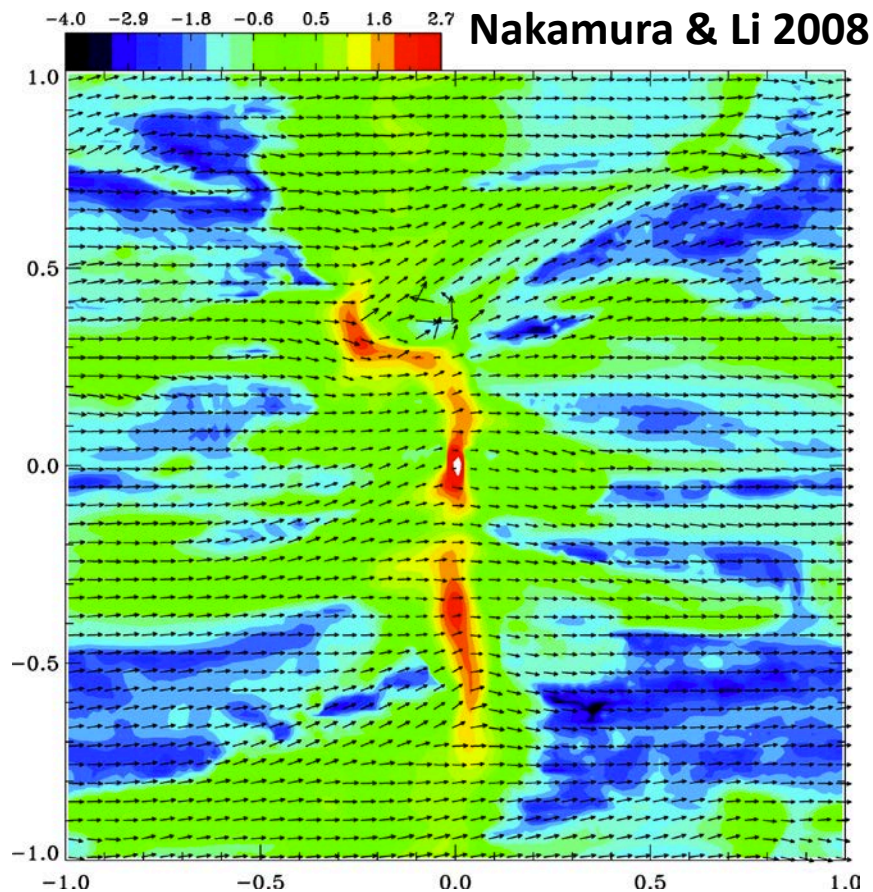
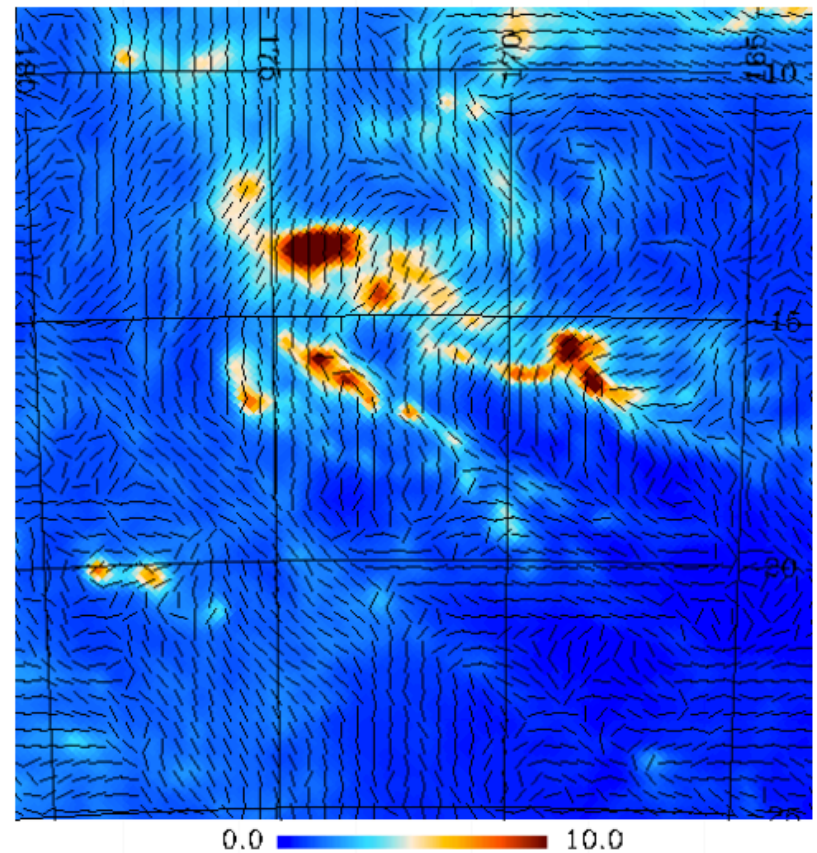


