B. CHAMP ISO-CO MAPS OF PHYSICAL QUANTITIES

Here we present moment maps for each Region of four derived parameters from the radiative transfer calculations: from top to bottom, the peak optical depth in the ^{12}CO line, peak excitation temperature, integrated ^{12}CO column density, and intensity-weighted mean abundance ratio R_{18}; these are continued to a second page in some cases. The physical maps are shown in the left column, with an estimated error map for each in the right column. Contours (10%–20% of the peak $N_{^{12}\mathrm{CO}}$, third row) and ellipses are the same as in Appendices A, C, and D.

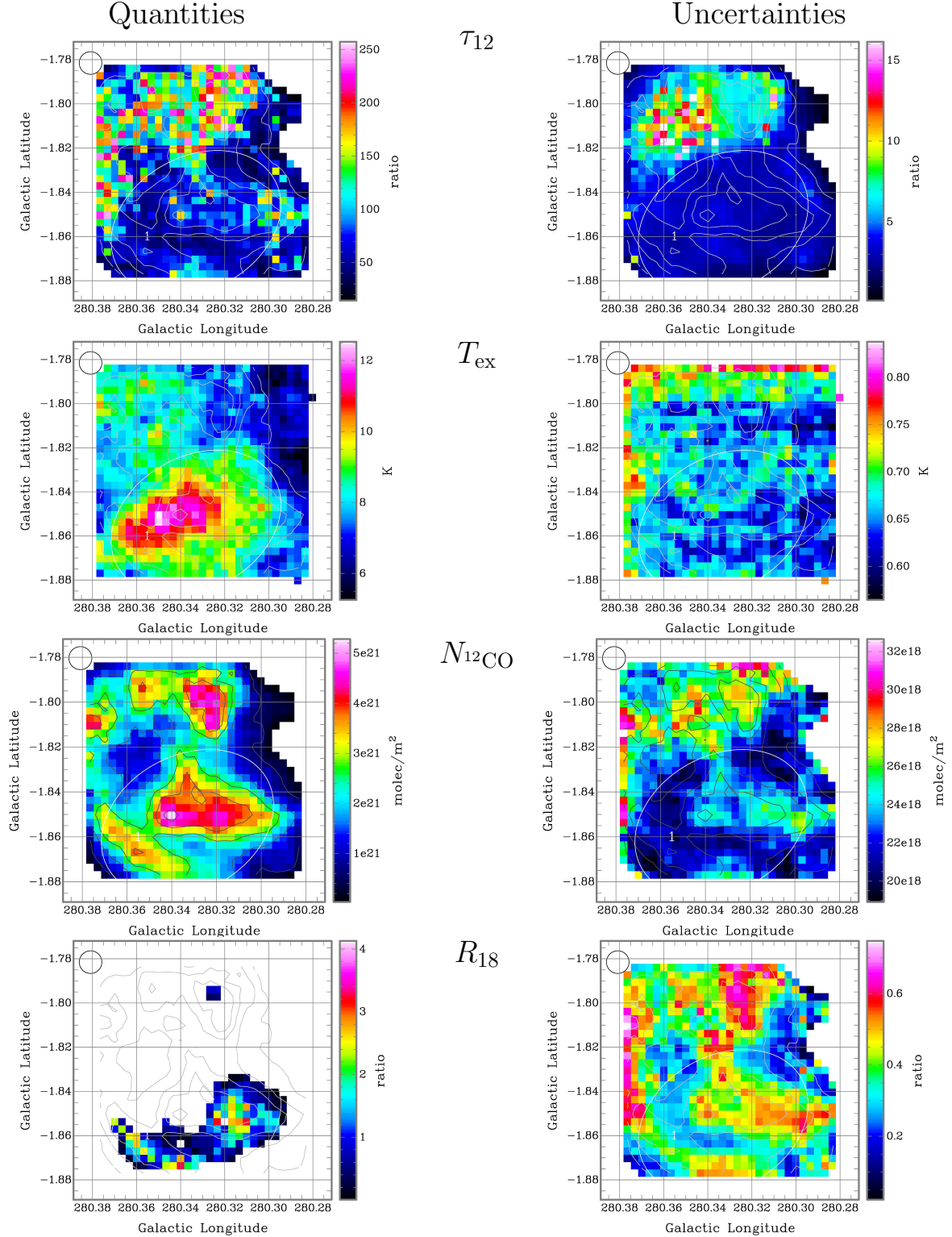**Figure B1.** BYF 1. At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.

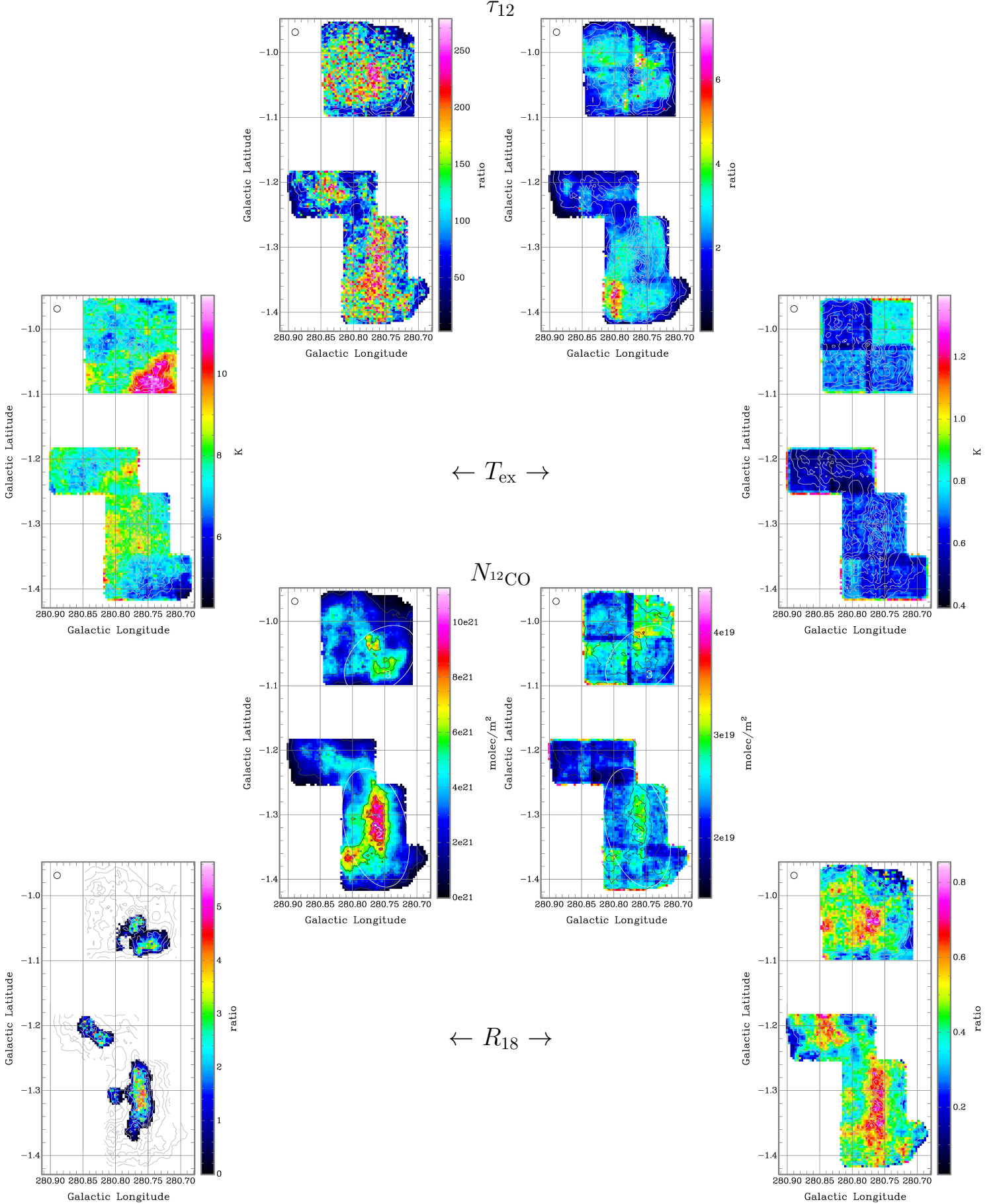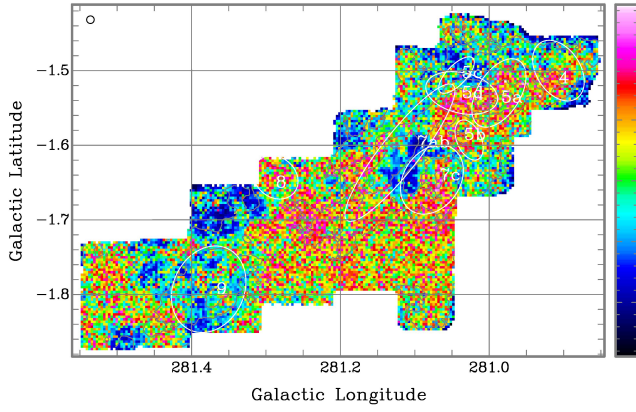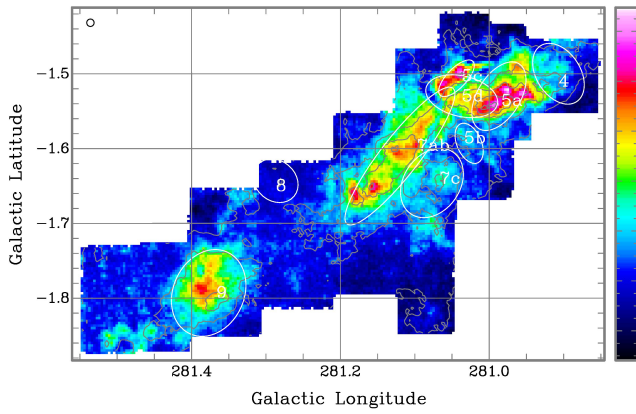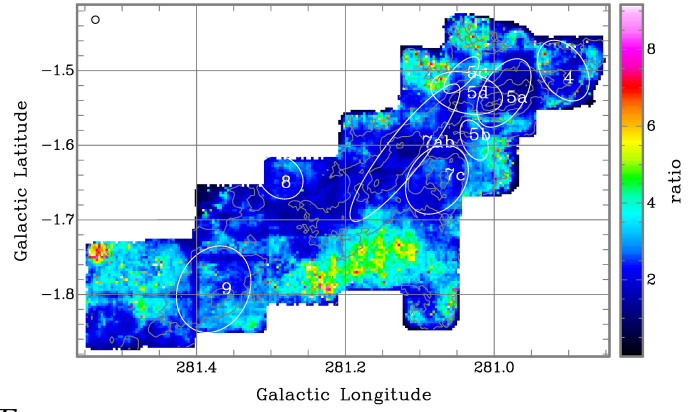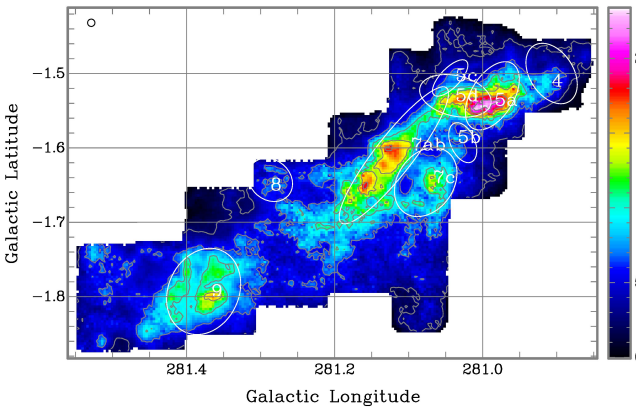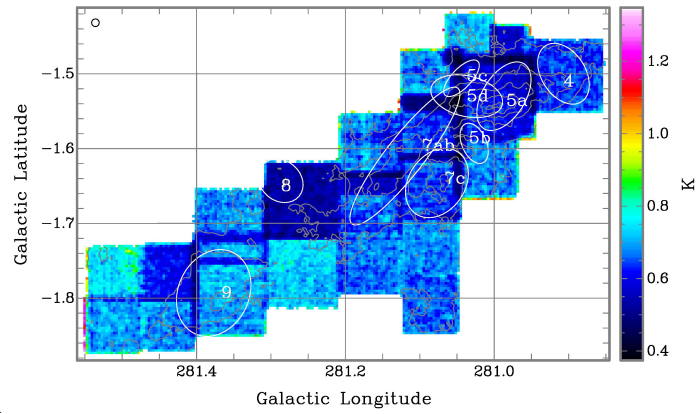Quantities   Uncertainties

τ_{12}

$\leftarrow T_{\mathrm{ex}} \rightarrow$

$N_{^{12}\mathrm{CO}}$

$\leftarrow R_{18} \rightarrow$

Figure B2. BYF 2 & 3 (Region 1a). At an assumed distance of $3.2\,\mathrm{kpc}$, the scale is $0°1 = 5.6\,\mathrm{pc}$. The Mopra HPBW is shown in the TL corner.

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Quantities

τ_{12}

T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

Uncertainties
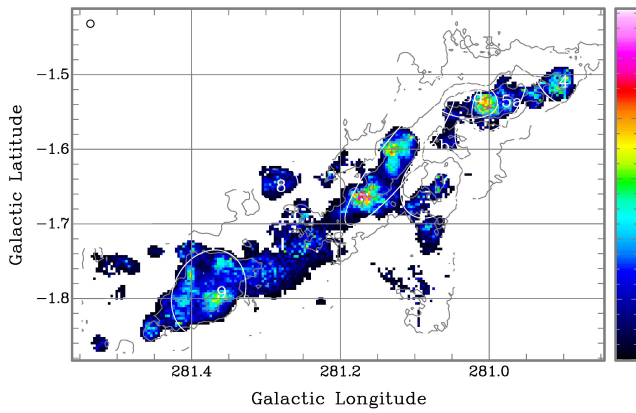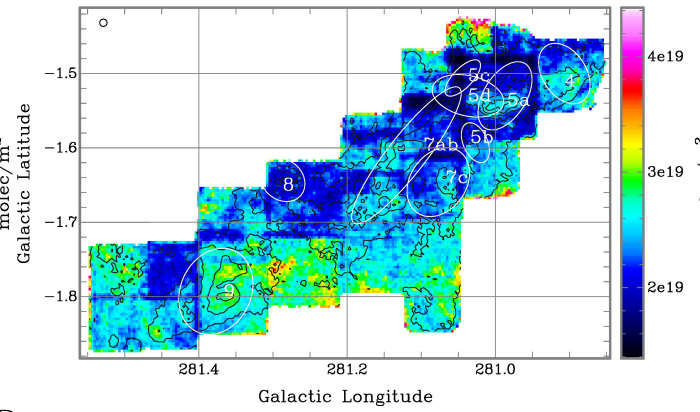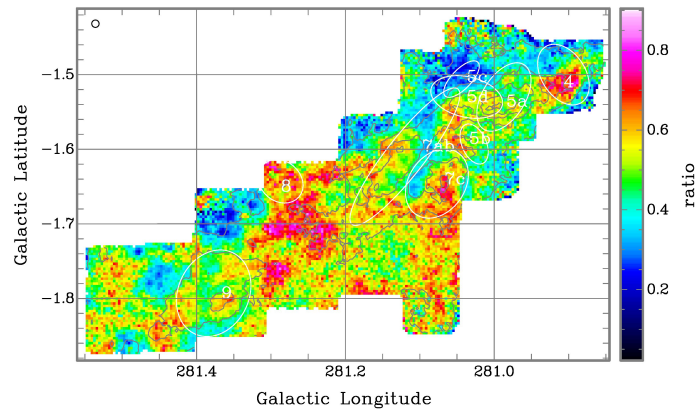
Figure B3. BYF 4–9 (Region 1b). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.

Quantities

Uncertainties

τ_{12}

T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

Figure B4. BYF 11. At an assumed distance of 3.2 kpc, the scale is $0°.1 = 5.6$ pc. The Mopra HPBW is shown in the TL corner.
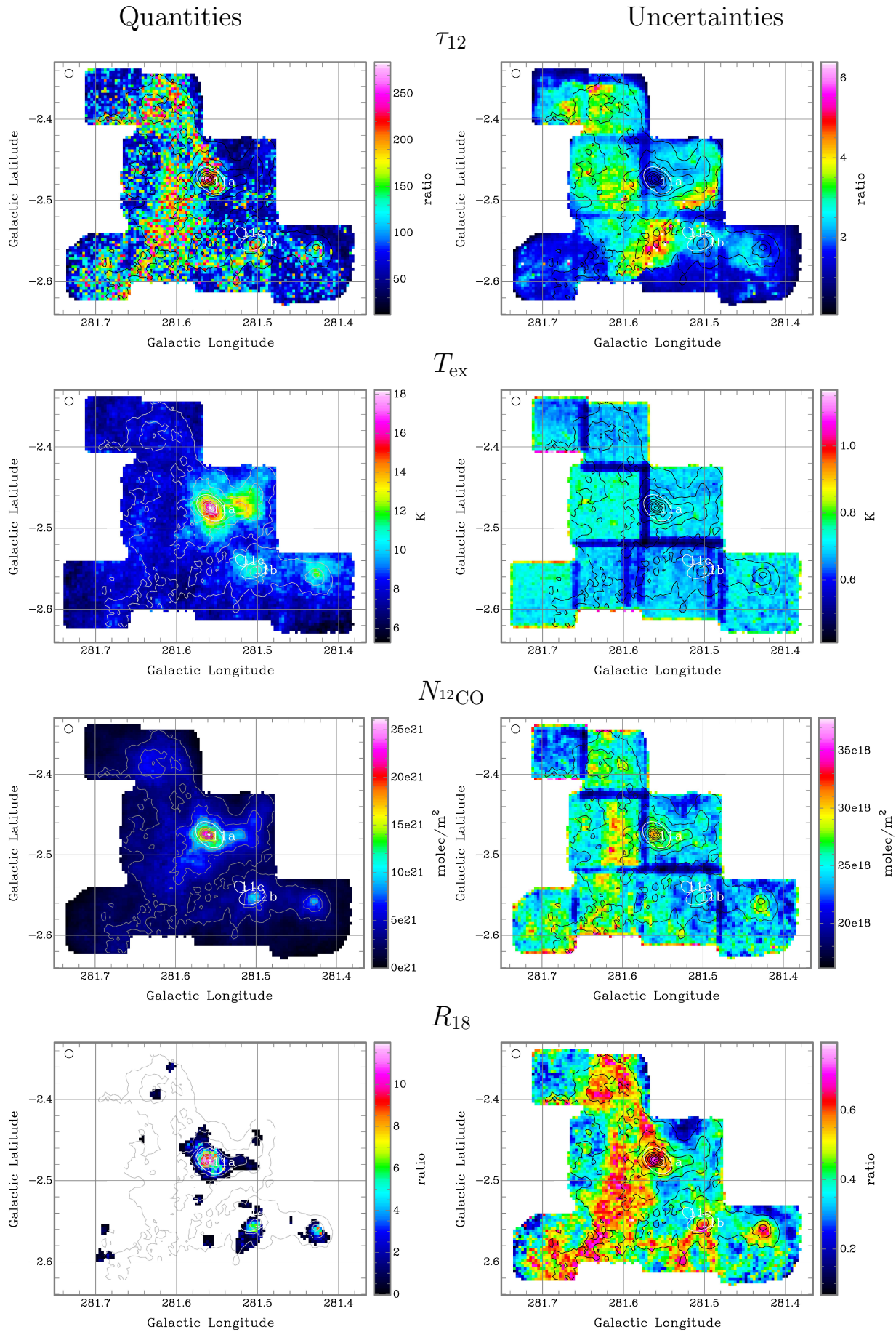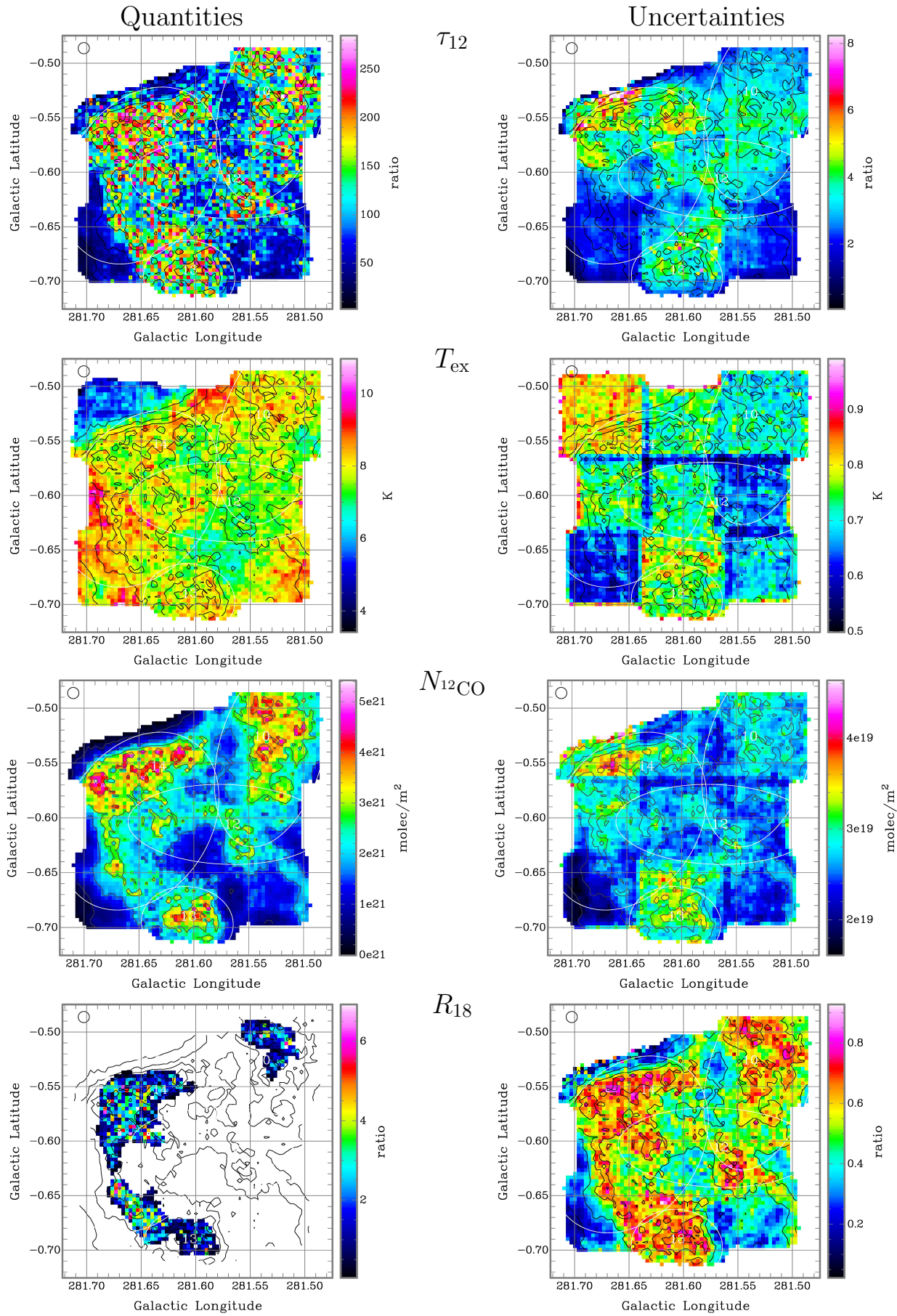
Barnes et al.

