

# OBSERVATIONS OF IONISED CARBON TOWARDS SNR RXJ1713.7-3946

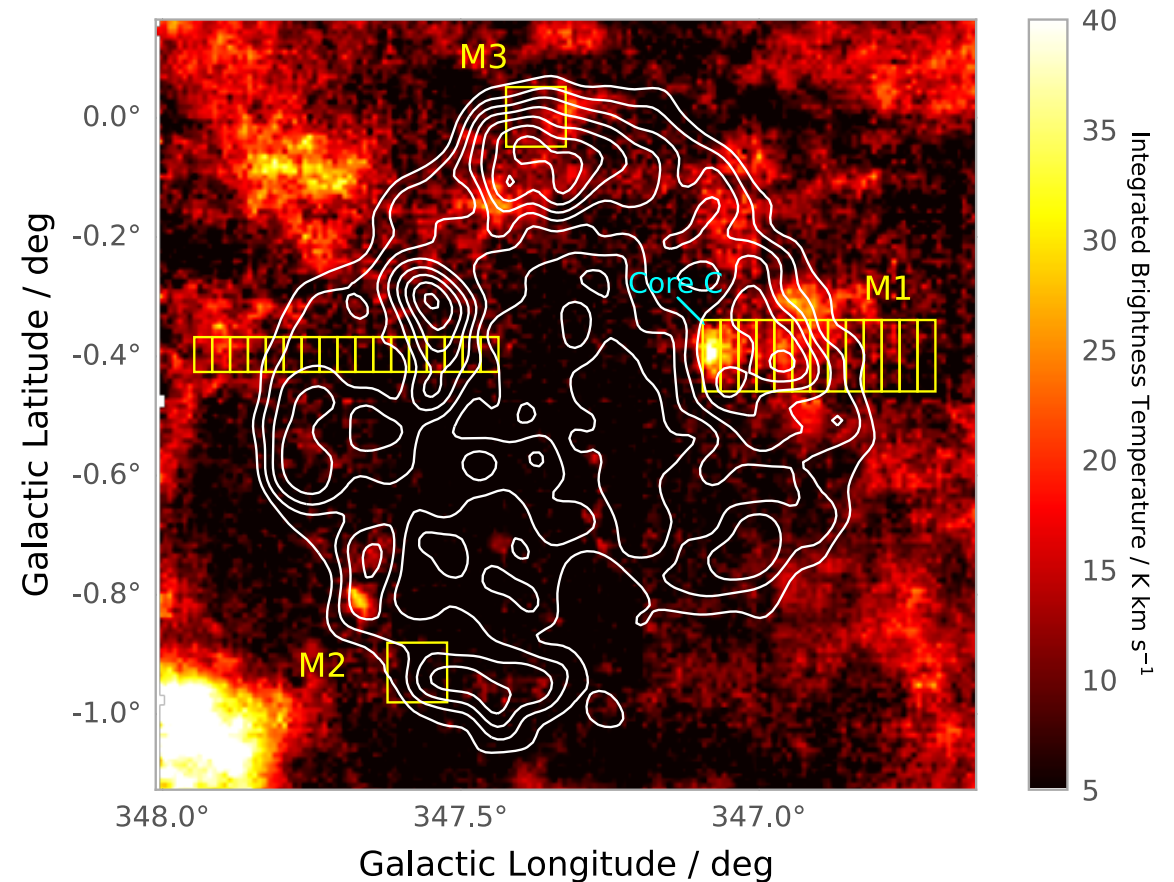
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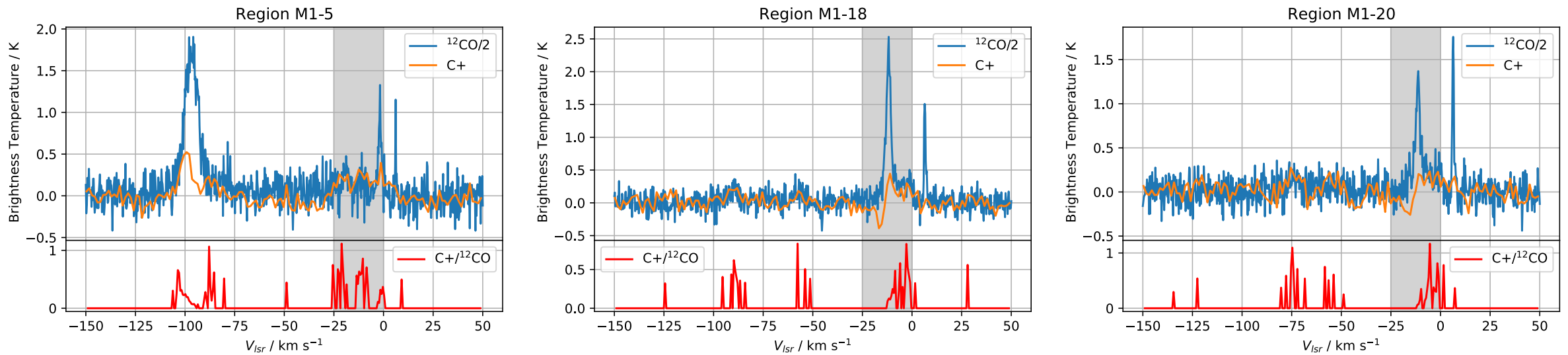
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- C<sup>+</sup> can be used as a tracer for ionisation.
- We are looking for locations and potential sources of ionisation.
- Our primary interest is cosmic rays.



