Mapping star-forming regions with CO lines

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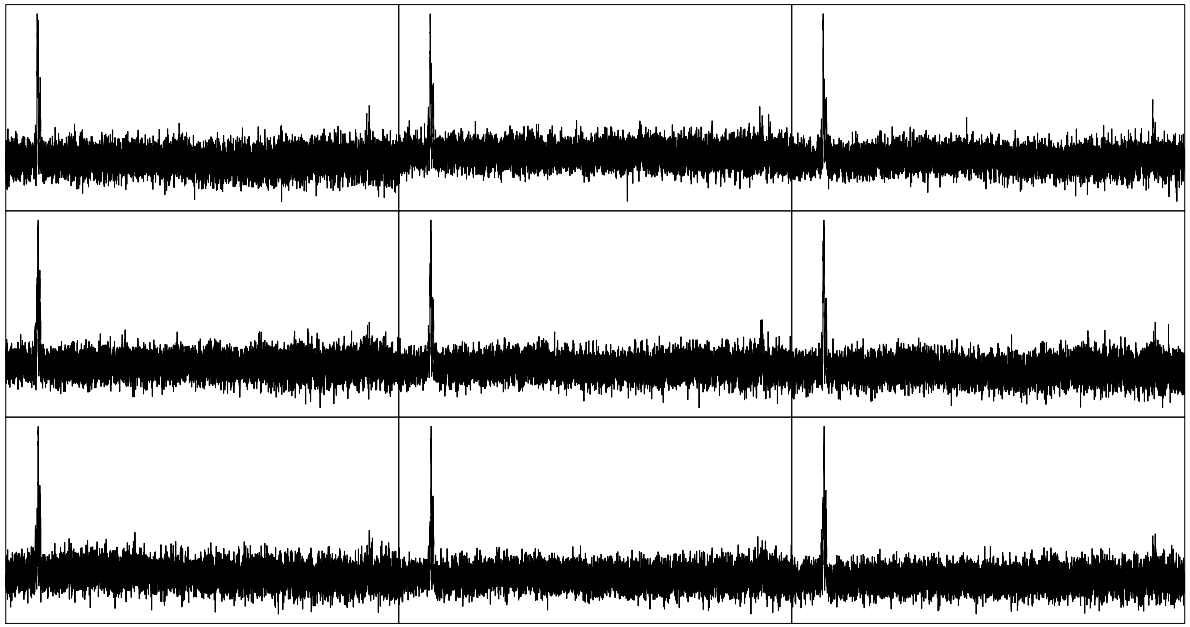
Source, data and observations

- N49: ring of molecular gas around an HII region.
- $^{13}CO/C^{18}O$ 2-1.
- Apex telescope at 220 GHz
- CLASS

