Calibrator Sources
3C273, 3C261, NGC4383

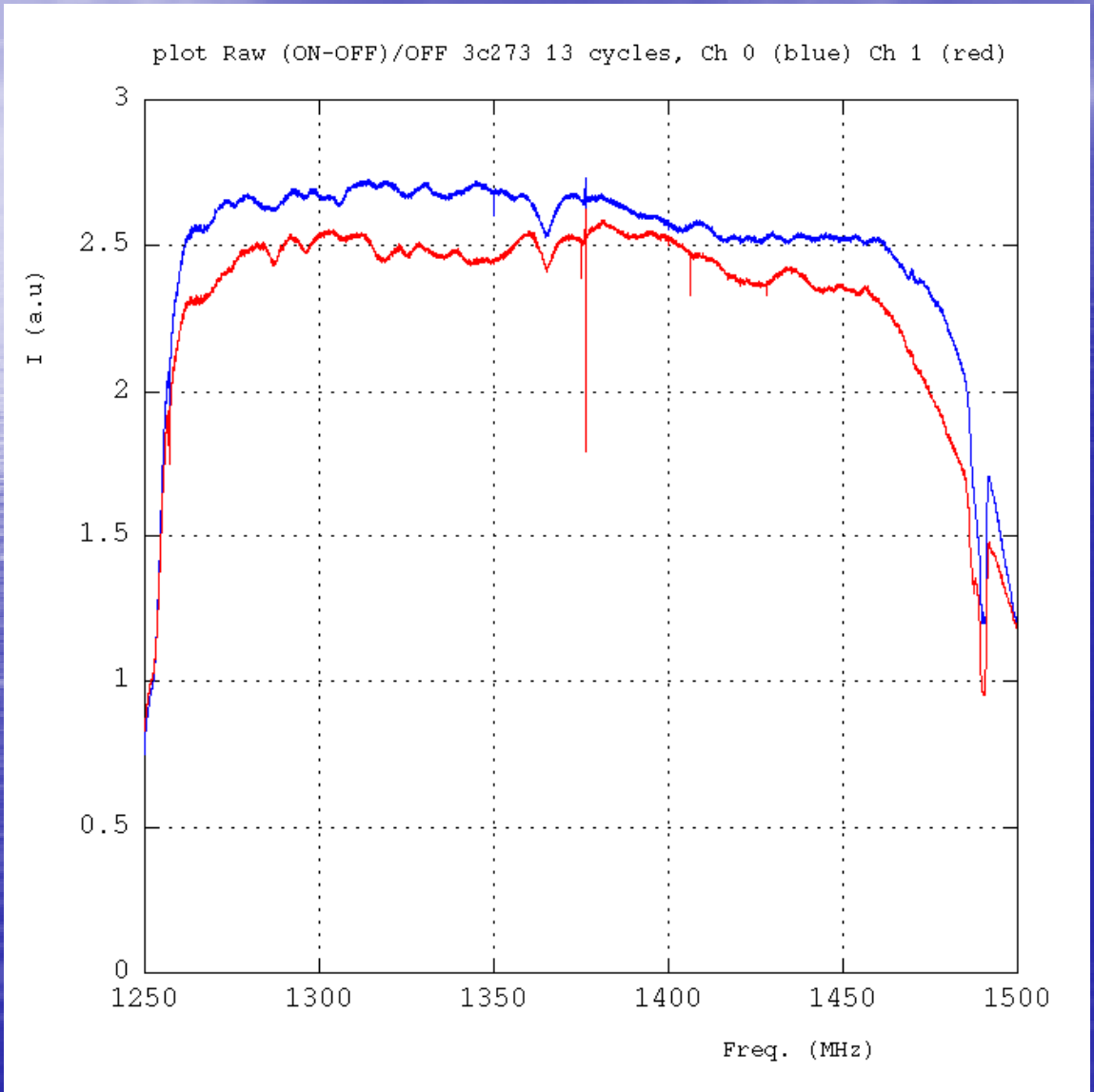
JE Campagne

16/1/2012

3C273 – 2011/12/09
ON/OFF & Drift

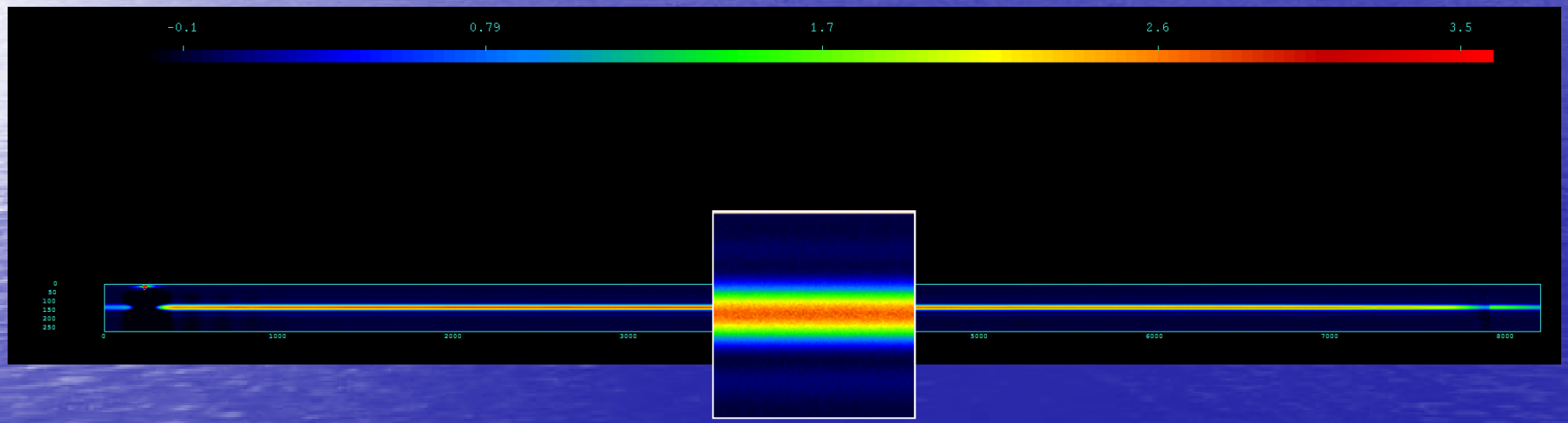
