NPOL and TOGA Operations

Key Area Microphysics

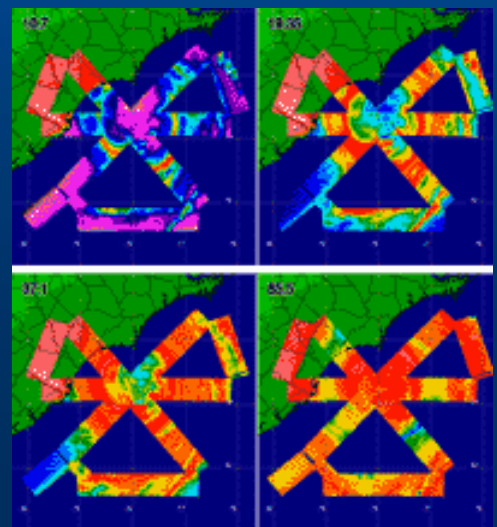
NASA

Dr. John Gerlach

Project Goals

KAMP

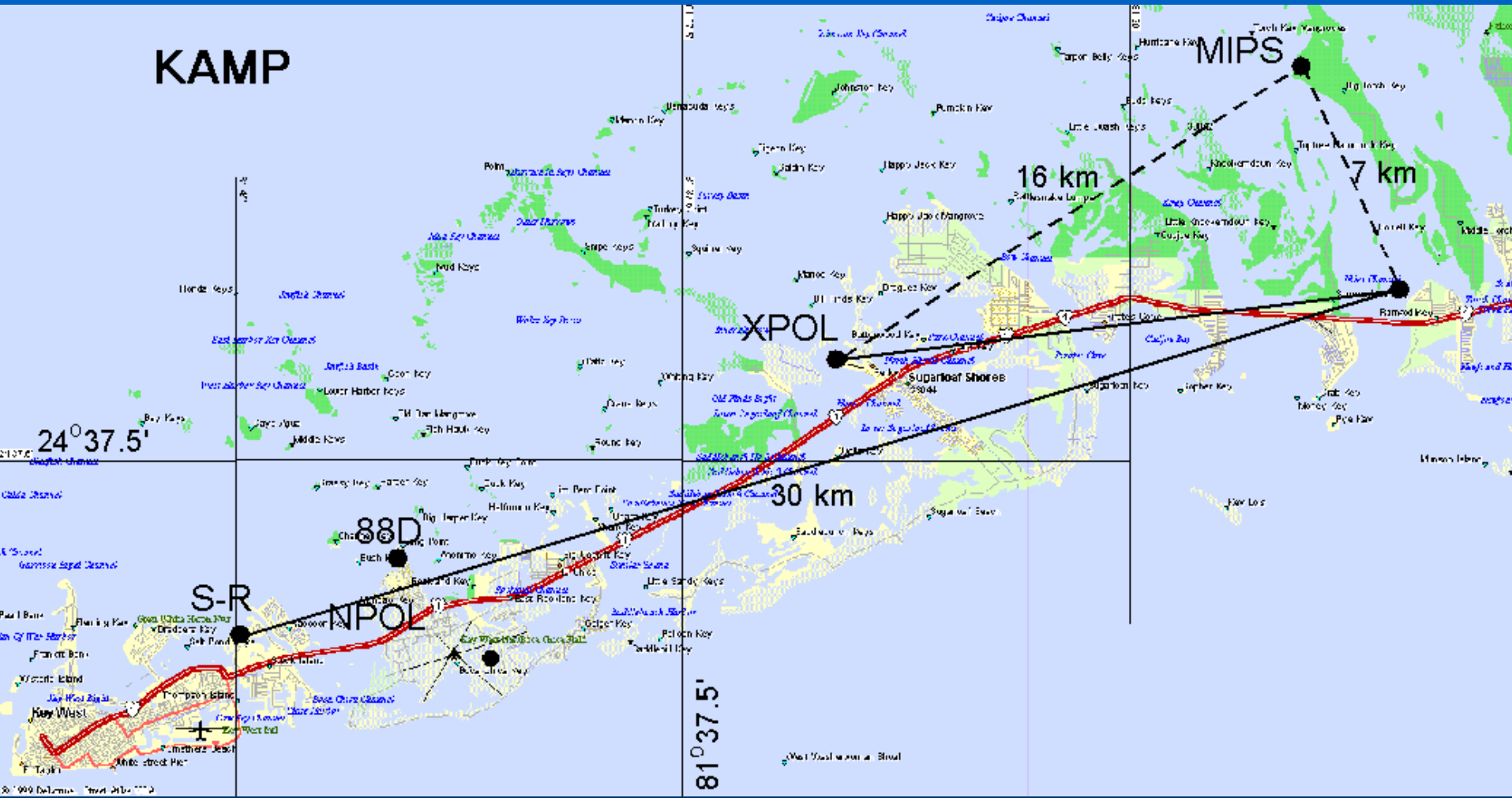
- **Thunderstorm structure**
- **Tropical precipitation**
- **Improve passive/active airborne microwave sensors**

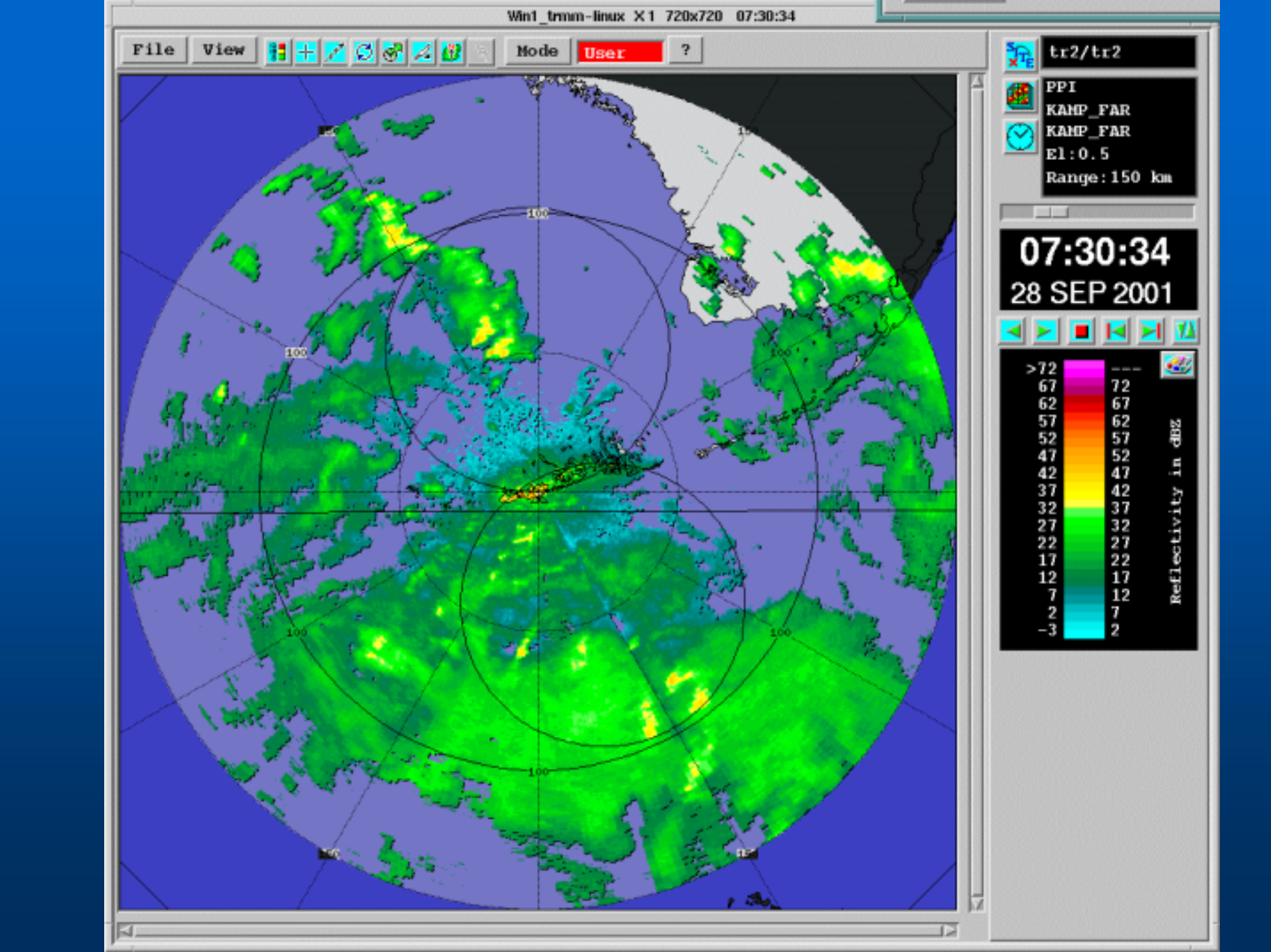


Radars

- **NPOL** S-band radar at Boca Chica

- **SMART-R** C-band on Stock Island
- **TOGA** C-band at Ramrod Key
- **XPOL** X-band radar at Cudjoe Key
- **MIPS** S-band Profiler at Cudjoe Key


KAMP
MIPS
16 km
7 km
XPOL
30 km
88D
S-R
NPOL
24°37.5'
81°37.5'