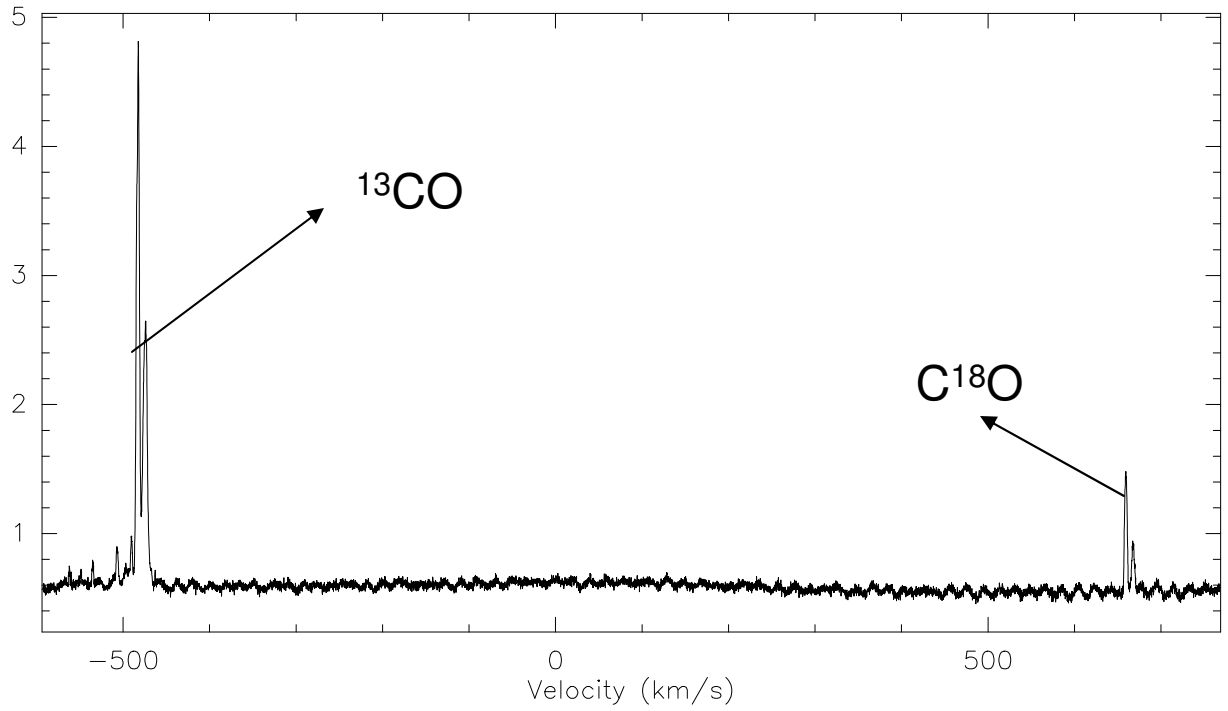
Data reduction

- Sample of single spectra
- 3200 spectra



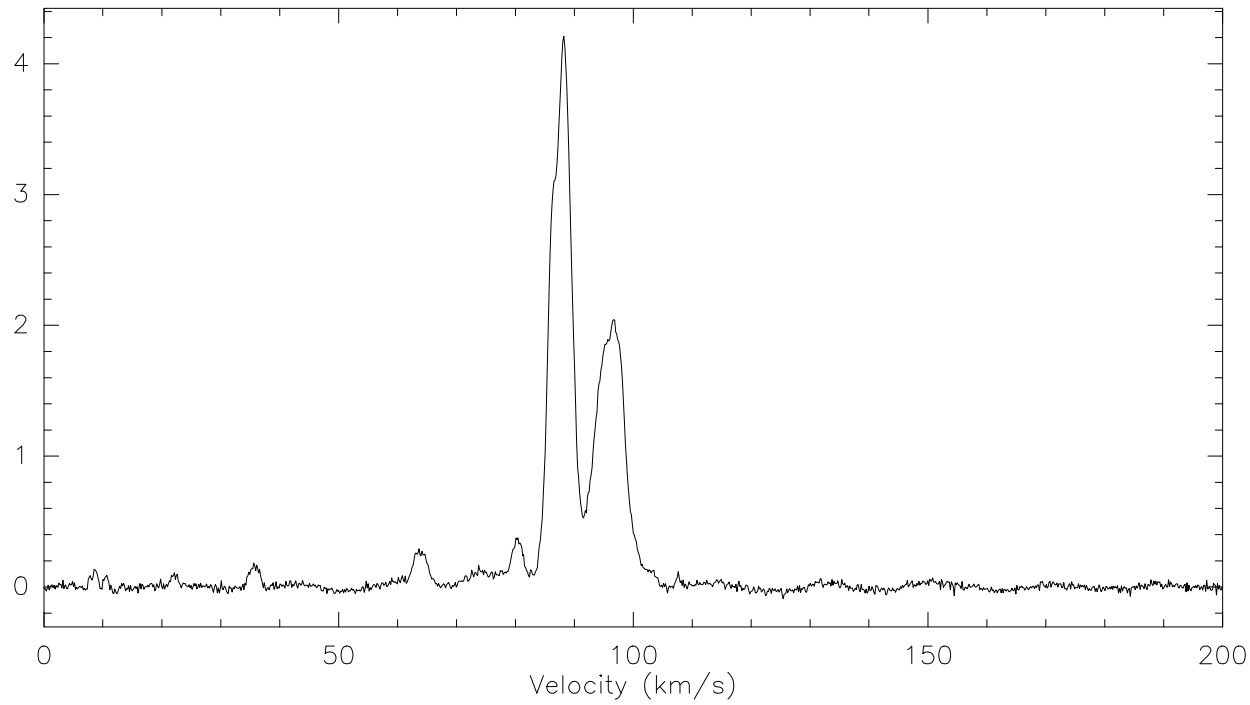