158461.171 & 158462.171

(ON-OFF)/OFF-flitered

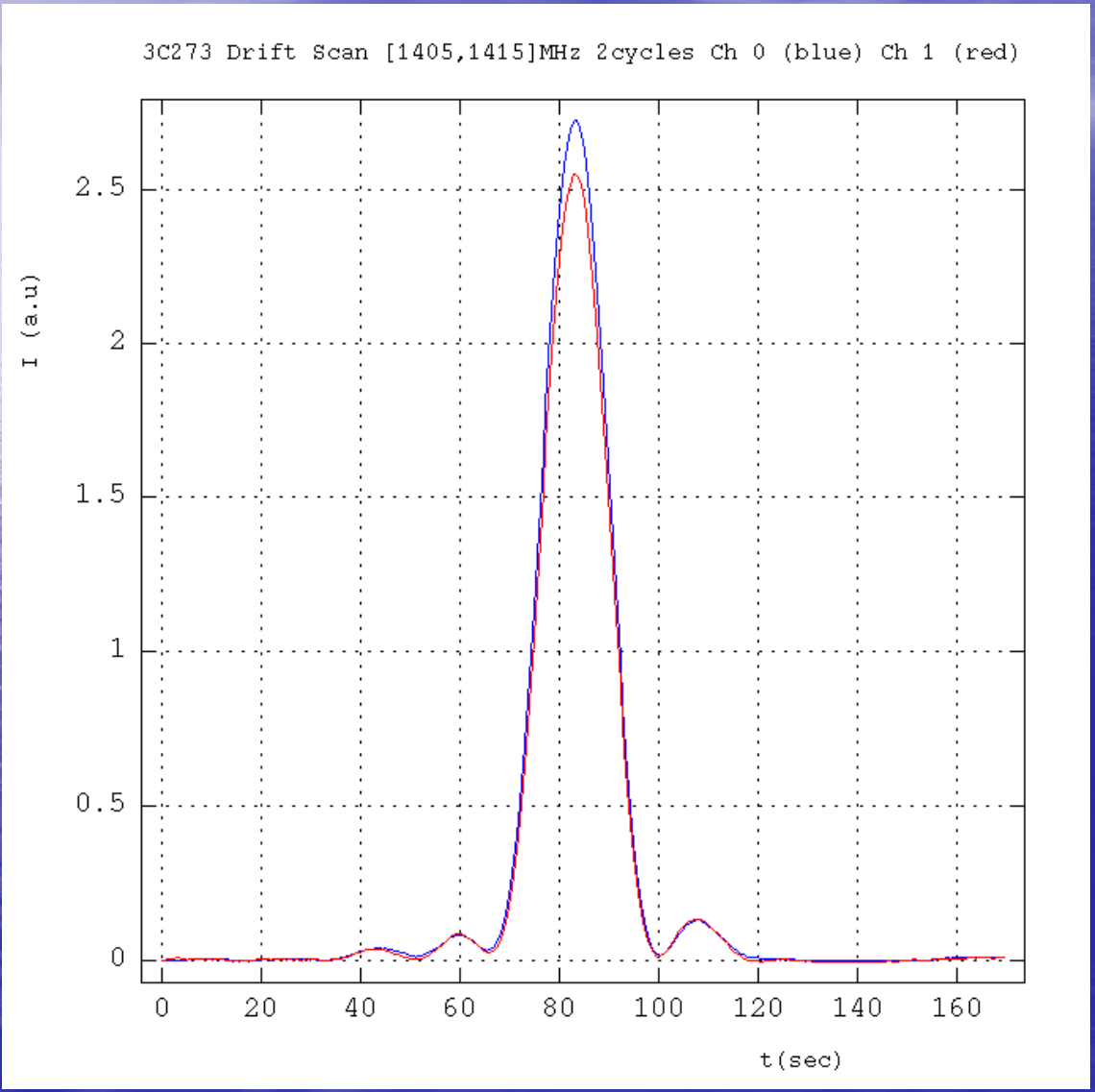


13 cycles 30sec each (30% eff.)

Drift Scan: I(time, frequancy)