Figure B5. BYF 10, 13, 14 (Region 2a-North). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.
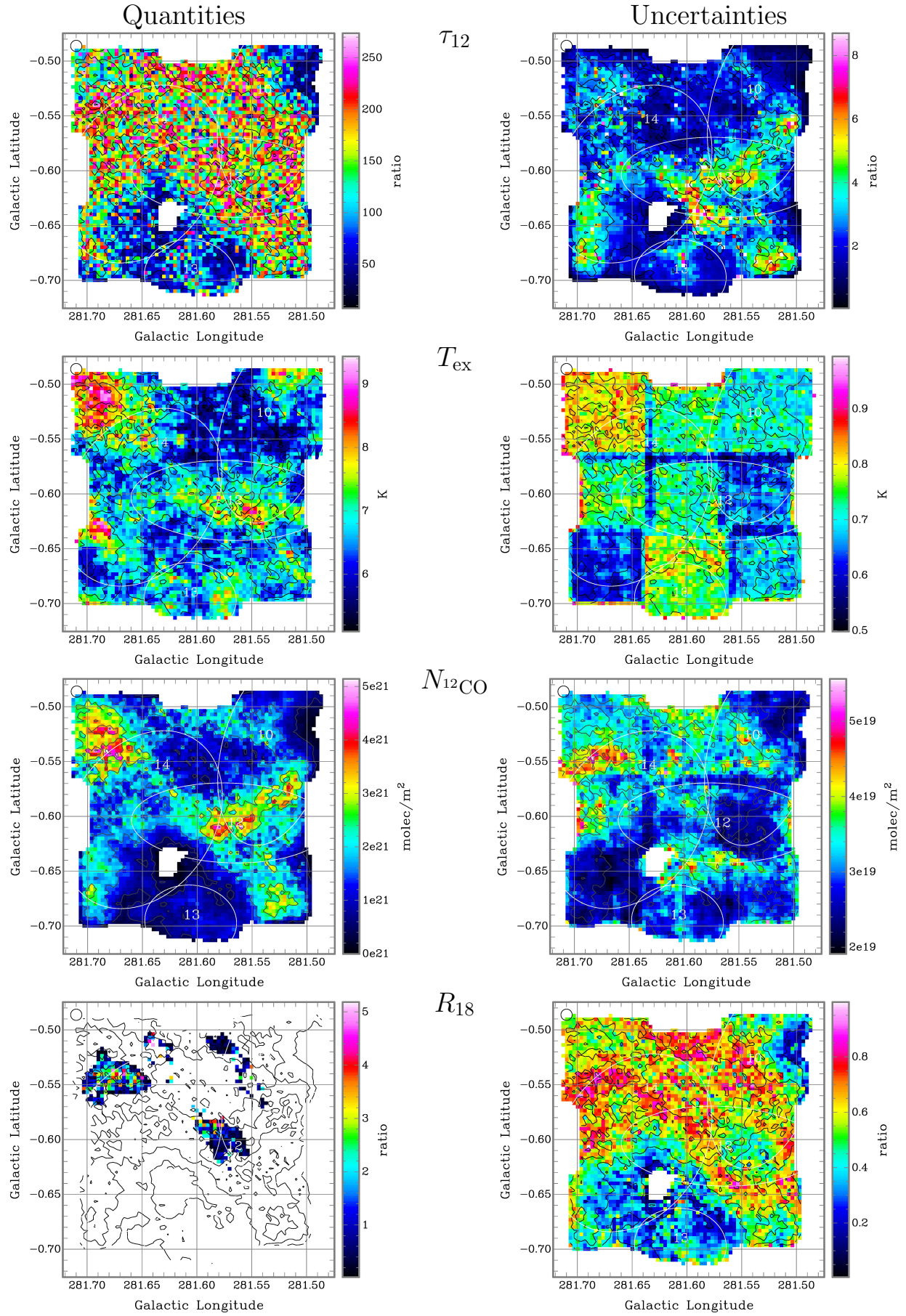
Figure B6. BYF 12 (Region 2a-North). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.
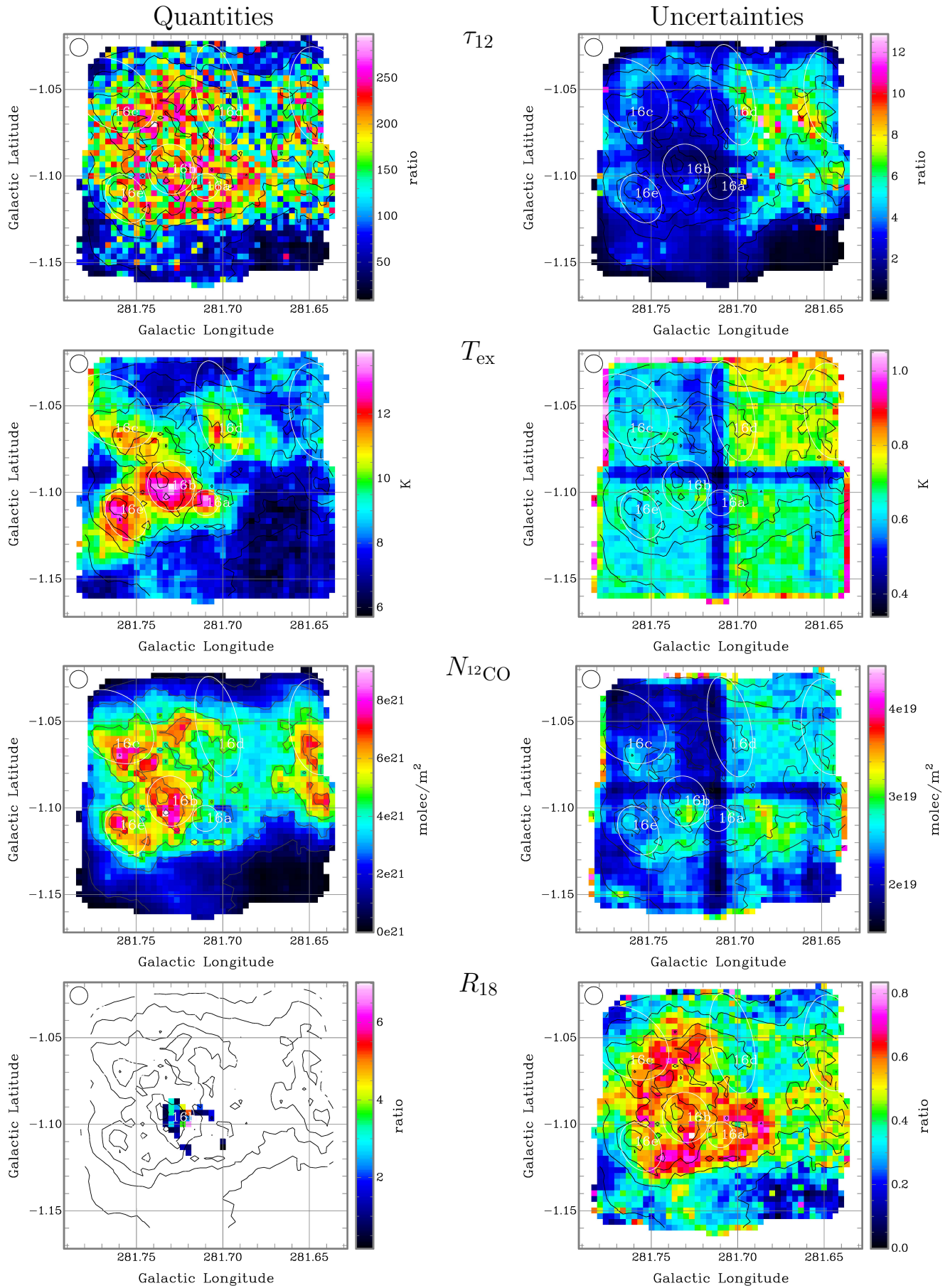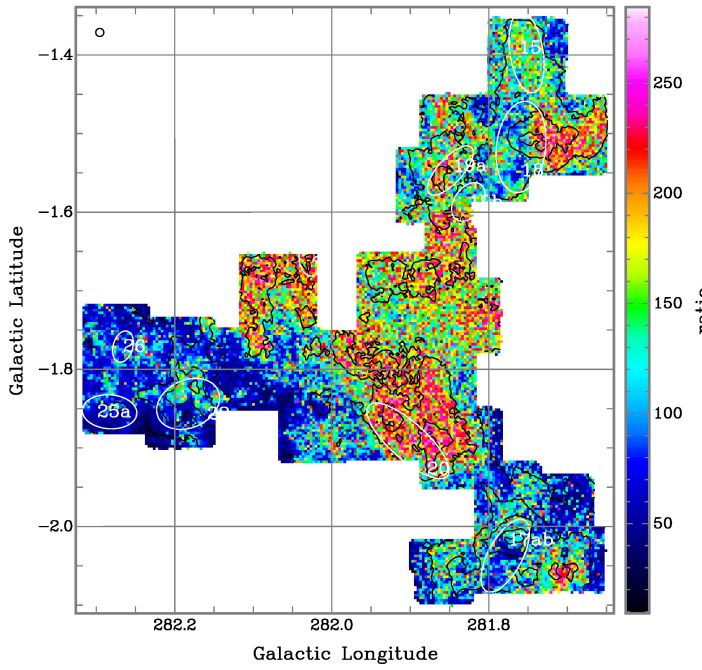
Figure B7. BYF 16 (Region 2a-South). At an assumed distance of 3.2 kpc, the scale is $0°1 = 5.6$ pc. The Mopra HPBW is shown in the TL corner.
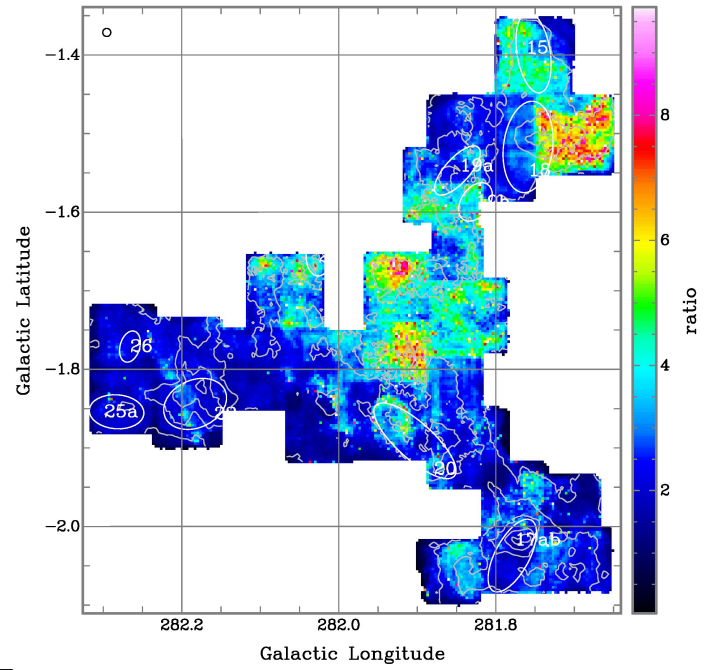
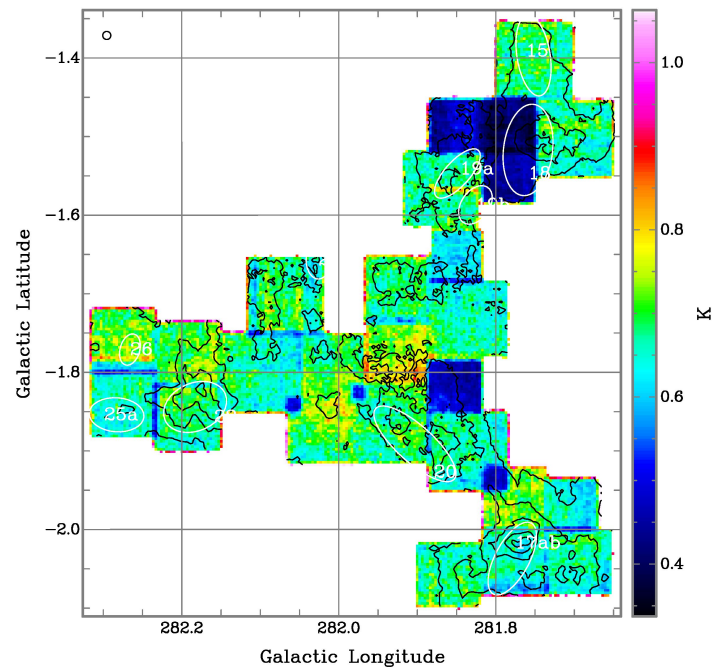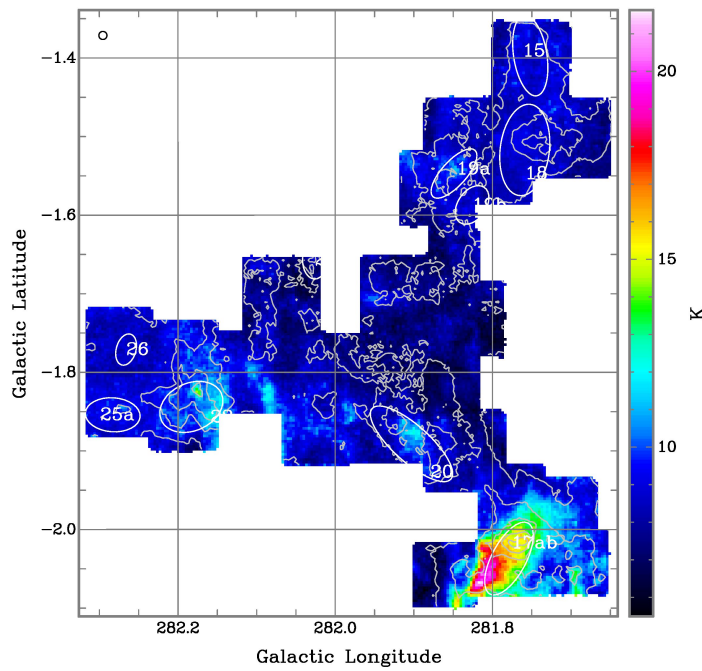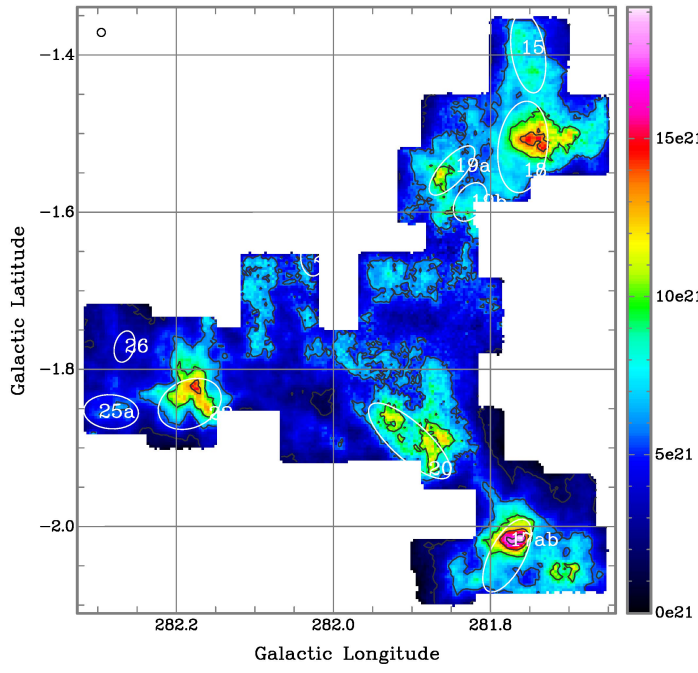**Figure B8.** BYF 15, 17–22, & 25–26 (Region 2b+3). At an assumed distance of 3.2 kpc, the scale is 0°1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.

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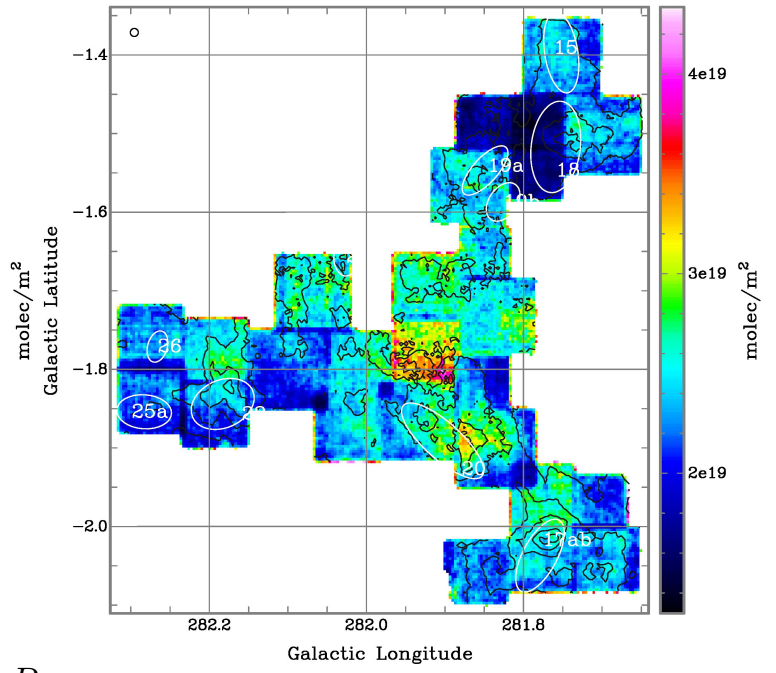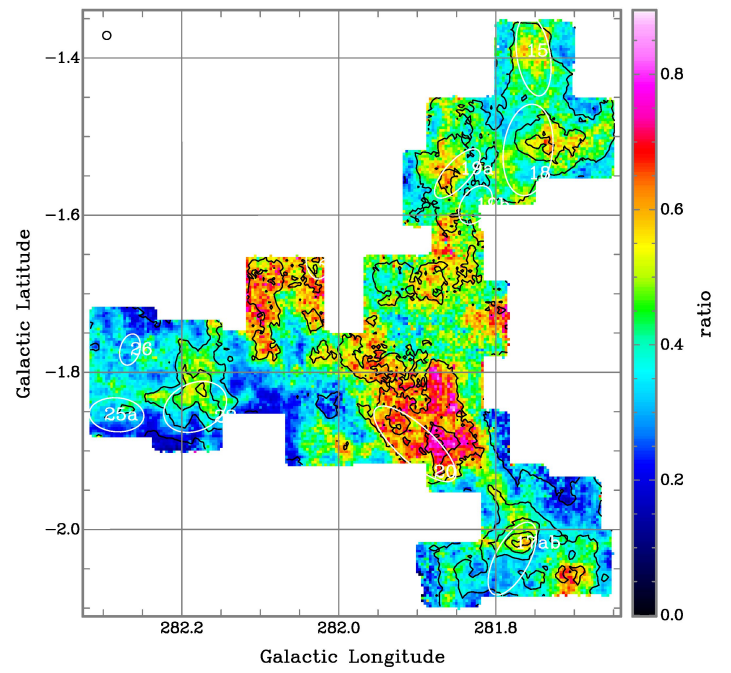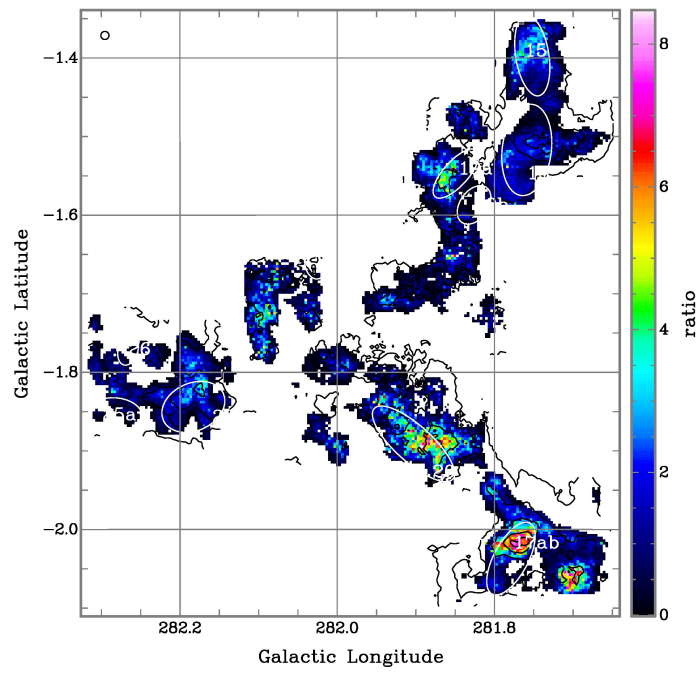
Quantities

Uncertainties

$N_{^{12}CO}$

R_{18}

Figure B9. BYF 15, 17–22, & 25–26 (Region 2b+3) *continued.*

Quantities

Uncertainties

τ_{12}

$\leftarrow T_{\mathrm{ex}} \rightarrow$

$N_{^{12}\mathrm{CO}}$

$\leftarrow R_{18} \rightarrow$

Figure B10. BYF 23 (Region 2c-North). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the BL corner.