Average spectra

3323; 3 N49 13CO C18O AP−H201−F101 +120.0 +117.6 Eq 18634. 1

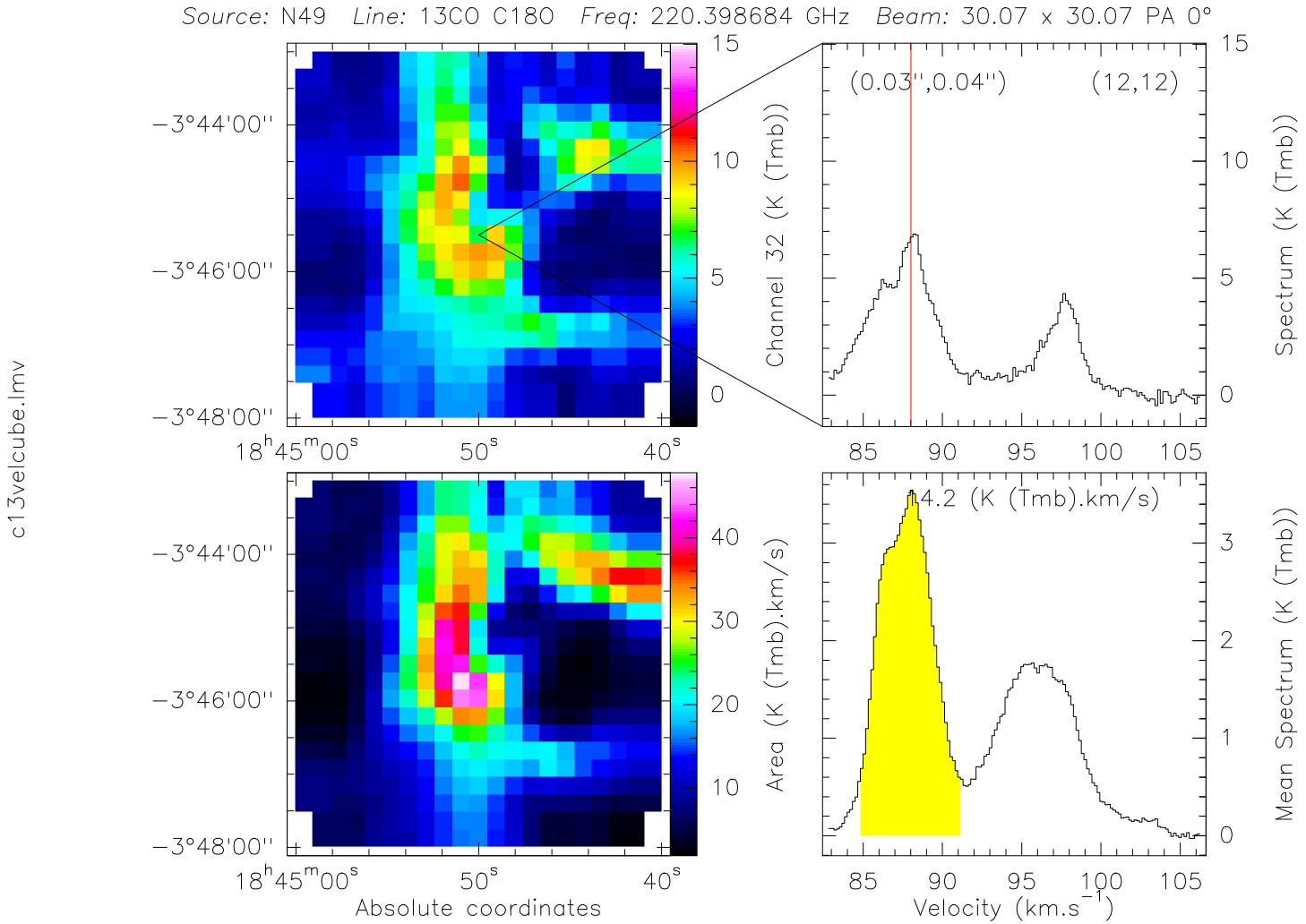