Panel Discussion II

Importance of Magnetic Fields

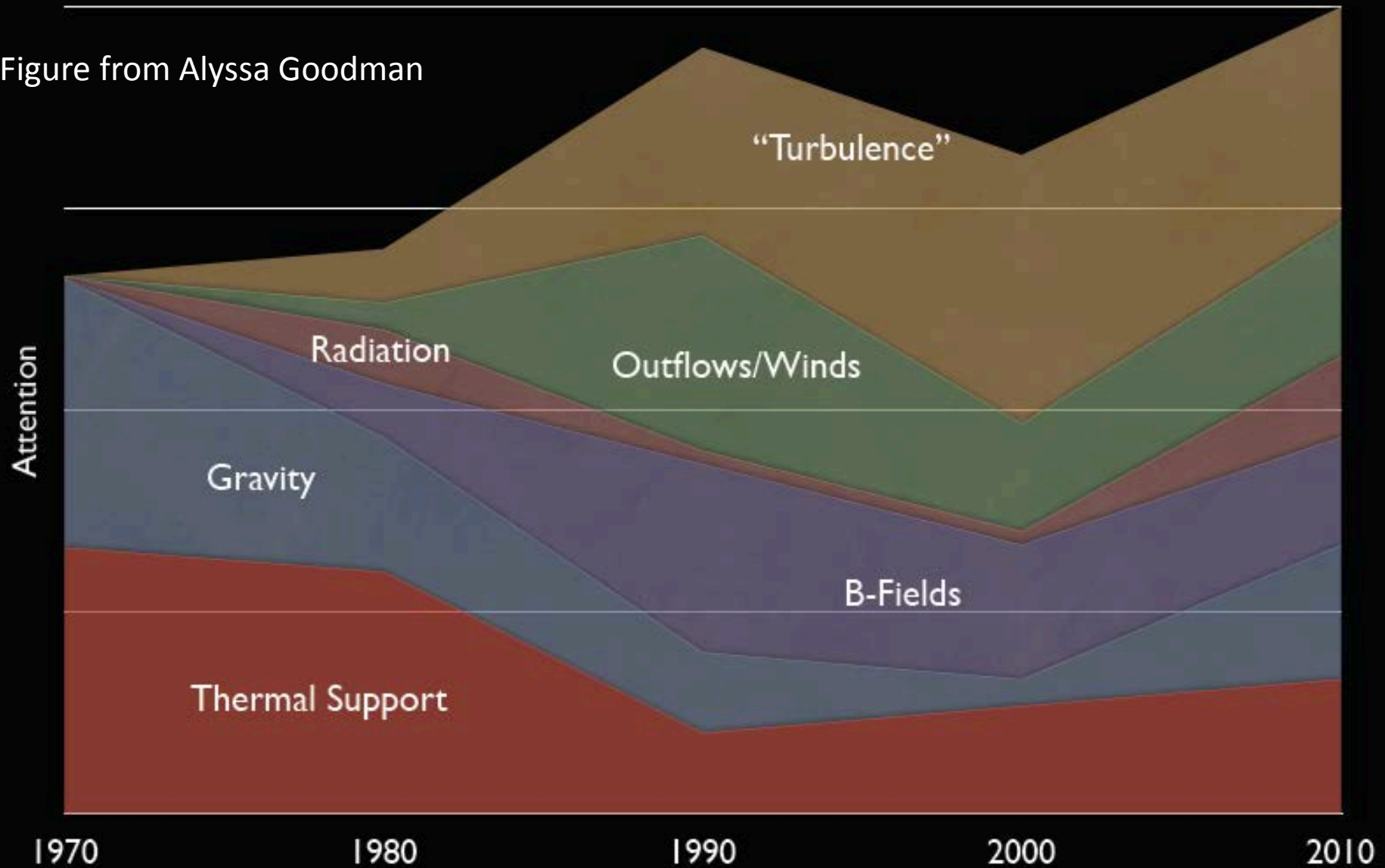


Planck XXII: arXiv: 1409.6728



Changes of Heart, rather than in Physics...

Figure from Alyssa Goodman



Questions for Discussion

1. What is the connection between magnetic fields and dense filaments?
 - Filament formation from diffuse ISM
 - Internal dynamics (support) and evolution (core formation)
 - Observational signatures
2. Are magnetic fields dynamically important for H I clouds?
3. Are magnetic fields dynamically important on ~ 10 pc scale of molecular clouds? Are clouds magnetically sub- or super-critical?