Figure B11. BYF 24 (Region 2c-South). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the BL corner.
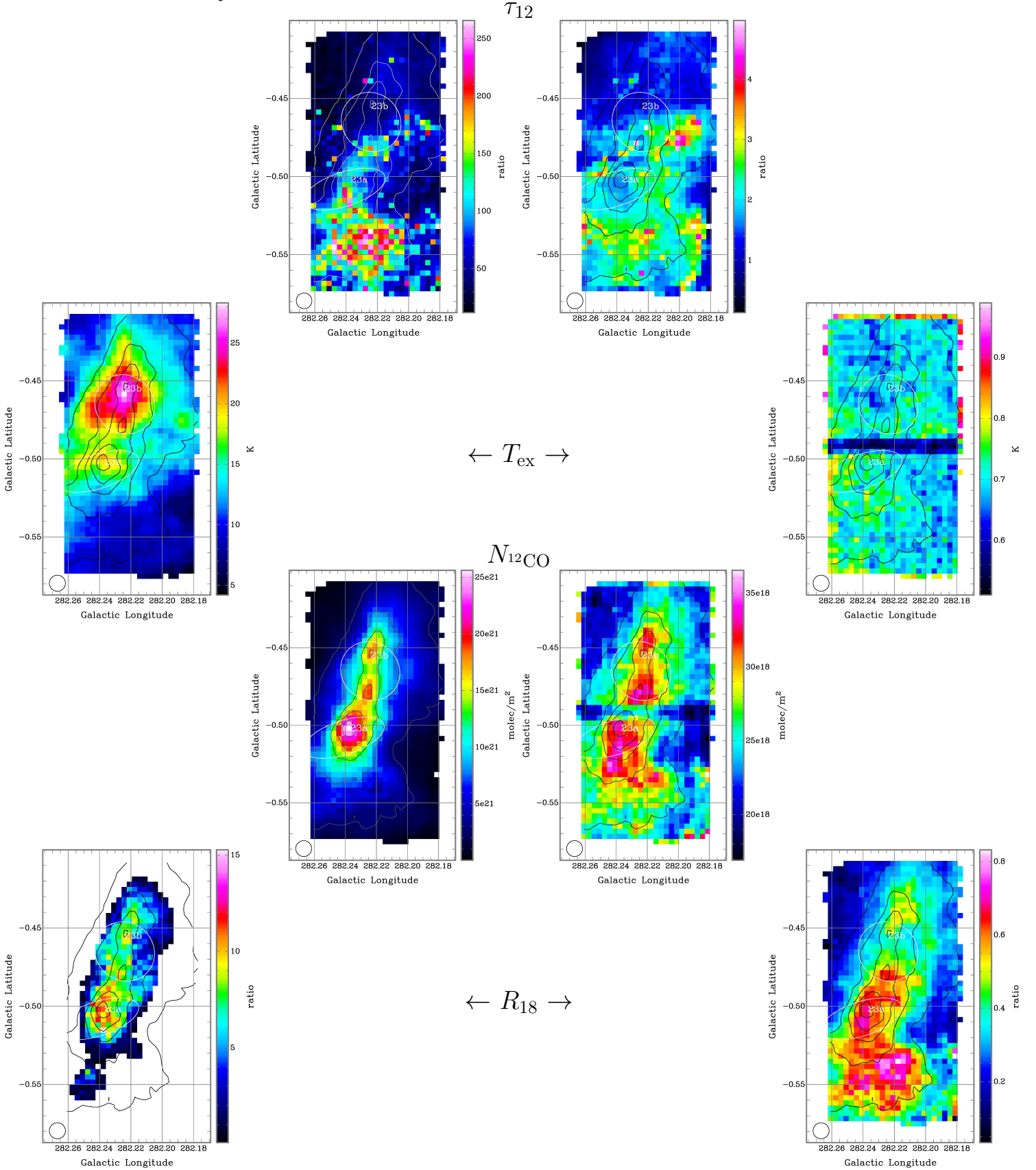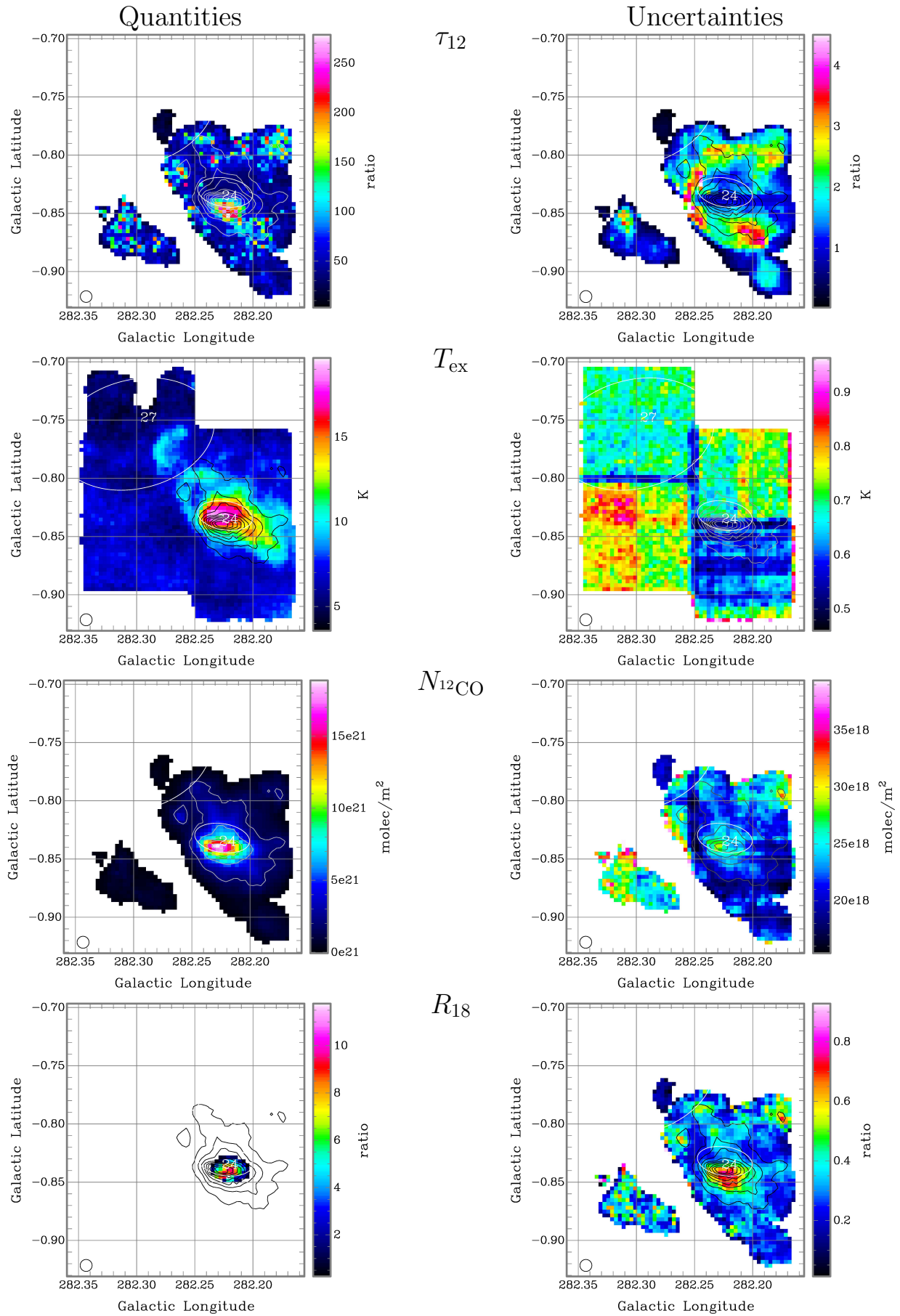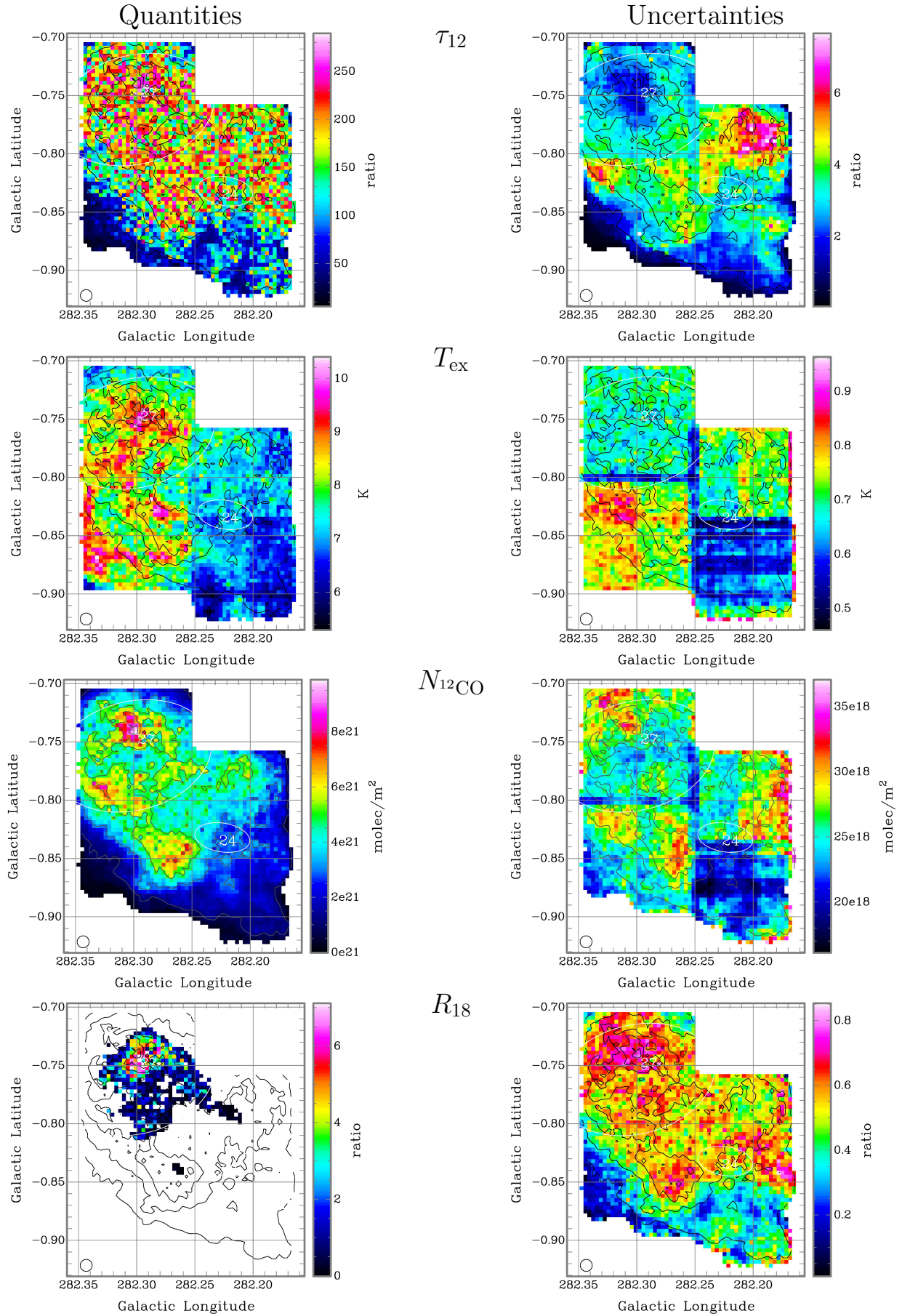
Figure B12. BYF 27 (Region 2c-South). At an assumed distance of 3.2 kpc, the scale is 0°1 = 5.6 pc. The Mopra HPBW is shown in the BL corner.
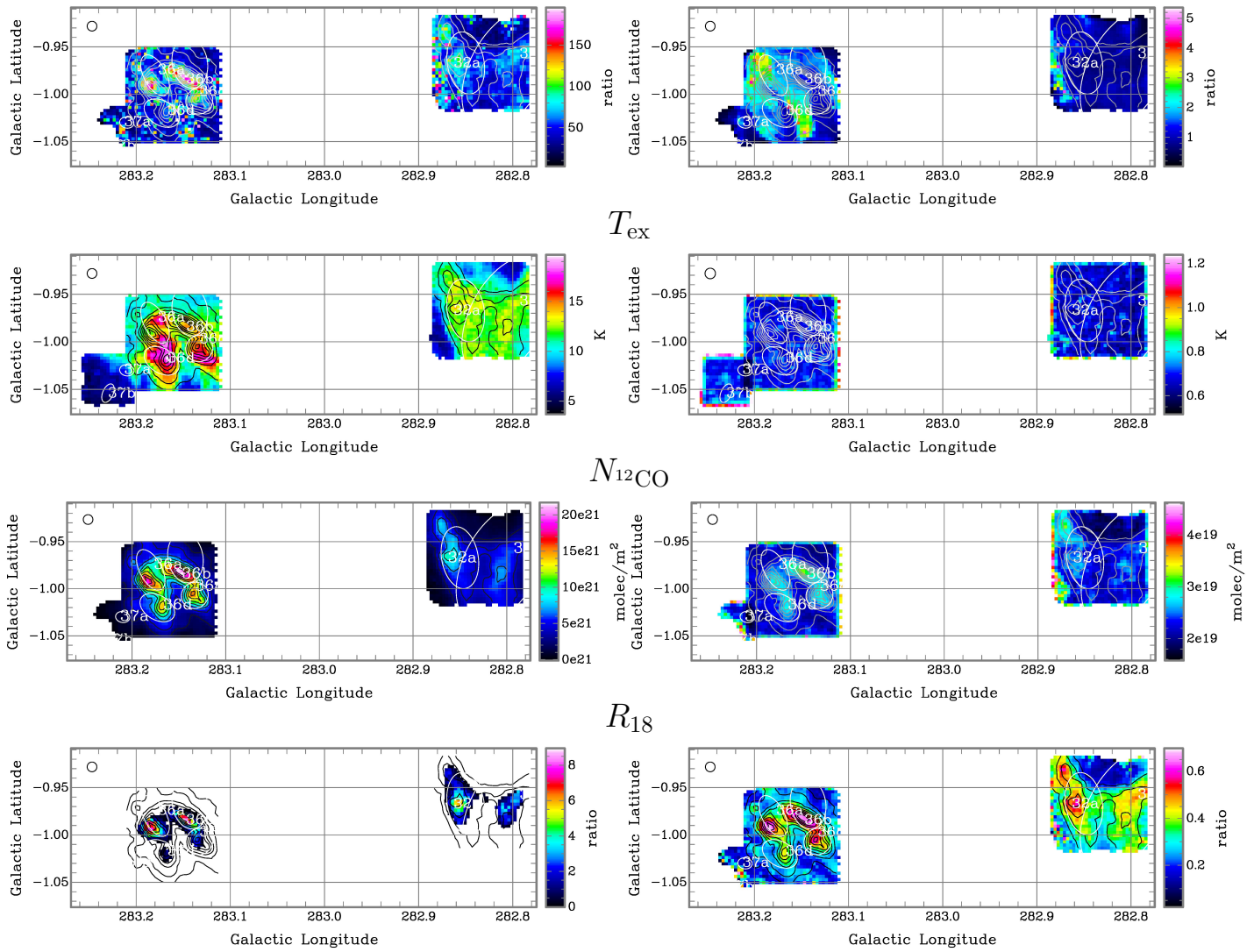
Figure B13. BYF 32 & 36 (Region 5). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.
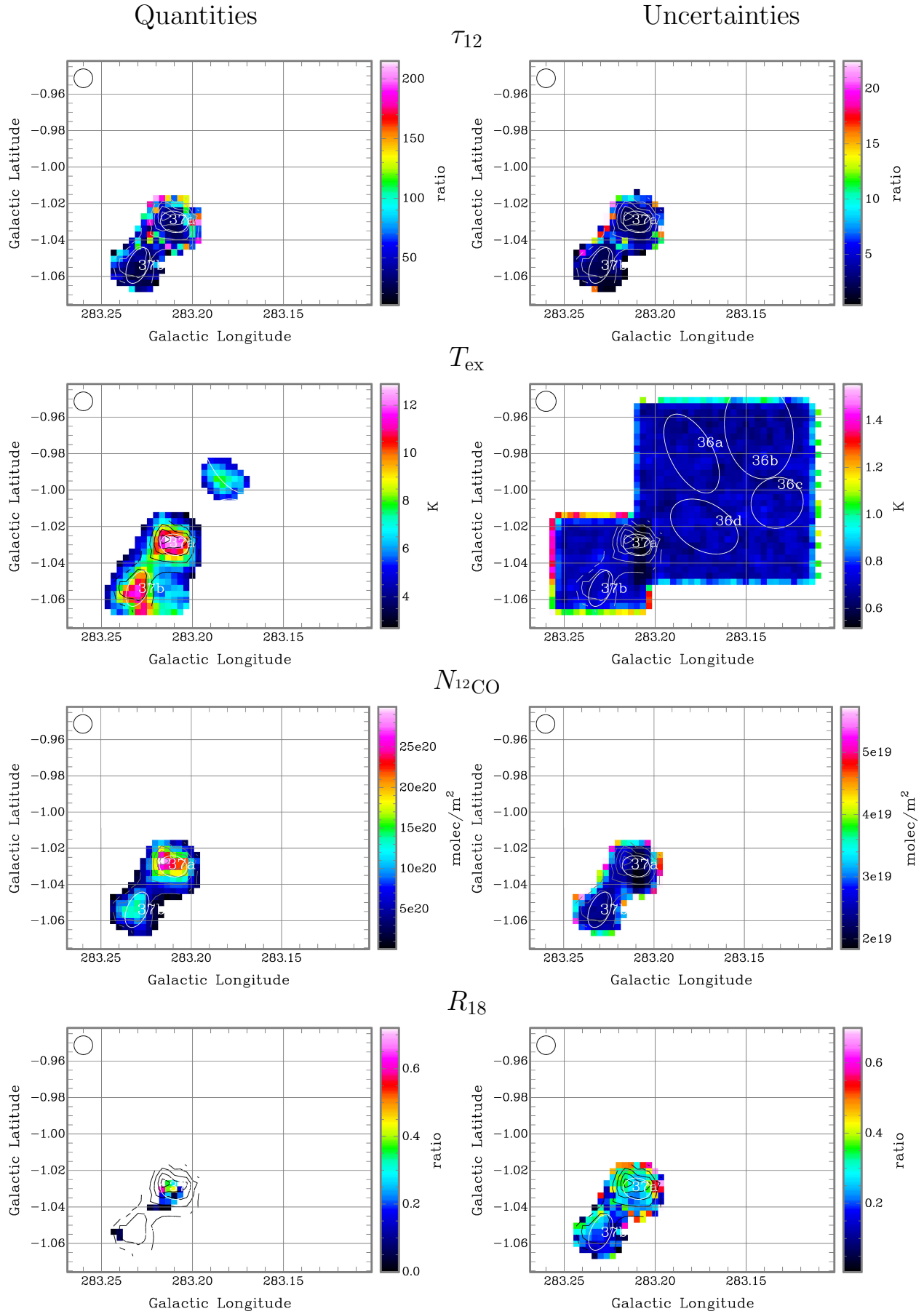
Figure B14. BYF 37 (Region 5-East). At an assumed distance of 3.2 kpc, the scale is 0°.1 = 5.6 pc. The Mopra HPBW is shown in the TL corner.