Win1_trmm-linux X1 720x720 07:30:34
File
View
Mode
User
?
tr2/tr2
PPI
KAMP_FAR
KAMP_FAR
El:0.5
Range:150 km
07:30:34
28 SEP 2001
>72
67
62
57
52
47
42
37
32
27
22
17
12
7
2
-3
72
67
62
57
52
47
42
37
32
27
22
17
12
7
2
Reflectivity in dBZ
100

TOGA Radar

- C-Band
- 1.5 degree Beam Width
- 500 KW peak power
- Linear polarization
- Z, V, W

- Last minute replacement for S-R

TOGA Radar

NPOL Radar

NPOL Radar

- S-band
- 875 kW peak power
- 1.4 degree beam width
- All polarimetric products
- Multi-modes - Dual, Switched, H or V
- Self contained
- Transportable

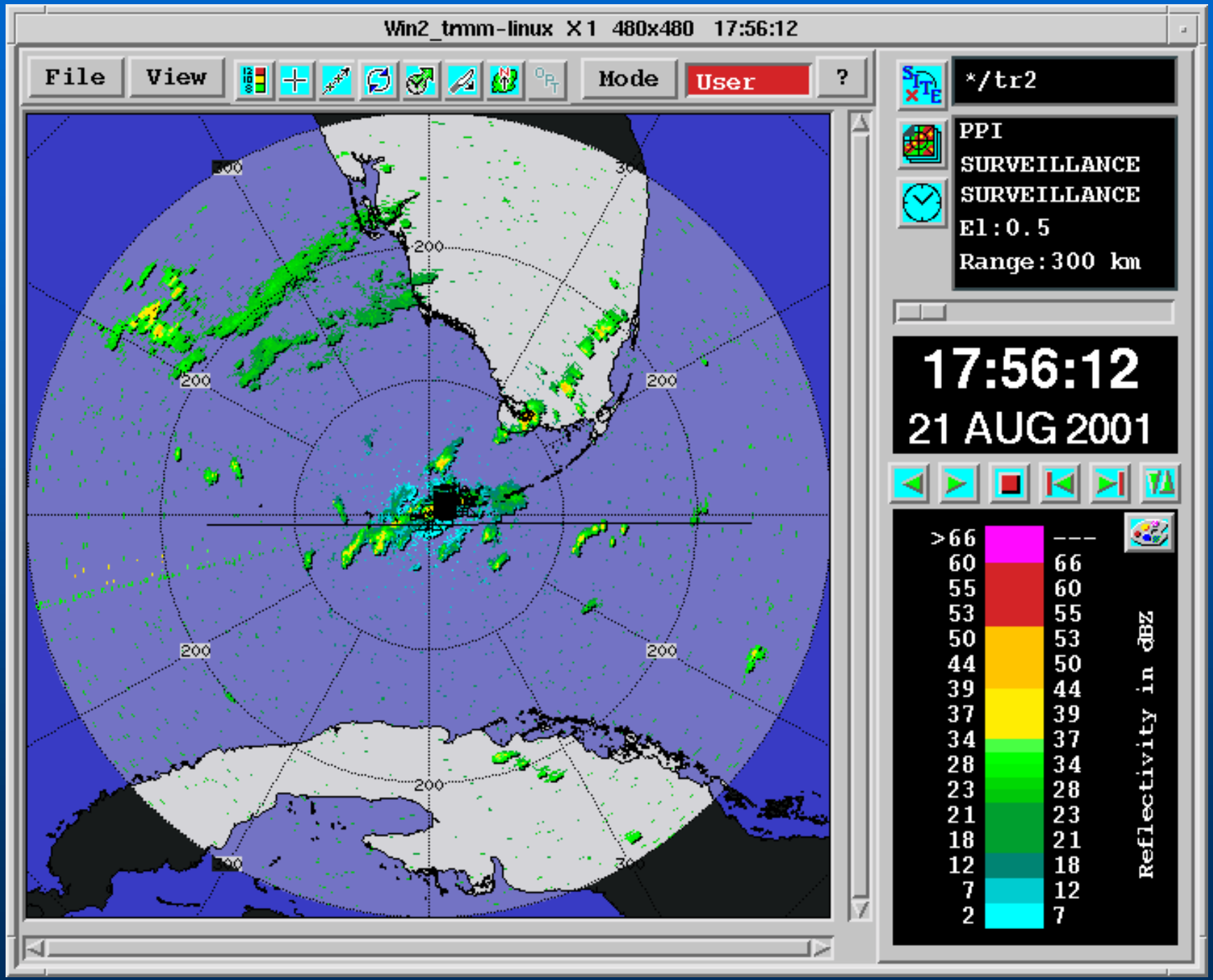
Deployment Status

- **First deployment**
- **Innovative design**
- **Final assembly at Boca Chica**
- **Cross Pol software not ready**

EXIT

Data