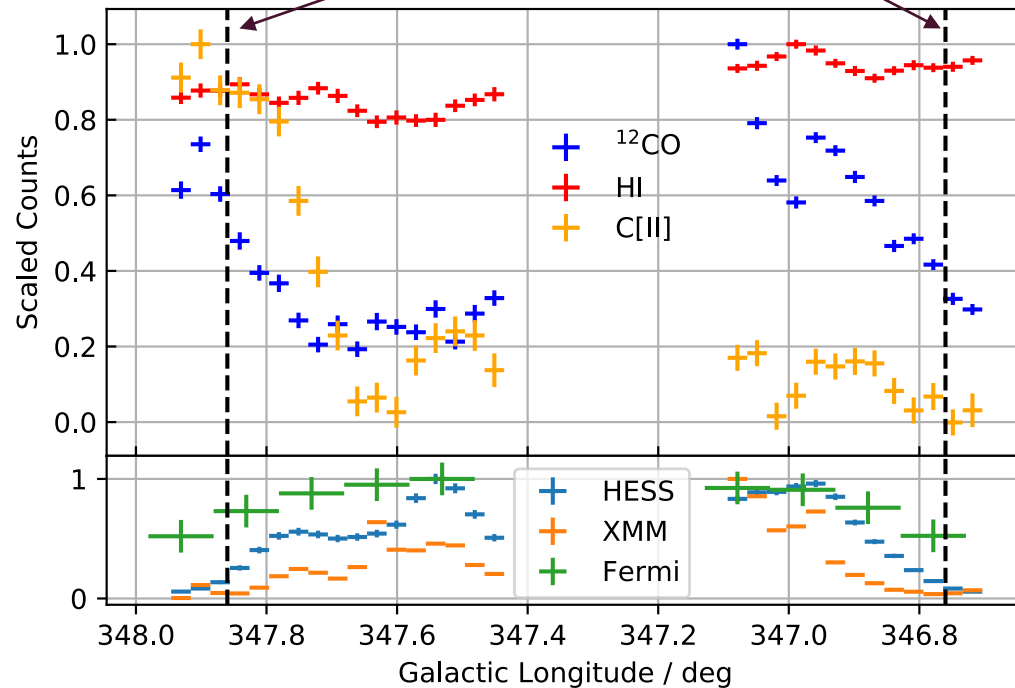
# SPECTRA



- The figures show the spectra of  $^{12}\text{CO}(J=1-0)$  and I[C II] from -150 km/s to 50 km/s for selected regions.
- The shaded band indicates where SNR RXJ1713 is located.

