Radio Emission & Environment : Tracing Galaxy HI Content and Mapping the Cosmic Web

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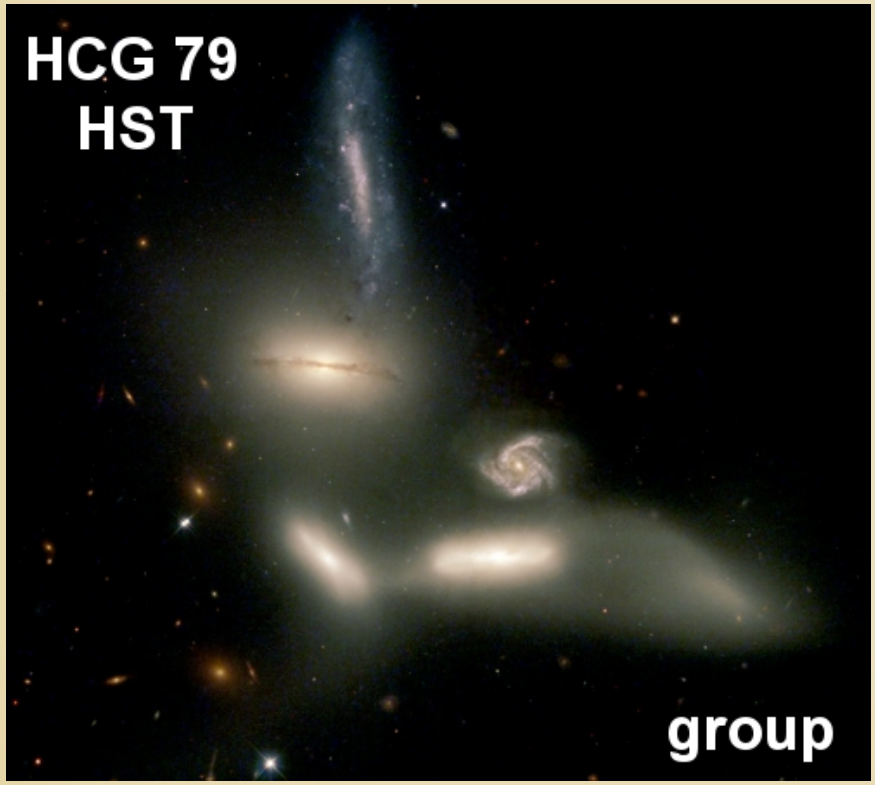