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Quantities
Uncertainties

τ_{12}

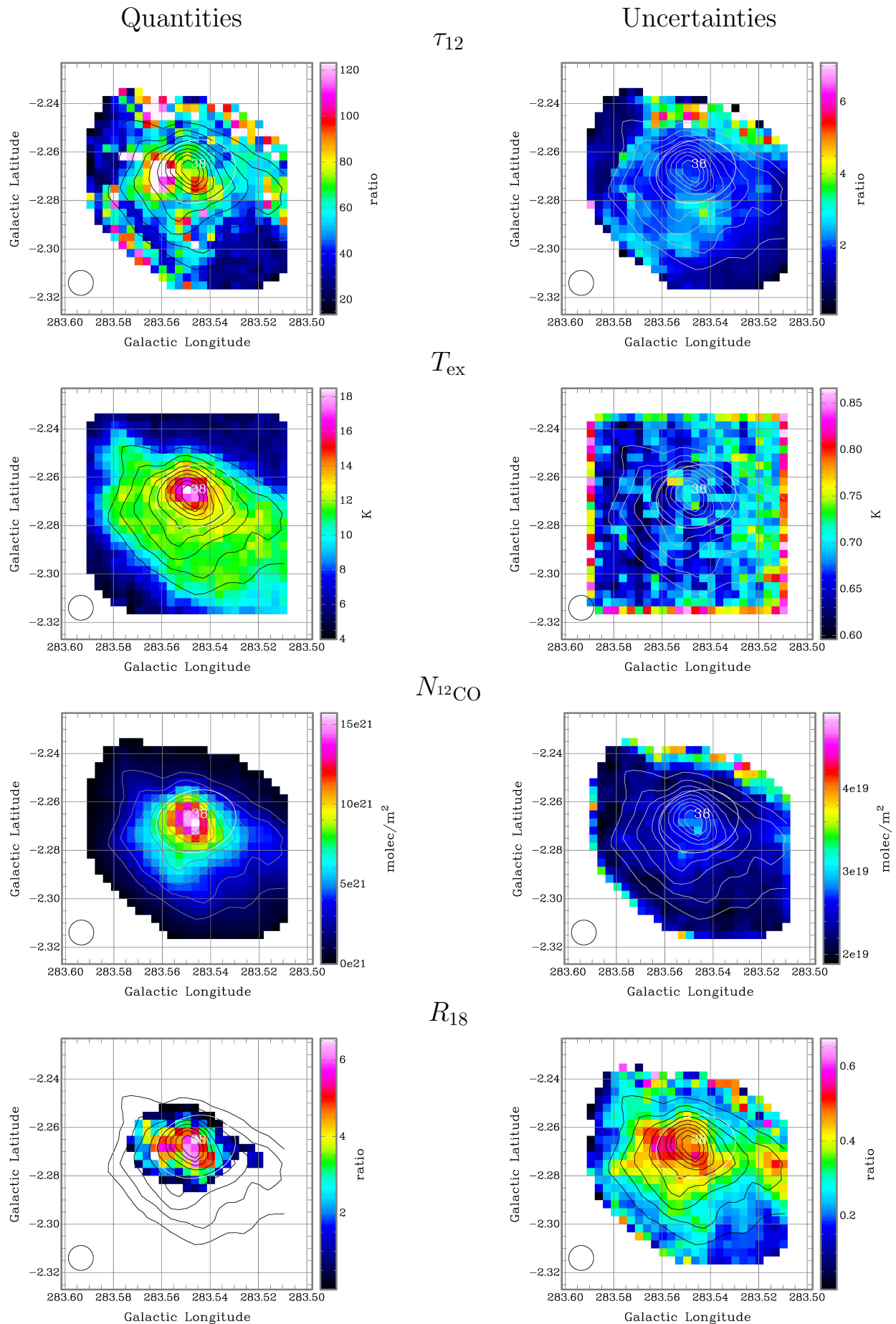T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

Figure B15. BYF 38. At an assumed distance of 2.0 kpc, the scale is 0°.1 = 3.5 pc. The Mopra HPBW is shown in the BL corner.
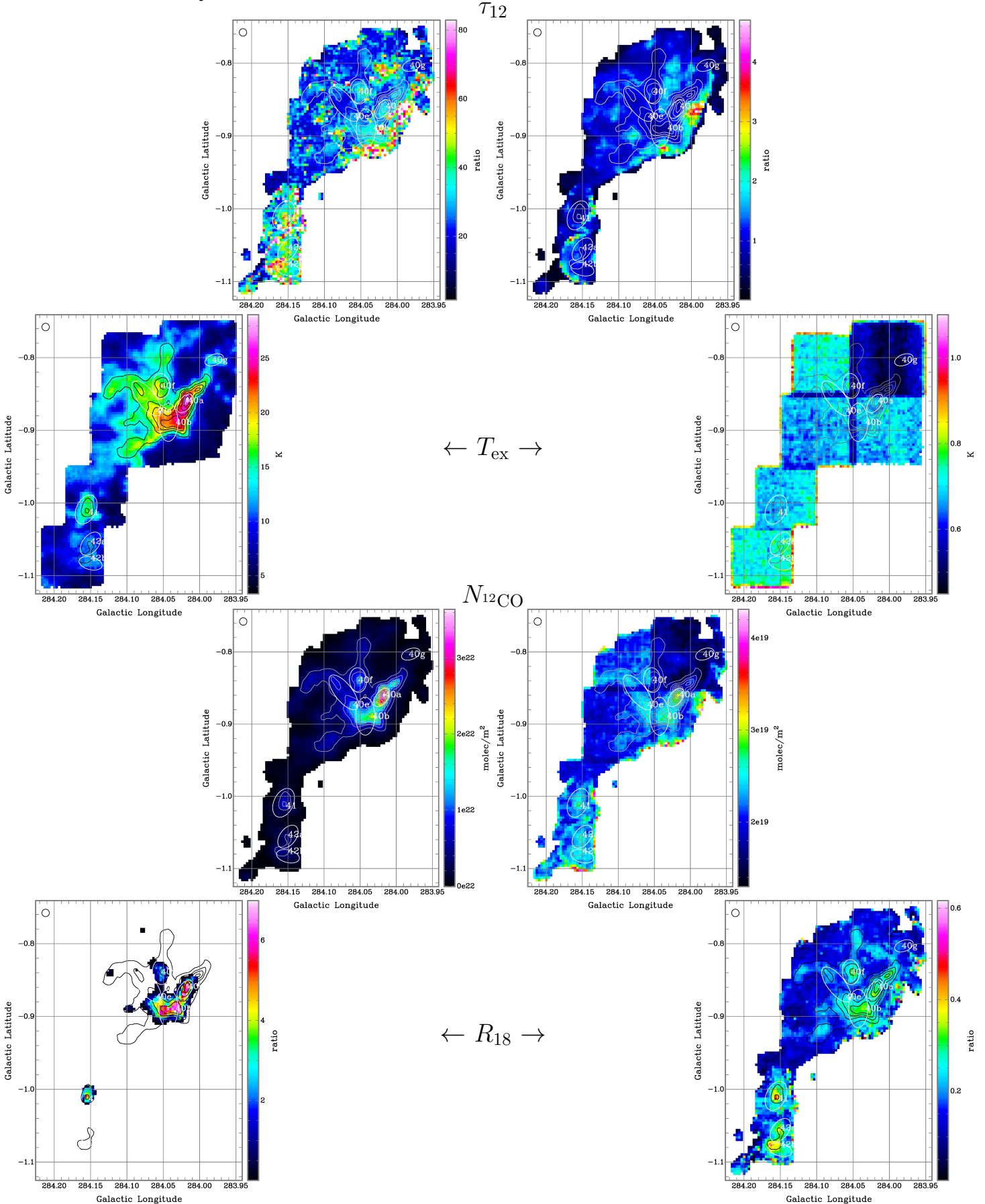
Quantities

Uncertainties

Figure B16. BYF 40–42 (Region 6). At an assumed distance of 6.6 kpc, the scale is 0°.1 = 11.5 pc. The Mopra HPBW is shown in the TL corner.

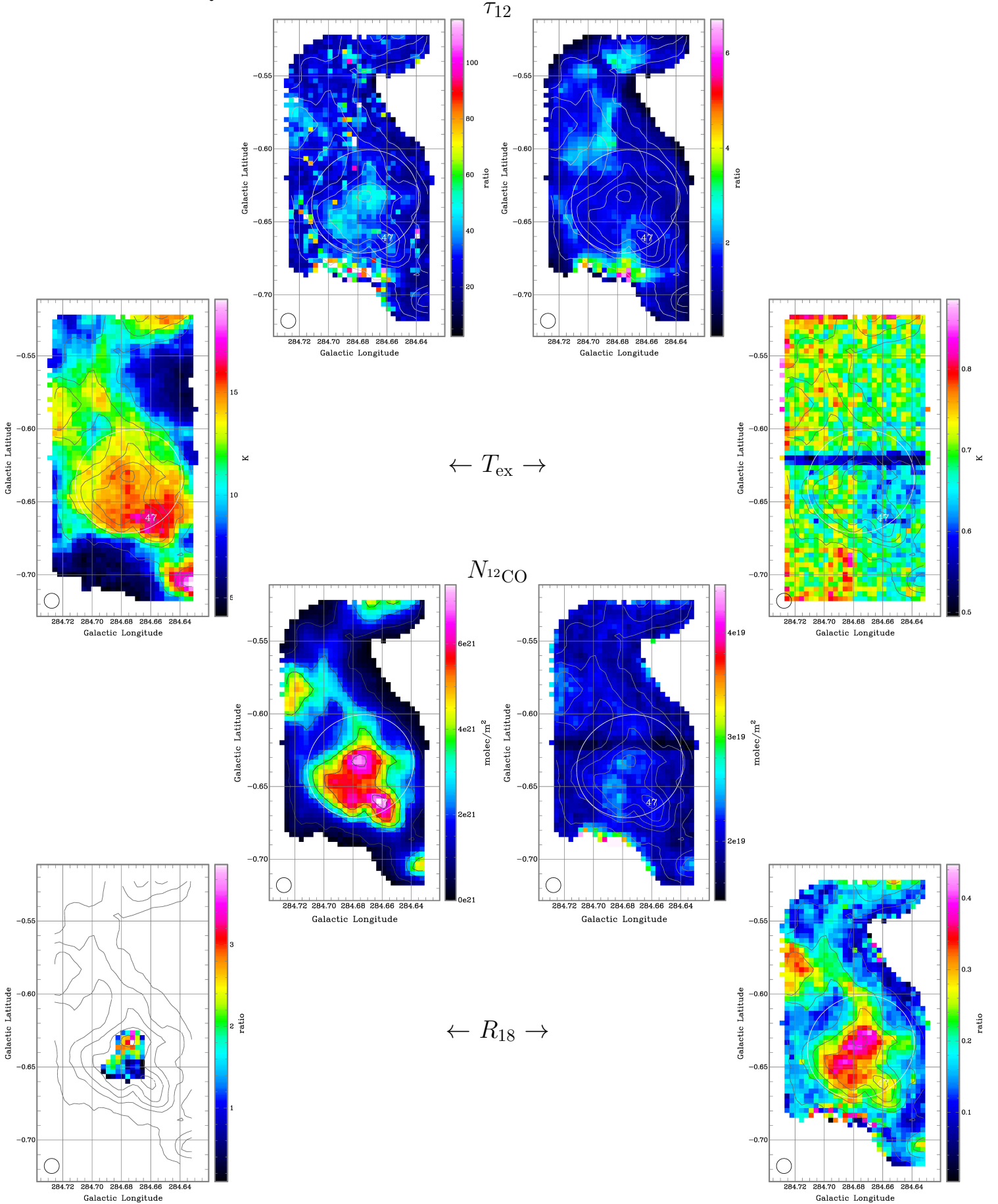Quantities   Uncertainties

τ_{12}

$\leftarrow T_{\mathrm{ex}} \rightarrow$

$N_{12_{\mathrm{CO}}}$

$\leftarrow R_{18} \rightarrow$

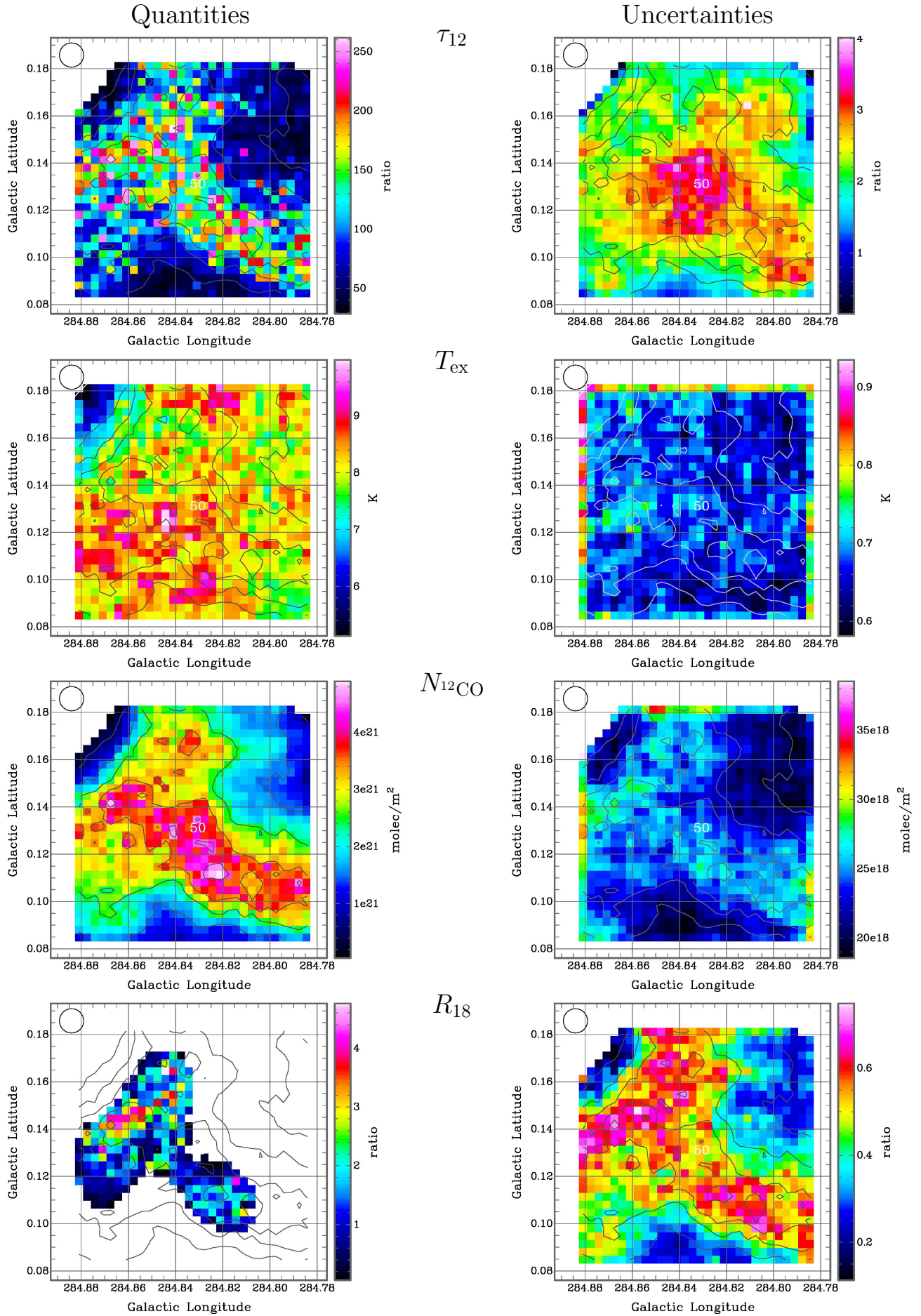**Figure B17.** BYF 47 (Region 7). At an assumed distance of 5.3 kpc, the scale is 0°.1 = 9.3 pc. The Mopra HPBW is shown in the BL

Figure B18. BYF 50 (Region 8-West). At an assumed distance of 5.3 kpc, the scale is 0°.1 = 9.3 pc. The Mopra HPBW is shown in the
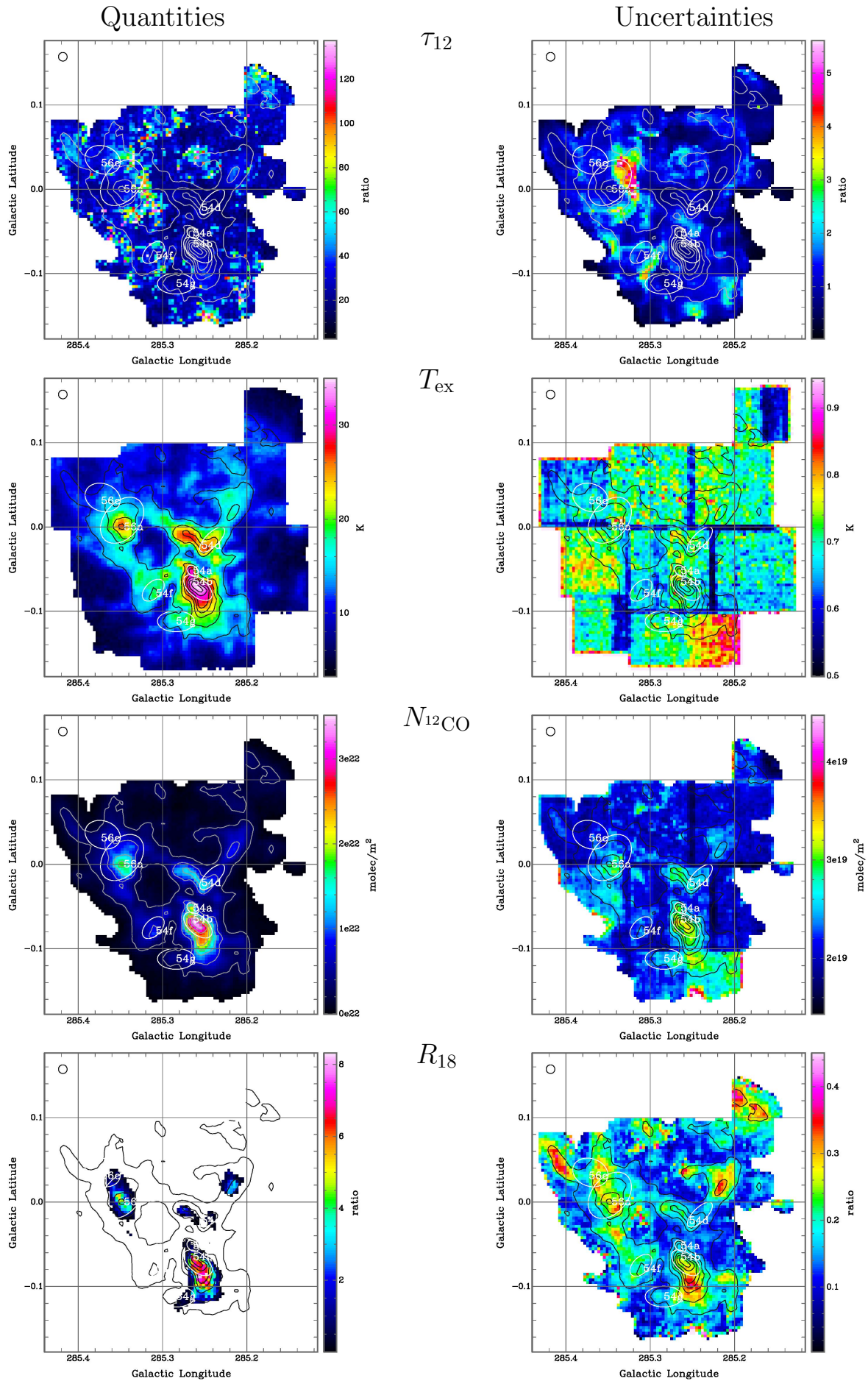
Barnes et al.