Drift Scan: time evolution

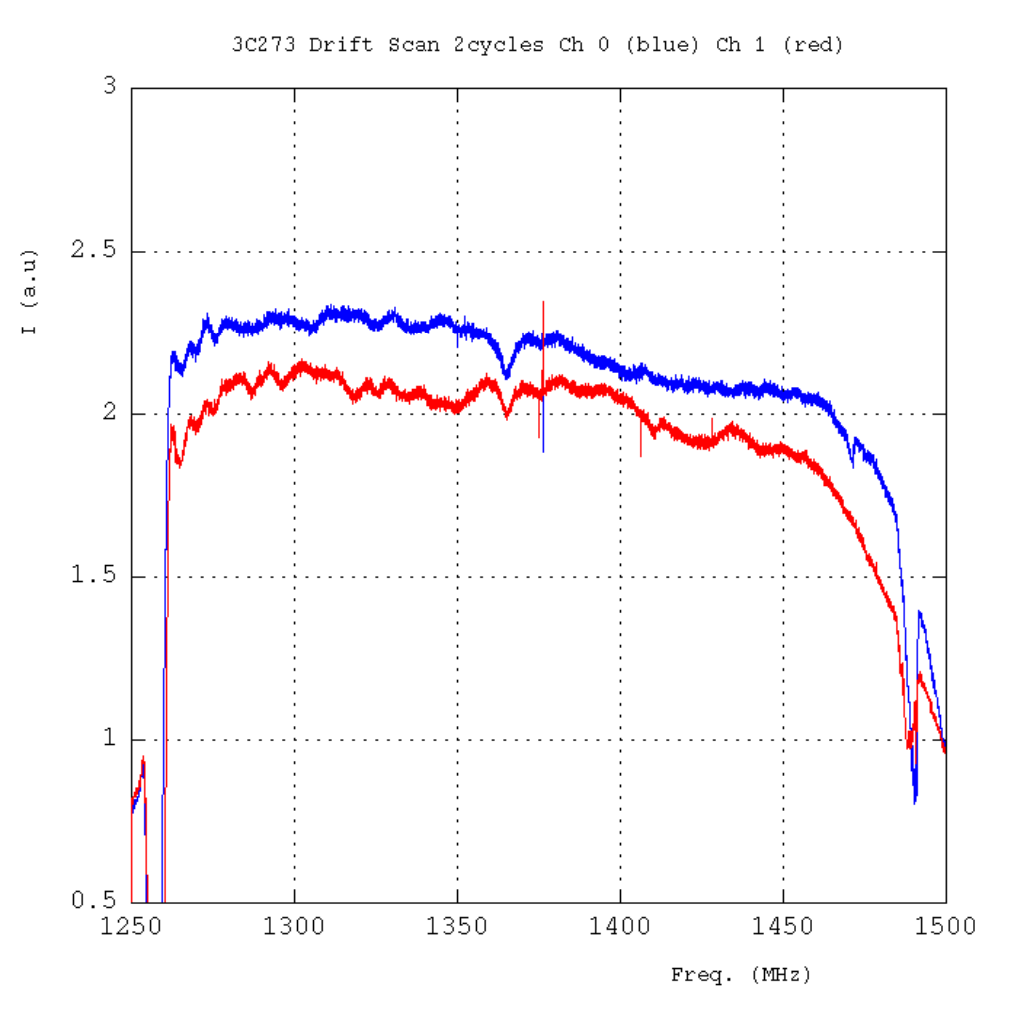


2 cycles 170sec (*)
(30% eff.)

"0" done with the first 30sec

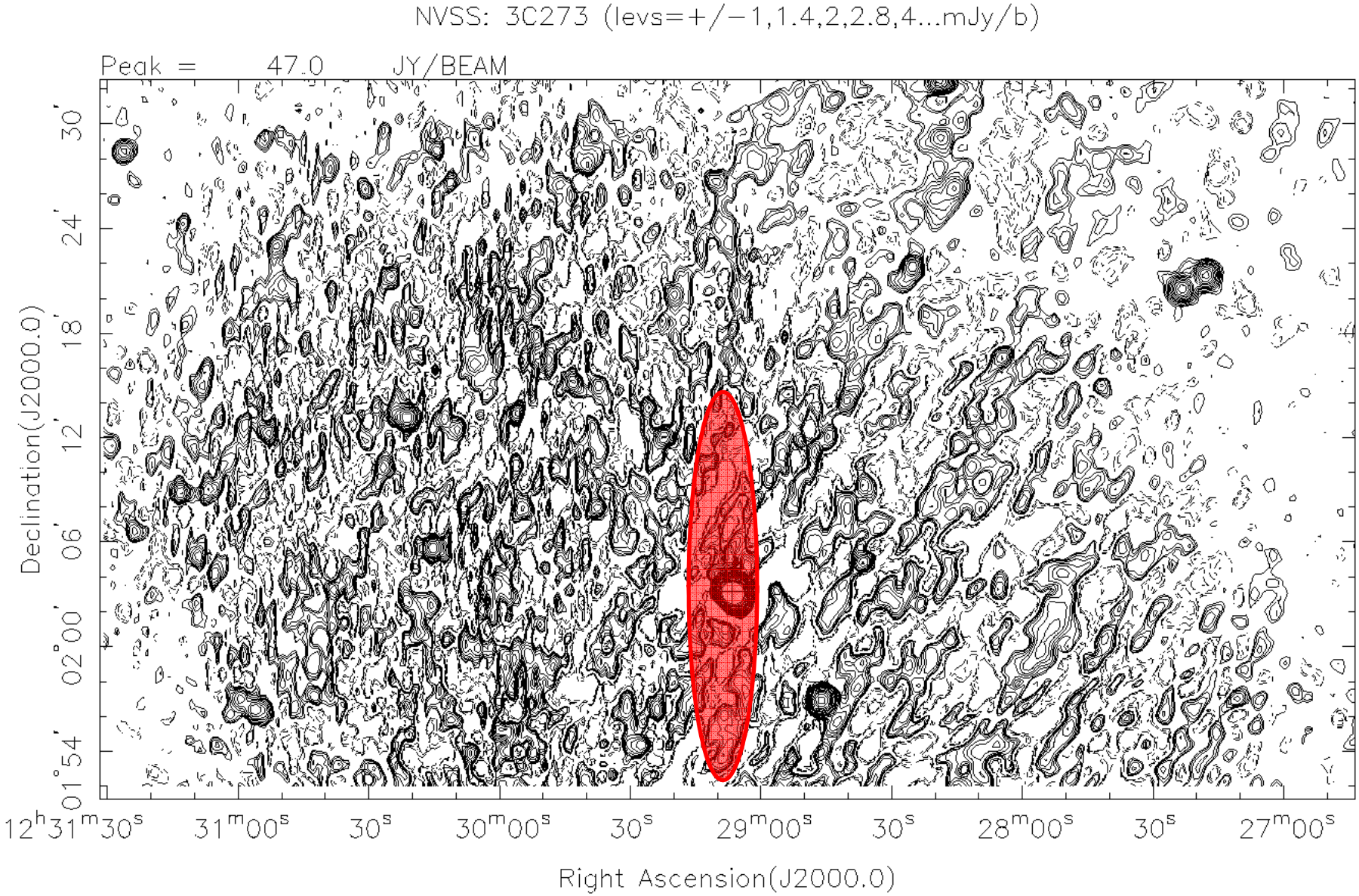
Mean of the band [1405,1415]MHz

Drift Scan: Frequency



Mean over the time FWHM (absolute value not to be compared to ON-OFF)

Same behavior as ON-OFF


NVSS: 3C273 (levs=+/−1,1.4,2,2.8,4...mJy/b)
Peak = 47.0 JY/BEAM
Declination(J2000.0)
01°54′
02°00′
06′
12′
18′
24′
30′
12h31m30s
31m00s
30s
30m00s
30s
29m00s
30s
28m00s
30s
27m00s
Right Ascension(J2000.0)

