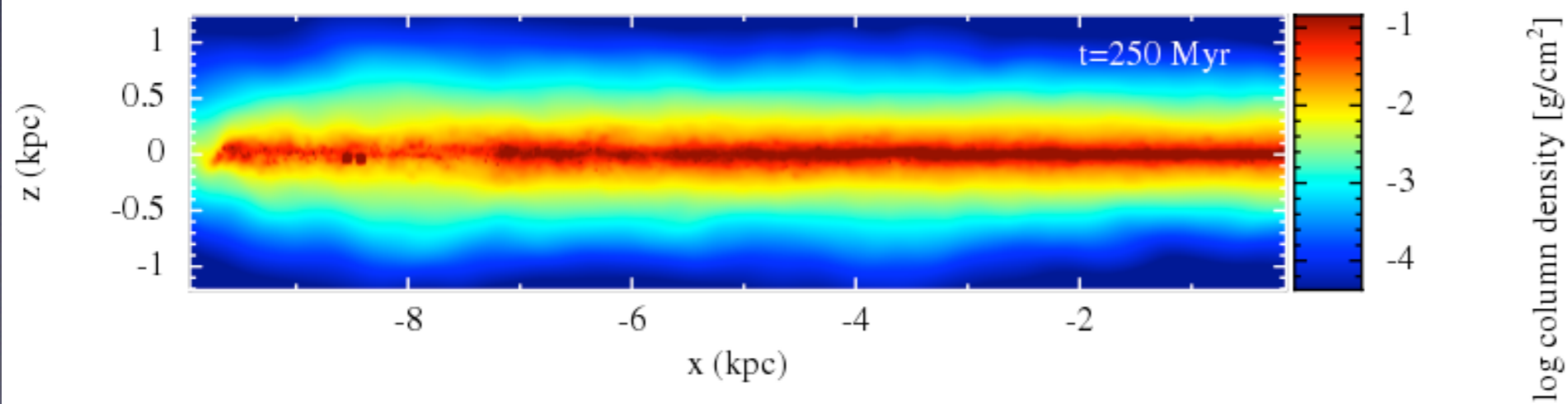
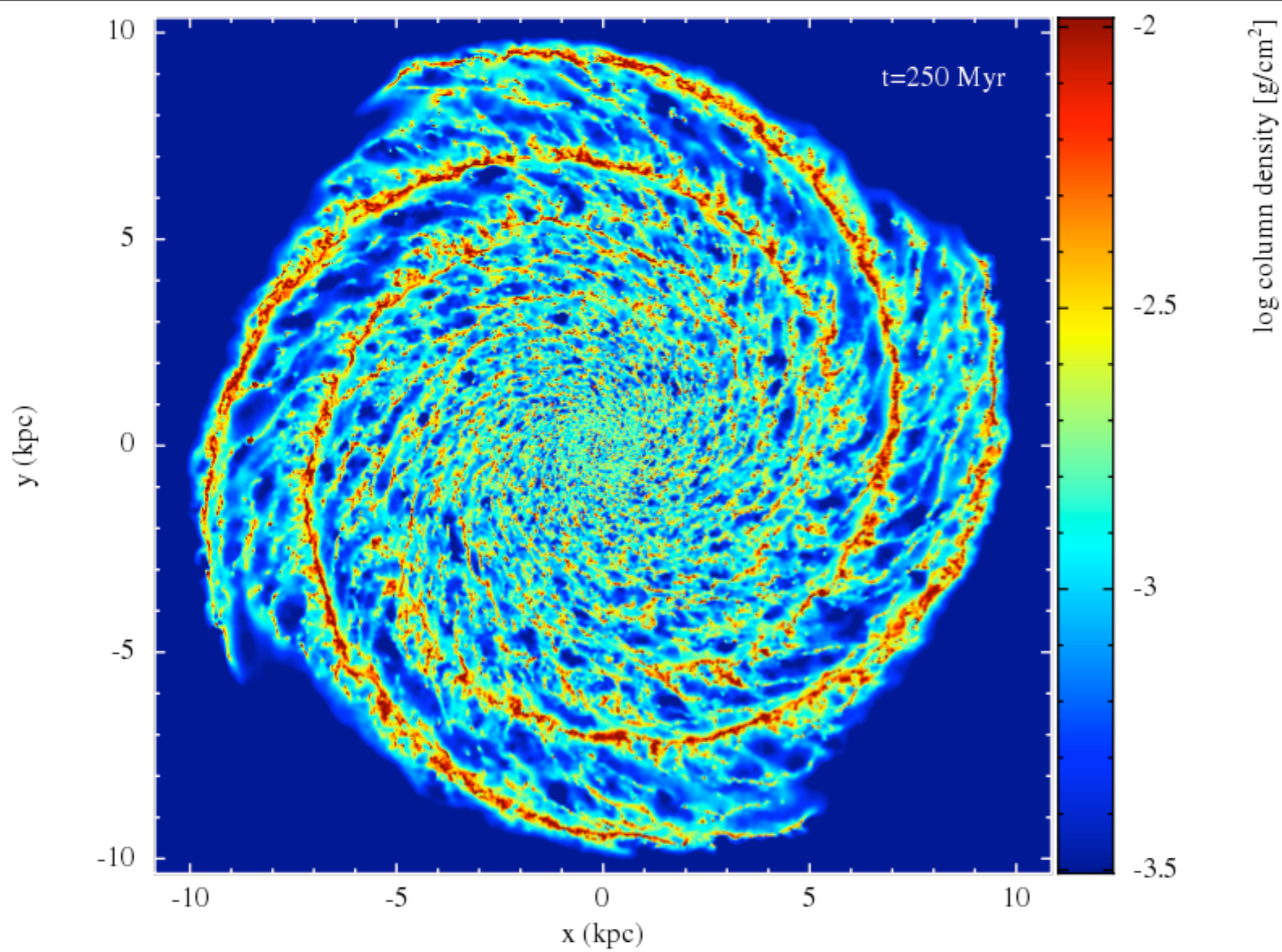