# COMPARISON OF GAS ACROSS REGION M I

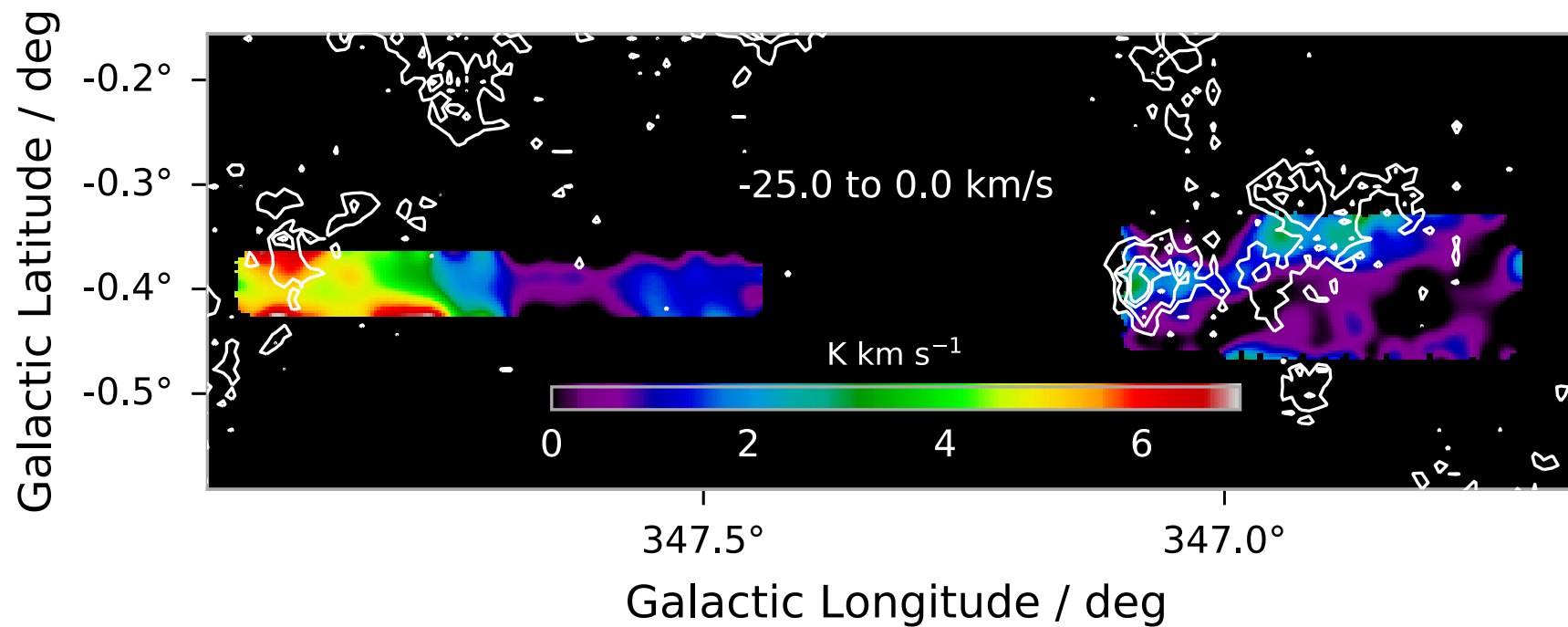
The black dotted lines indicate the edge of the SNR shell, based on the HESS Gamma Ray contours