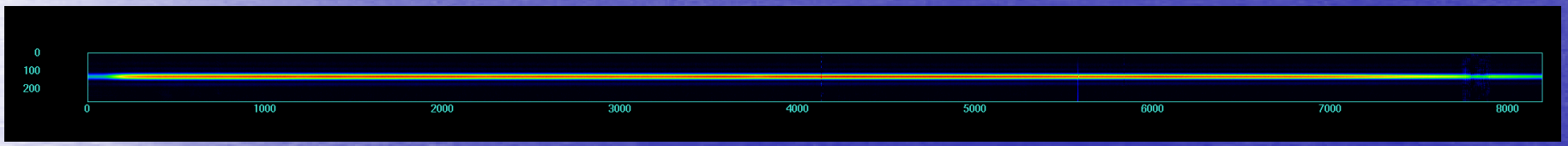
3C161 Drift Scan

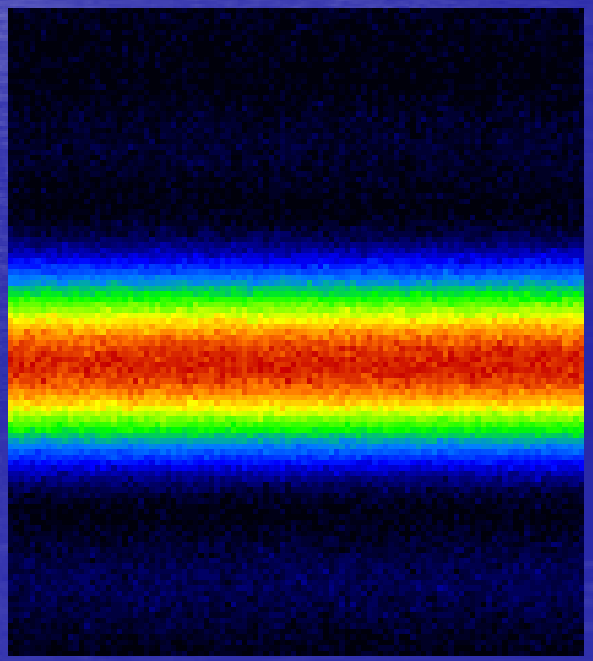
158451.171 & 158452.171

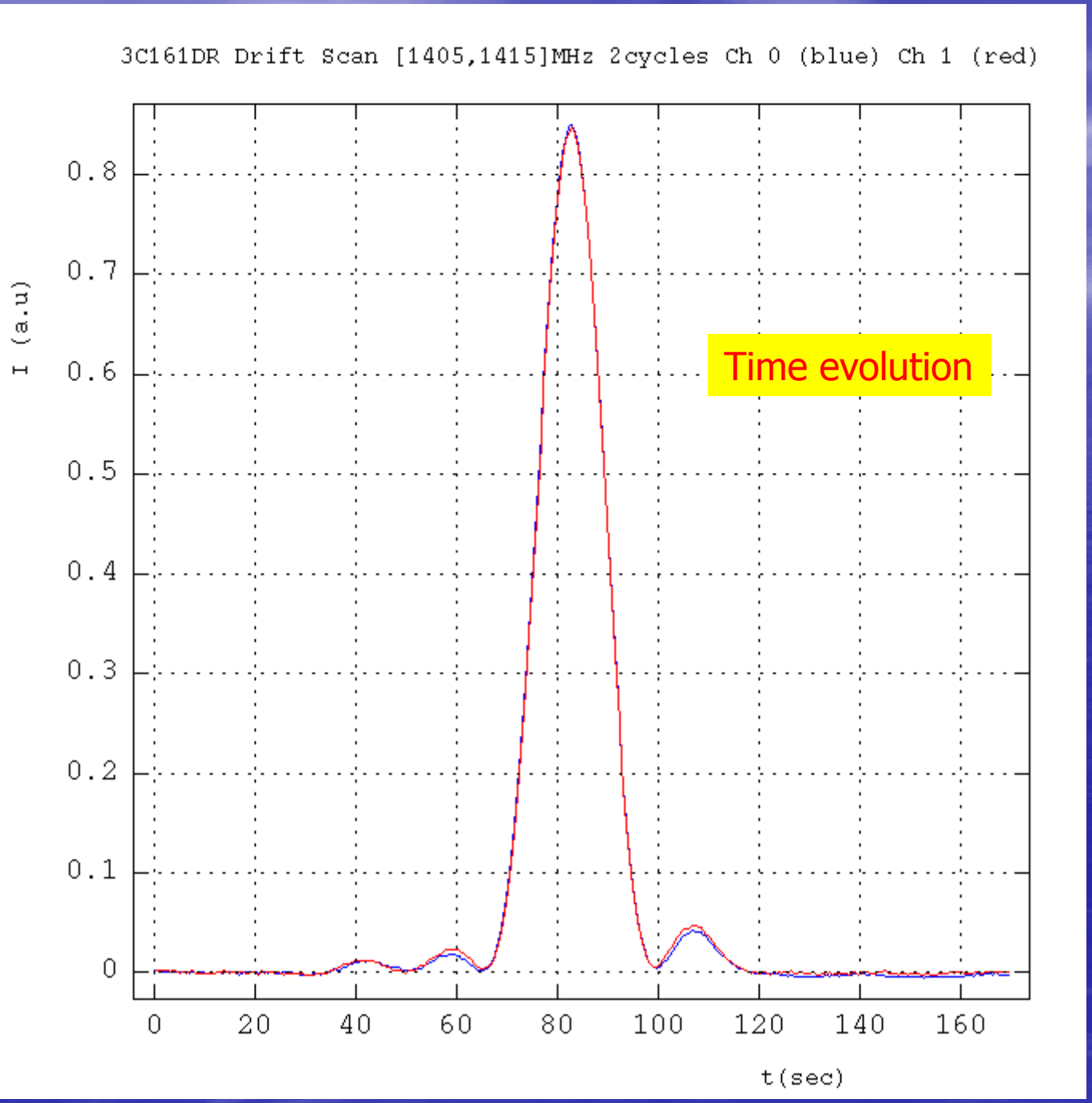
Data

- 2 runs 2011-12-09
  - 3C161 : 0:57:21 start
    - 3 cycles/4 available 2-4
  - 3C161B : 1:11:50
    - 7 cycles/9 available 3-9
- 1 cycle = 170 sec ON-like
- Add the images time-freq. and use the first 30sec as “0”
- No use of DAB