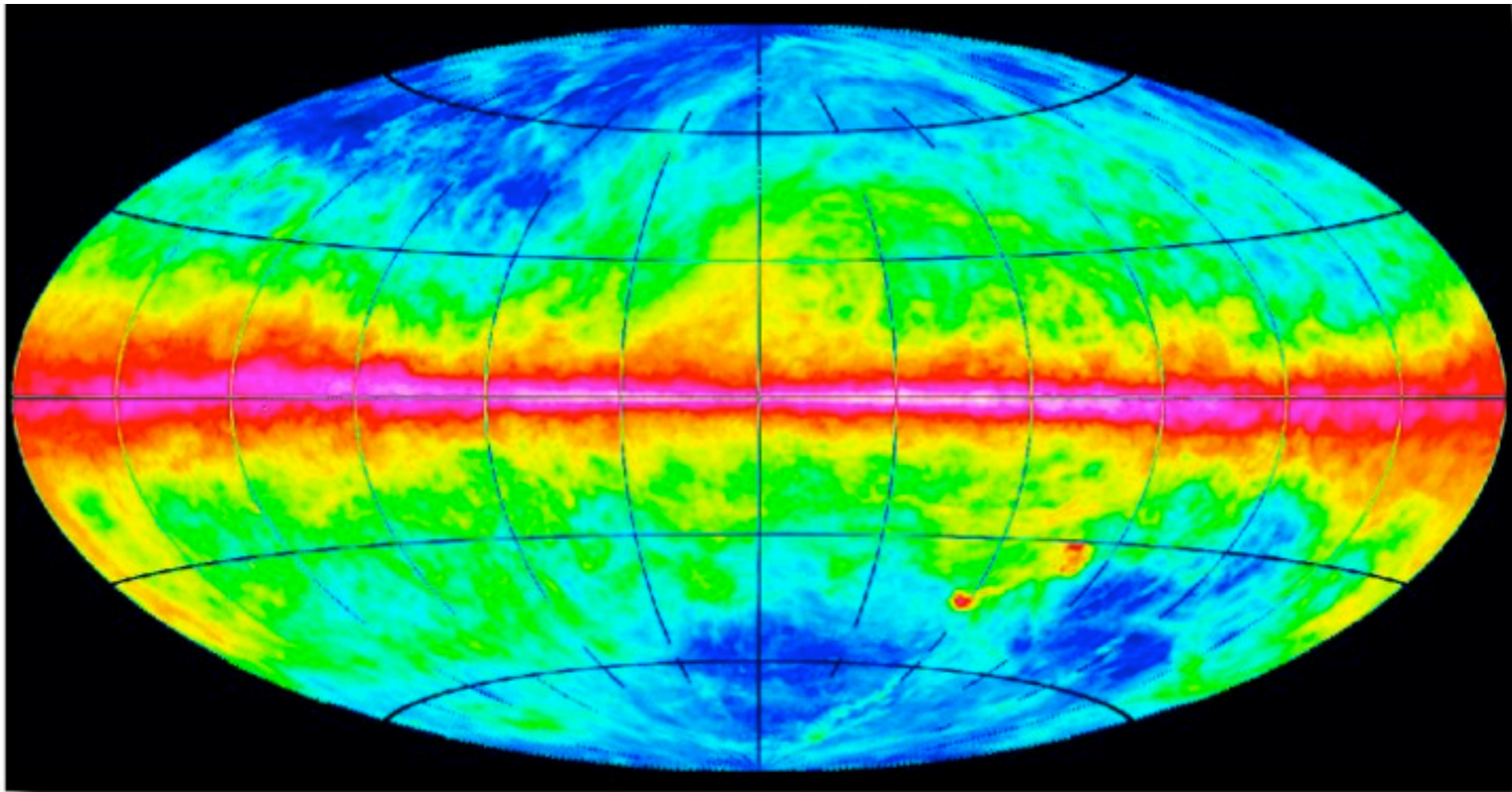