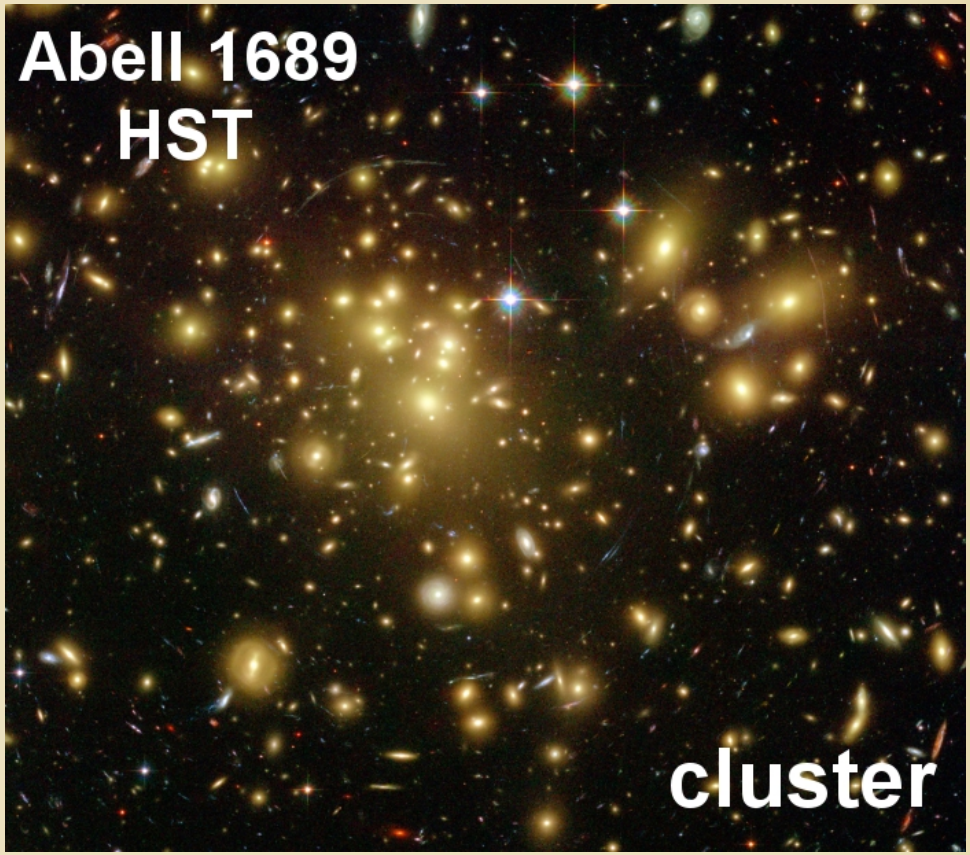
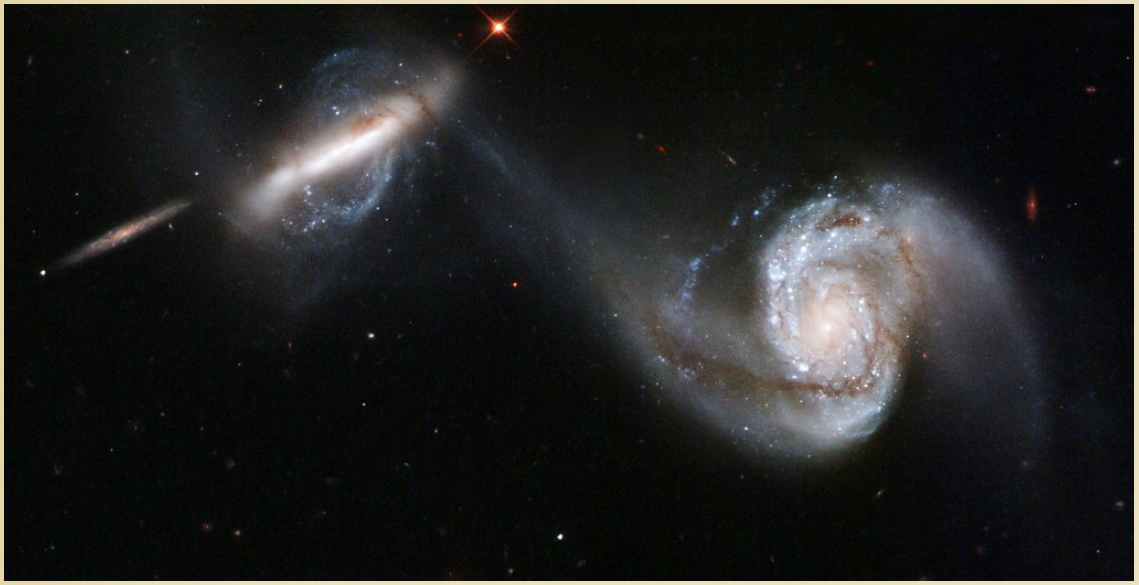
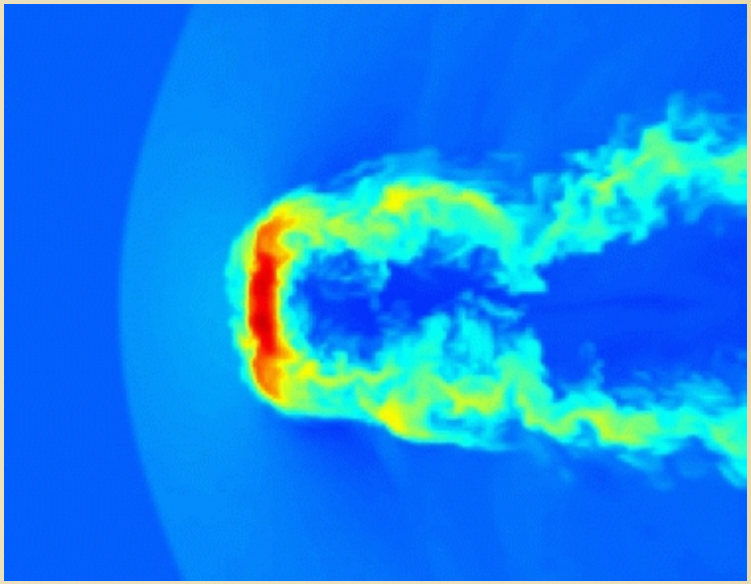
Environment affects the evolution of galaxies.