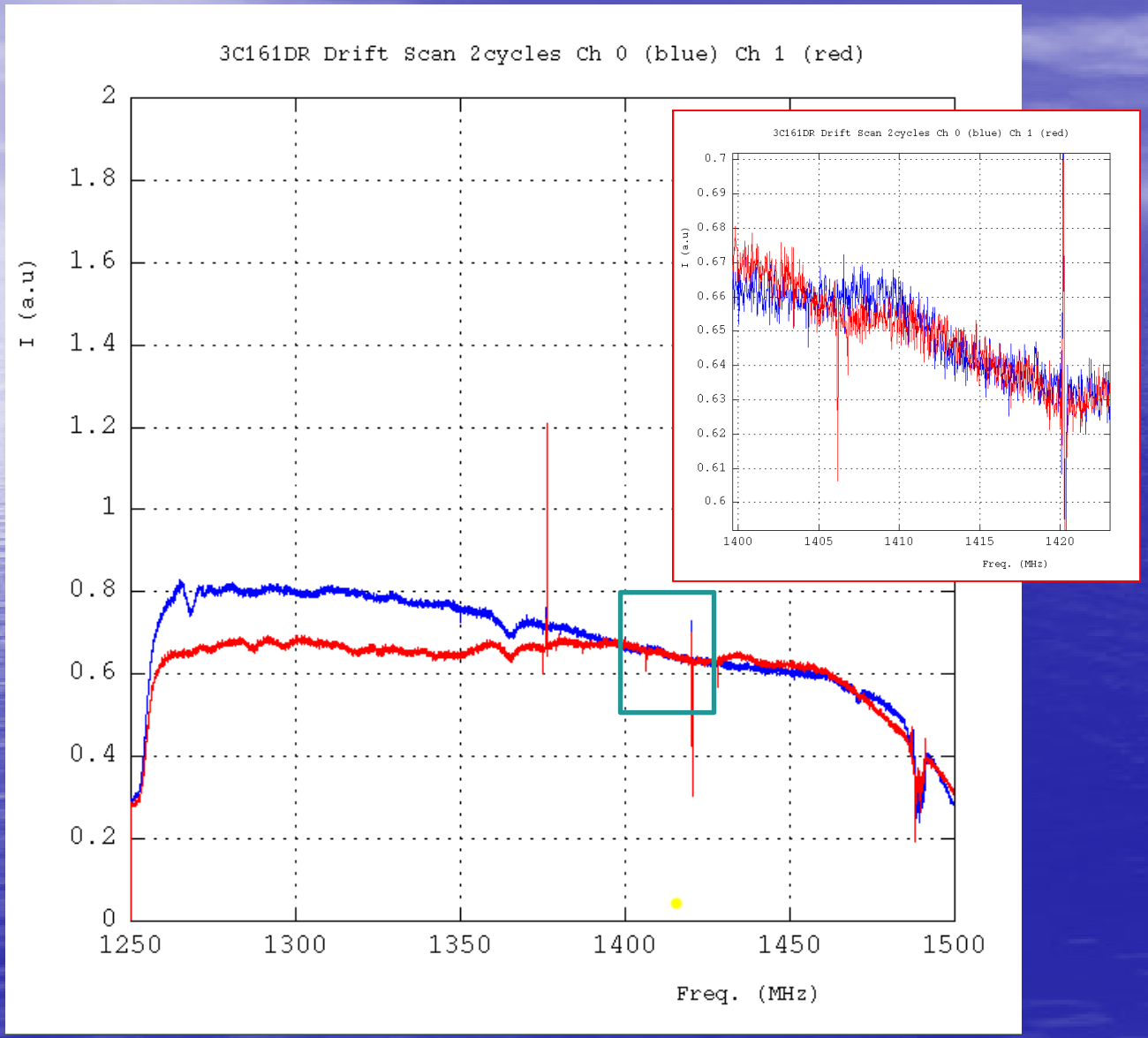
Image time-Freq.







