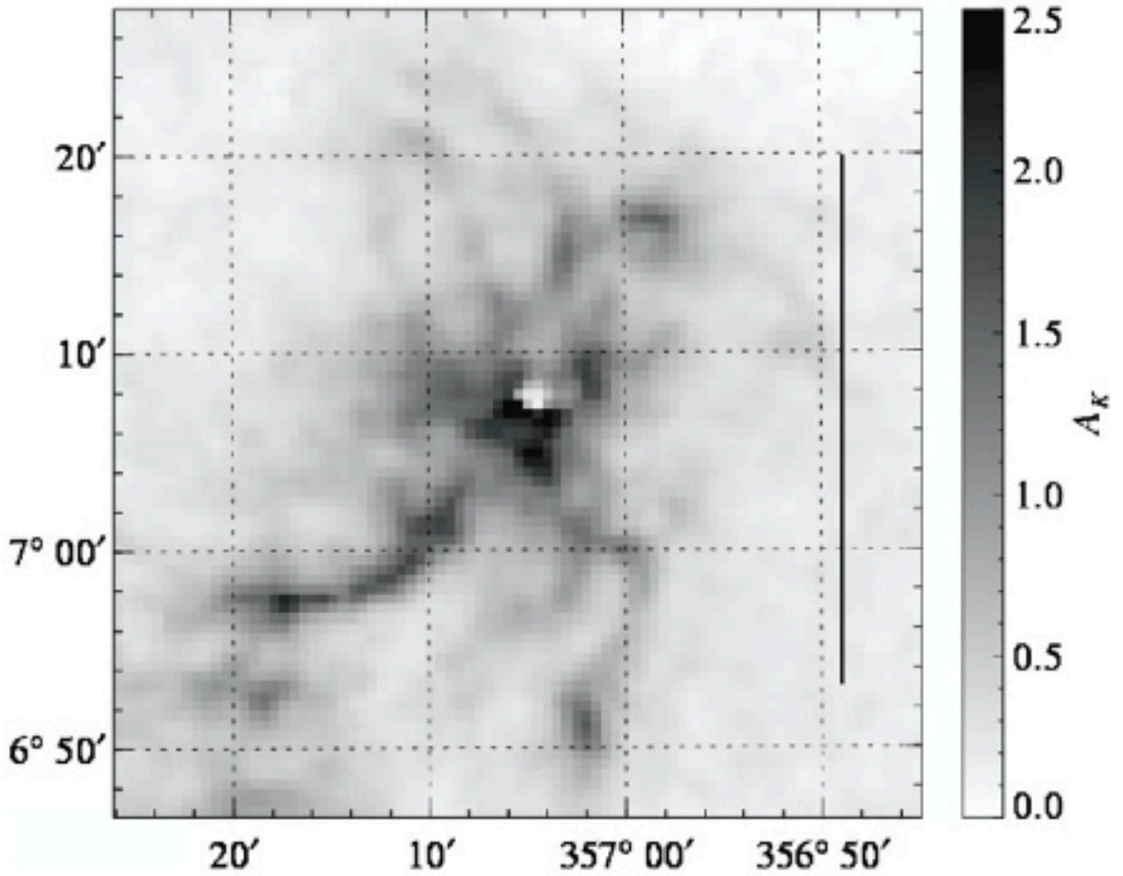

Figure 3. A_K image of Barnard 59 in the Pipe Nebula, based on near-infrared star counts (Lombardi et al. 2006), showing two curving filaments to the south and SE, and one to the NW. The central white spot is an artifact. The scale bar indicates 1 pc.