- **10 minute repeat cycle**
  - **300 Km Surveillance Scan**
  - **Full Volume scan - 150 km**
  - **RHI's**
- **Volume Sector Scans**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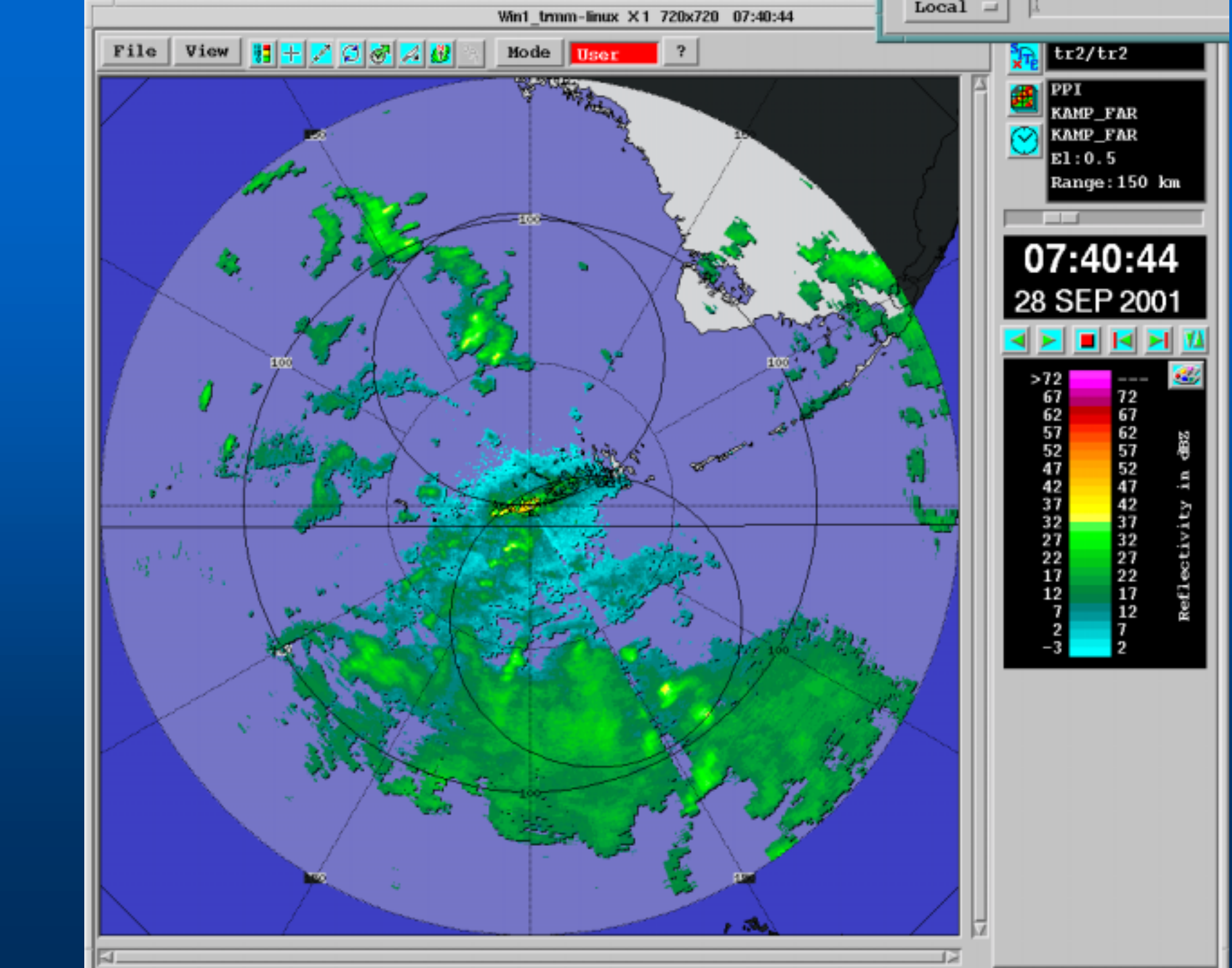
File
View
Mode
User
?
*/tr2
PPI
SURVEILLANCE
SURVEILLANCE
El:0.5
Range:300 km
17:56:12
21 AUG 2001
>66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
2
66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
Reflectivity in dBZ
200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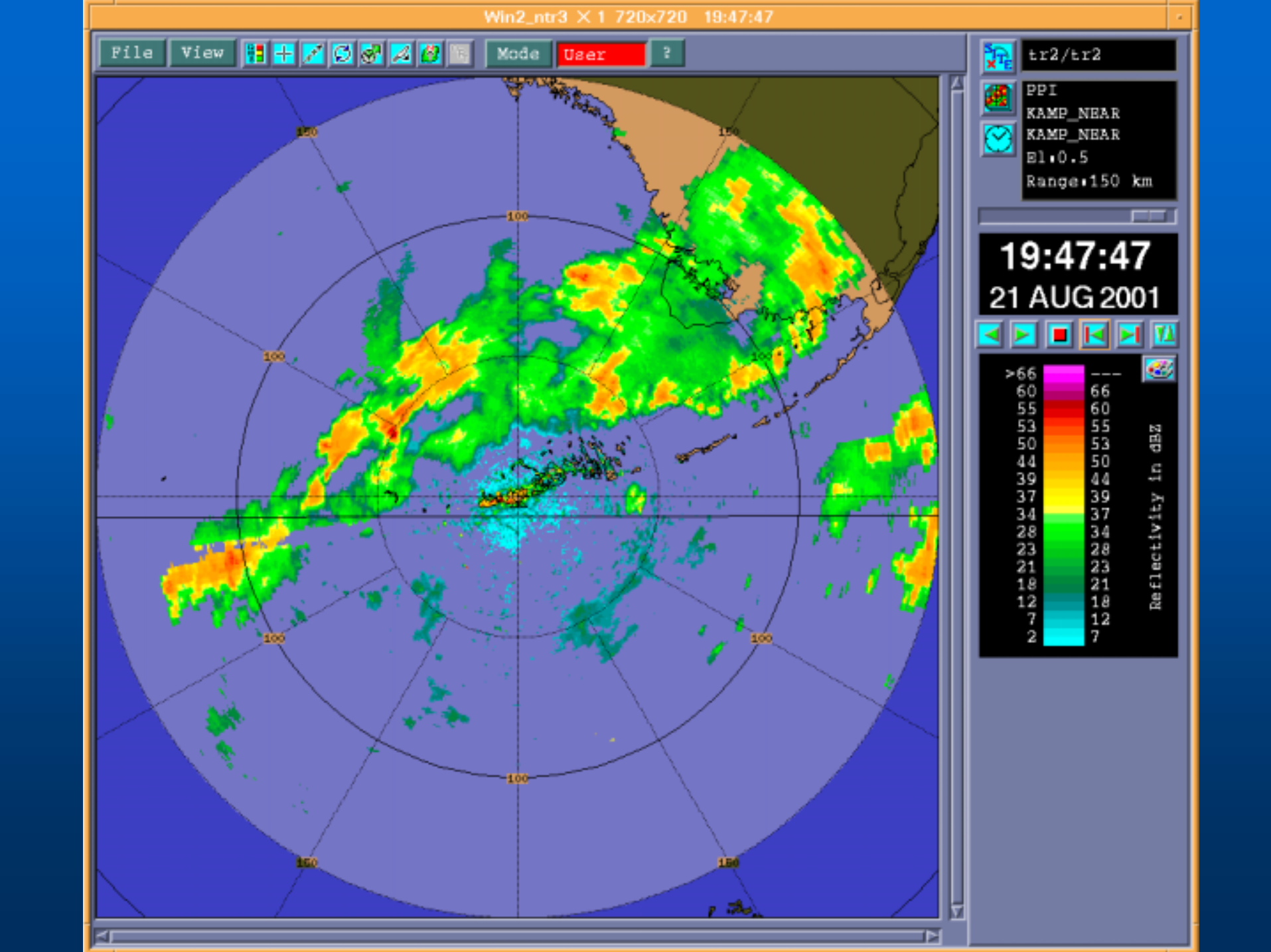
Local
File
View
Mode
User
?
tr2/tr2
PPI
KAMP_FAR
KAMP_FAR
El:0.5
Range:150 km
07:40:44
28 SEP 2001
>72
67
62
57
52
47
42
37
32
27
22
17
12
7
2
-3
72
67
62
57
52
47
42
37
32
27
22
17
12
7
2
Reflectivity in dBZ