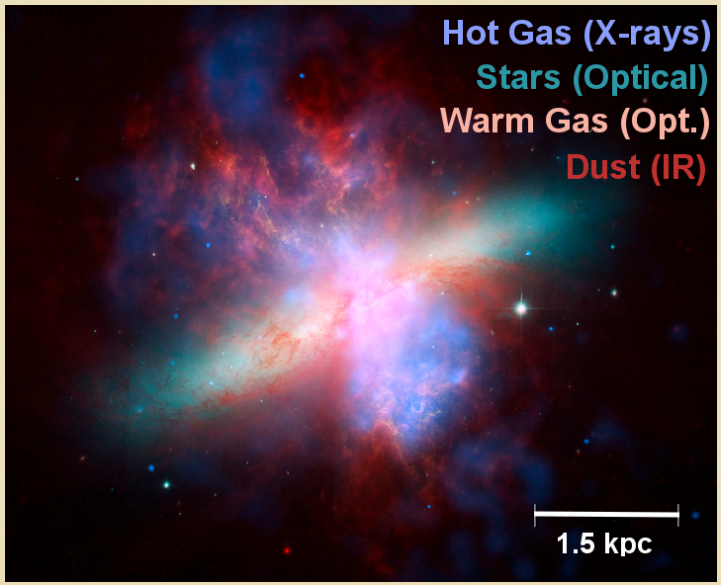




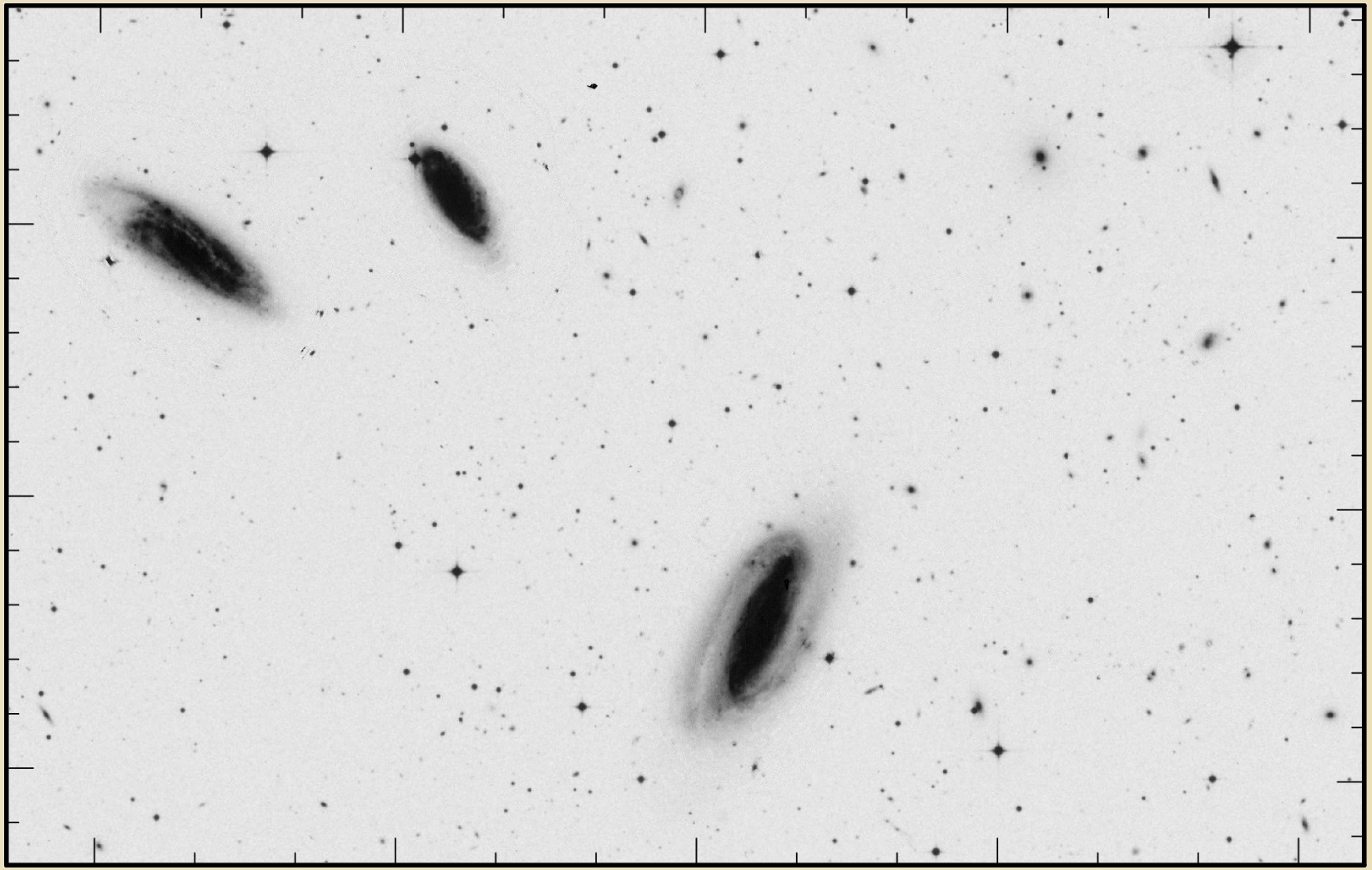
The relative contributions of physical processes that alter galaxies are not well known, especially across environment.