Quantities

Uncertainties

τ_{12}

T_{ex}

$N_{12\text{CO}}$

R_{18}

Figure B19. BYF 51–56 (Region 8-East). At an assumed distance of 5.3 kpc, the scale is 0°.1 = 9.3 pc. The Mopra HPBW is shown in
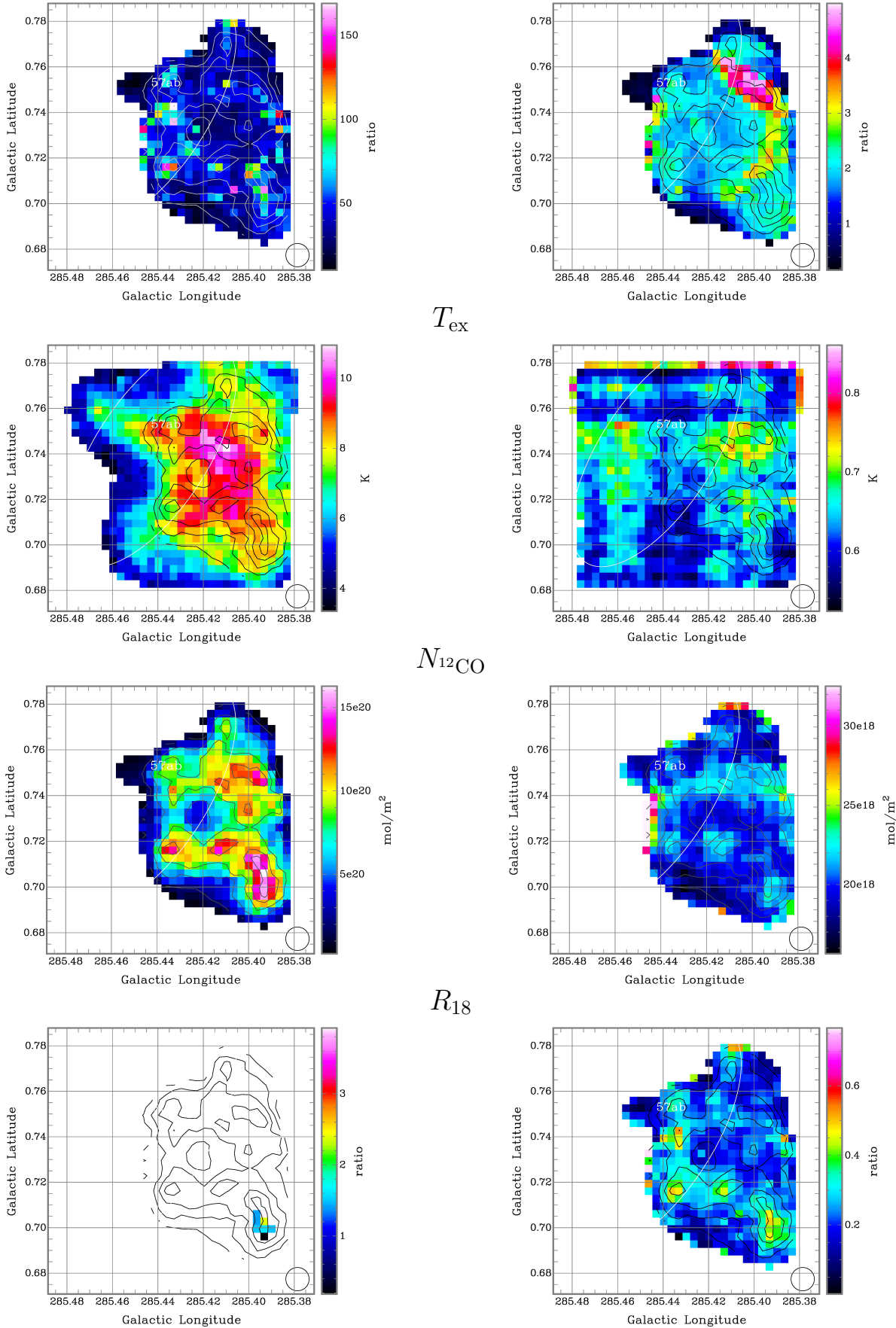
Quantities

Uncertainties

τ_{12}

T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

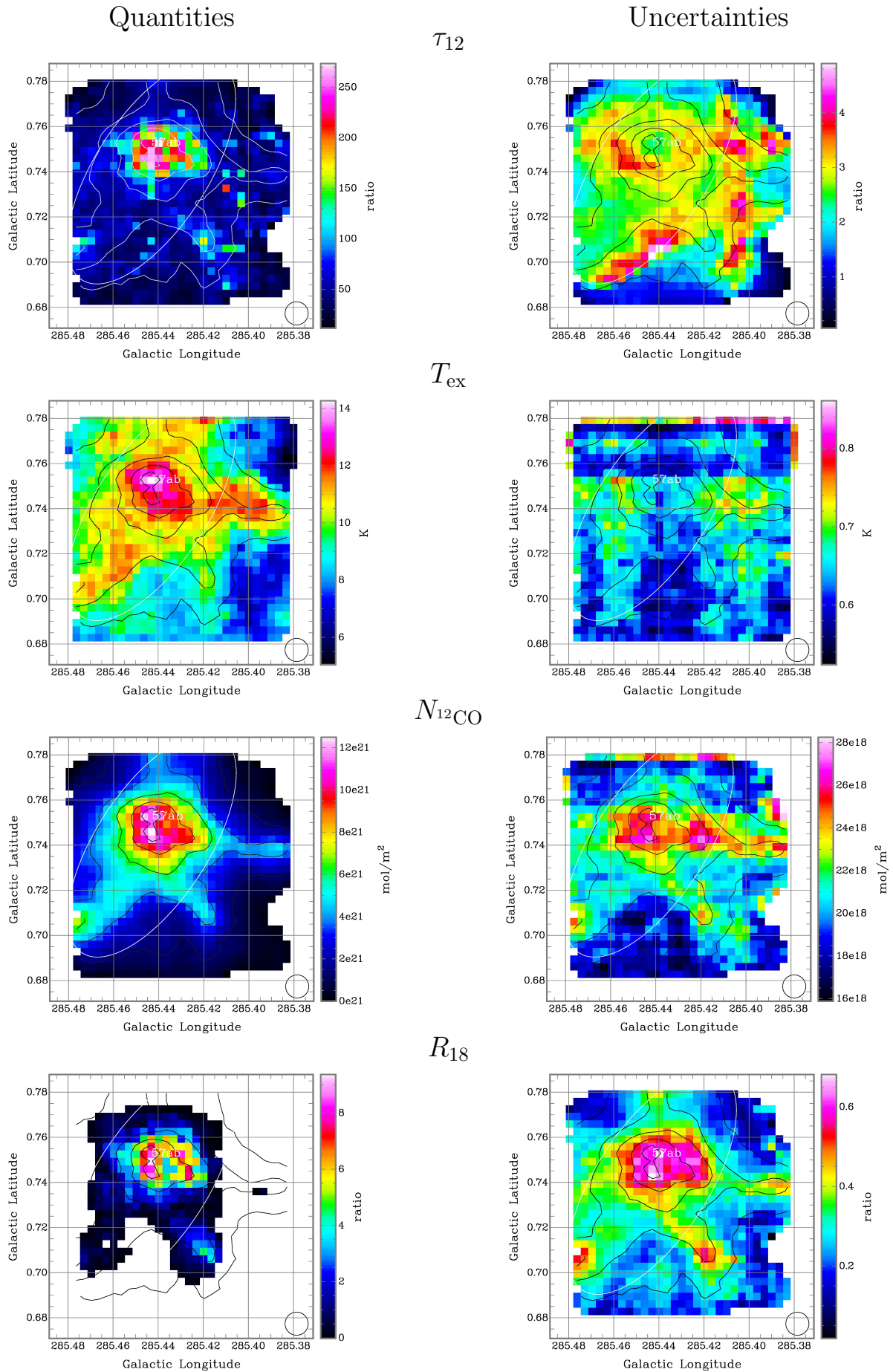**Figure B20.** BYF 57-West. At an assumed distance of 5.3 kpc, the scale is $0°\!.1 = 9.3$ pc. The Mopra HPBW is shown in the BR corner.

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Quantities

Uncertainties

τ_{12}

T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

Figure B21. BYF 57-East. At an assumed distance of 5.3 kpc, the scale is 0°1 = 9.3 pc. The Mopra HPBW is shown in the BR corner.

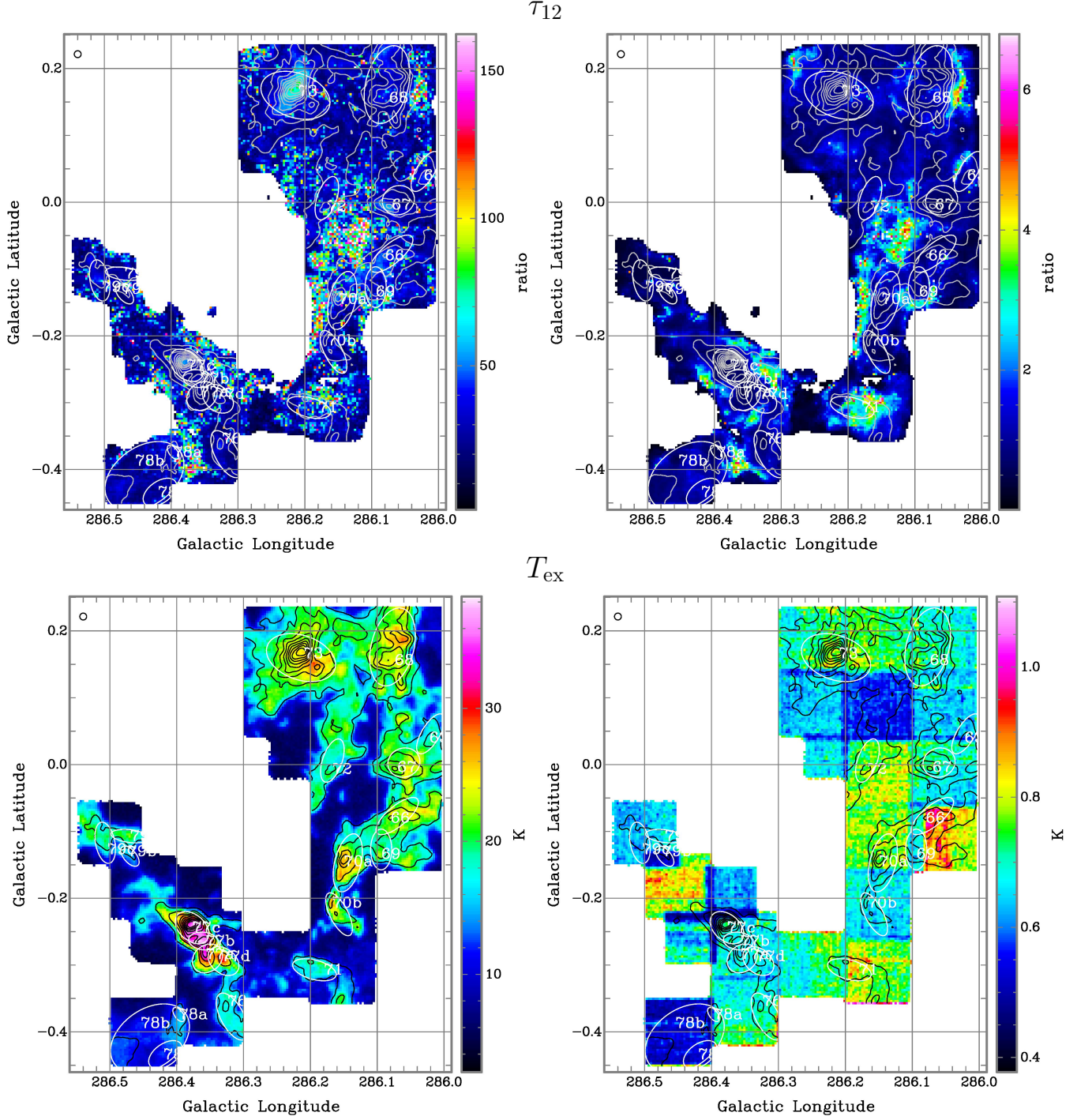**Figure B22.** BYF 63–80 (Region 9). At an assumed distance of 2.5 kpc, the scale is 0°.1 = 4.4 pc. The Mopra HPBW is shown in the TL corner.

Quantities
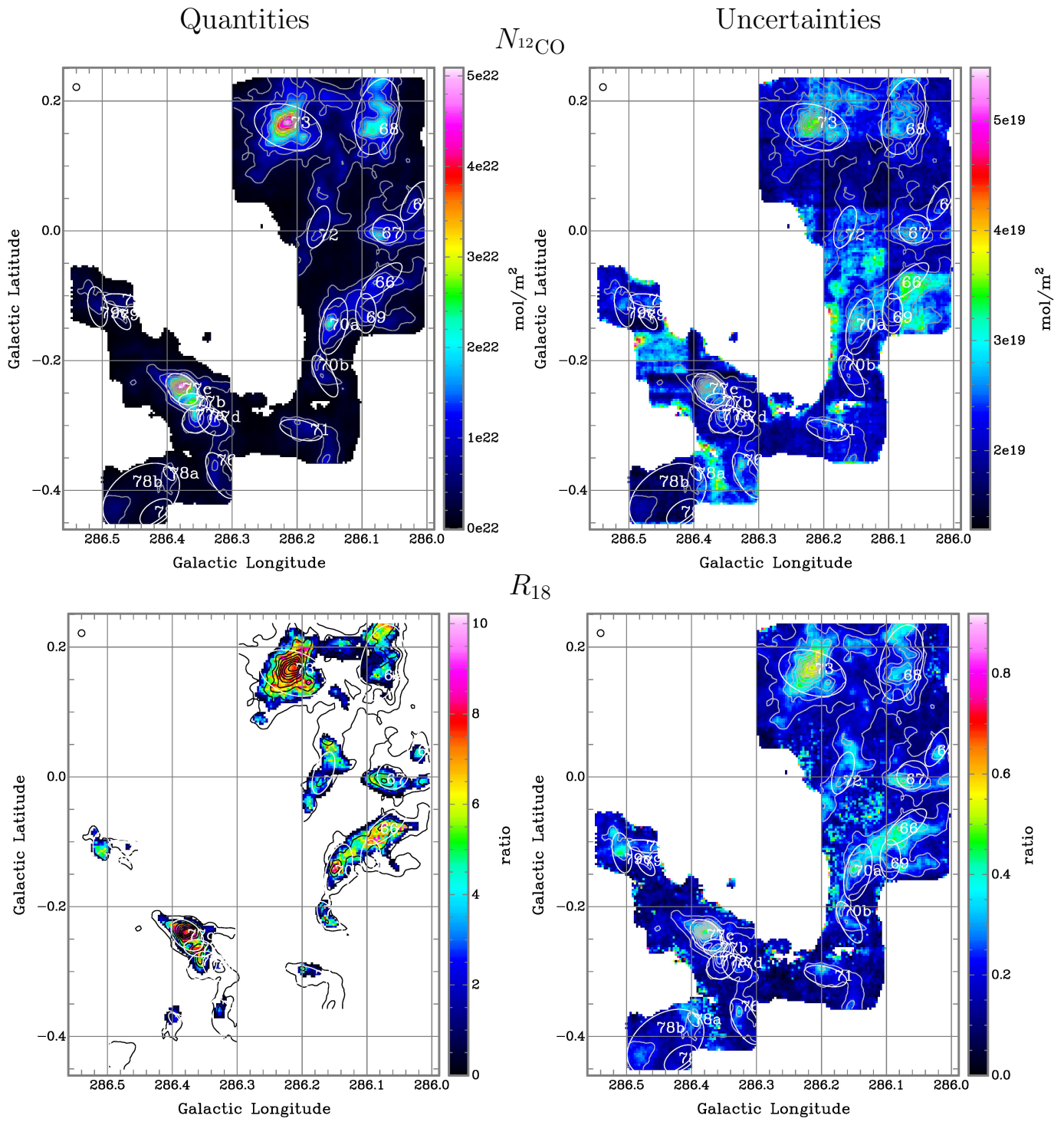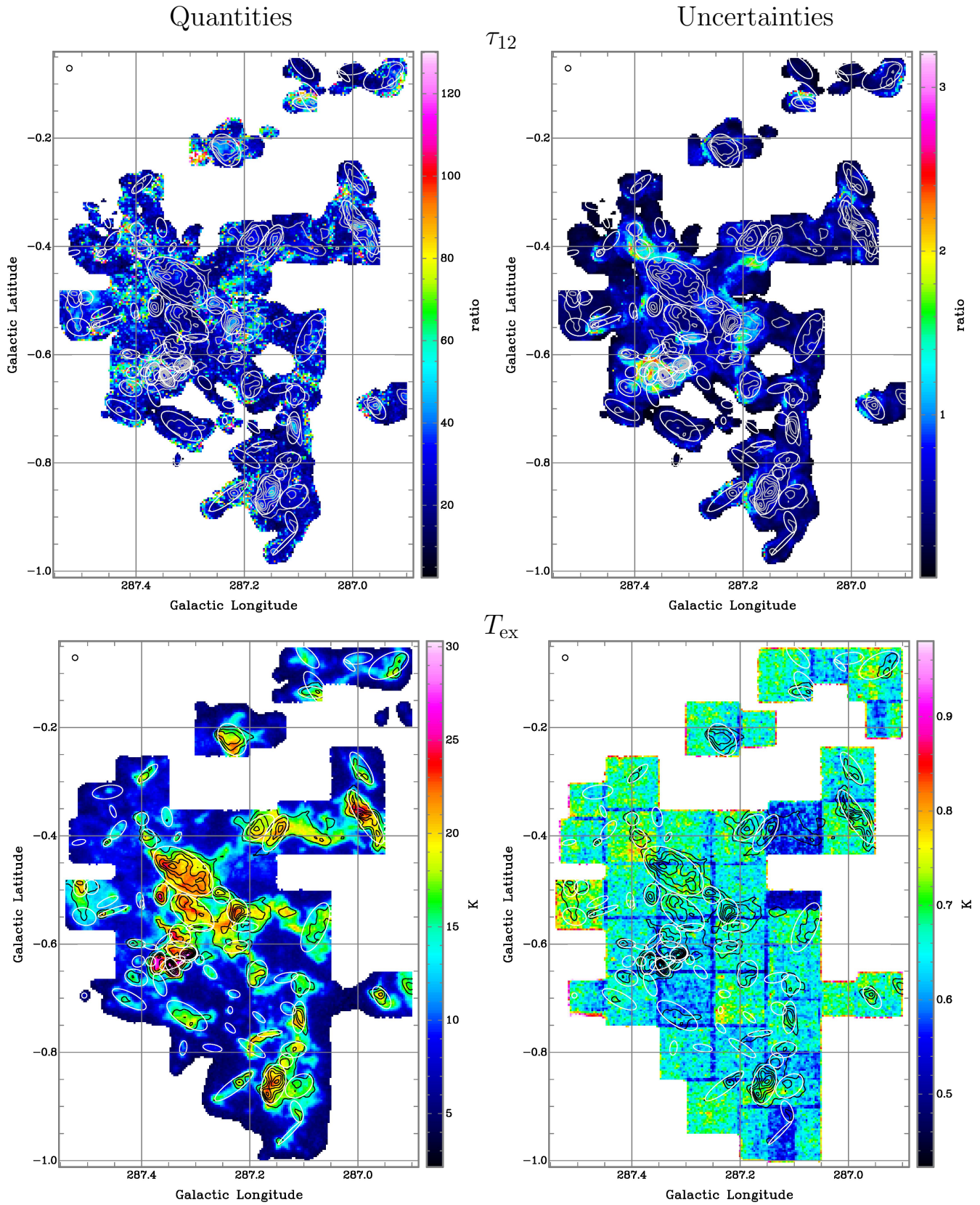
Uncertainties