Win2_ntr3 X 1 720x720 19:47:47
File
View
Mode
User
?
tr2/tr2
PPI
KAMP_NEAR
KAMP_NEAR
El:0.5
Range:150 km
19:47:47
21 AUG 2001
>66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
2
66
60
55
53
50
44
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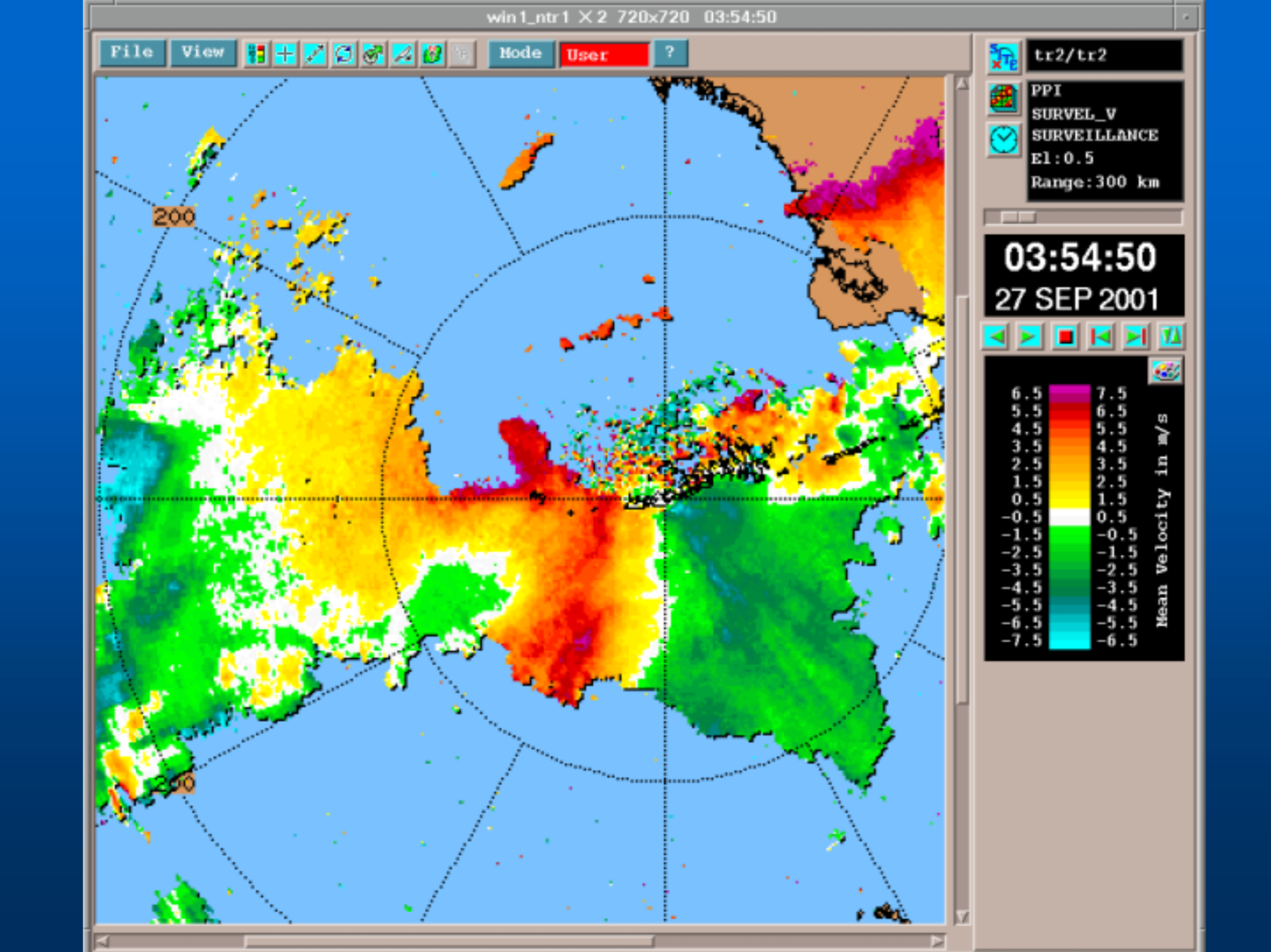
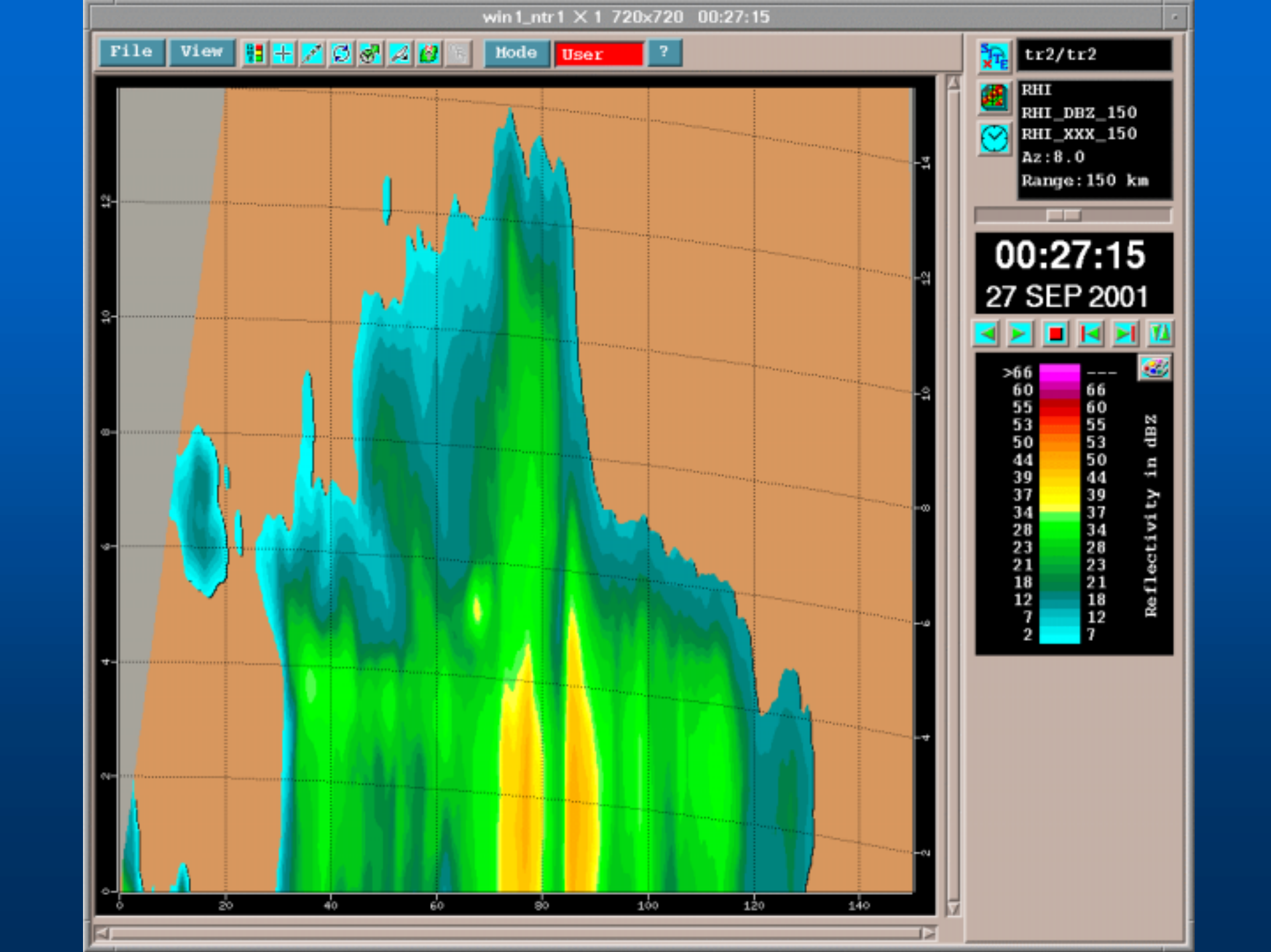
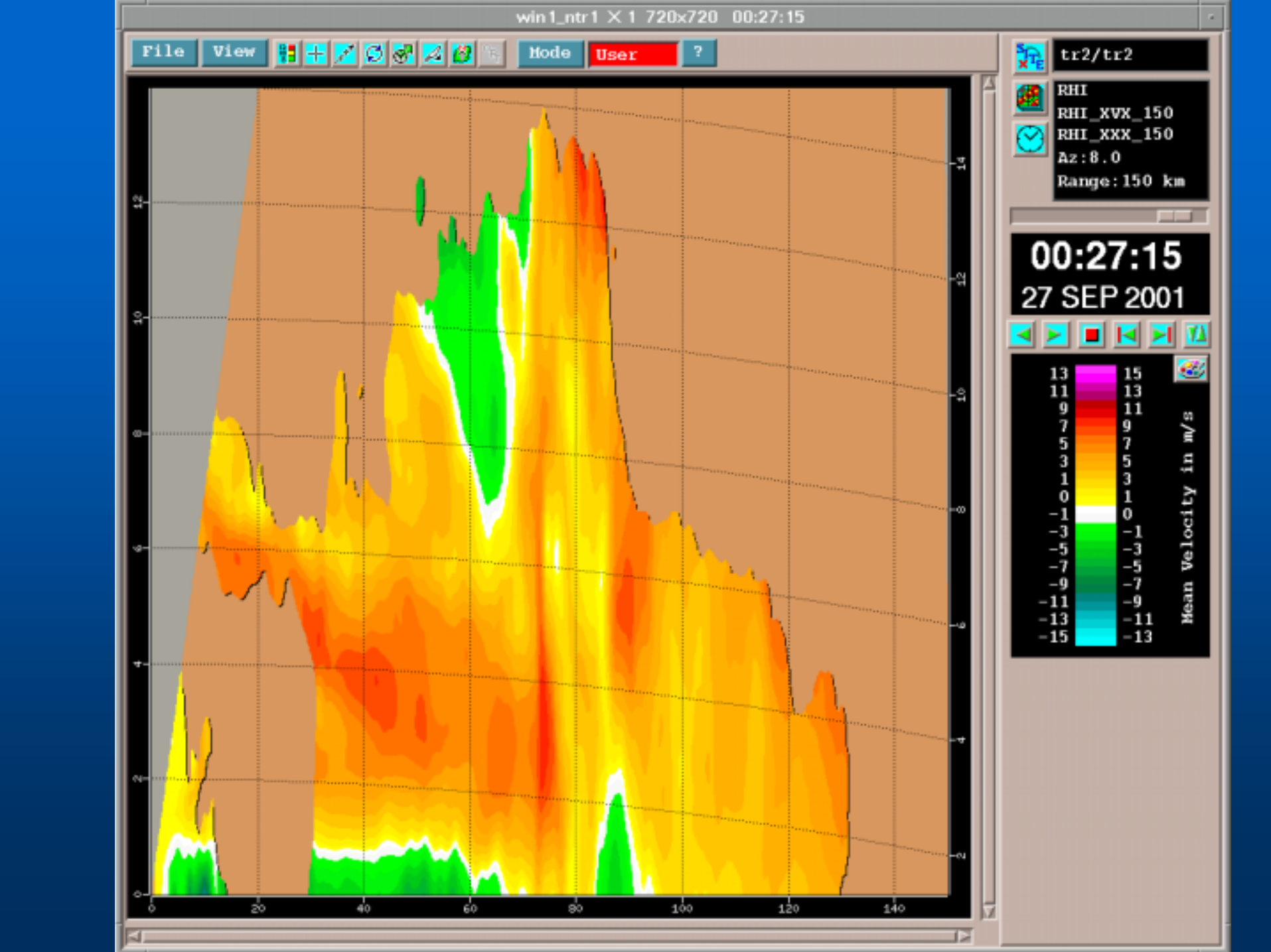
37
34
28
23
21
18
12
7
Reflectivity in dBZ