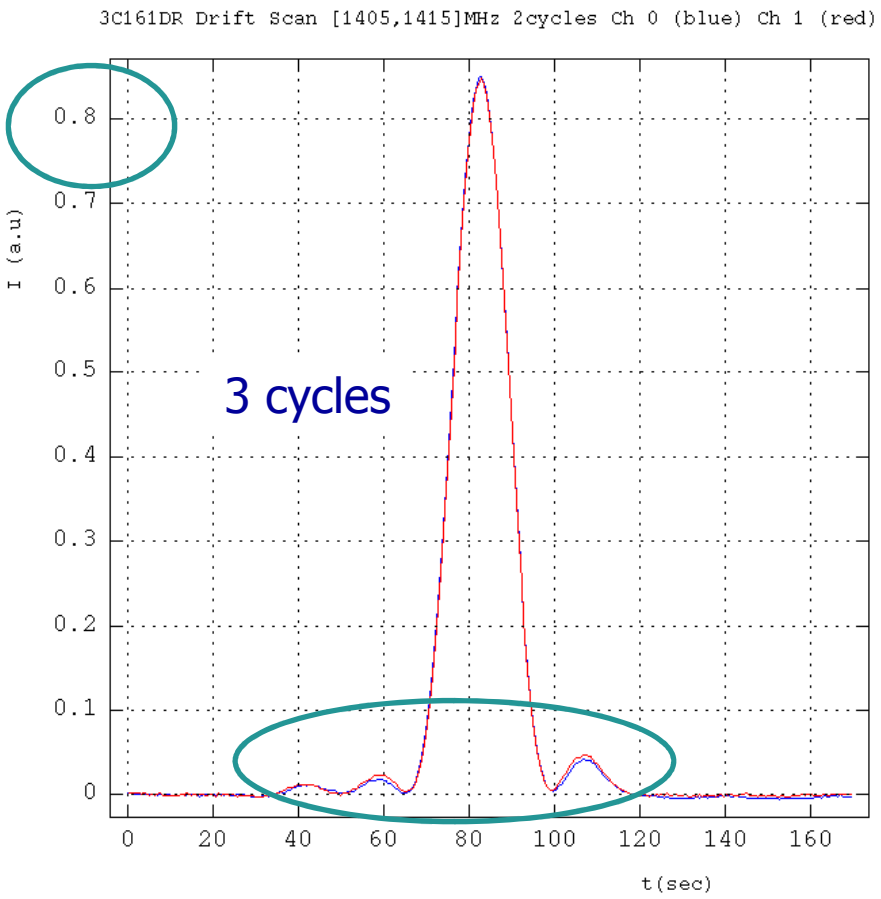
Timing: 8.22kHz

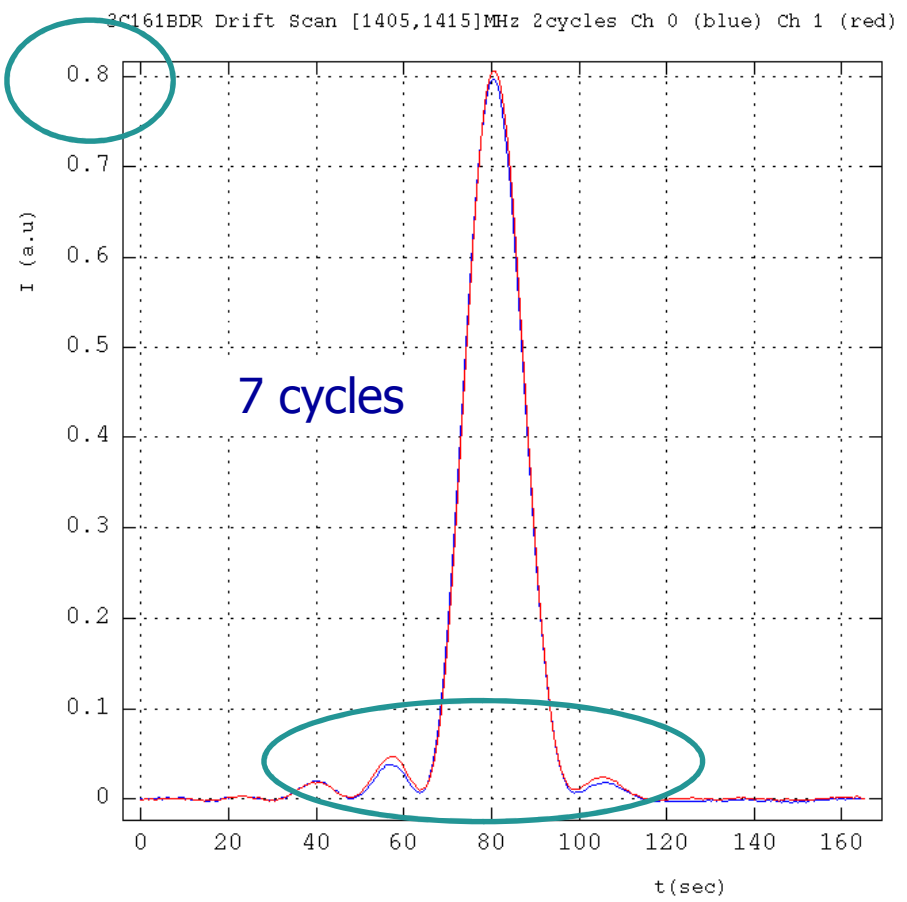


Spectra integrated during the FWHM of the drift.

Differences wrt the 3C273 spectra Polarization?

The 2 drifts of 3C161
±3% effect on peak value





The freq. spectrum remains the same

Calibration

$$(I_{max}^{Pol1} + I_{max}^{Pol2})(a.u) \times C_{mean\ polar} = I_{tot}(Jy)$$

3C161 0624-05 (Baars et al 1977)

Freq MHz	1250	1280	1380	1410
Flux Jy	20,636	20,294	19,233	18,937

Ott et al. , 1994

Freq. MHz	Flux Jy	date Obs.
1408	18.58 (0.09)	Feb. 1990

3C161

1410MHz

11.6 Jy/a.u (*)

(*): be careful this is to be applied to the SUM of the 2 polarizations, not the MEAN

3C273

-Bridle et al., 1972: I(1400 MHz) : 38.84 (0.70) Jy

- Kühr et al., 1981 & NED

Freq.(MHz)	Flux (Jy)	
1400	41.28 1.23	Witzel et al. 1971
1400	46.30 2.30	Kellerman et al. 1969
1410	45.17 1.07	Wills 1975
1410 MHz	42.00 ...	Jy -> Wright et al. 1990, Parkes
1400 MHz	45.0 +/- 5 %	Jy -> PAULINY-TOTH et al., 1966
1400 MHz	39.62 ± 0.38	Jy -> idem
1.4 GHz (ATCA)	35.82 ...	Jy -> Tingay et al., 2003, PASJ
1.40 GHz	50100	...milliJy -> White et al., 1992, 300ft, -> Condon et al. 1985,1986
1.4GHz	**54992.1 ± 1900.3**	**milliJy -> Condon et al. 1998, NVSS**

