in closer range. From the example shown below you will also notice that the leak in the 'up' beam return is about 10 dB stronger than in the 'down' beam return. This is because, the sensitivity of the up beam is weaker (by 6 dB) and the leakage received by the up beam receiver is stronger than the leakage received by the down beam receiver.

To illustrate the effect of averaging on the leak examine the received power segment from December 13, 17:06:55-17:10:38 UTC (processed data file WCR.ICEL07.20071213.165025_174311.PP8.nc in Z and no averaging located in decl3_Z, and in dBZ and after 25 profiles averaged - file with the same name located in decl3_dBZ directory). This data segment represents an area free of clouds or other scatterers.

Two png files showing the reflectivity in dBZ and the corresponding velocity for the selected data segment are located in the same directory as this file (you can also open the pdf version of this file, which includes the two images at the end).

The 2 files are: WCRleak.ICEL07.20071213.170655_171038.Z_noaverage.png and WCRleak.ICEL07.20071213.170655_171038.Z_25average.png. For both files the system noise was thresholded at 3 standard deviations above the mean system noise.

The case without averaging shows the leakage in the first 2-3 range gates as well as individual noise pixels not removed with the thresholding. The case

with the 25 averaged profiles shows the leakage extending as far as 800-900 meters for the up beam and almost no system noise pixels (due to the averaging reducing the system noise). The leakage in the down beam is significantly weaker and pretty much confined in the first 500 meters.

Users of radar power data should keep in mind the limitation in increasing the sensitivity/detectability of cloud signal from clouds located in the first 1 km range from the radar. Since the Tx leak is not constant the contamination will vary in strength and in maximum affected range. Cases have to be examined individually and a signal threshold selected appropriately. An IDL routine aiding the removal of the Tx leak and thresholding the target signal from the residual noise in the processed data for specific data segments is available to interested users. Contact ProcessAuthor (see above) for more information.

* Known corrupted data not fixed in this revision:

- = The dBZ data set has a corrupted TimeInterval global attribute due to a bug in the processing software. The bug is fixed and the attribute will be corrected in a future release.

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WCRleak.ICEL07.20071213.170655_171038.Z_noaverage.png