win1_ntr1 X 2 720x720 03:54:50
File
View
Mode
User
?
200
200
tr2/tr2
PPI
SURVEL_V
SURVEILLANCE
El:0.5
Range:300 km
03:54:50
27 SEP 2001
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
-1.5
-2.5
-3.5
-4.5
-5.5
-6.5
-7.5
Mean Velocity in m/s


win1_ntr1 X 1 720x720 00:27:15
File
View
Mode
User
?
tr2/tr2
RHI
RHI_DBZ_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
>66 ---
60 66
55 60
53 55
50 53
44 50
39 44
37 39
34 37
28 34
23 28
21 23
18 21
12 18
7 12
2 7
Reflectivity in dBZ
0
20
40
60
80
100
120
140
2
4
6
8
10
12
14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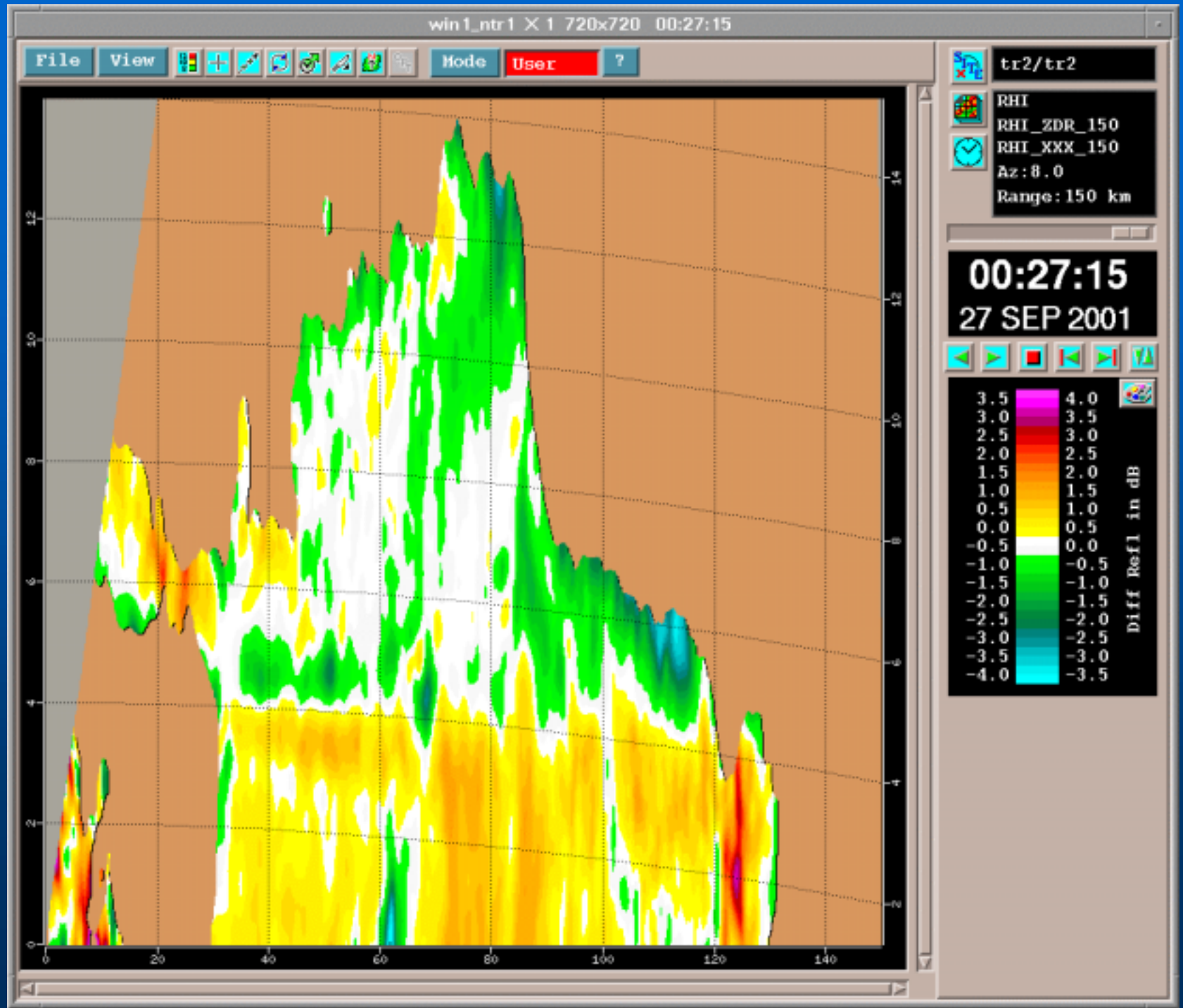
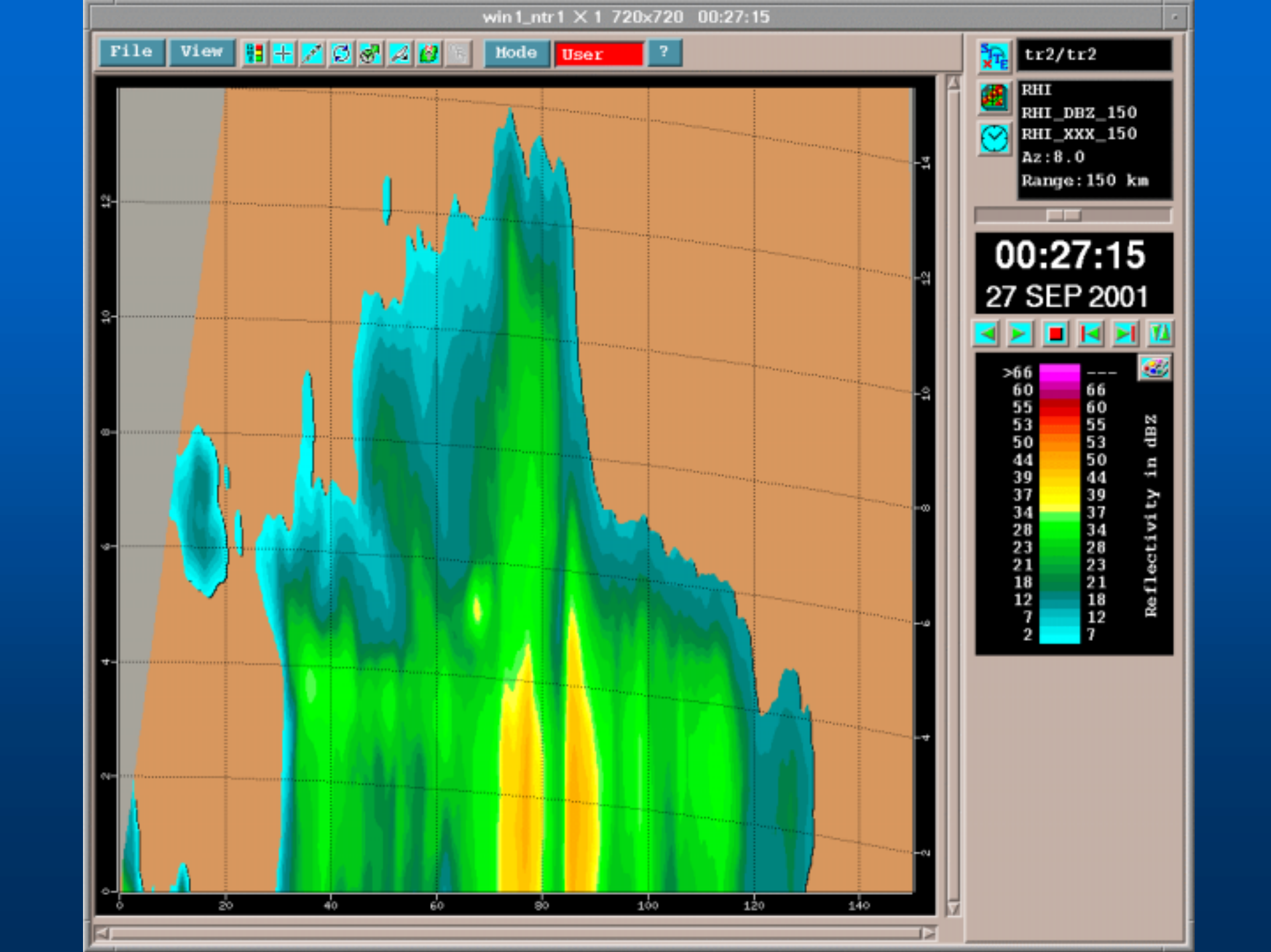
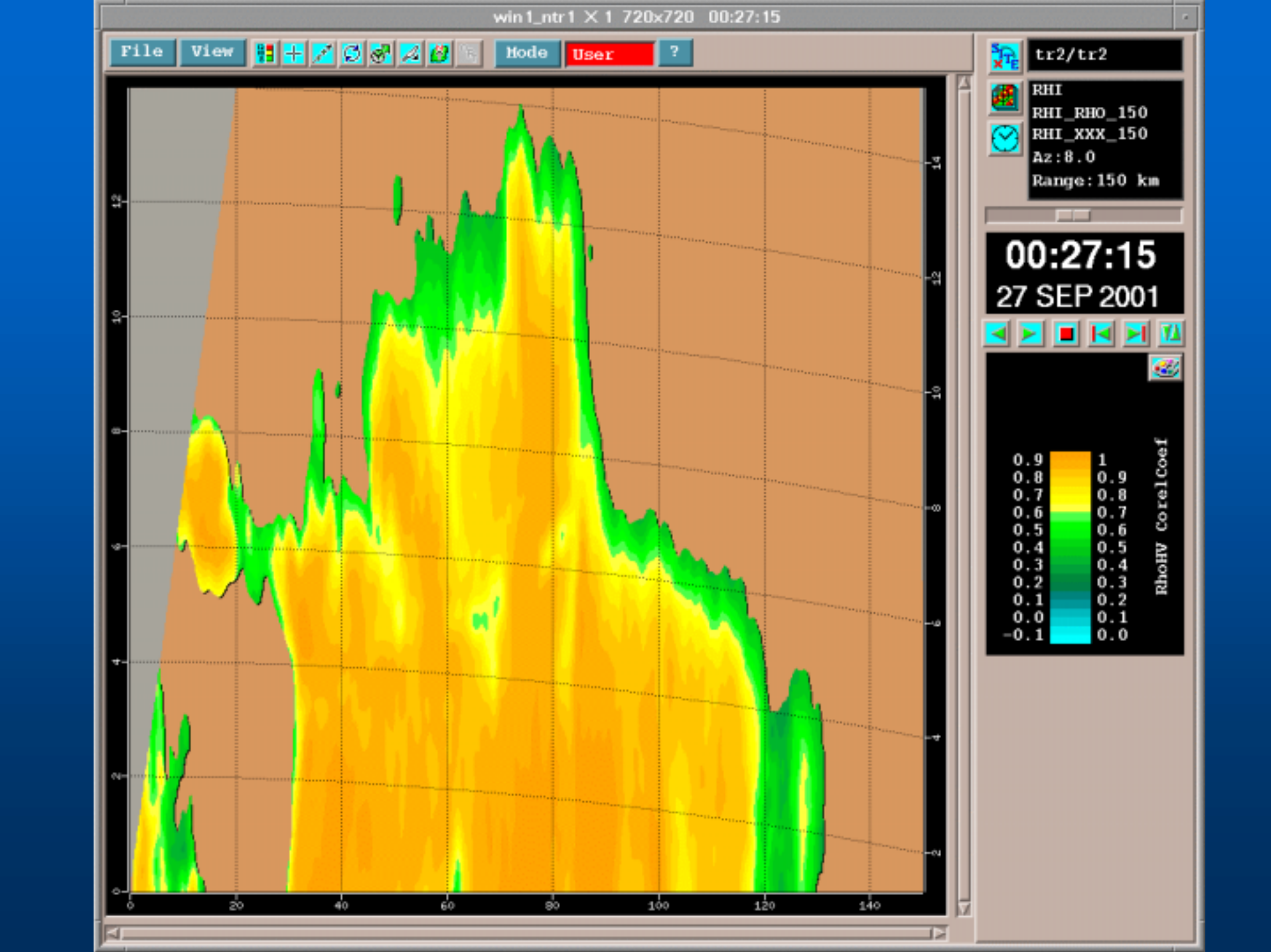
File
View
Mode
User
?
tr2/tr2
RHI
RHI_XVX_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
13 11 9 7 5 3 1 0 -1 -3 -5 -7 -9 -11 -13 -15
15 13 11 9 7 5 3 1 0 -1 -3 -5 -7 -9 -11 -13
Mean Velocity in m/s
0 20 40 60 80 100 120 140
0 2 4 6 8 10 12 14