4. Are clouds sub- or super- Alfvénic?

5. Are simulations with ideal MHD sufficiently accurate to illustrate cloud evolution and filament formation?
6. How does one quantitatively compare MHD simulations to observations?
 - Polarization maps derived from dust
 - Zeeman
 - Scaling relationships (ex. $B \sim n^{\kappa}$)
7. Is there a connection between low column density “striations” and dense filaments?
8. Other?

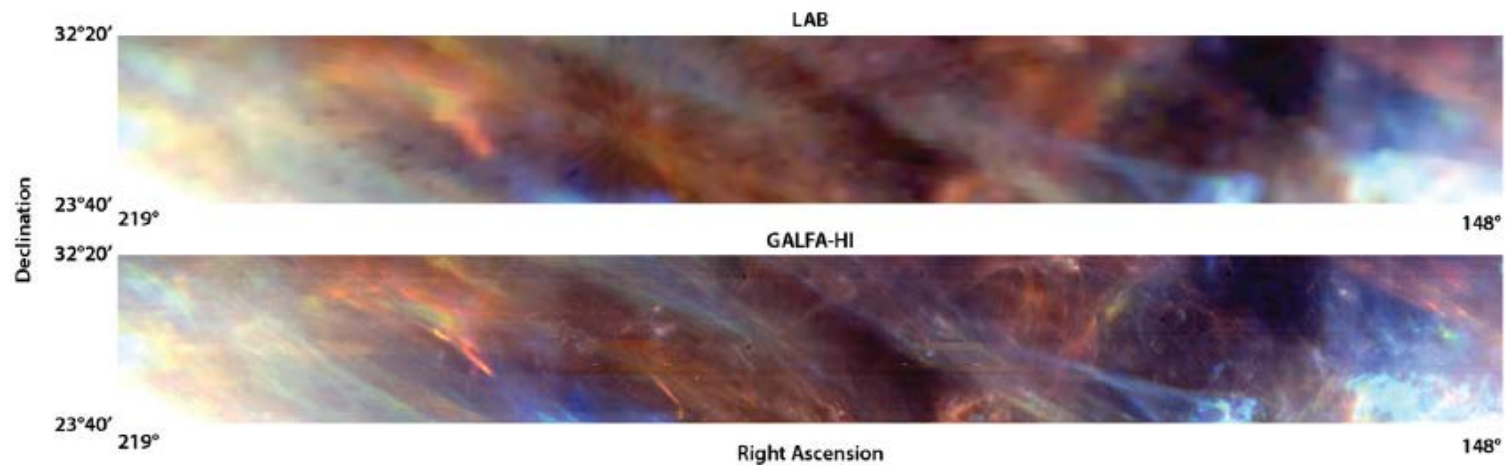
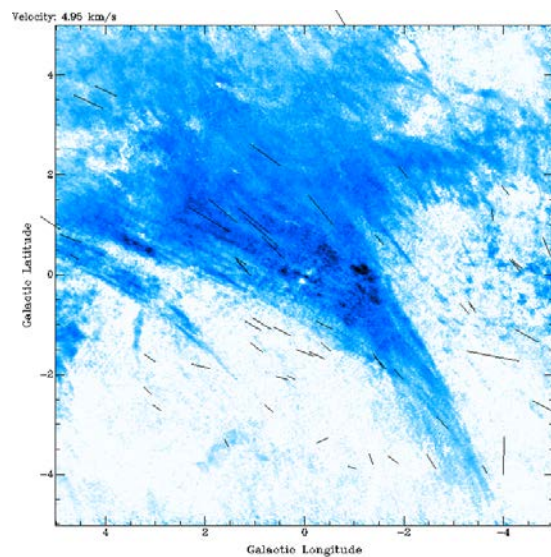
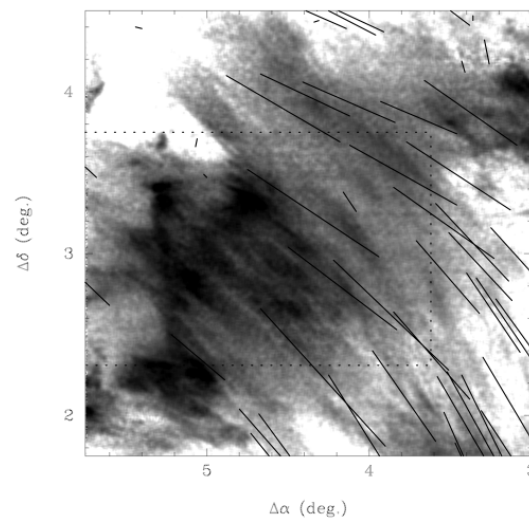