Base line subtraction and centering frequency

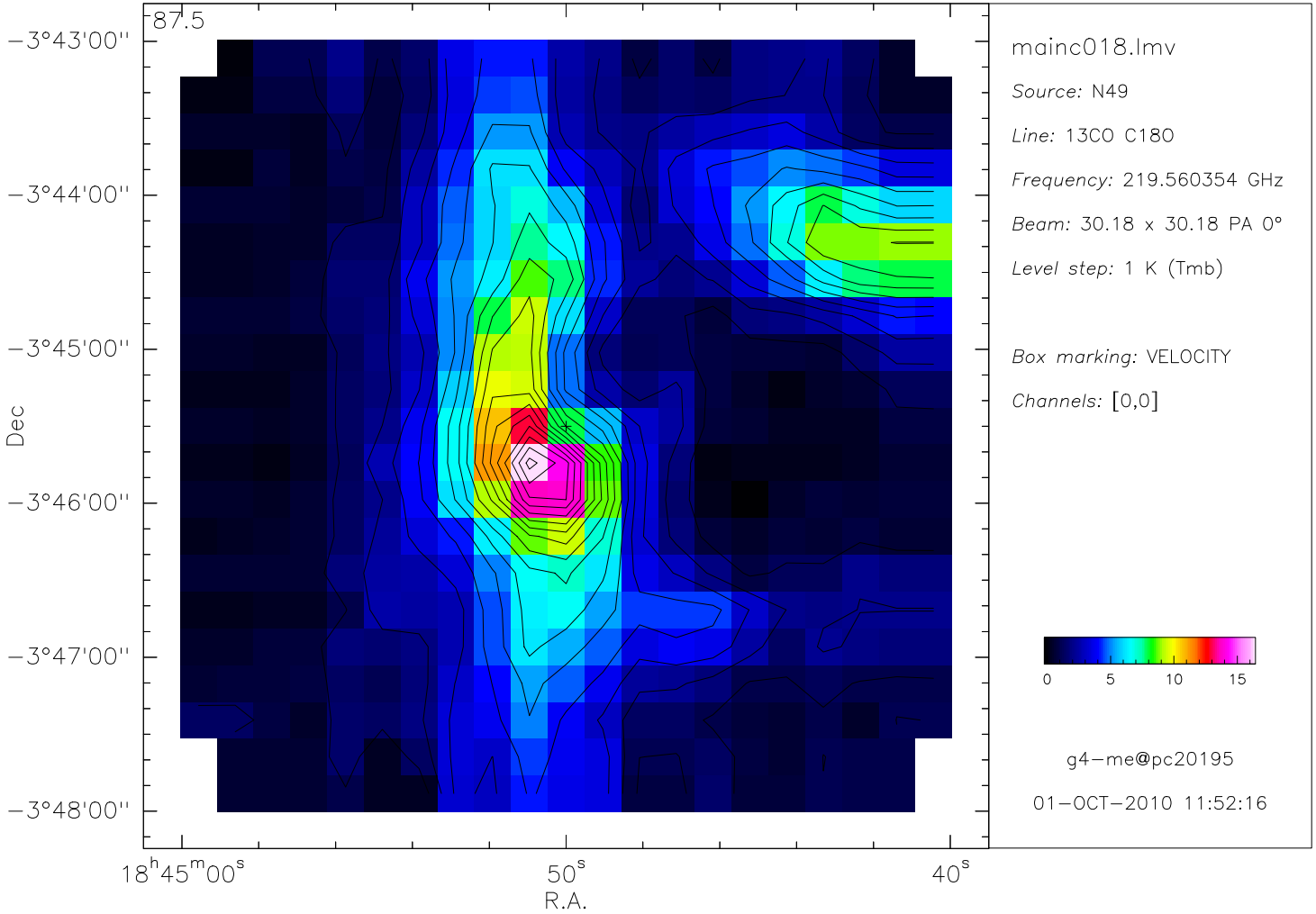
3323; 4 N49 13CO C18O AP−H201−F101 +120.0 +117.6 Eq 18634. 1