win1_ntr1 X 1 720x720 00:27:15
File
View
Mode
User
?
tr2/tr2
RHI
RHI_ZDR_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.0 -3.5 -4.0
4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.0 -3.5
Diff Refl in dB
0 20 40 60 80 100 120 140


win1_ntr1 X 1 720x720 00:27:15
File
View
Mode
User
?
tr2/tr2
RHI
RHI_DBZ_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
>66 ---
60 66
55 60
53 55
50 53
44 50
39 44
37 39
34 37
28 34
23 28
21 23
18 21
12 18
7 12
2 7
Reflectivity in dBZ
0
20
40
60
80
100
120
140
2
4
6
8
10
12
14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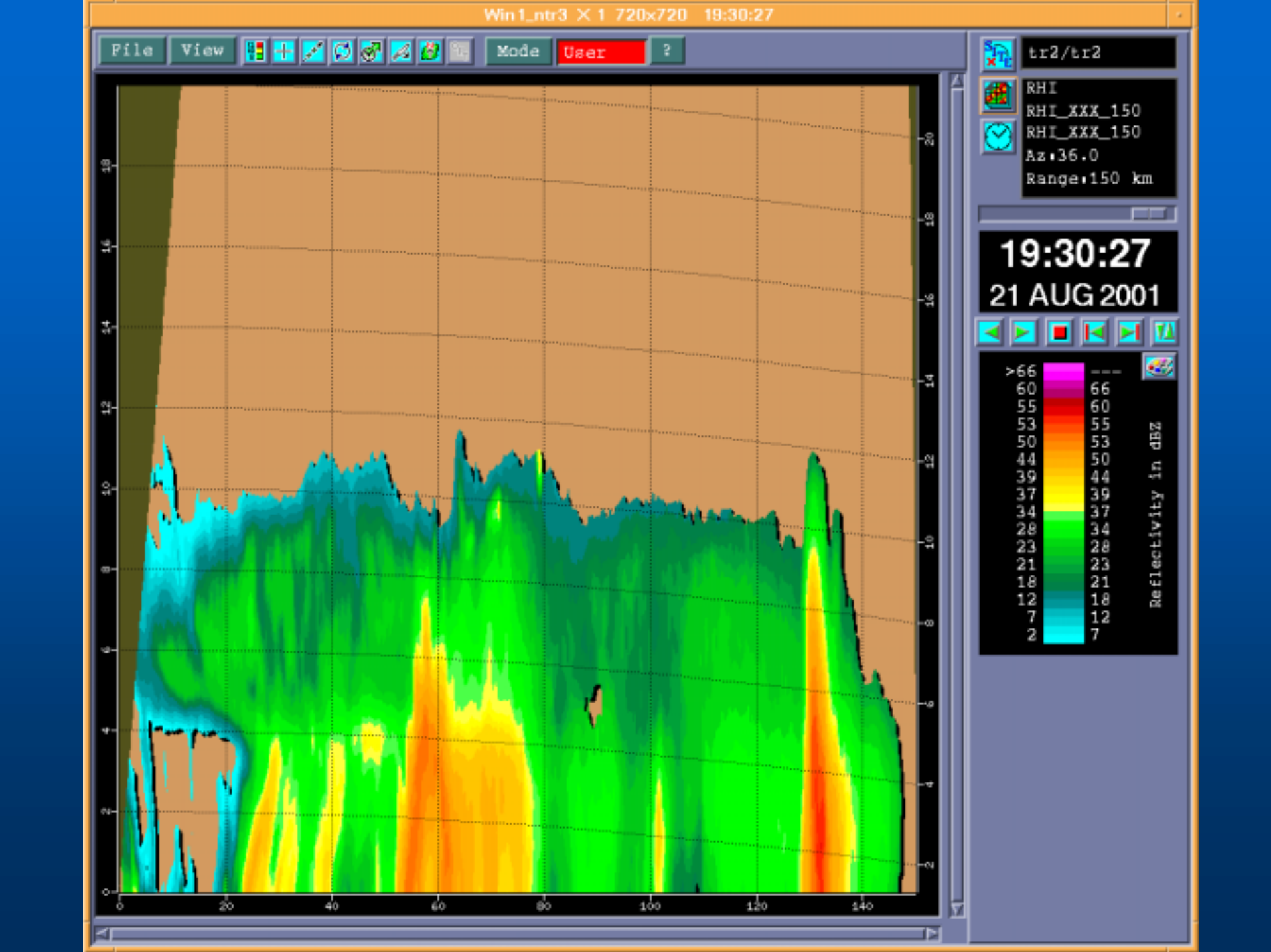
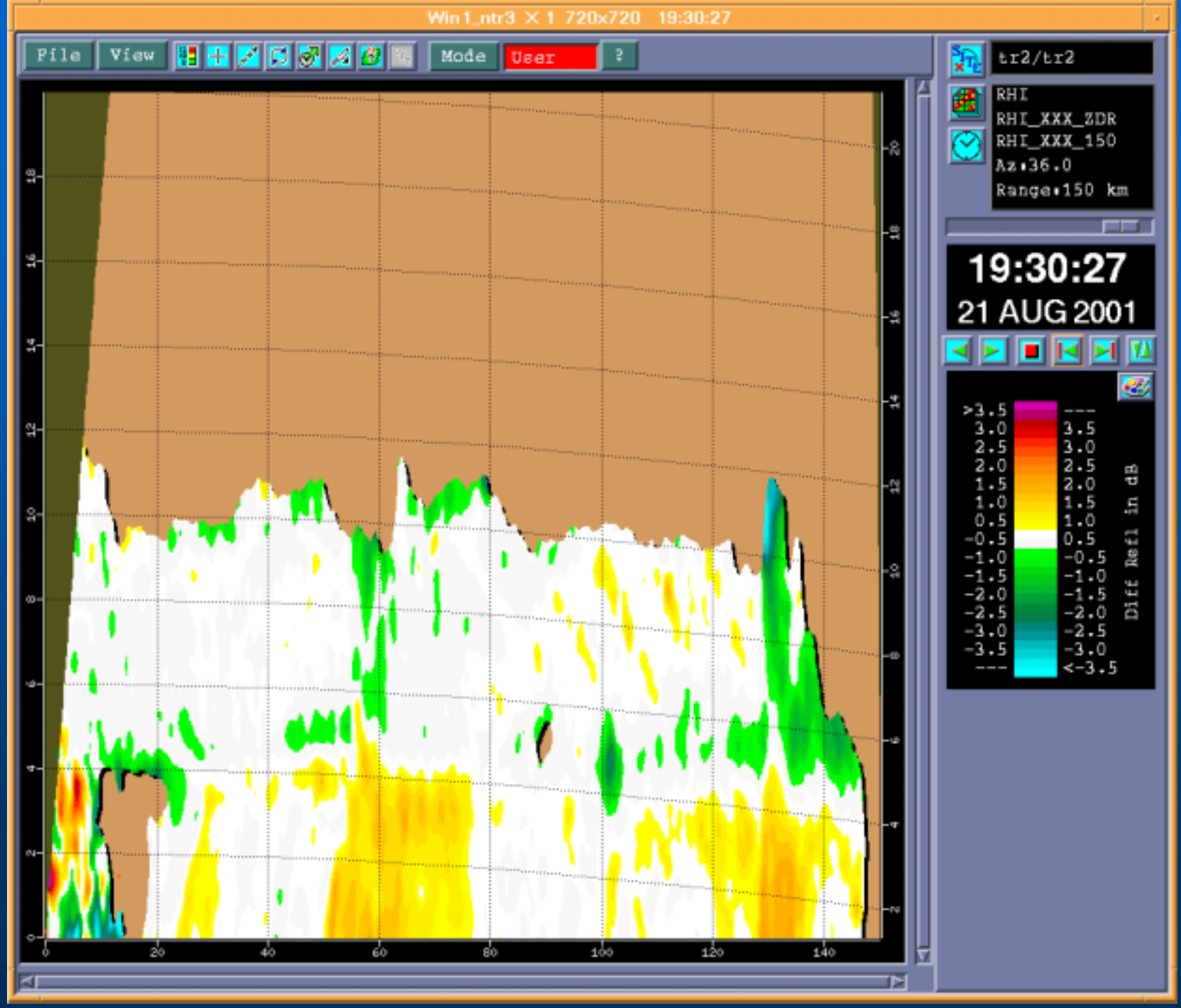
File
View
Mode
User
?
tr2/tr2
RHI
RHI_RHO_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
RhoHV CorelCoef
0.9 1
0.8 0.9
0.7 0.8
0.6 0.7
0.5 0.6
0.4 0.5
0.3 0.4
0.2 0.3
0.1 0.2
0.0 0.1
-0.1 0.0
0 20 40 60 80 100 120 140
0 2 4 6 8 10 12 14