Our measurement : ~2 x 2.5 au x 11.6 Jy/au ~ 58 Jy

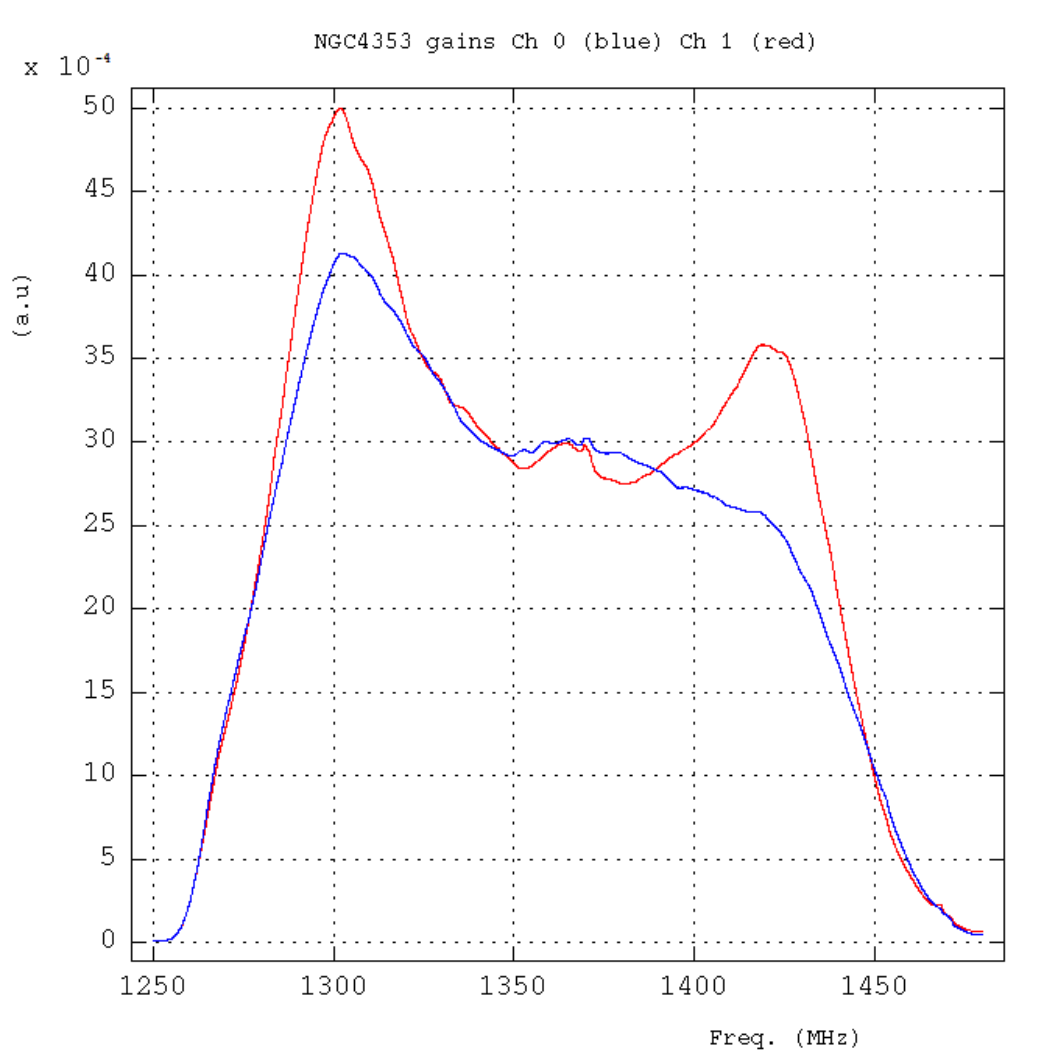
NGC4383 ON-OFF

SCA156855.171

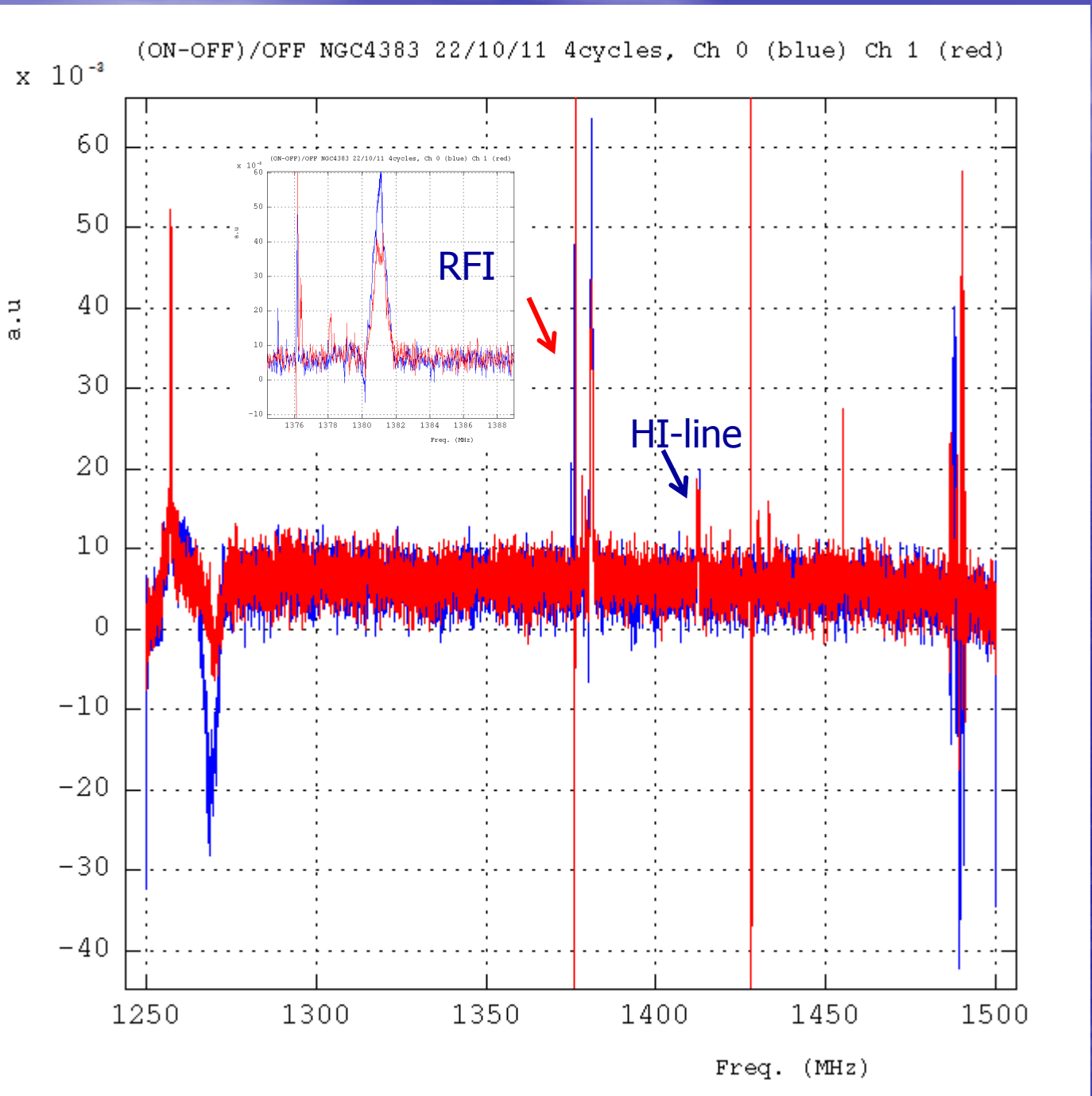
Date 2011-10-22

Cycles 1-15 foreseen but 12-15 only !