$N_{^{12}CO}$

R_{18}

Figure B23. BYF 63–80 (Region 9) *continued.*

Quantities

Uncertainties

τ_{12}

T_{ex}

Figure B24. BYF 83–104 (Region 10). At an assumed distance of 2.5 kpc, the scale is $0°.1 = 4.4\,\mathrm{pc}$. The Mopra HPBW is shown in the TL corner.
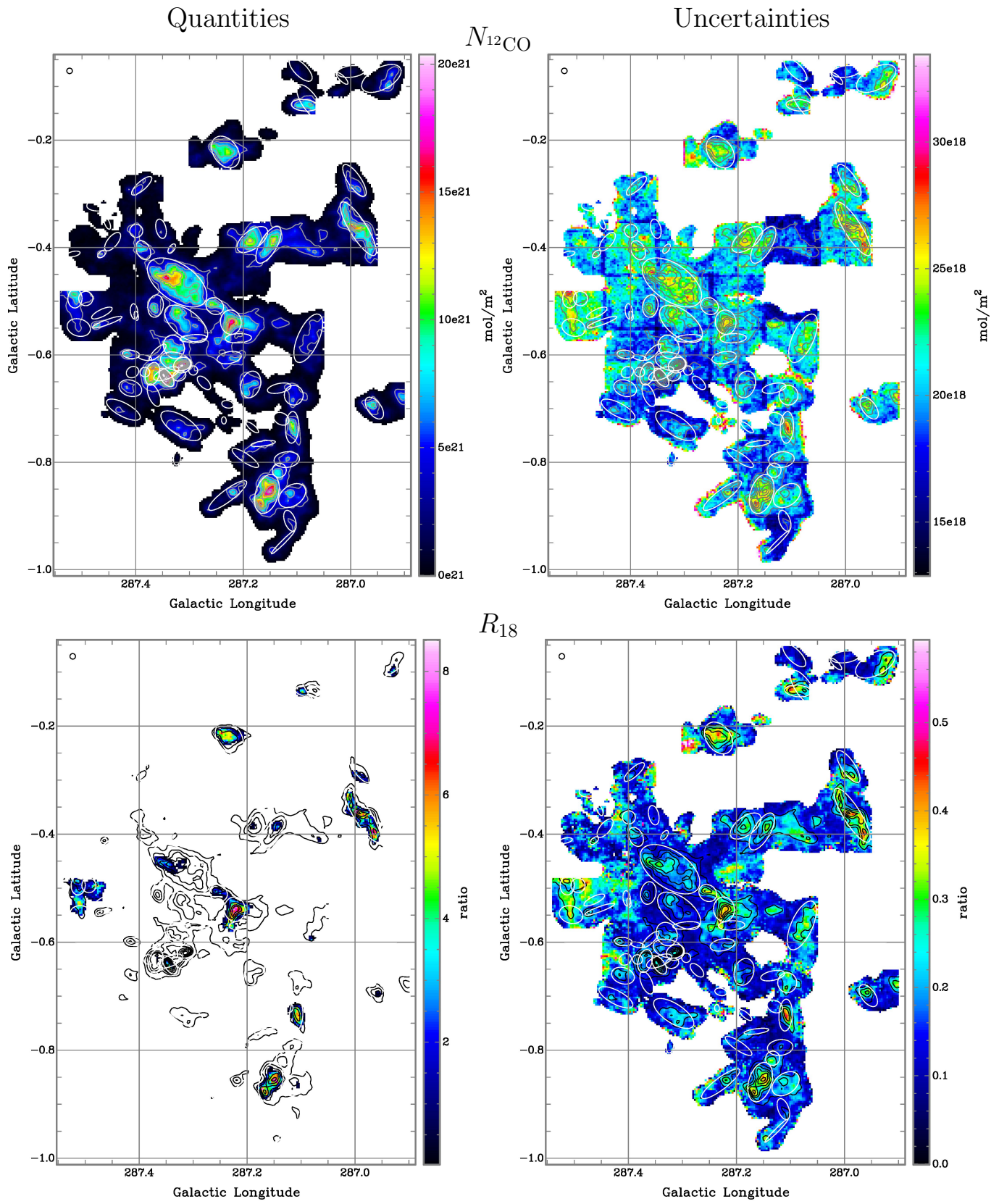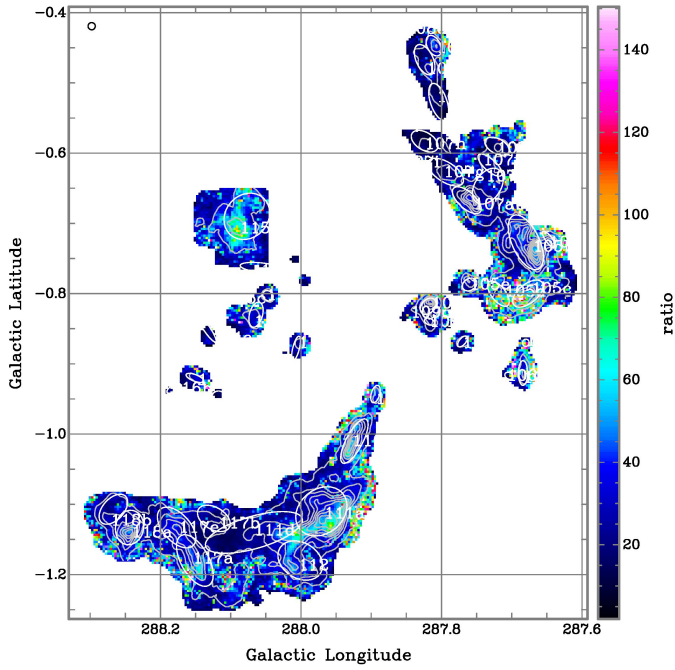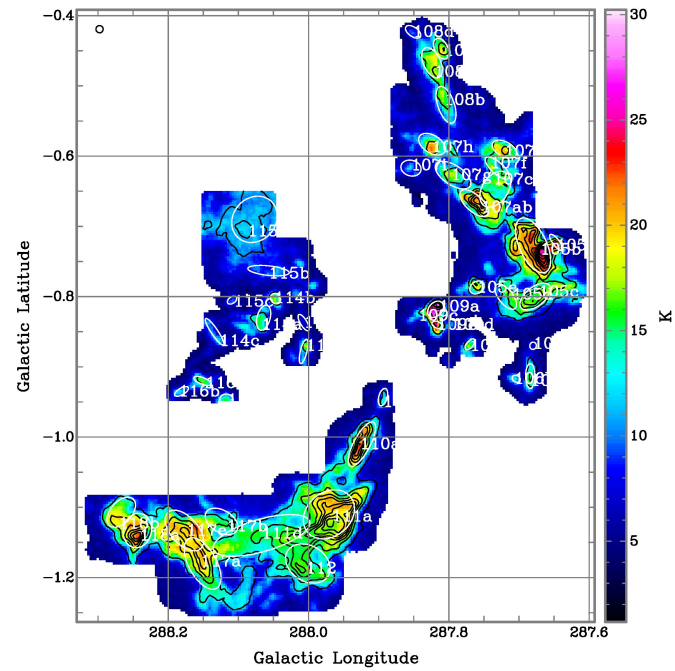
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Quantities

Uncertainties

N_{12CO}

R_{18}

Figure B25. BYF 83–104 (Region 10) *continued.*

Figure B26. BYF 105–118 (Region 11). At an assumed distance of 2.5 kpc, the scale is 0°1 = 4.4 pc. The Mopra HPBW is shown in the TL corner.

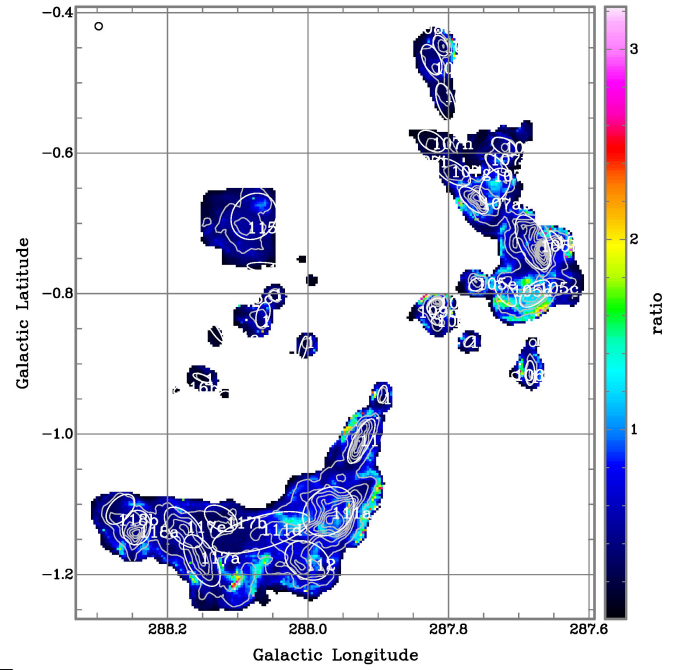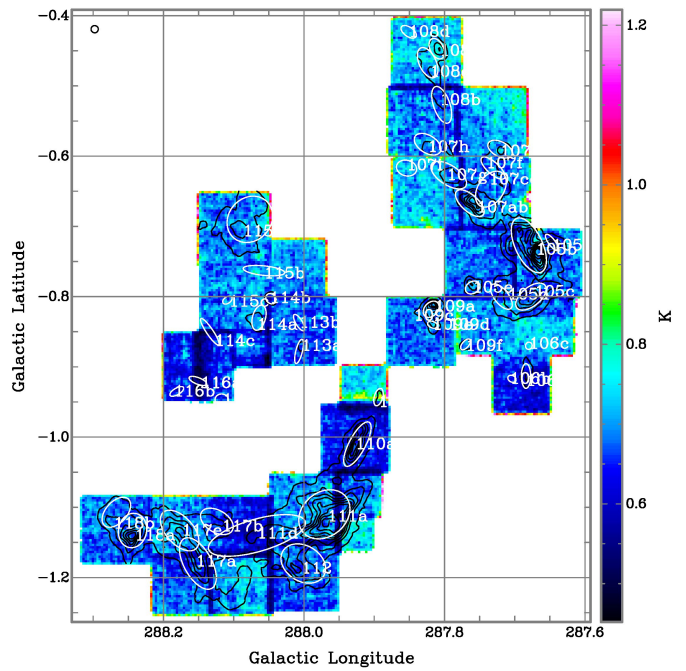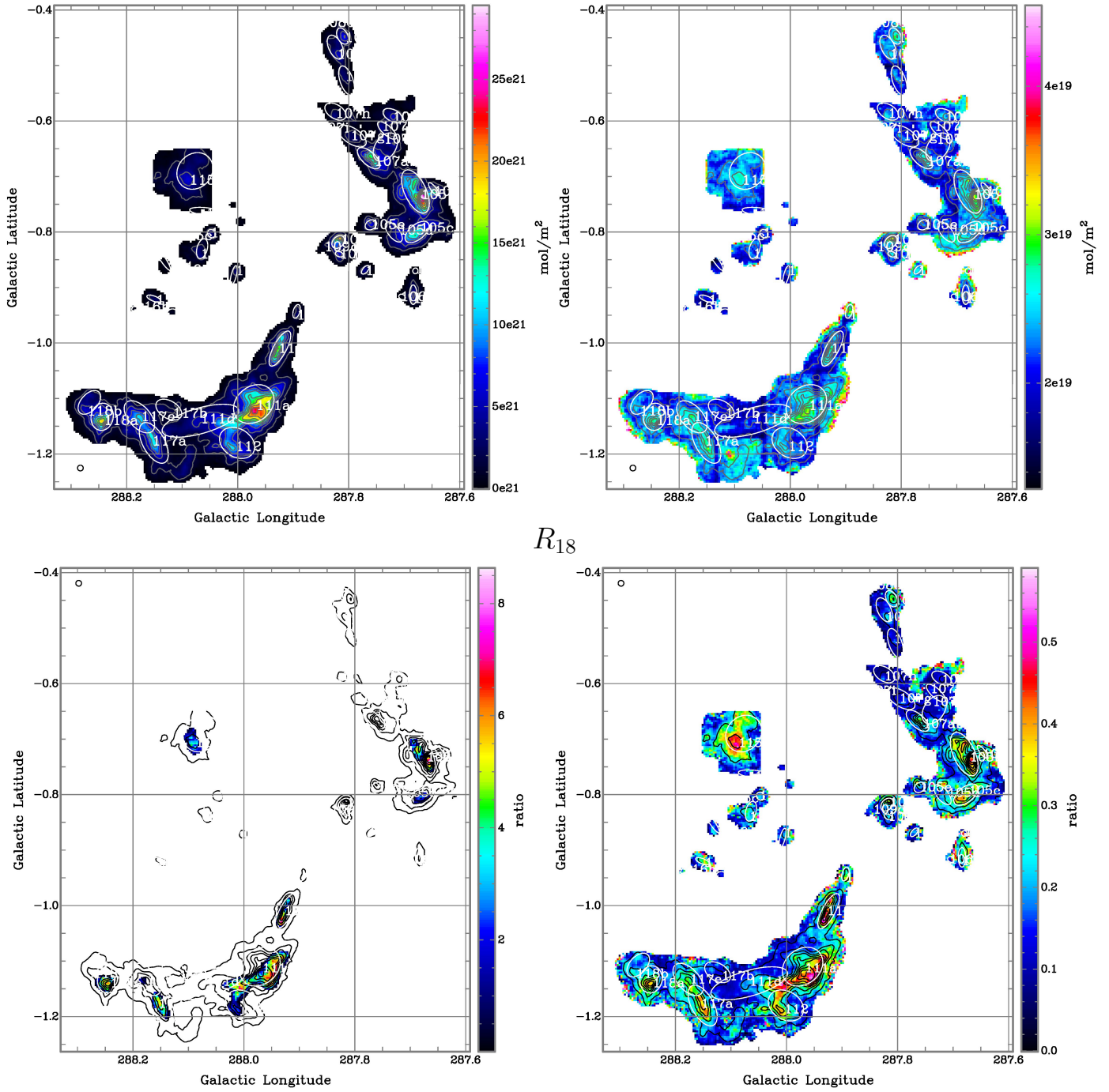Quantities $N_{^{12}CO}$ Uncertainties

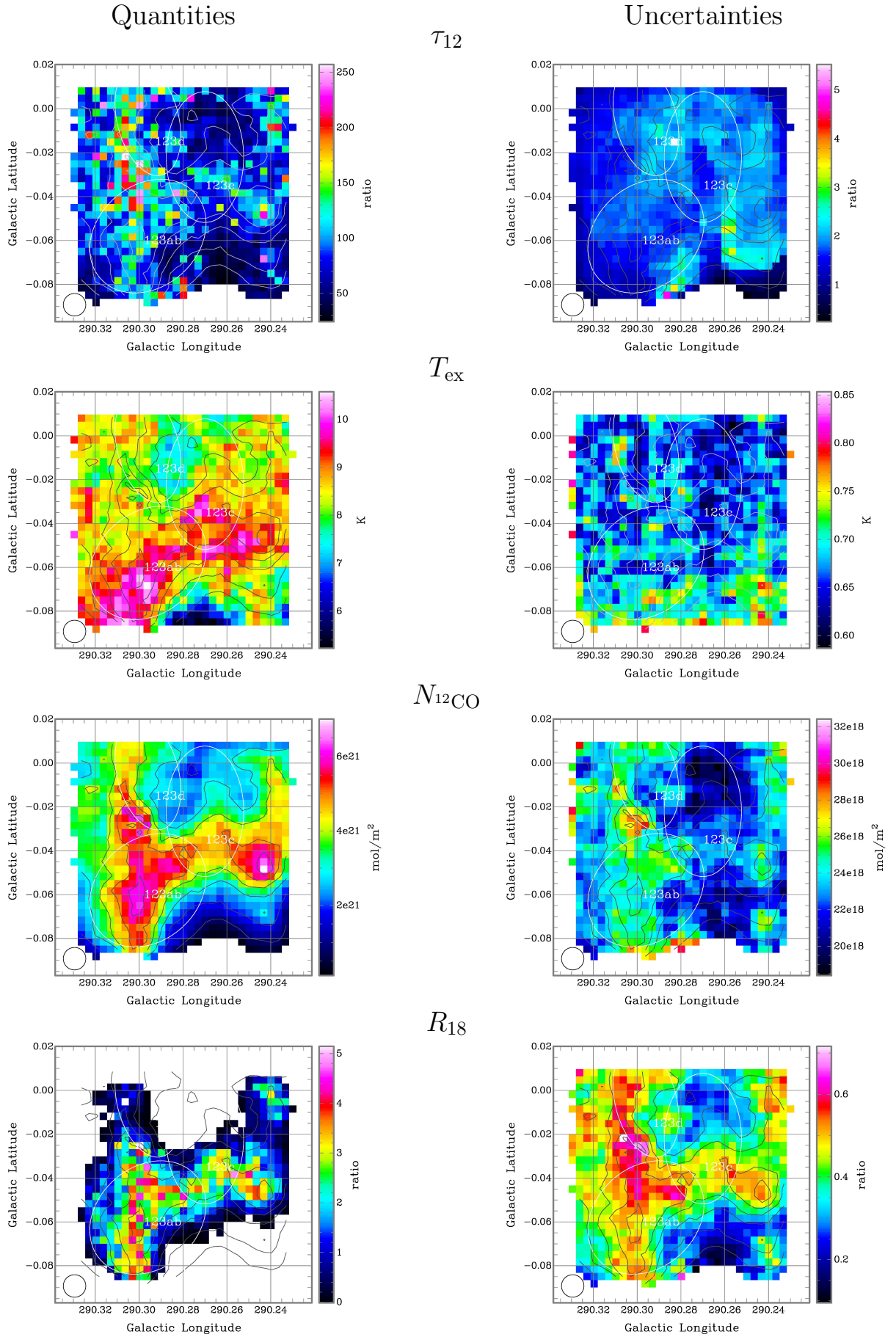R_{18}

Figure B27. BYF 105–118 (Region 11) *continued.*

Figure B28. BYF 123. At an assumed distance of 6.8 kpc, the scale is 0°.1 = 11.9 pc. The Mopra HPBW is shown in the BL corner.
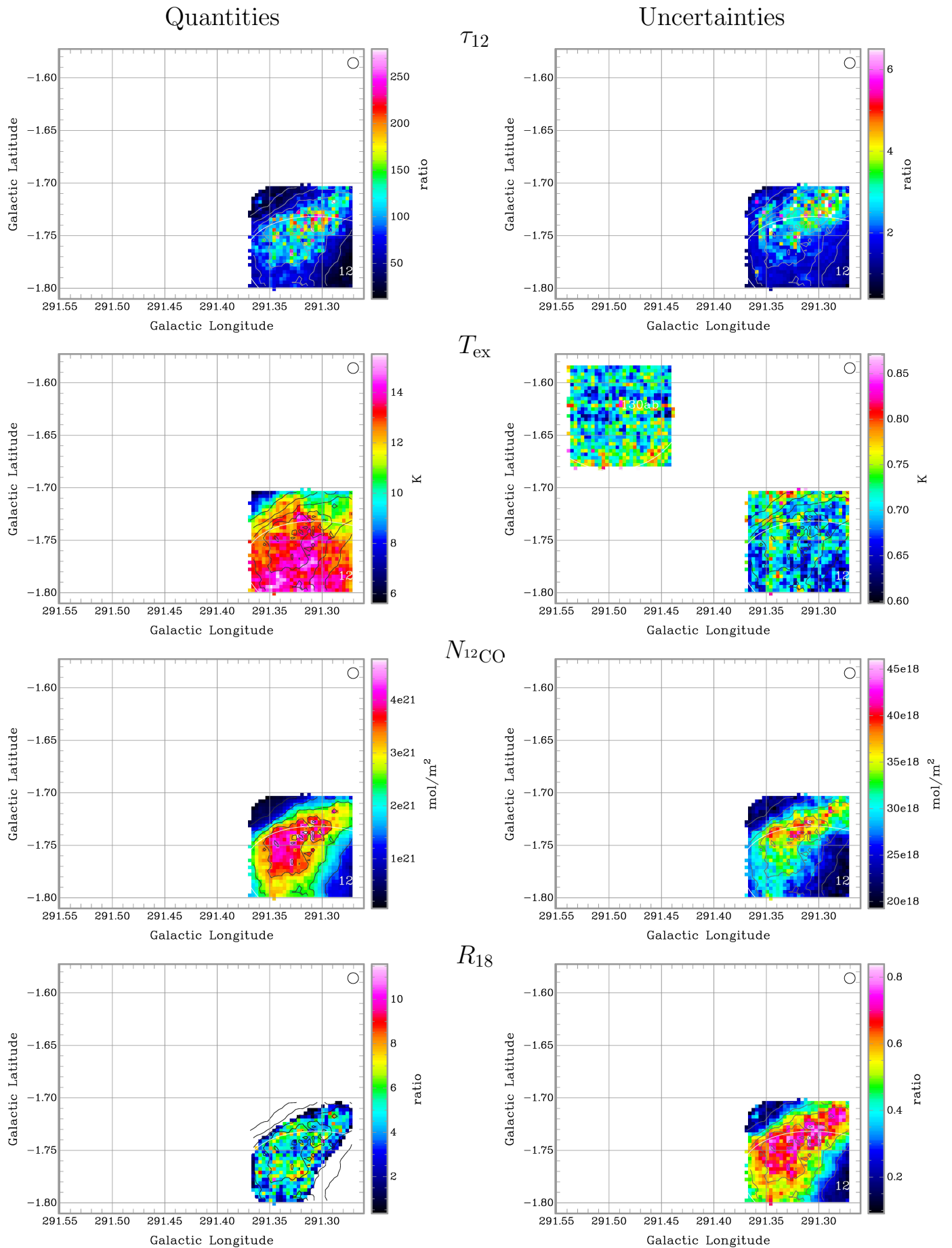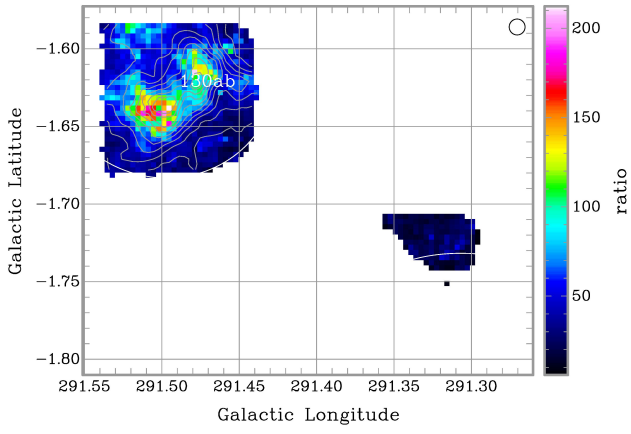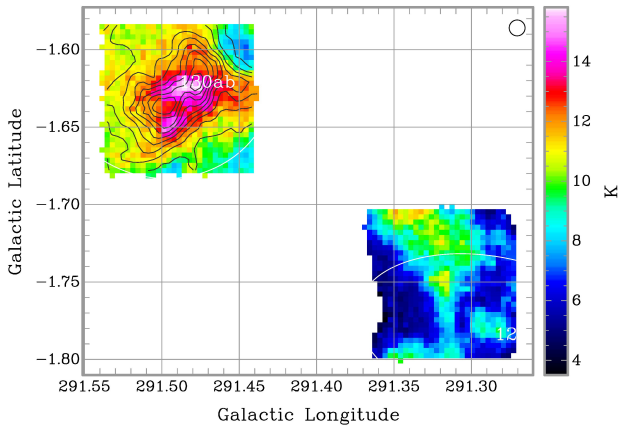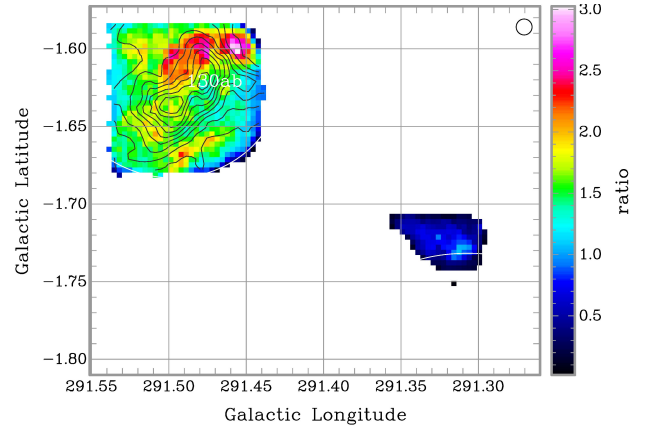
Figure B29. BYF 127 (Region 12-West). At an assumed distance of 1.1 kpc, the scale is 0°.1 = 1.9 pc. The Mopra HPBW is shown in the TR corner.