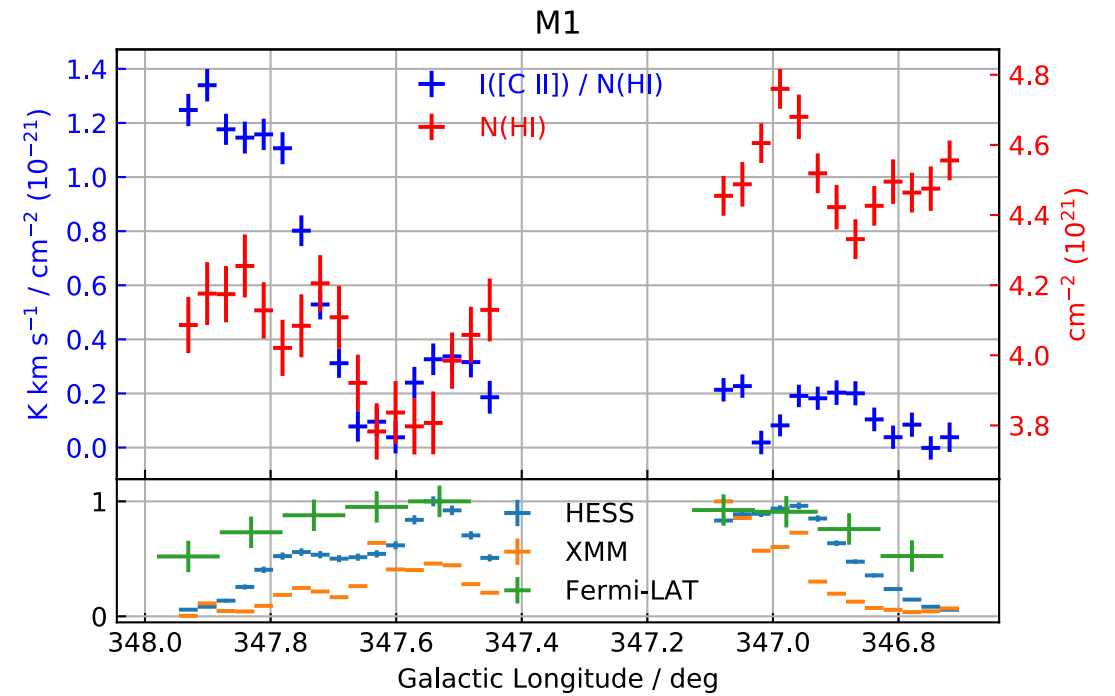
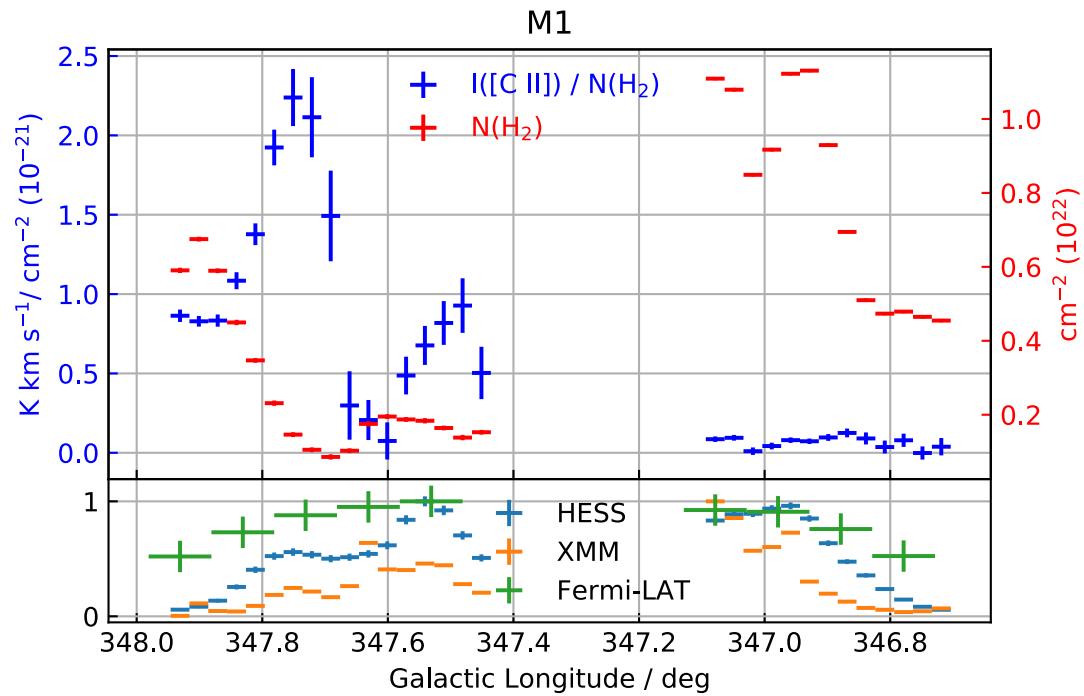


- C[II] emission increases sharply on the left of the figure, coinciding with an increase in the molecular gas. While on the right side there is not much variation in the emission
- The levels of atomic gas seems to stay constant across the SNR.
- The molecular gas peaks around Core C, shown in the previous slide, and around the far left edge, outside the SNR shell.

# DISTRIBUTION OF I[C II] IN REGION M1

- The map shows the variation of the [C II] emission line across the M1 region
- The contours are the  $^{12}\text{CO}(J=1-0)$  emission line





## GAS RATIOS ACROSS THE SNR

- Gas clouds across the centre of the remnant are primarily molecular.
- Excess C[II] emission comes from the left of the remnant.

## FUTURE WORK

- We have established a decent understanding of the distribution of gas throughout SNR RXJ1713 and are currently working to estimate the cosmic ray ionisation rate in the clouds. There is currently a paper in prep detailing our results so far:

### **Observations of Ionised Carbon towards Supernova Remnant RXJ1713.7-3946**

- The next step involves looking at other SNRs where we expect to see an excess of ionised carbon. The two targets in mind are Vela Jr. and RCW 86.