HI observations are a powerful probe of galaxy interactions.



Freeland, Stilp, Wilcots 2009

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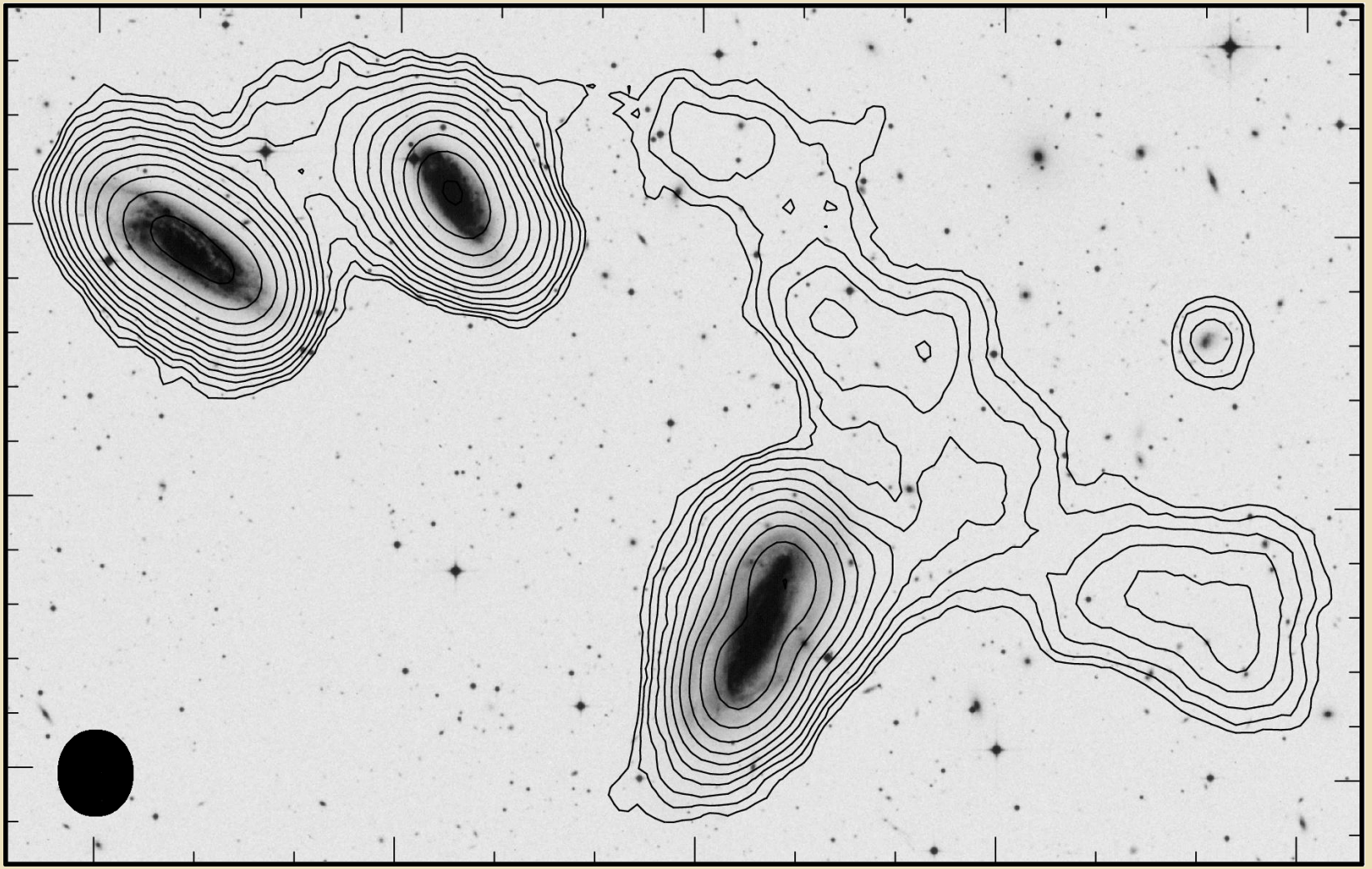
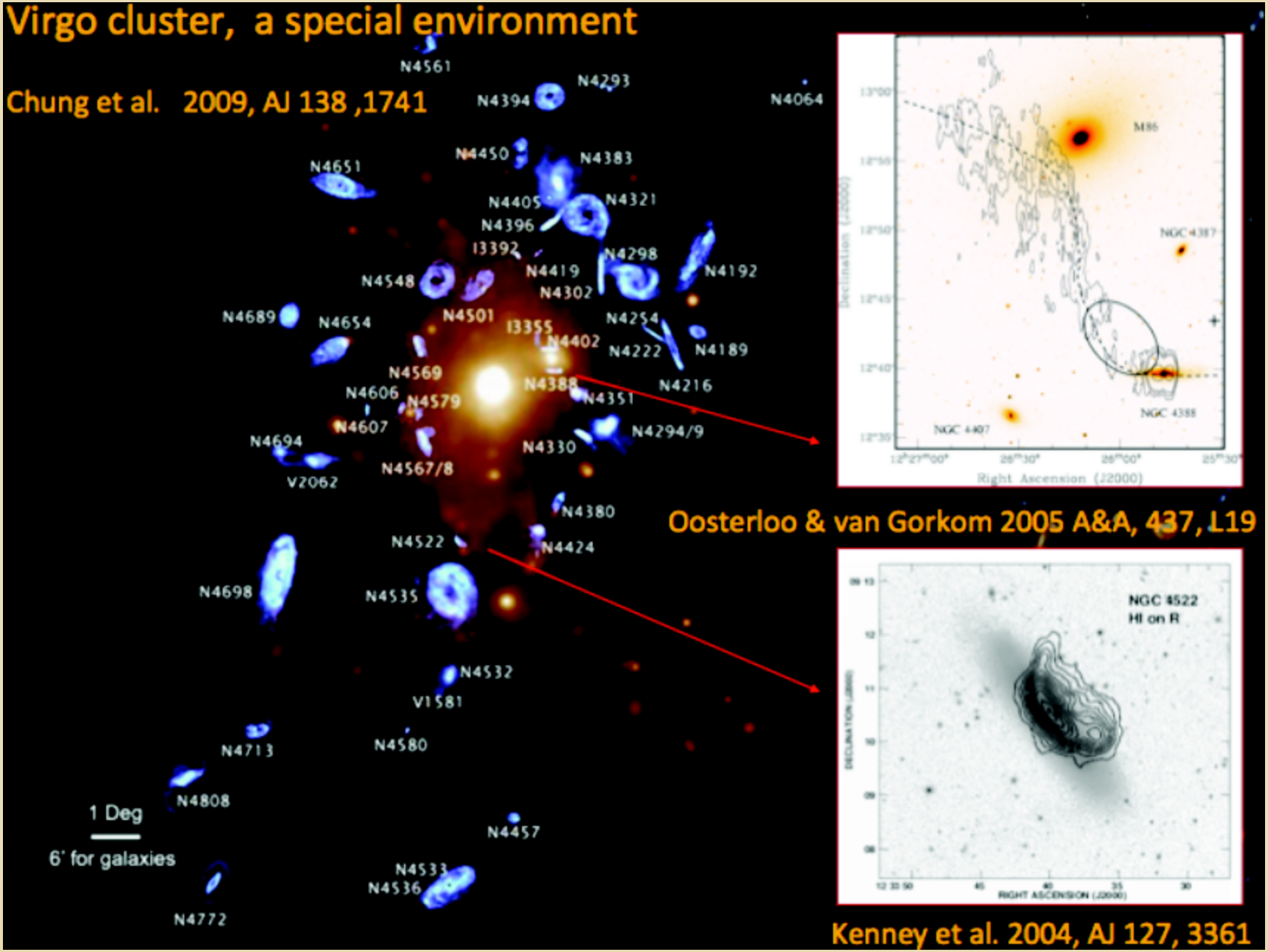