Quantities

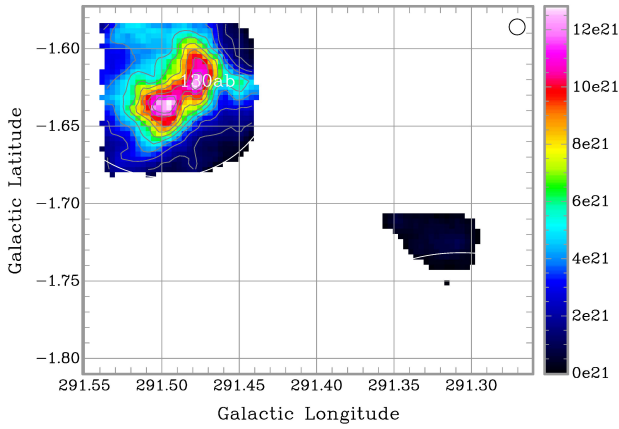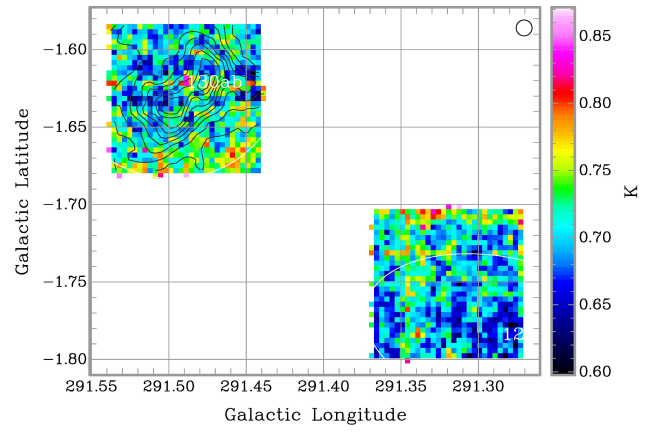## Uncertainties
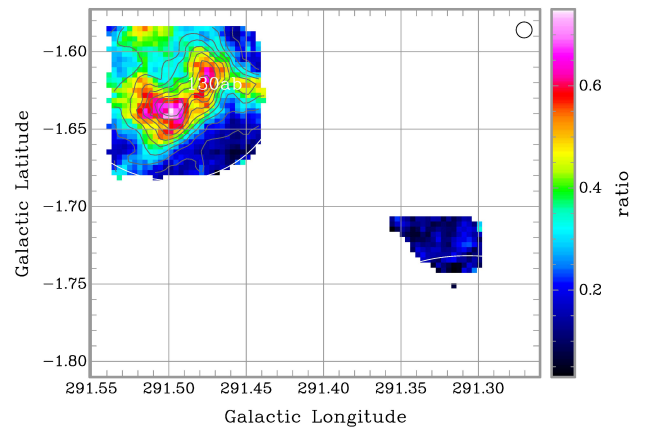
Figure B30. BYF 130 (Region 12-East). At an assumed distance of 2.4 kpc, the scale is 0°1 = 4.2 pc. The Mopra HPBW is shown in the TR corner.

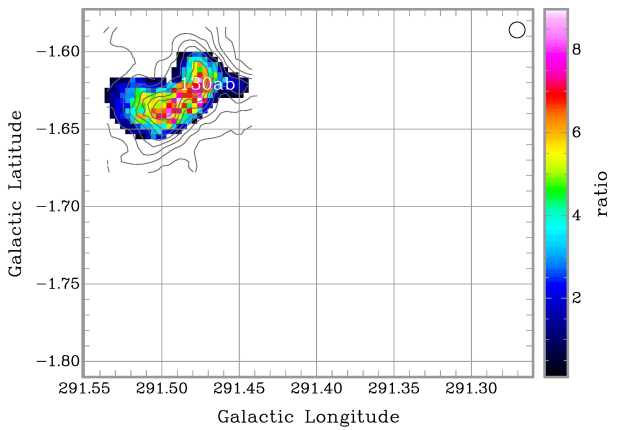Quantities   Uncertainties

τ_{12}

$T_{\rm ex}$

$N_{^{12}\rm CO}$

R_{18}

Figure B31. BYF 126 & 128 (Region 13a). At an assumed distance of 2.4 kpc, the scale is 0°.1 = 4.2 pc. The Mopra HPBW is shown in the BL corner.

Figure B32. BYF 129 (Region 13b). At an assumed distance of 1.2 kpc, the scale is $0°1 = 2.1$ pc. The Mopra HPBW is shown in the TL corner.

Figure B33. BYF 131 & 132 (Region 13c). At an assumed distance of 6.0 kpc, the scale is 0°.1 = 10.5 pc. The Mopra HPBW is shown in the TL corner.

Figure B34. BYF 134 (Region 15). At an assumed distance of 2.4 kpc, the scale is 0°.1 = 4.2 pc. The Mopra HPBW is shown in the TR corner.
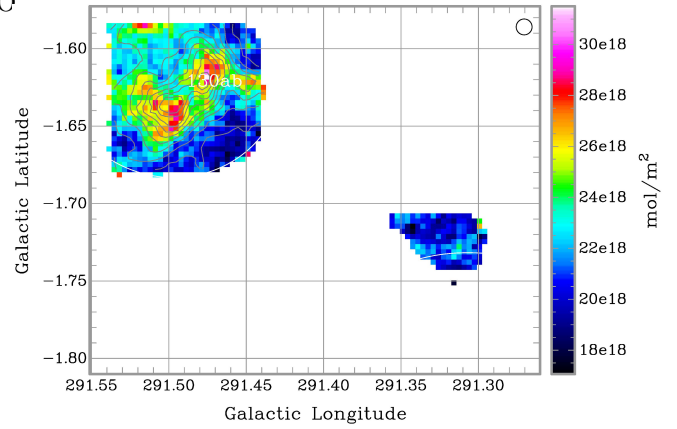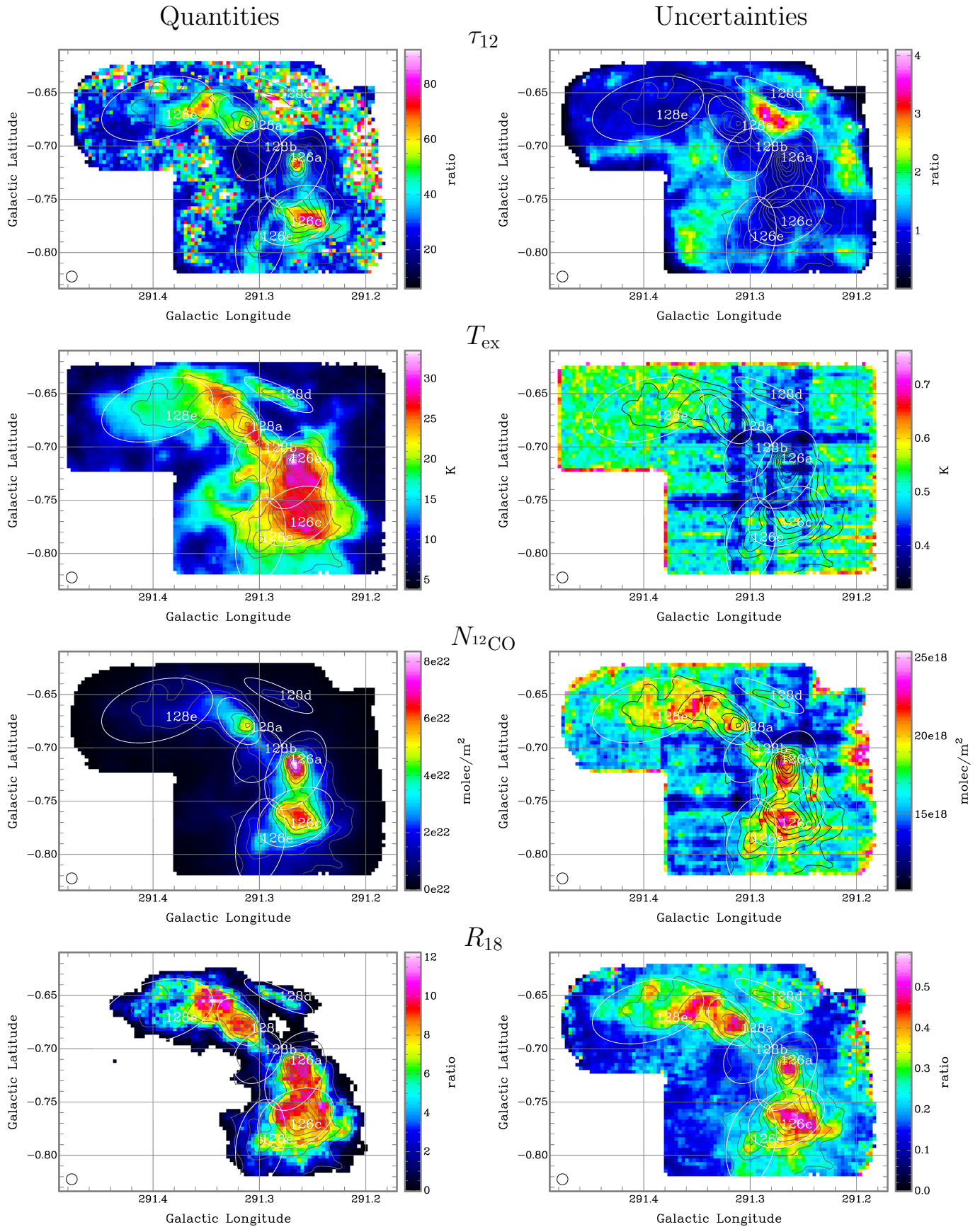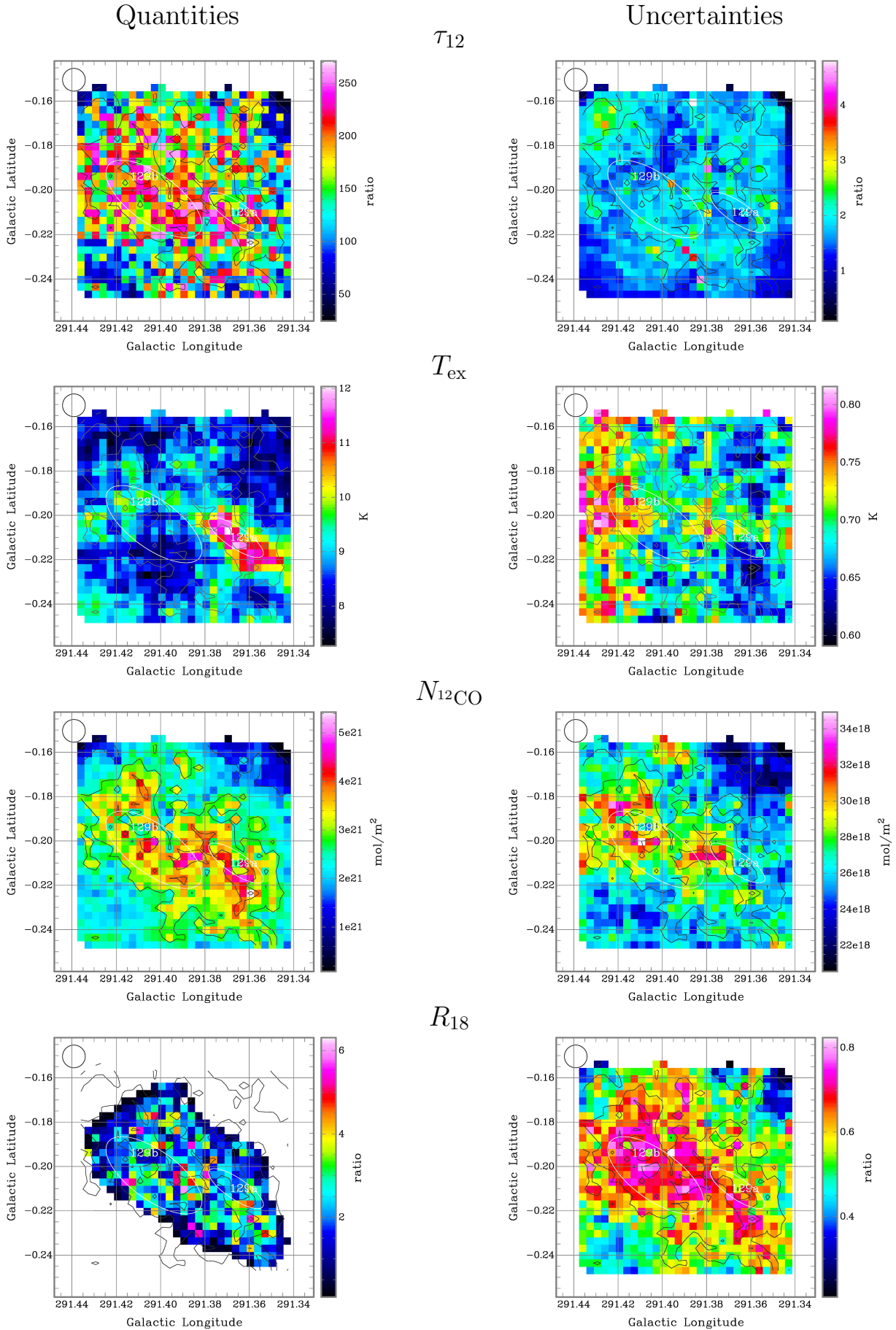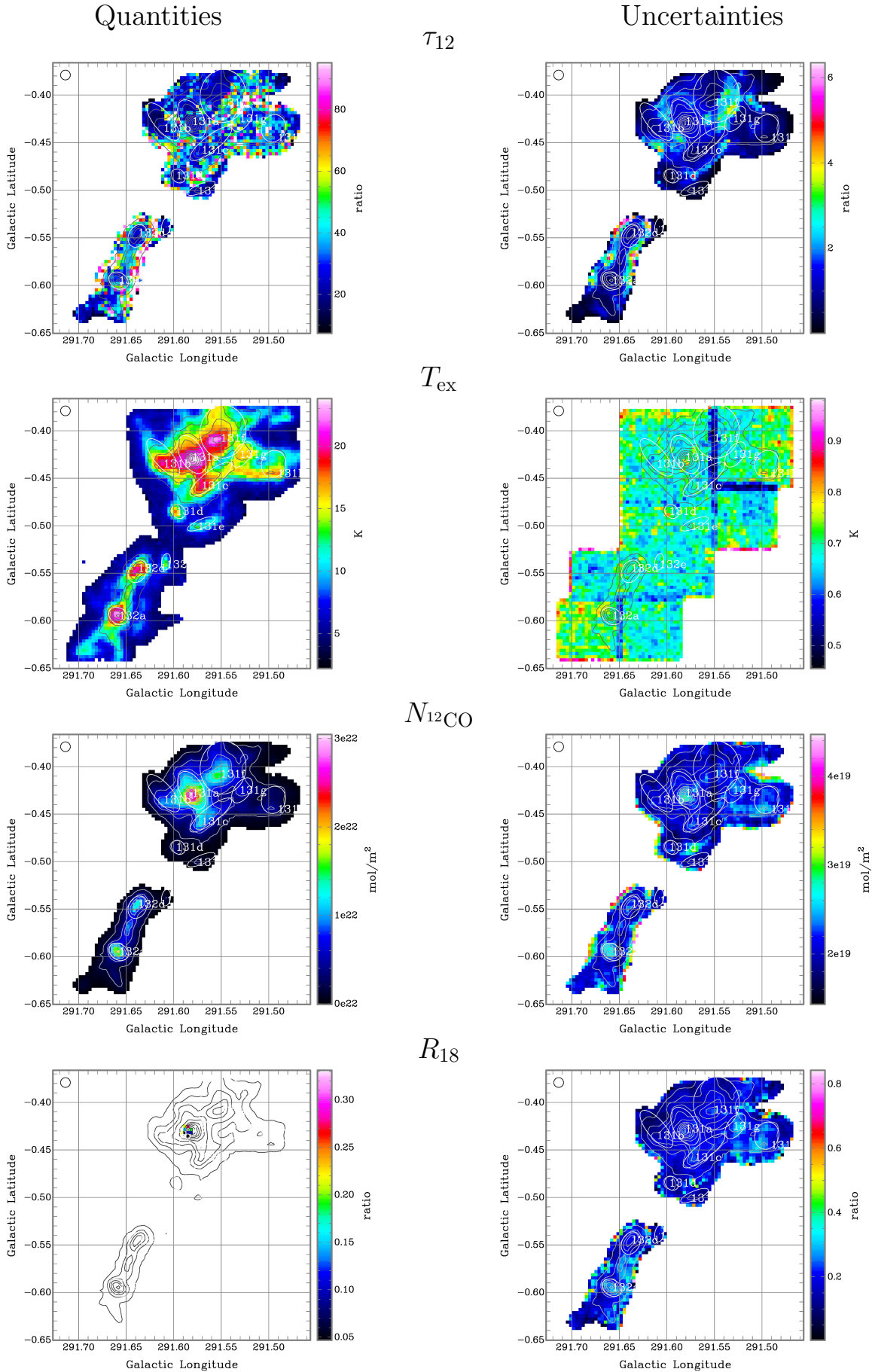
Quantities

Uncertainties

τ_{12}

T_{ex}

$N_{^{12}\mathrm{CO}}$

R_{18}

Figure B35. BYF 141–144 (Region 16). At an assumed distance of 2.4 kpc, the scale is 0°.1 = 4.2 pc. The Mopra HPBW is shown in the TR corner.

Figure B36. BYF 149 & 150 (Region 18). At an assumed distance of 2.4 kpc, the scale is 0°1 = 4.2 pc. The Mopra HPBW is shown in the TL corner.