Win 1_ntr3 X 1 720x720 19:30:27
File
View
Mode
User
?
tr2/tr2
RHI
RHI_XXX_150
RHI_XXX_150
Az:36.0
Range:150 km
19:30:27
21 AUG 2001
>66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
2
66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
Reflectivity in dBZ
0
20
40
60
80
100
120
140


Win1_ntr3 X 1 720x720 19:30:27
File
View
Mode
User
?
tr2/tr2
RHI
RHI_XXX_ZDR
RHI_XXX_150
Az:36.0
Range:150 km
19:30:27
21 AUG 2001
>3.5
3.0
2.5
2.0
1.5
1.0
0.5
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5

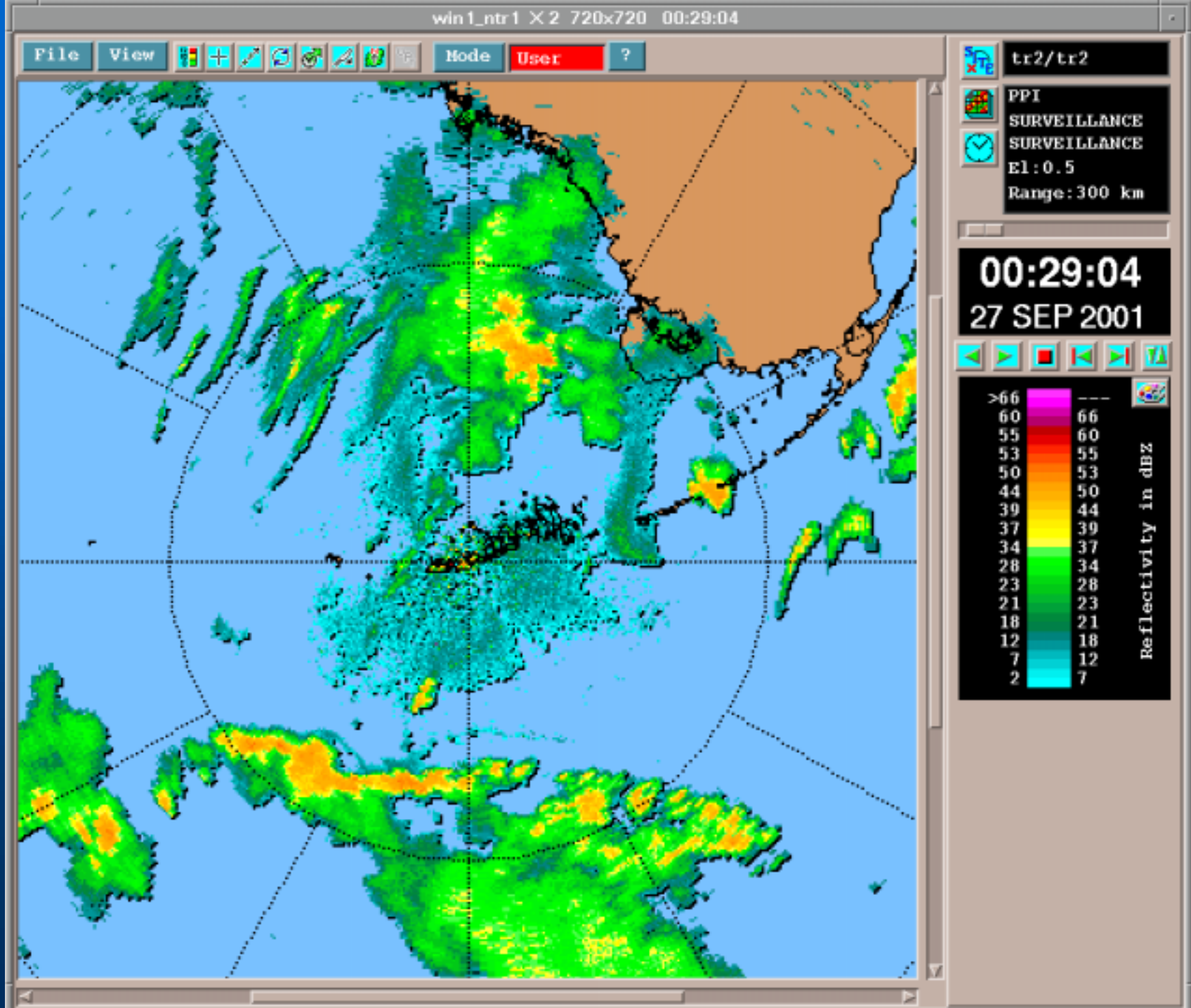
3.5
3.0
2.5
2.0
1.5
1.0
0.5
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
<-3.5
Diff Refl in dB
0
20
40
60
80
100
120
140