Gains cycle #13



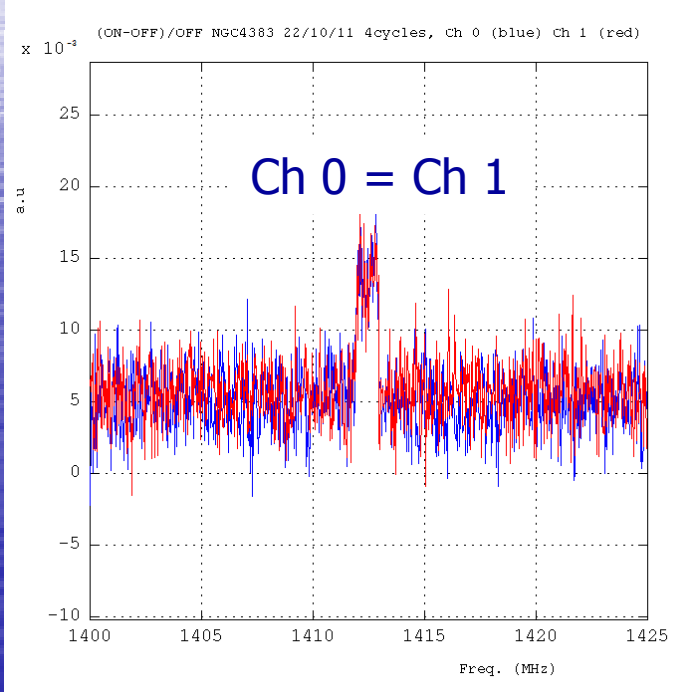
Gains different shape as I was expecting. But confirmed by Ana that they have changed since 7th July…


(ON-OFF)/OFF NGC4383 22/10/11 4cycles, Ch 0 (blue) Ch 1 (red)
x 10⁻³
a.u
60
50
40
30
20
10
0
-10
-20
-30
-40
1250
1300
1350
1400
1450
1500
Freq. (MHz)
RFI
HI-line

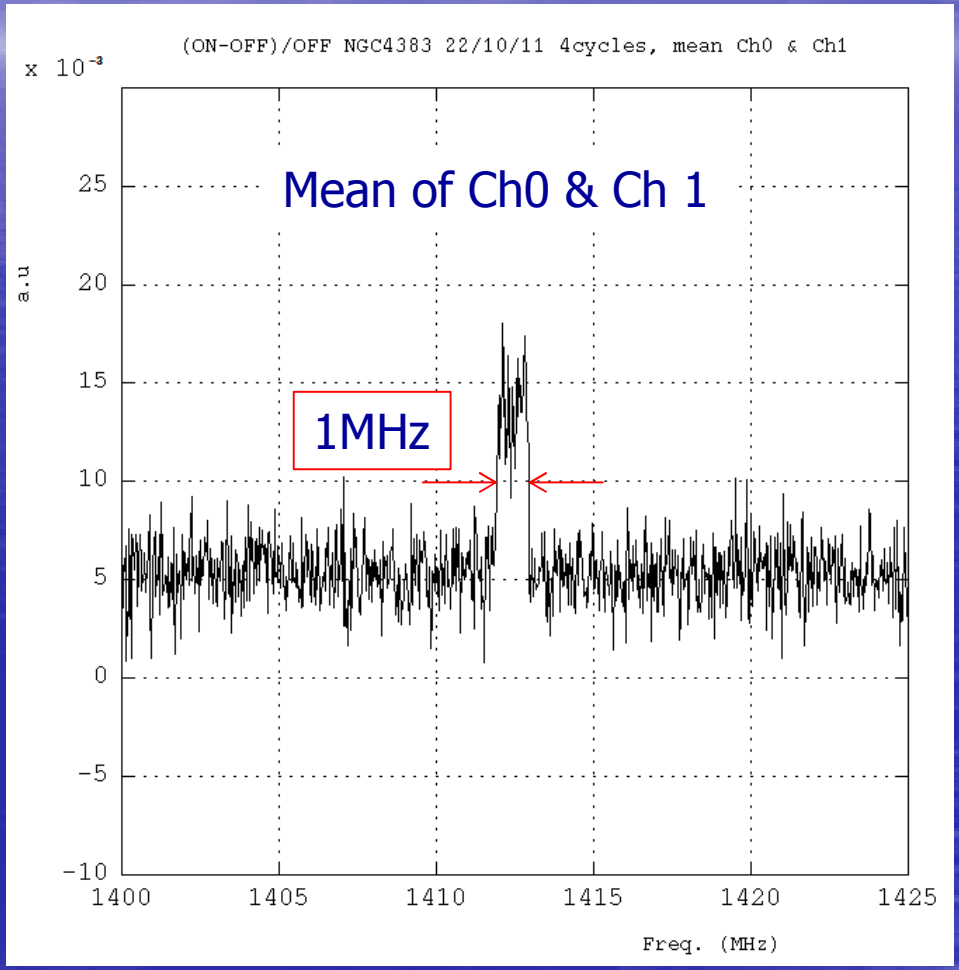
Continuum & line

Continuum: ~ 44.3 ± 4.1 mJy
HI Line:
- width ~213km/s ~1MHz
- int. 48.4 ± 5.1 Jy km/s ~230mJy

A. Chung et al, VLA IMAGING OF VIRGO SPIRALS IN ATOMIC GAS (VIVA). I., The Astronomical Journal, 138:1741–1816, 2009 December
THE ATLAS AND THE Hi PROPERTIES



Zoom of HI line



1420.20/(1+0.0057) = 1412.15 MHz = 1700 km/s OK

The HI line intensity

Integral in the range [1412-1413] MHz

$$\int HI(\nu)d\nu = 2_{polar} \times \left(\sum_i (S_i - Conti_i)\right) \Delta\nu$$
$$= 2 \times (447 - 175)\ 10^{-3}[a.u] \times 30\ 10^{-3}[MHz] \times 213[km/s/MHz] \times C_{mean\ polar}$$
$$= 3.48[a.u.km/s] \times C_{mean\ polar}$$
$$= 48.4 \pm 5.1\ [\mathrm{Jy.km/s}]$$

Then $C_{mean\ polar} = 13.9 \pm 1.5\ [Jy/a.u]$ To be compared to 11.6 Jy/au

Or $3.48 \times 11.6 = 39.2[Jy.km/s]$ To be compared to 48.4 Jy.km/s