The structure of HI in galactic disks: Simulations vs observations

David Acreman, Clare Dobbs, Chris Brunt (University of Exeter)
Kevin Douglas (University of Calgary/DRAO)



Dobbs et al
2011

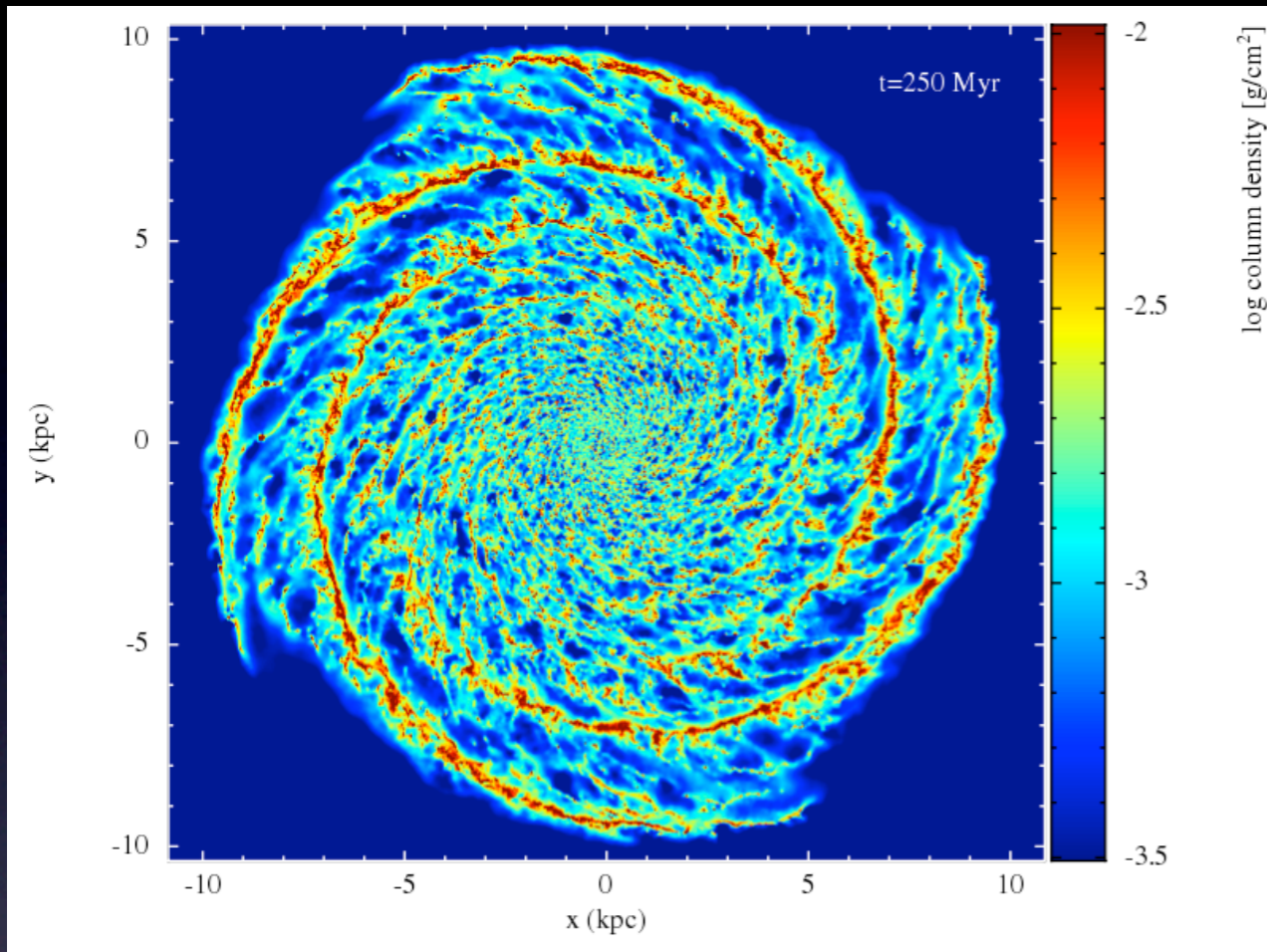


LAB galactic HI survey

Kalberla et al. 2005 A&A 440, 775

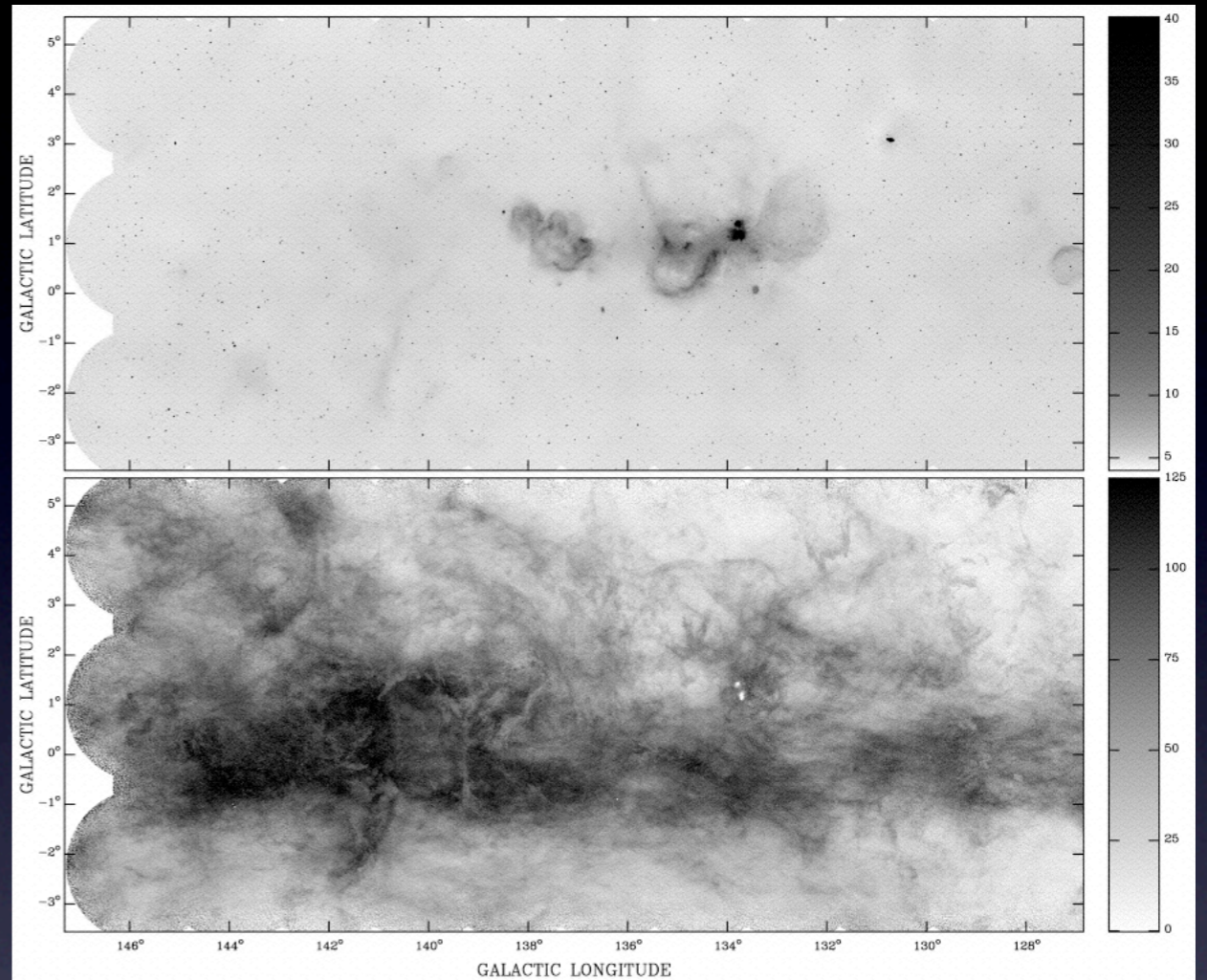