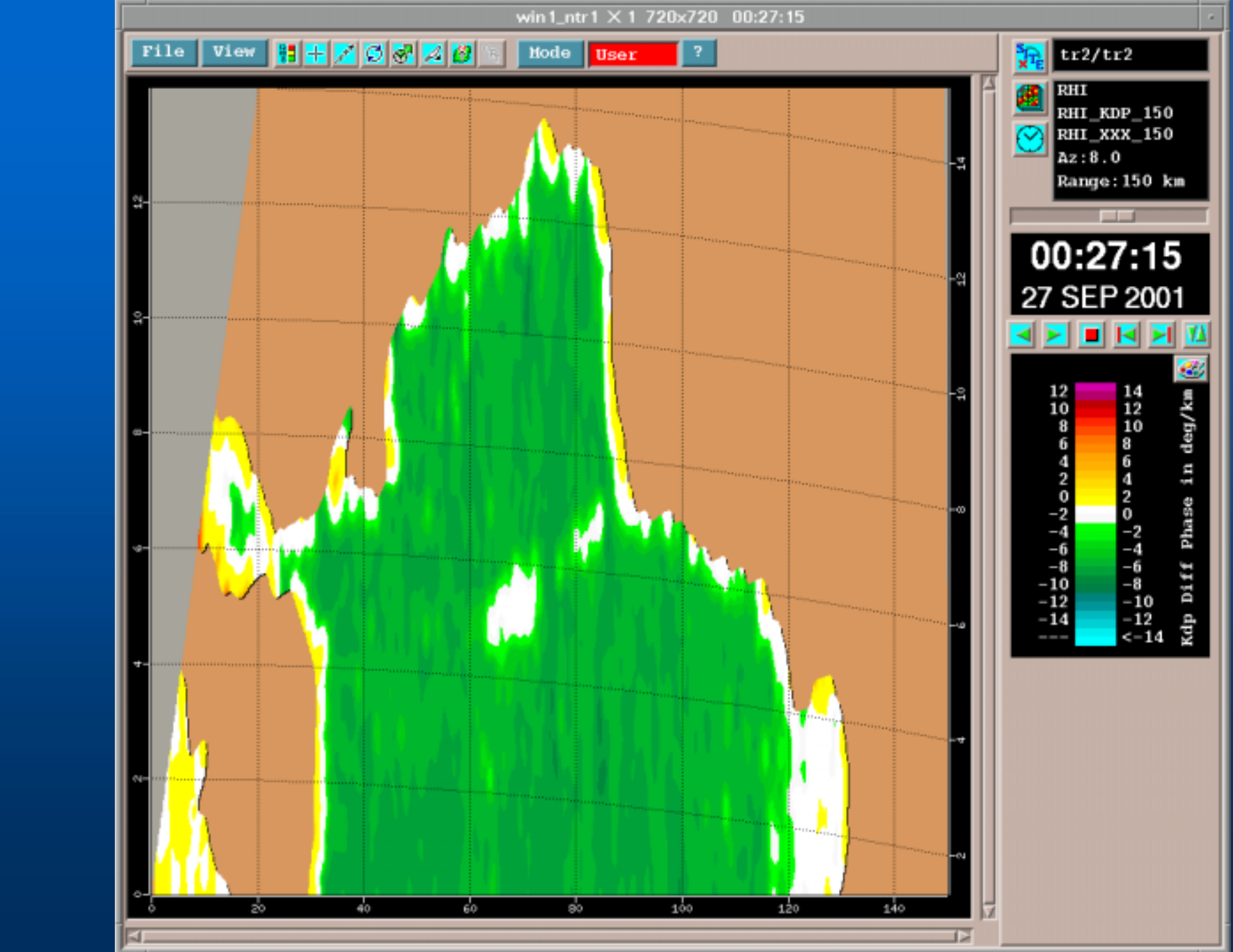
Problems

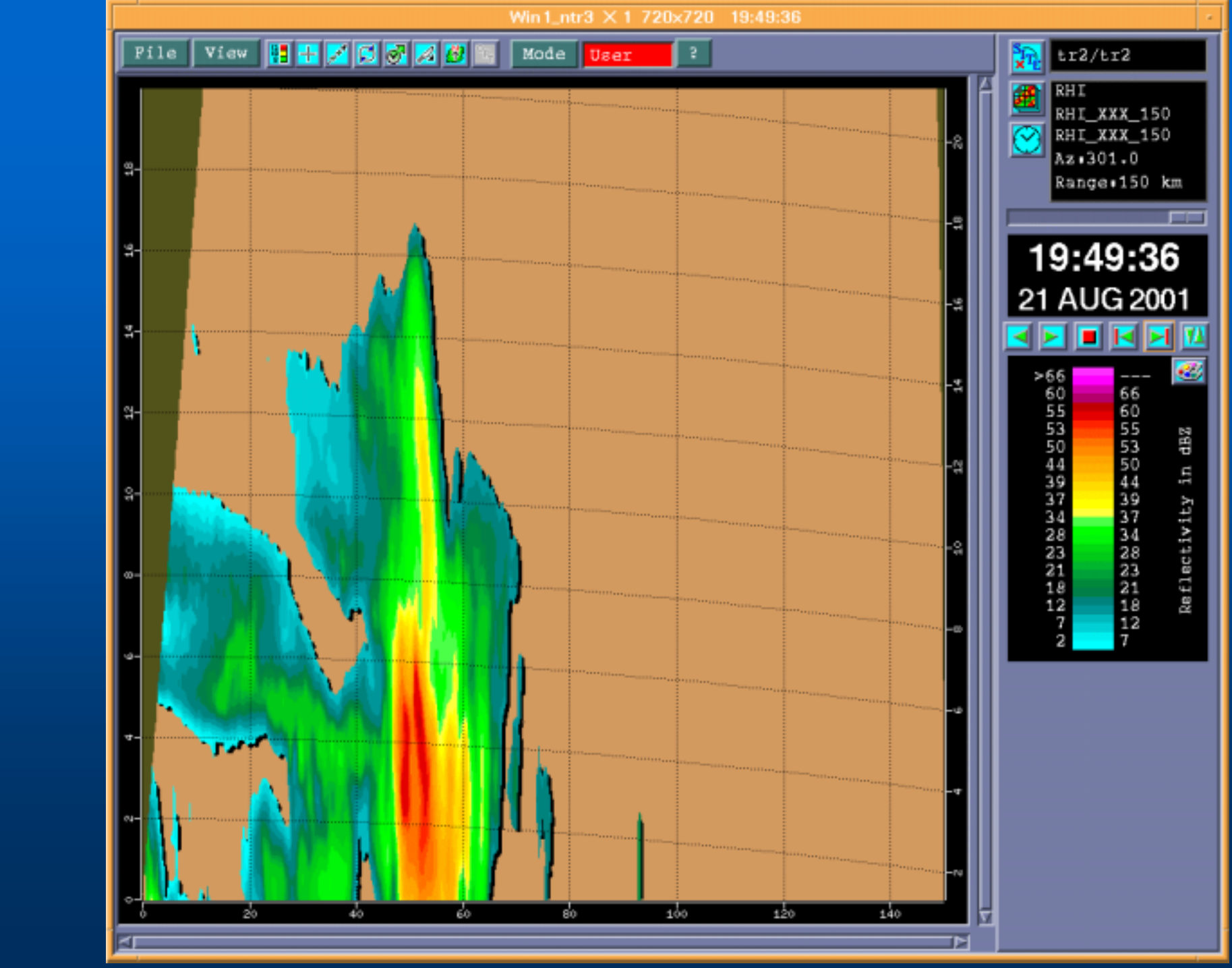
- **Slip Ring failure**
- **RFI from ASR-8**
- **Phases not locked**

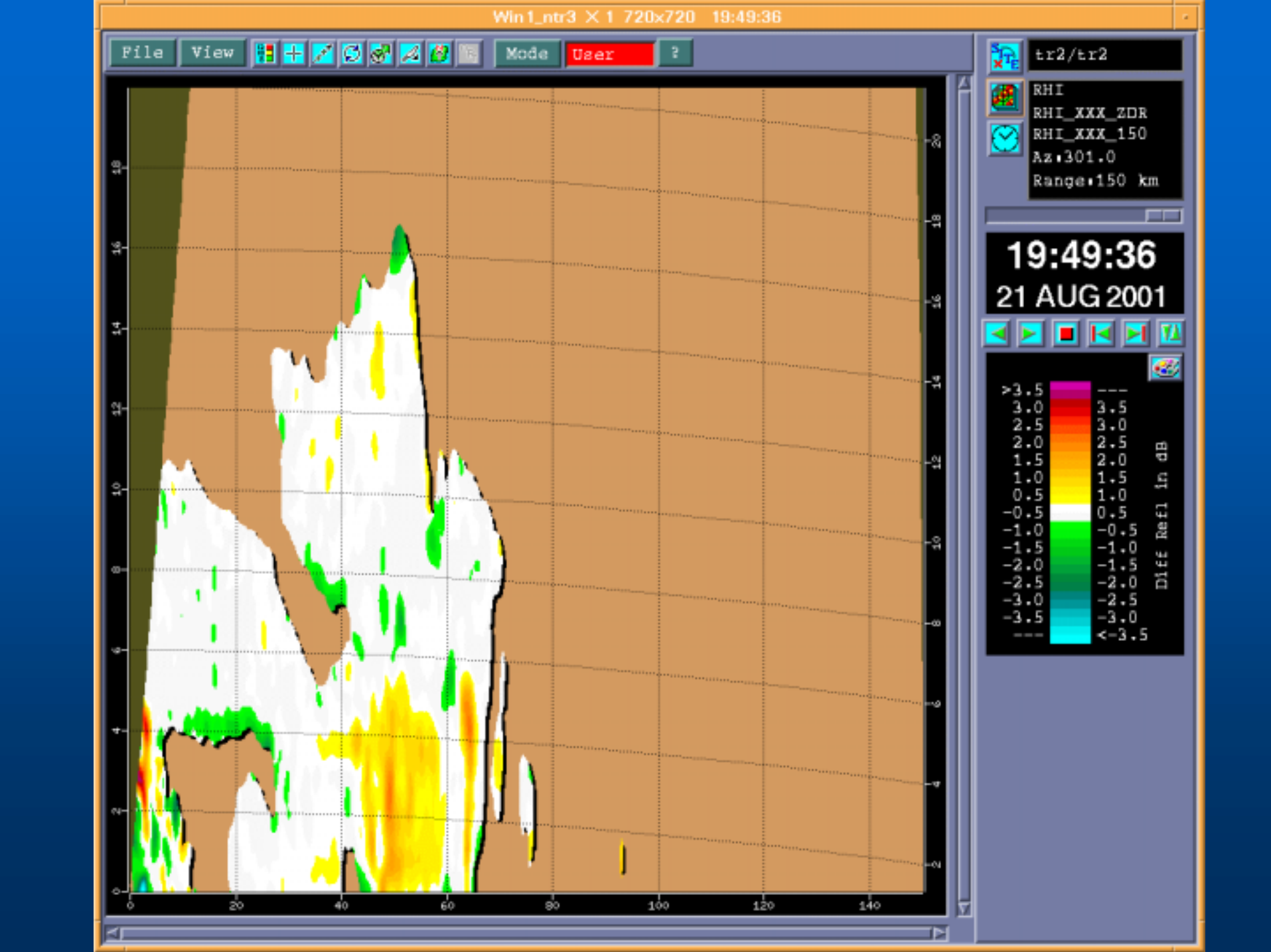
Summary

- **TOGA data 24/7 most of the time**
- **NPOL data 8/18 - 9/4 9/21- 9/28**
- **Tape Log and Science Log on Web**


win1_ntr1 X 2 720x720 00:29:04
File
View
Mode
User
?
tr2/tr2
PPI
SURVEILLANCE
SURVEILLANCE
El:0.5
Range:300 km
00:29:04
27 SEP 2001
>66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
2
66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
Reflectivity in dBZ


win1_ntr1 X 1 720x720 00:27:15
File
View
Mode
User
?
tr2/tr2
RHI
RHI_KDP_150
RHI_XXX_150
Az:8.0
Range:150 km
00:27:15
27 SEP 2001
12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 ---
14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 <-14
Kdp Diff Phase in deg/km
0 20 40 60 80 100 120 140
0 2 4 6 8 10 12 14


Win1_ntr3 X 1 720x720 19:49:36
File
View
Mode
User
?
tr2/tr2
RHI
RHI_XXX_150
RHI_XXX_150
Az:301.0
Range:150 km
19:49:36
21 AUG 2001
>66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
2
66
60
55
53
50
44
39
37
34
28
23
21
18
12
7
Reflectivity in dBZ
0
20
40
60
80
100
120
140


Win1_ntr3 X 1 720x720 19:49:36
File
View
Mode
User
?
tr2/tr2
RHI
RHI_XXX_ZDR
RHI_XXX_150
Az:301.0
Range:150 km
19:49:36
21 AUG 2001
>3.5
3.0
2.5
2.0
1.5
1.0
0.5
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
<-3.5
Diff Refl in dB
0
20
40
60
80
100
120
140