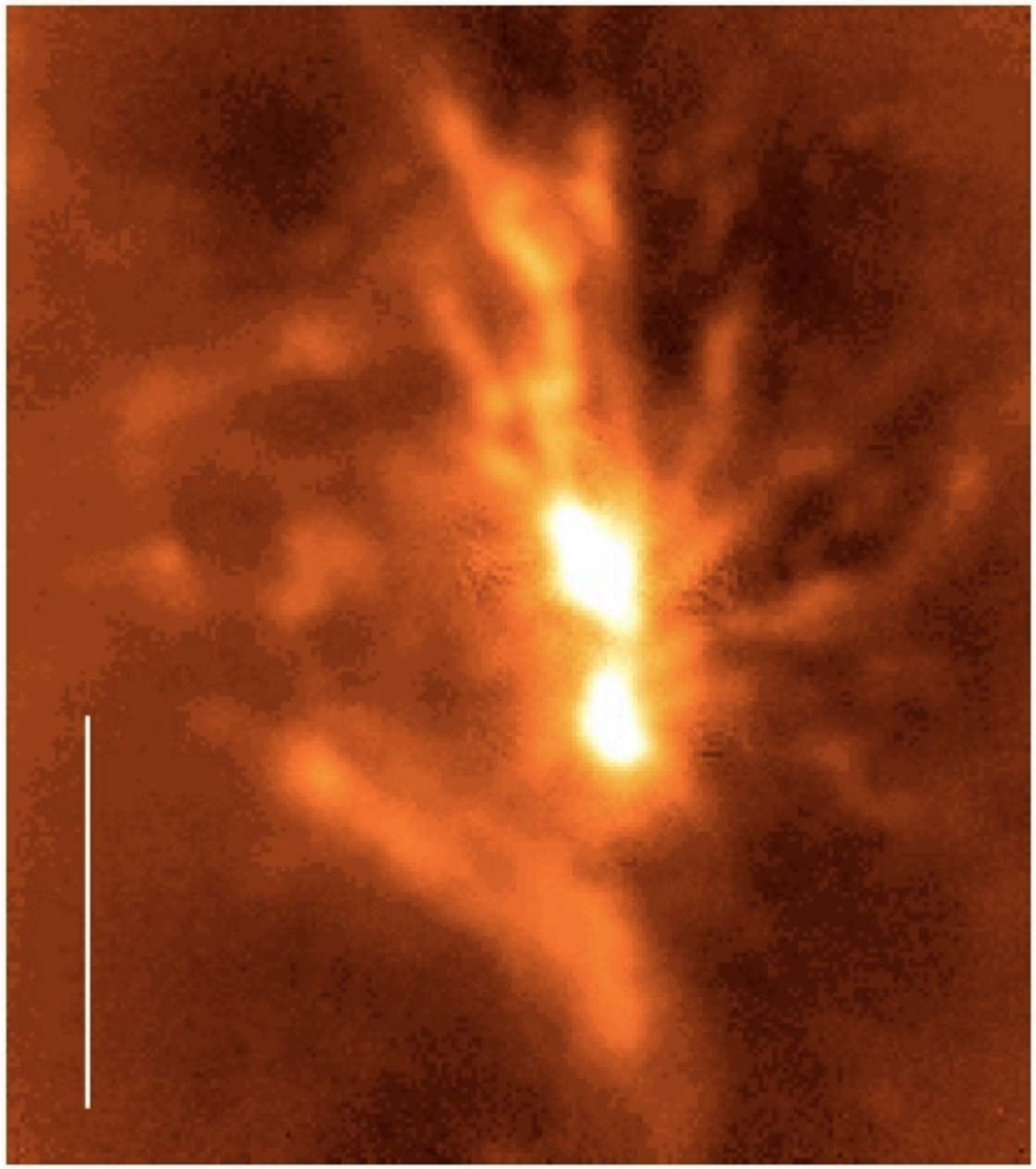

Figure 10. Integral filament associated with the Orion Nebula Cluster, in a submillimeter continuum image at 0.85 mm (Johnstone & Bally 1999). The bright elongated hub radiates four arms to the west and three to the north, in addition to the "bar" in the south. The scale bar indicates 0.5 pc.

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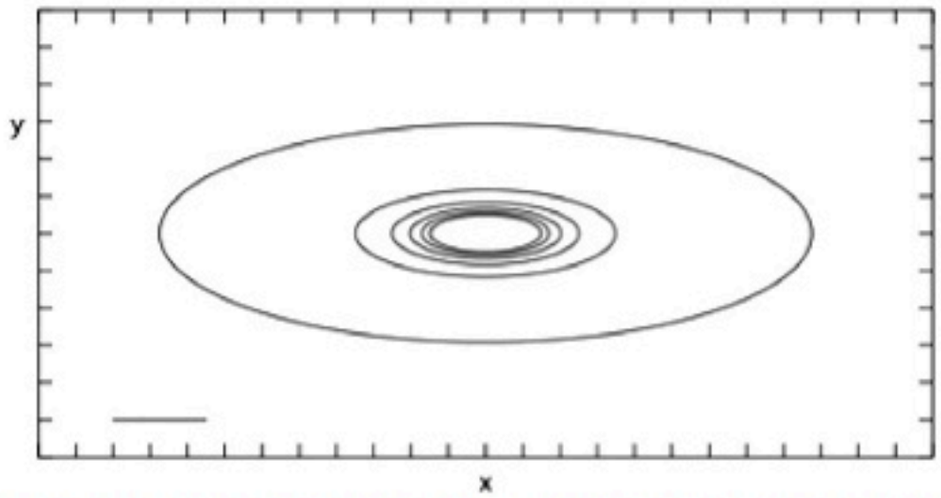