Quantities   Uncertainties

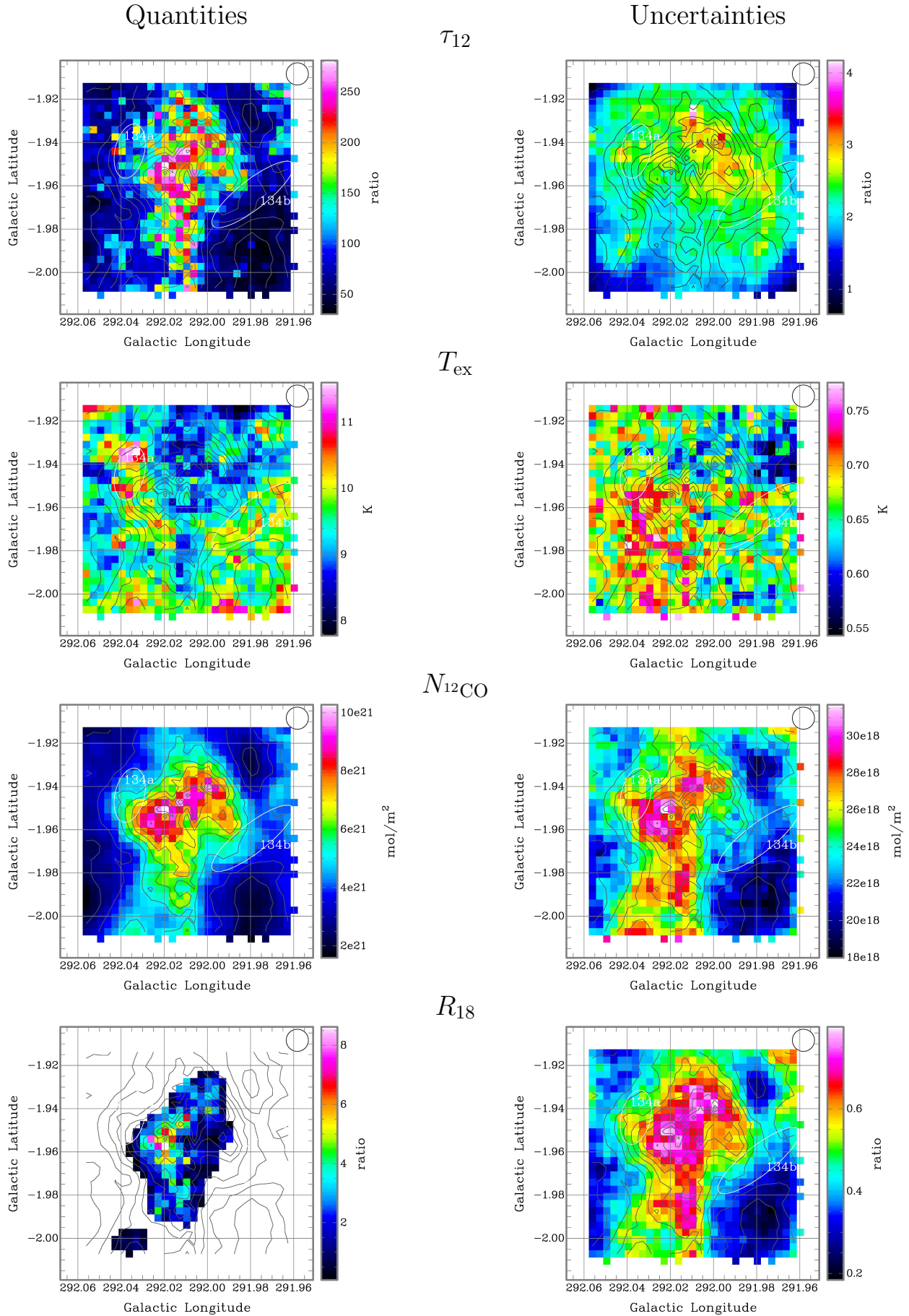τ_{12}

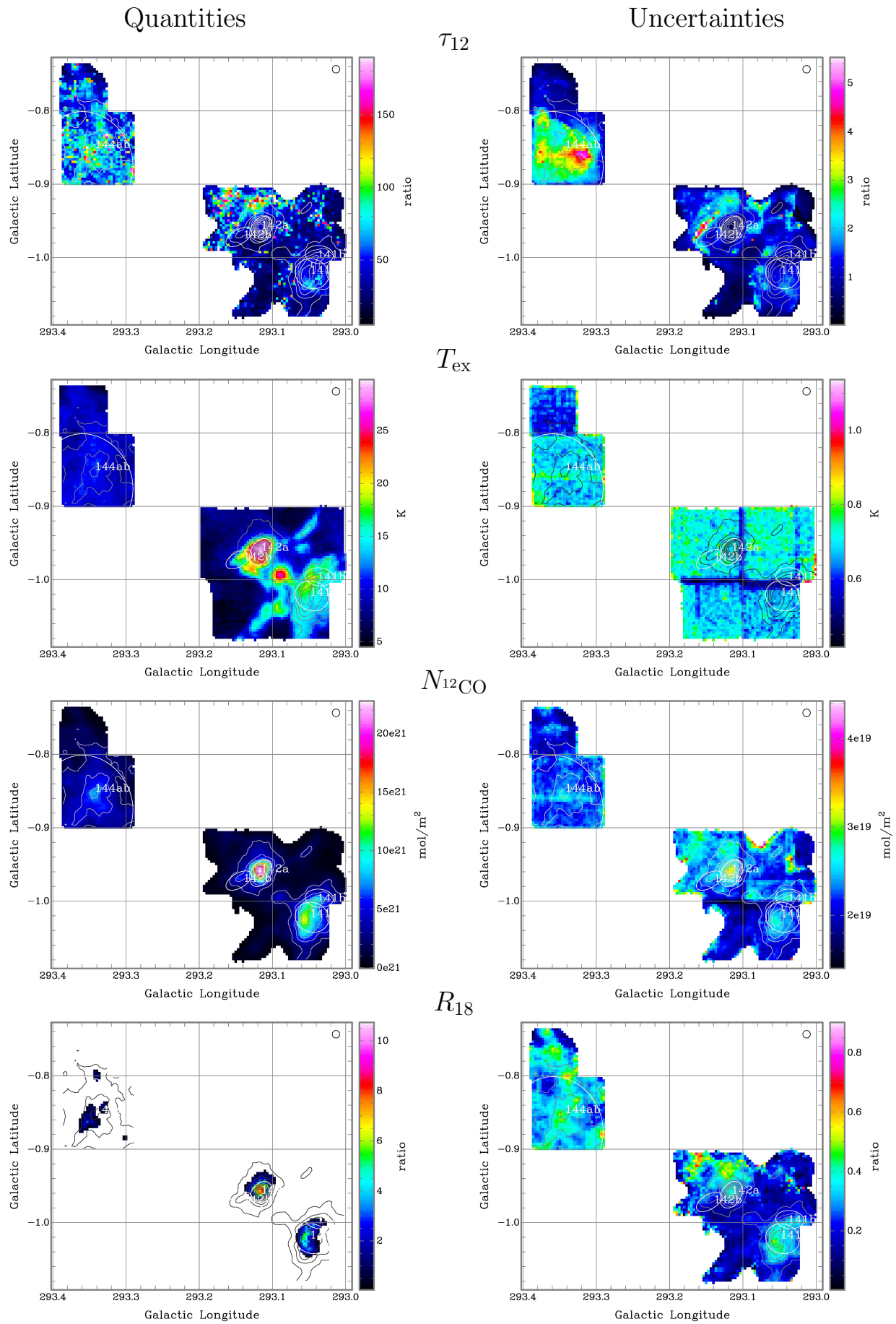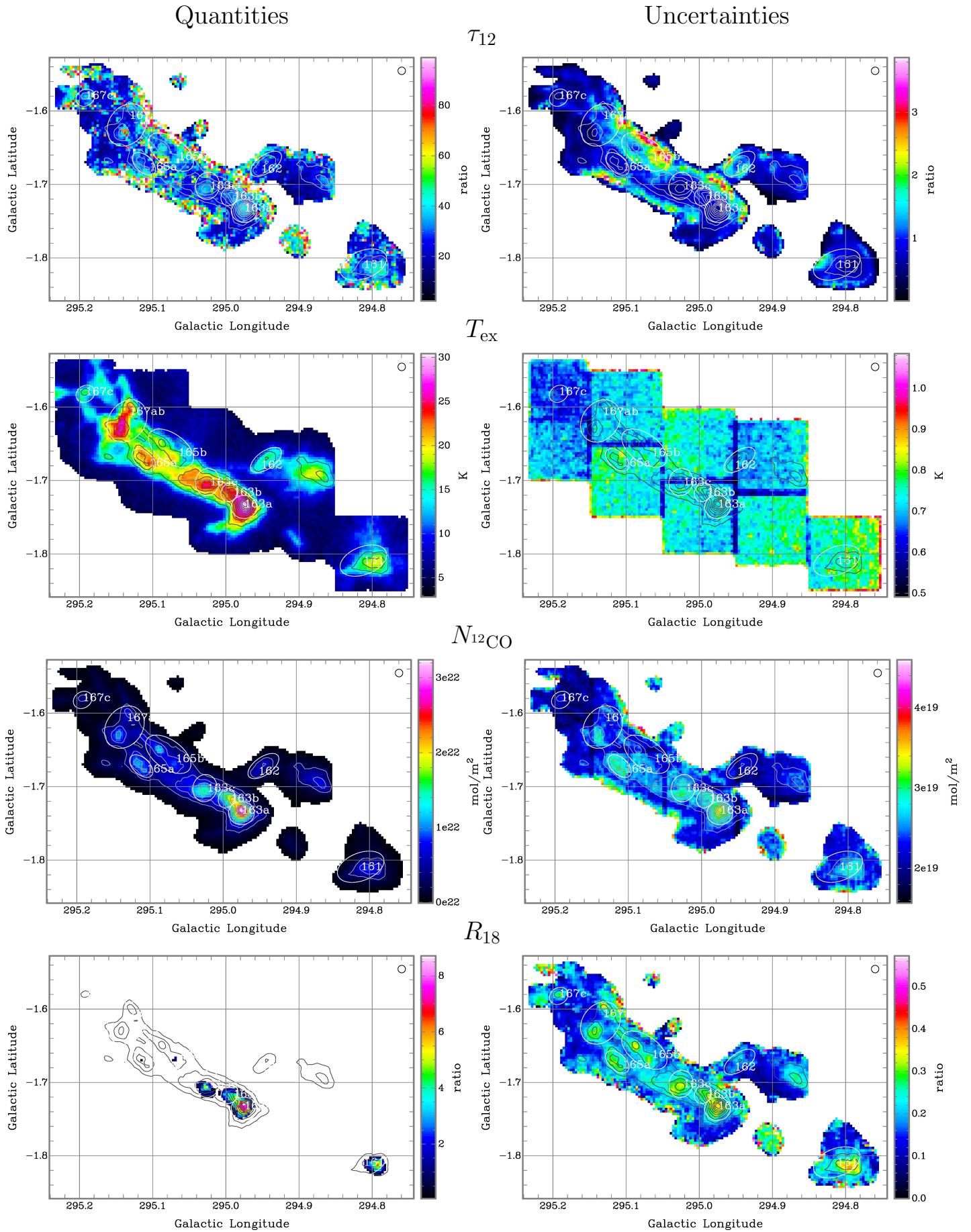

$T_{\rm ex}$

$N_{^{12}\rm CO}$

R_{18}

Figure B37. BYF 161–167 (Region 21). At an assumed distance of 2.4 kpc, the scale is 0°.1 = 4.2 pc. The Mopra HPBW is shown in the TR corner.
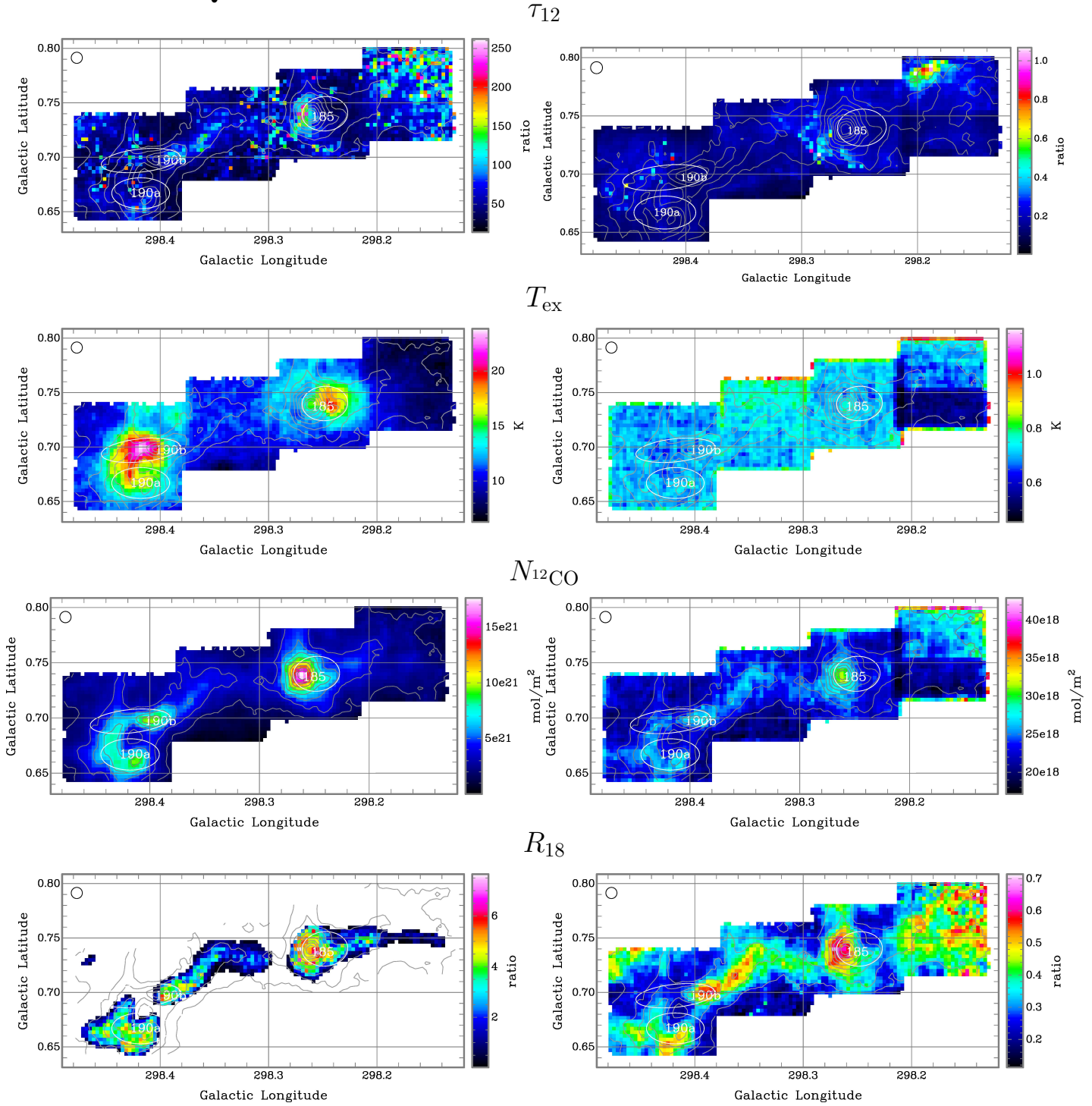
Figure B38. BYF 183–190 (Region 23). At an assumed distance of 4.7 kpc, the scale is 0°1 = 8.2 pc. The Mopra HPBW is shown in the TL corner.
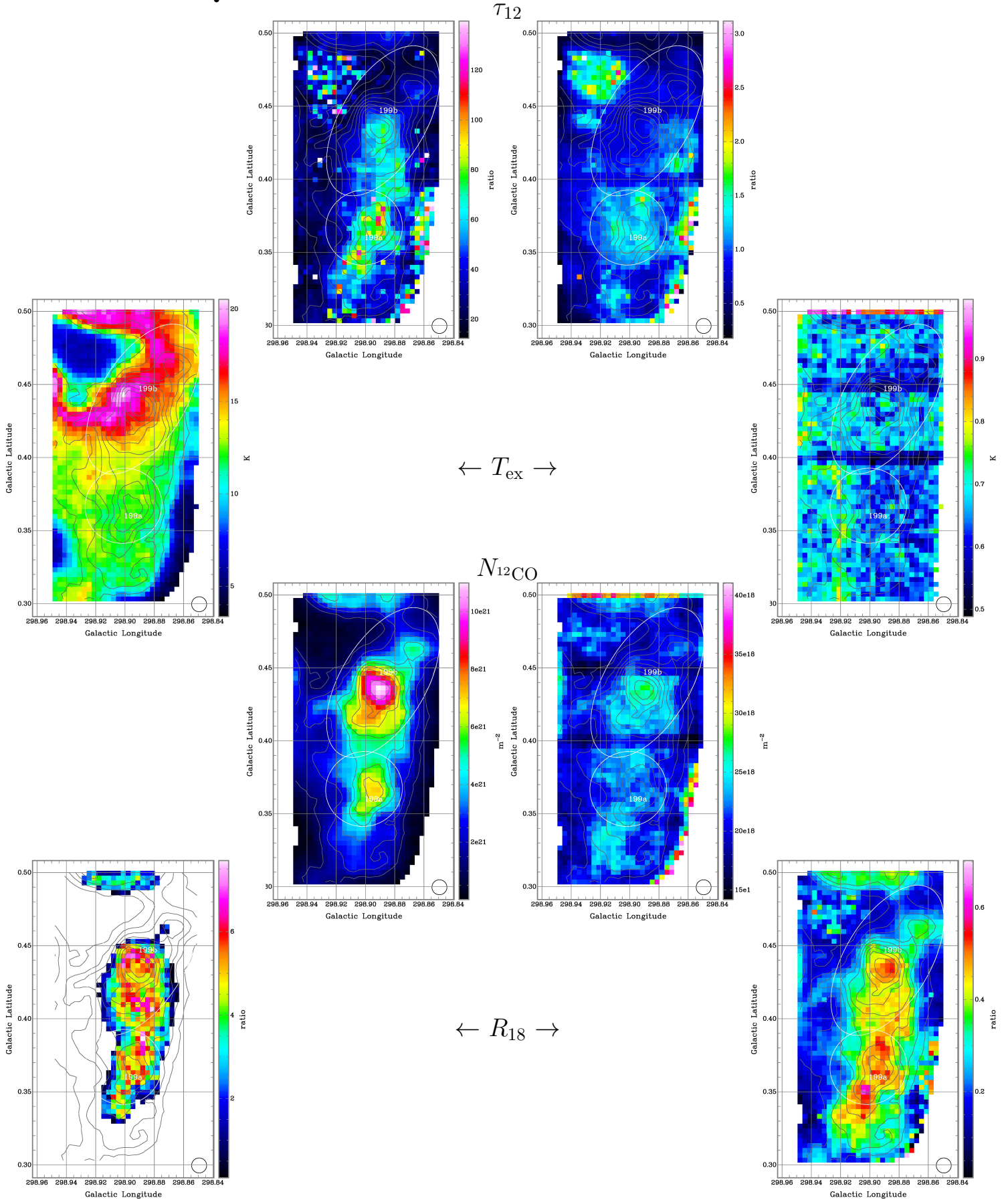
Quantities

Uncertainties

τ_{12}

$\leftarrow T_{\mathrm{ex}} \rightarrow$

$N_{^{12}\mathrm{CO}}$

$\leftarrow R_{18} \rightarrow$

Figure B39. BYF 199 (Region 26a). At an assumed distance of 4.7 kpc, the scale is 0°.1 = 8.2 pc. The Mopra HPBW is shown in the BR corner.
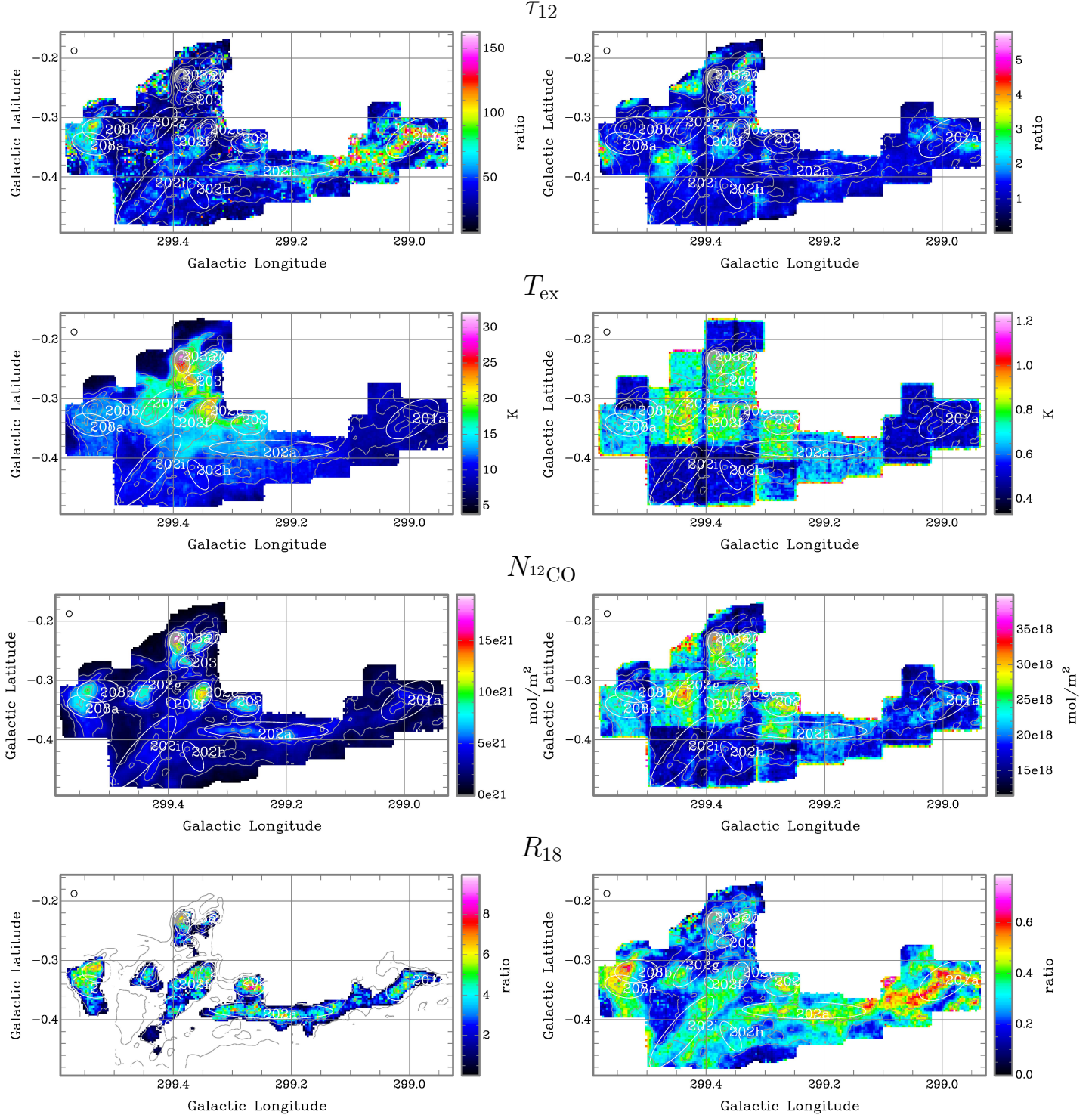
Figure B40. BYF 201–208 (Region 26b). At an assumed distance of 4.7 kpc, the scale is 0°1 = 8.2 pc. The Mopra HPBW is shown in the TL corner.