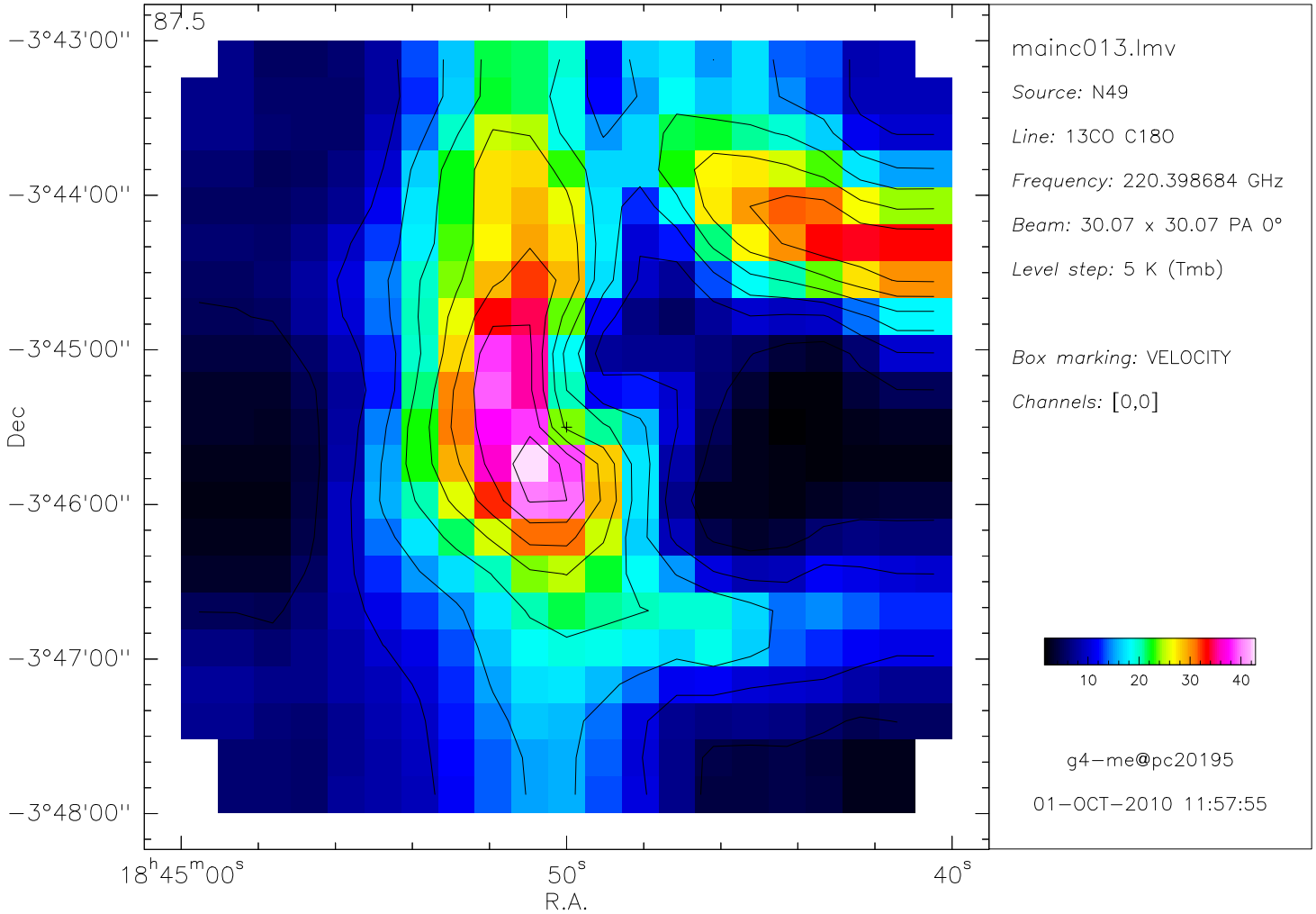
Velocity map



$C^{18}O$


87.5
−3°43'00"
−3°44'00"
−3°45'00"
−3°46'00"
−3°47'00"
−3°48'00"
Dec
18h45m00s
50s
40s
R.A.
mainc018.lmv
Source: N49
Line: 13CO C18O
Frequency: 219.560354 GHz
Beam: 30.18 x 30.18 PA 0°
Level step: 1 K (Tmb)
Box marking: VELOCITY
Channels: [0,0]
0
5
10
15
g4−me@pc20195
01−OCT−2010 11:52:16