Figure 18. Unmodulated column density contours of a compressed clumpy medium as in Figures 16 and 17 but with elongation parameter $g = 3$. As in Figure 16, contours start at 3.2×10^{21} cm^{-2} and increase in steps of 1.0×10^{21} cm^{-2}. Ticks have spacing 2 pc, and the scale bar indicates 5 pc.

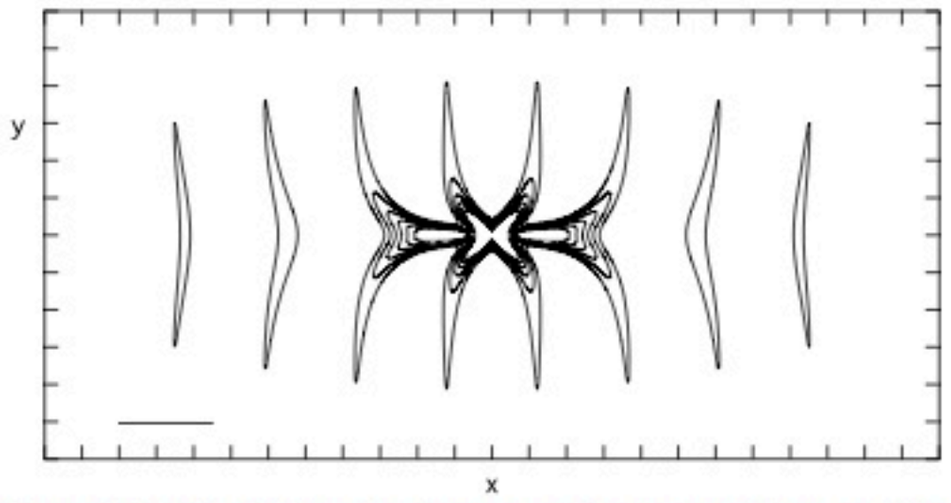
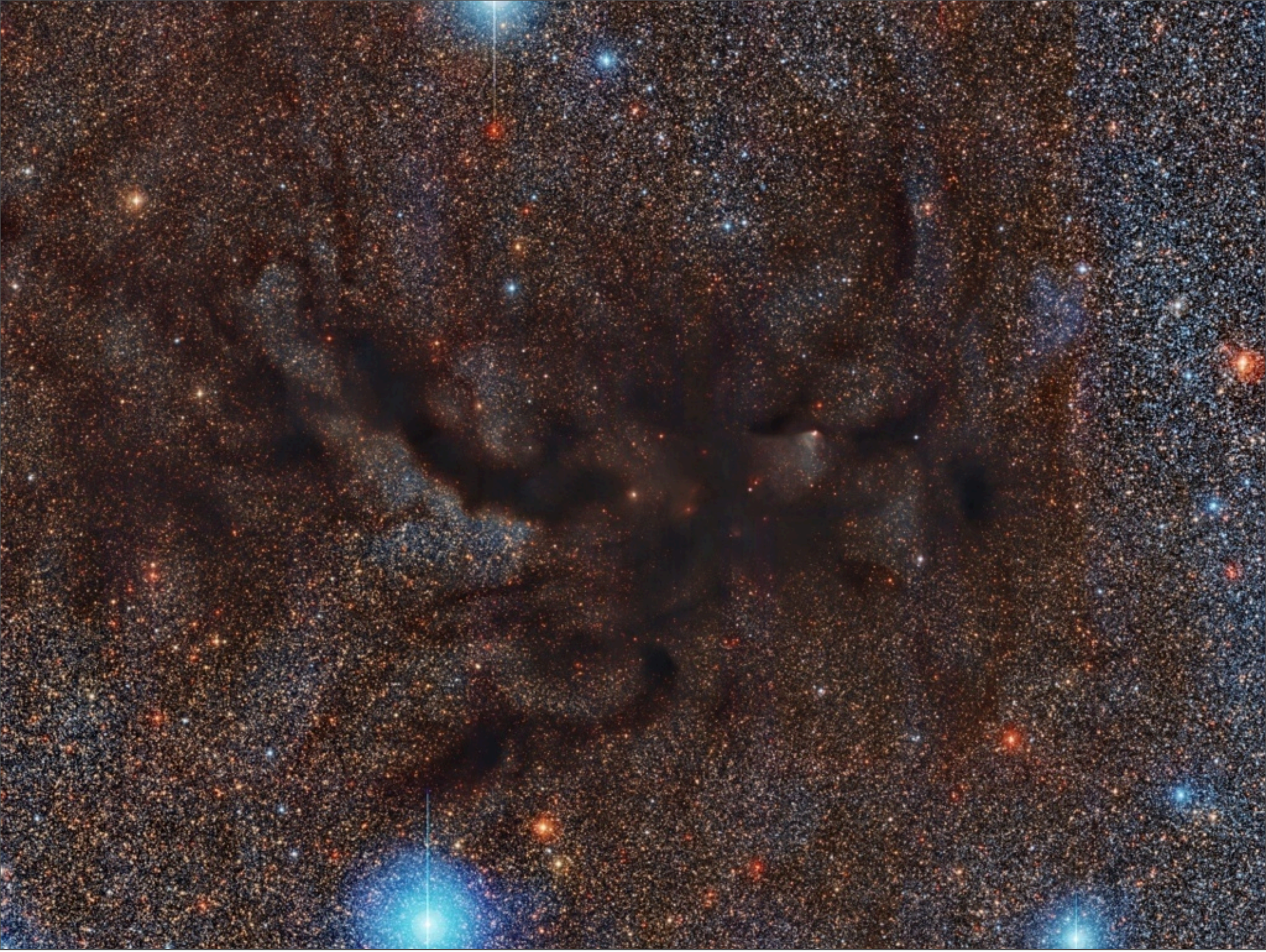