SPH models

Dobbs, Burkert and Pringle 2011,
MNRAS, 417, 1318



Canadian Galactic Plane Survey

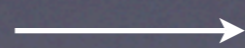
Taylor et al. 2003, AJ, 125, 3145



$$\rho(x,y,z), T(x,y,z) \quad v(x,y,z)$$



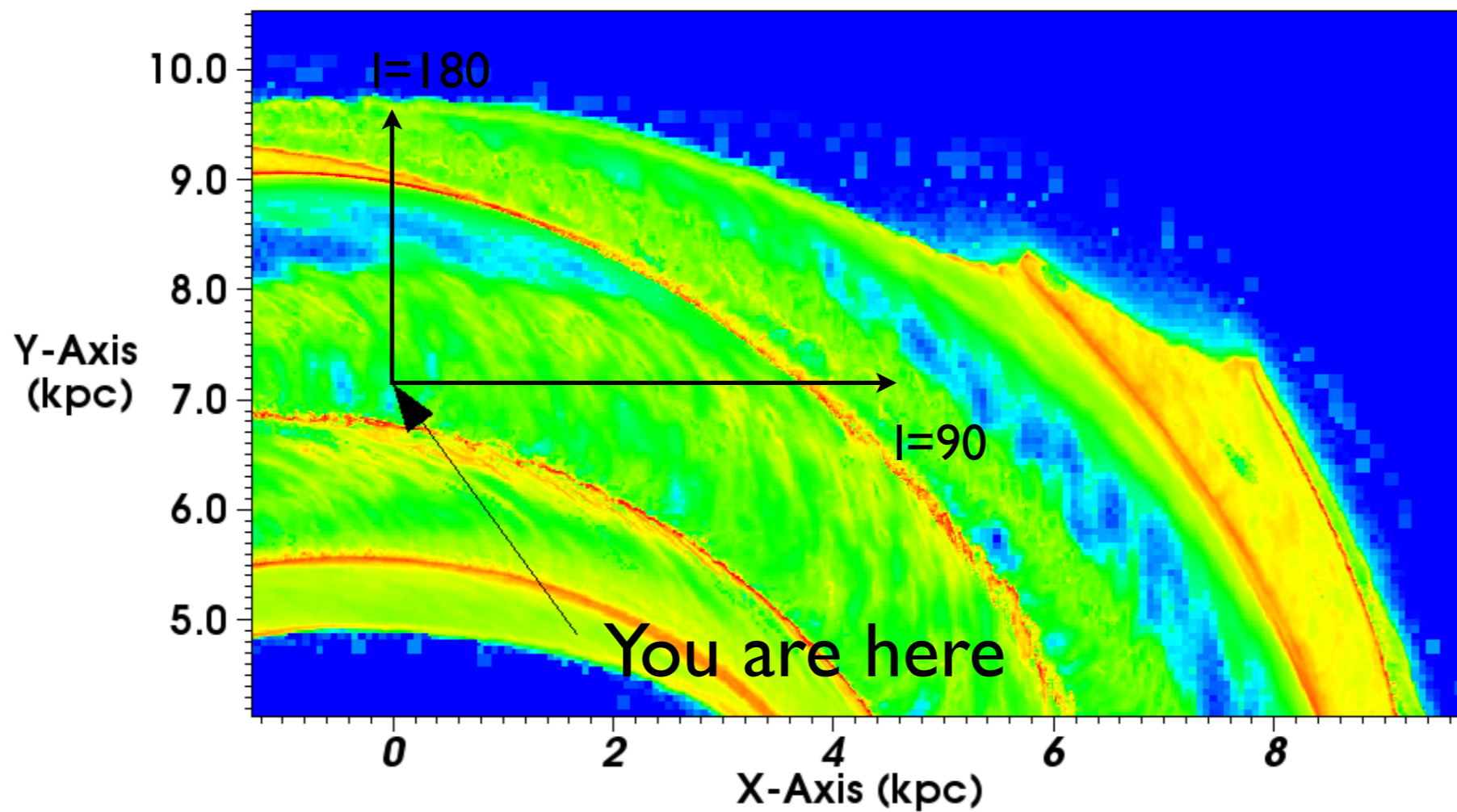
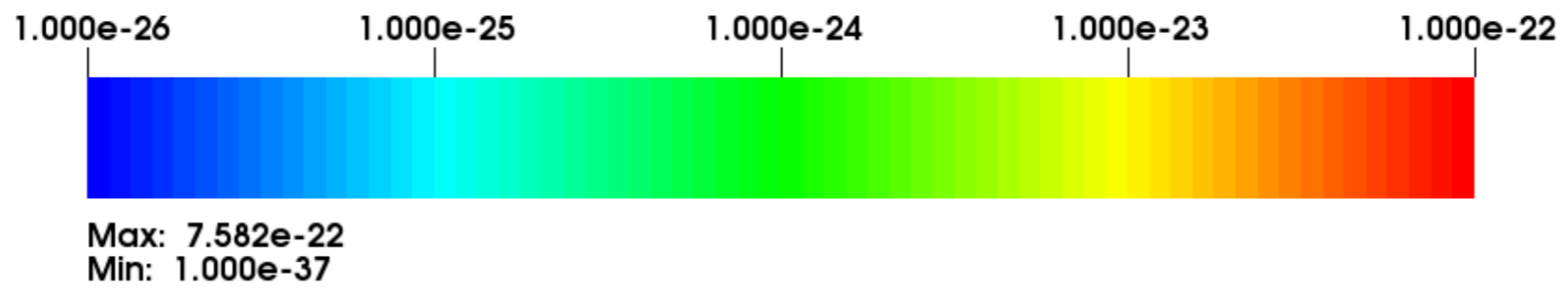
Radiative transfer
(TORUS, AMR)