^{13}CO


87.5
−3°43'00''
−3°44'00''
−3°45'00''
−3°46'00''
−3°47'00''
−3°48'00''
Dec
18h45m00s
50s
40s
R.A.
mainc013.lmv
Source: N49
Line: 13CO C180
Frequency: 220.398684 GHz
Beam: 30.07 x 30.07 PA 0°
Level step: 5 K (Tmb)
Box marking: VELOCITY
Channels: [0,0]
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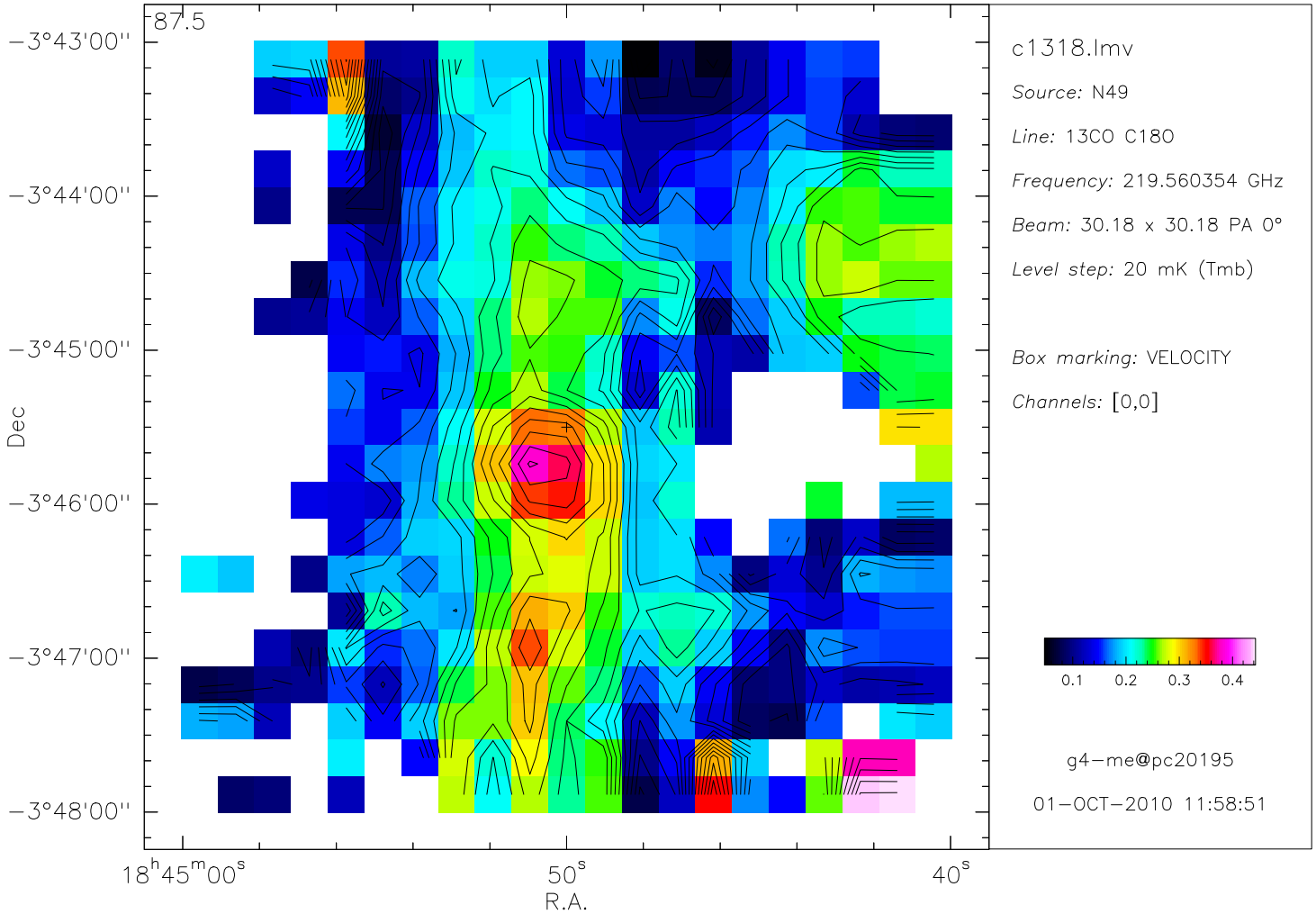
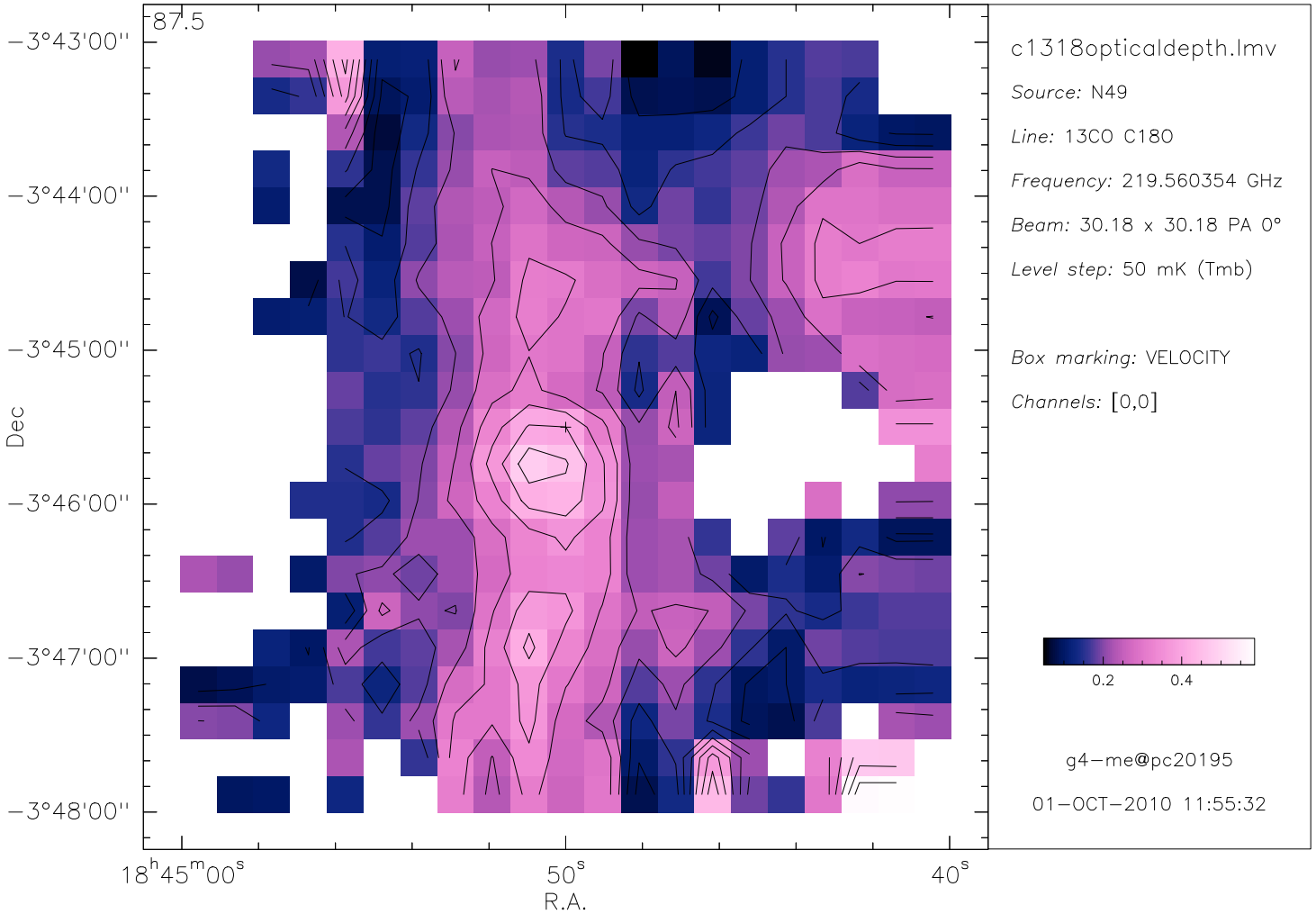
20
30
40
g4−me@pc20195
01−OCT−2010 11:57:55

Intensity Ratio



Optical depth



Results

- Optical depth ~ 0.45
- Column density N_H~4 10^{21} cm^{-2}
- Mass ~ 60 M_{sun}

Thank you!