Figure 19. Modulated column density contours of a compressed clumpy medium with parameters as in Figures 16 and 17 but with elongation parameter $g = 3$. As in Figure 17, contours start at 5.25×10^{21} cm^{-2} and increase in steps of 1.00×10^{21} cm^{-2}. Tick marks have spacing 2 pc, and the scale bar indicates 5 pc. Here, the most prominent filaments have regular spacing and are nearly parallel. They converge on an elongated hub as seen in Figures 8, 9, 14, and 15.

Basic idea: a self-gravitating layer can develop and preserve filamentary structure

Phil's model: compress a clumpy molecular cloud gas is into a layer which is vertically self-gravitating and density modulated, similar to the isothermal equilibrium of Schmid-Burgk (1967).
Insight: if you could shrink the S-B scale length toward the hub, you would make the arms curve inward.

WARNING: Solution in the paper is only a valid equilibrium as you approach the outermost extent of the layer. The inner structure is an extrapolation, is not in equilibrium, and may not be physically justified.



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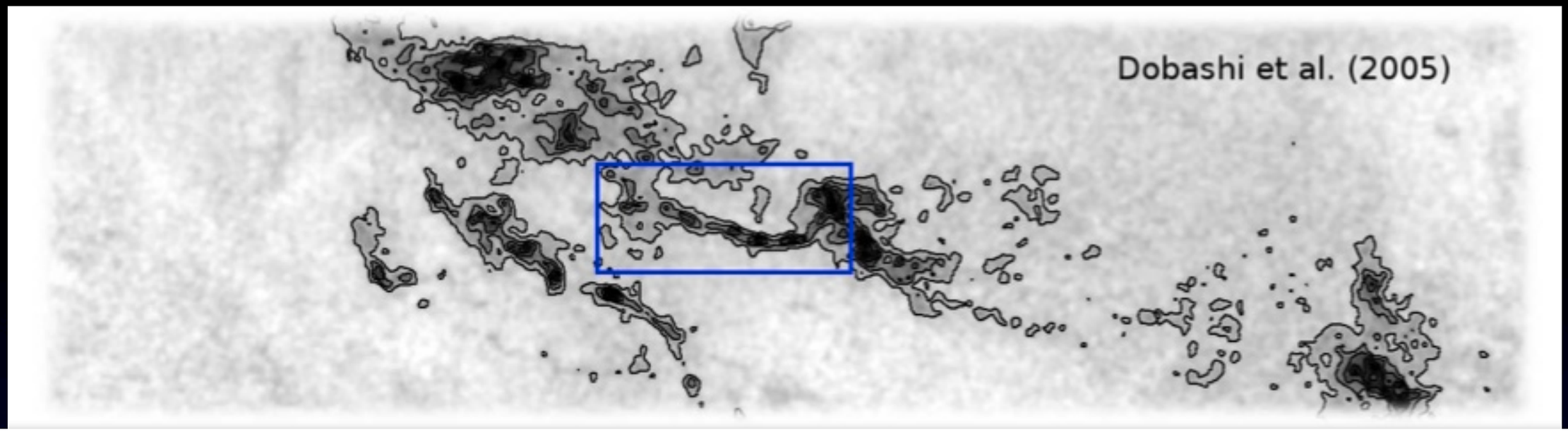