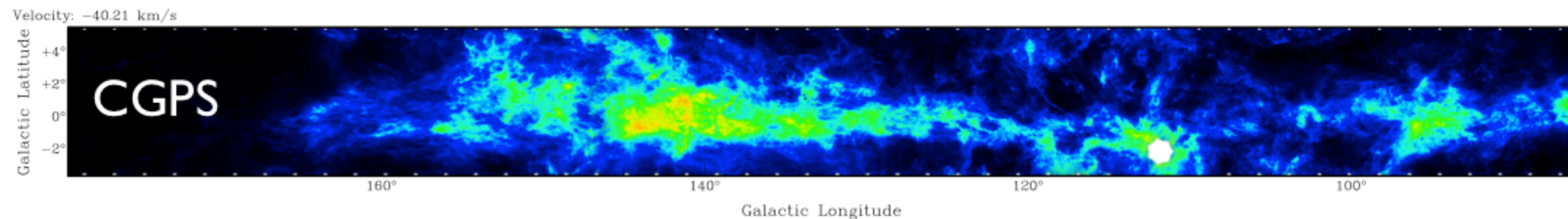
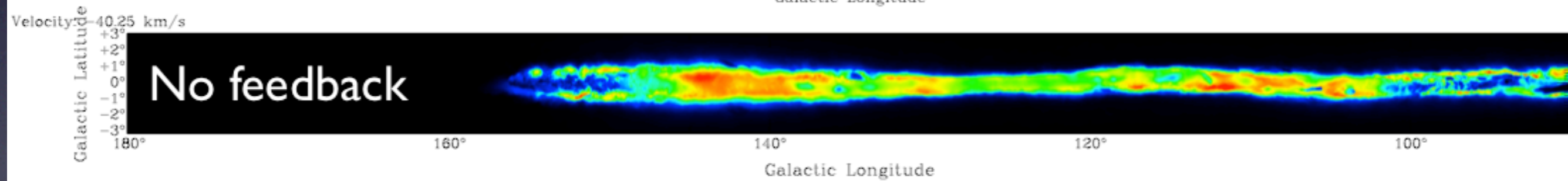
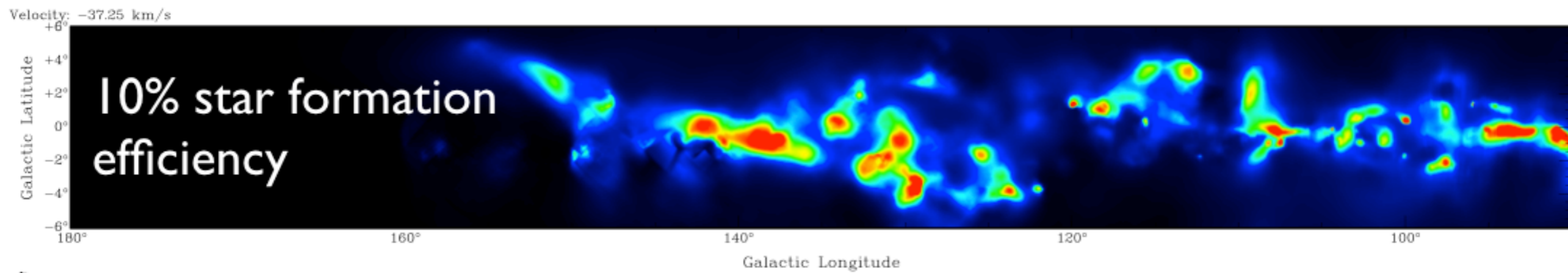
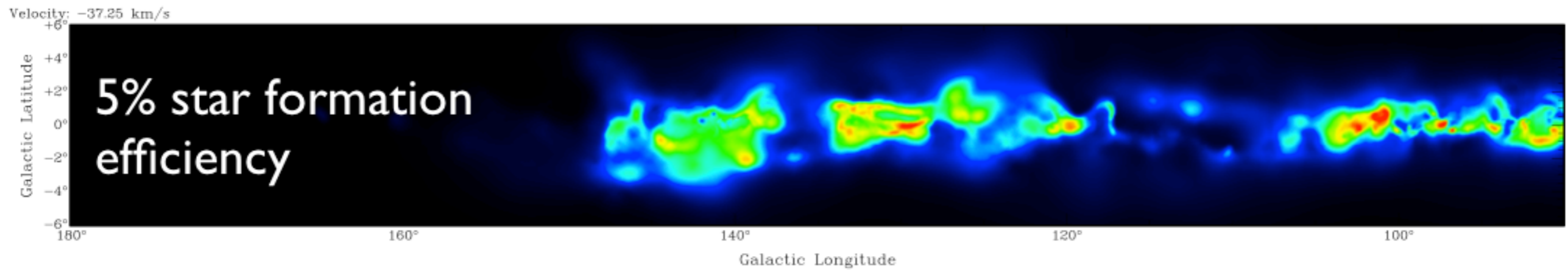
Synthetic observations
 $T_b(l,b,v_{\text{LOS}})$