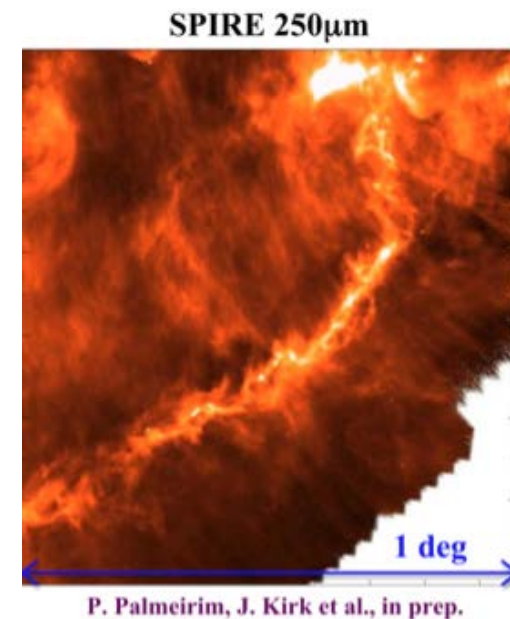
Figure 1. H I data at high Galactic latitude. Top panel is taken from the $36'$ resolution Leiden-Argentina-Bonn survey (Kalberla et al. 2005, LAB), bottom panel from a section of the $4'$ resolution GALFA-H I DR1 data analyzed in this work. Red, blue, and green channels represent -7 to -4 km s $^{-1}$, -3 to -1 km s $^{-1}$, and 0 to 3 km s $^{-1}$, respectively. Brightnesses are shown in a logarithmic stretch in brightness temperature from 0.5 K (dark) to 5 K (light), or an H I column density range of 3×10^{18} cm $^{-2}$ to 3×10^{19} cm $^{-2}$. The slender fiber features can be seen in the bottom panel but are washed out by the low resolution of the LAB survey in the top panel.



McClure-Griffiths et al. 2006



Heyer+08



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4. Are clouds sub- or super- Alfvénic?
5. Are simulations with ideal MHD sufficiently accurate to illustrate cloud evolution and filament formation?
6. How does one quantitatively compare MHD simulations to observations? Is there a connection between low column density “striations” and dense filaments?
7. Other?