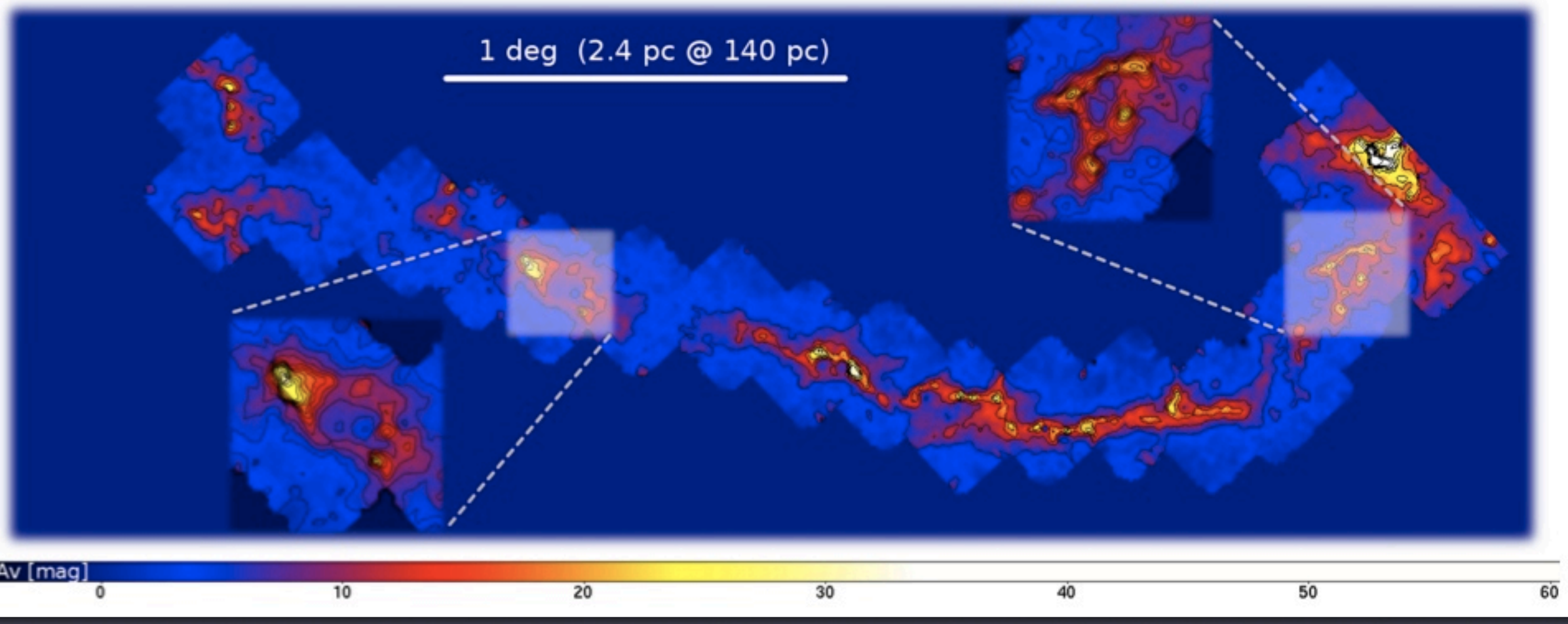

Schmalz et al. 2009 in prep * See Poster *

Thanks Phil!