$$T_b(l,b,v_{\text{LOS}})$$



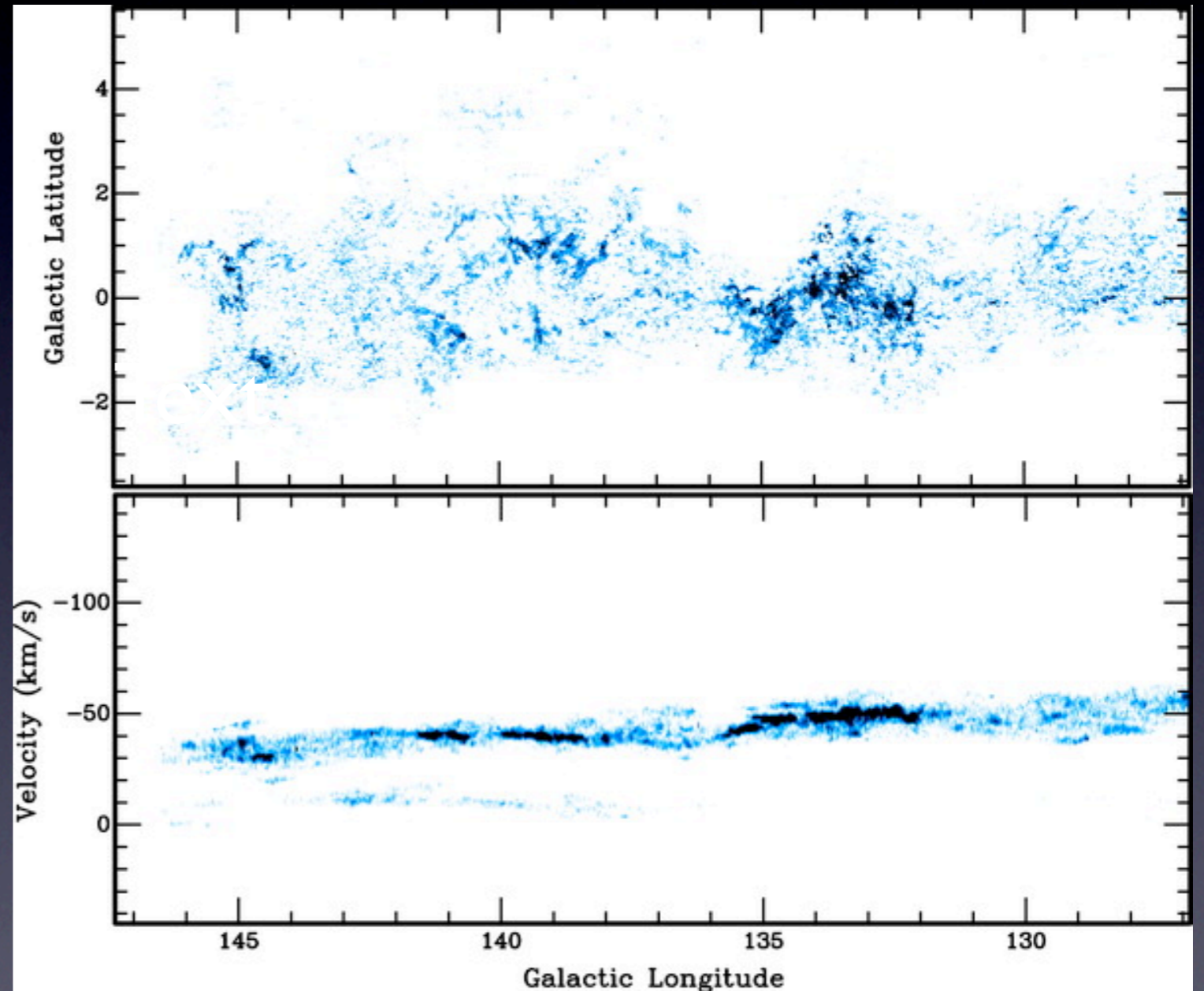


“Perseus” arm



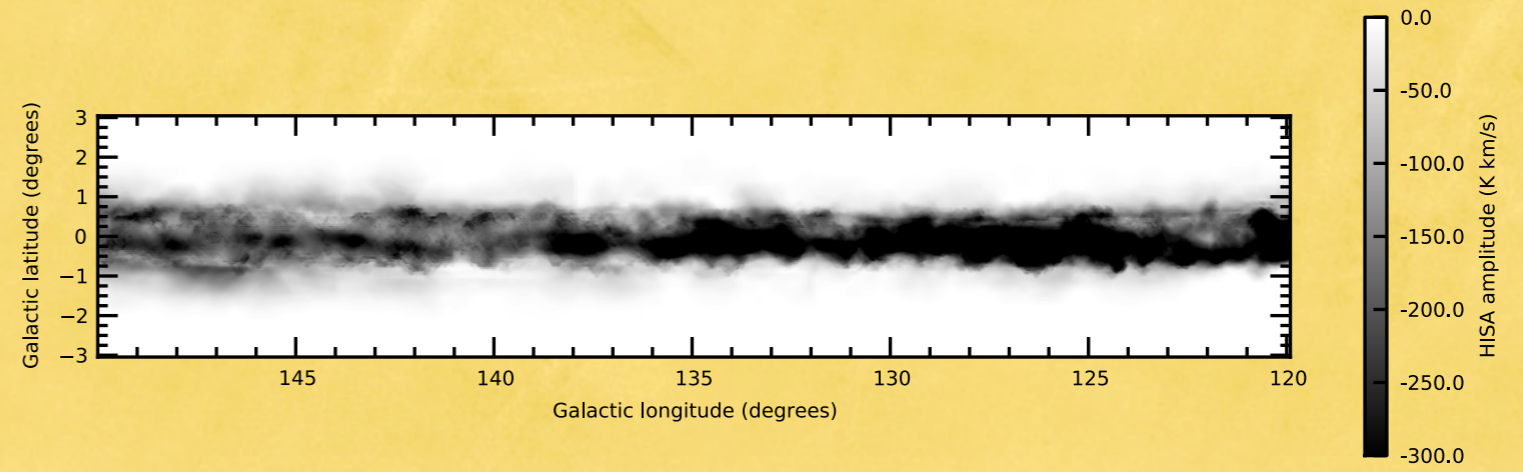
HISA

- HI self-absorption
- Cold, dense HI viewed against warmer background at same v_{LOS}
- Trace early stages of cloud formation
- Detected in observations

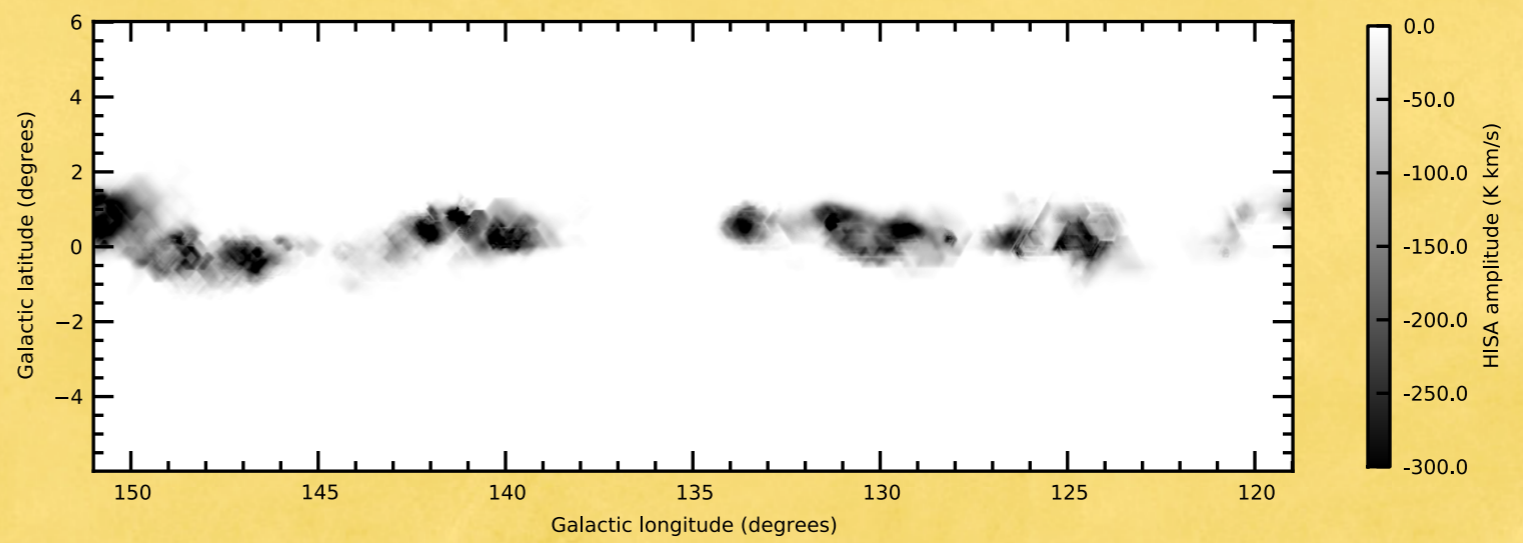


Gibson et al, 2005, ApJ, 626, 195

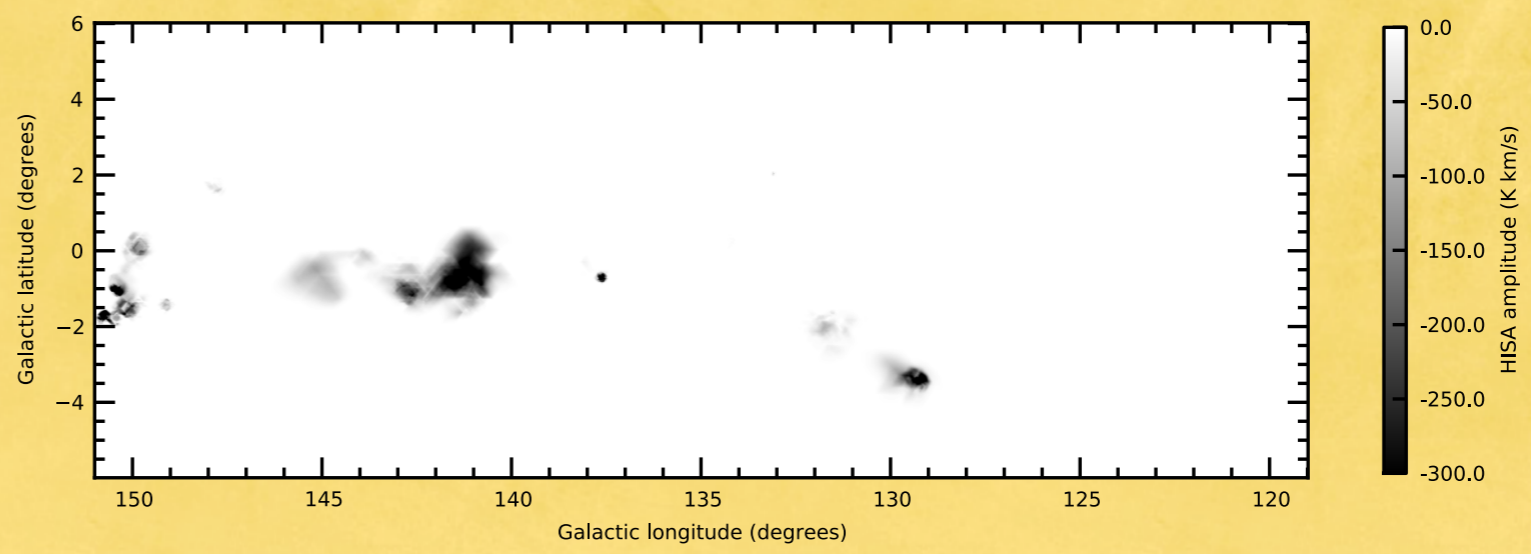
No feedback



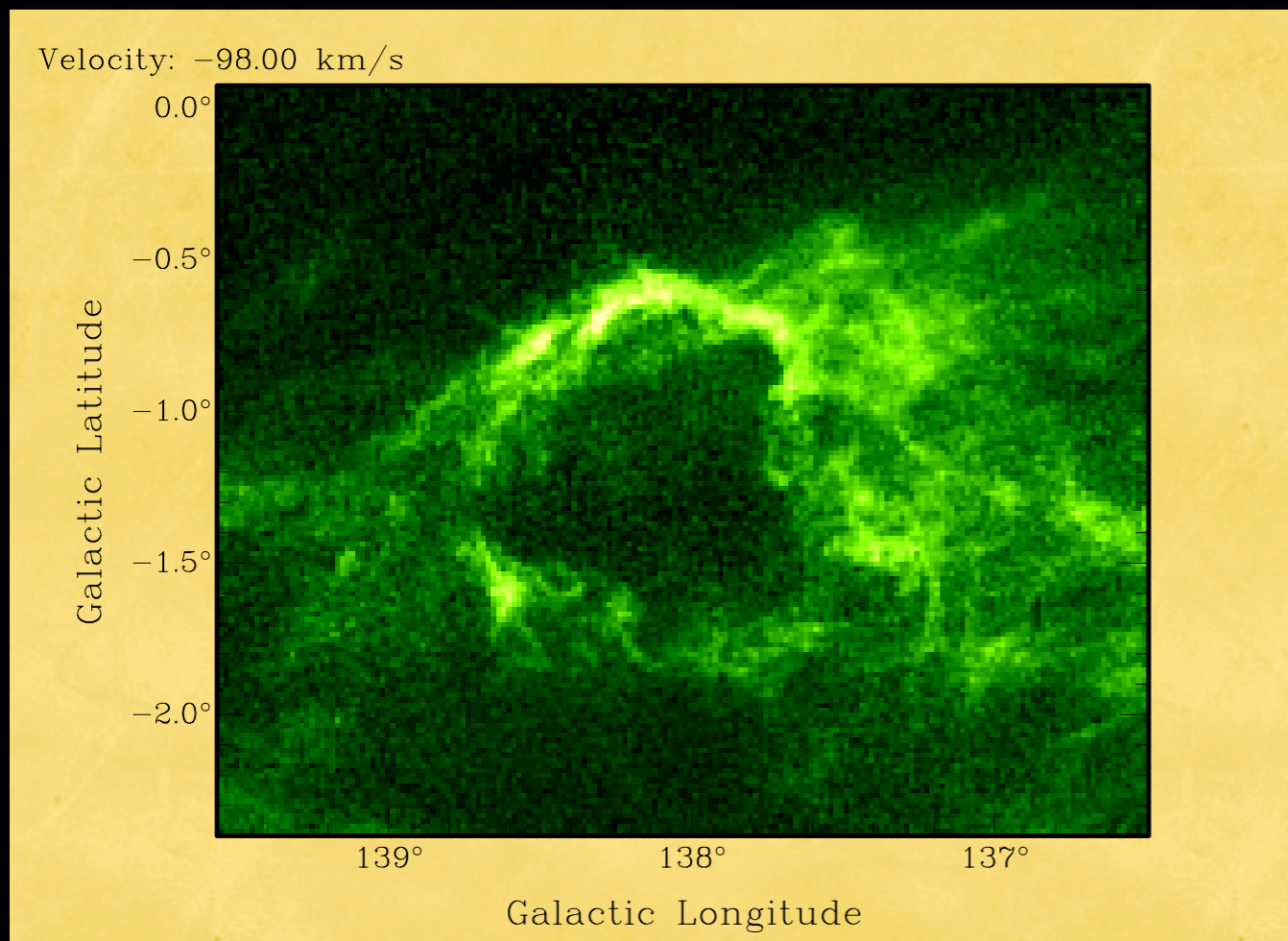
5% efficiency



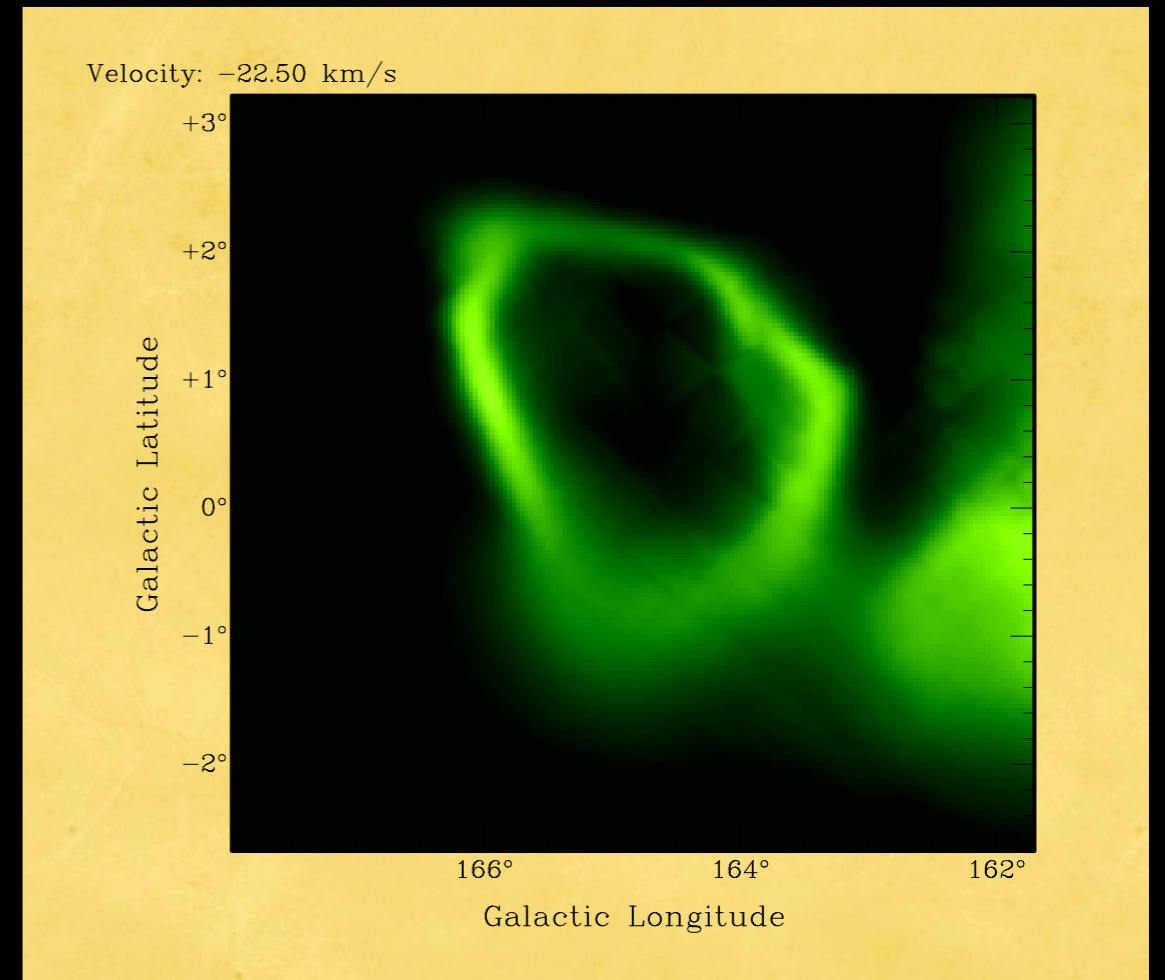
10% efficiency



Supernova shells



Canadian Galactic
Plane Survey



Synthetic observation

Conclusions

- H_{I} scale height matches observations better when feedback included
- More realistic HISA with feedback
- Can form supernova driven shells
- See Acreman et al, arXiv:1201.4970