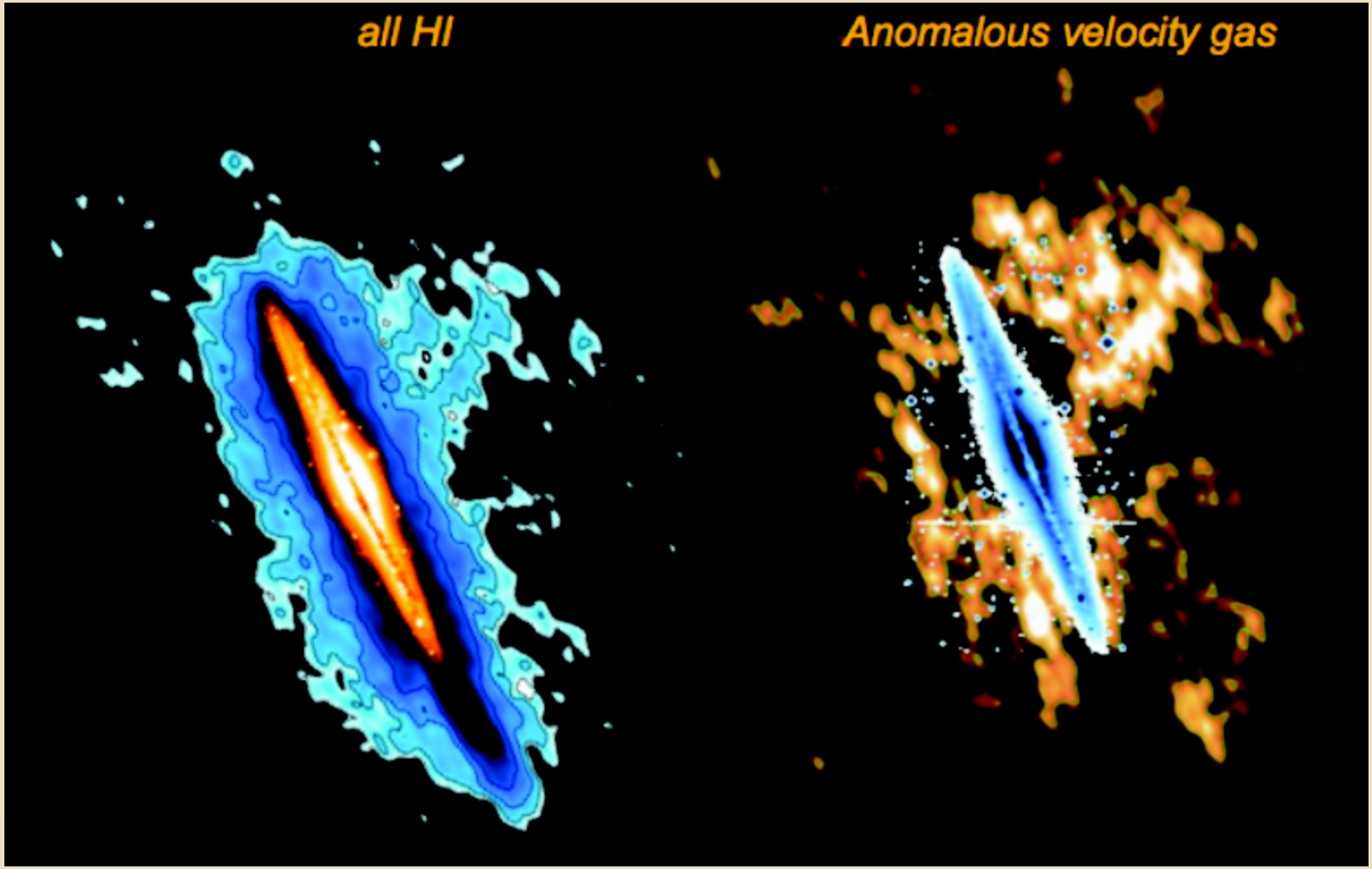


Freeland, Stilp, Wilcots 2009

Ram pressure stripping removes HI from galaxies in clusters.

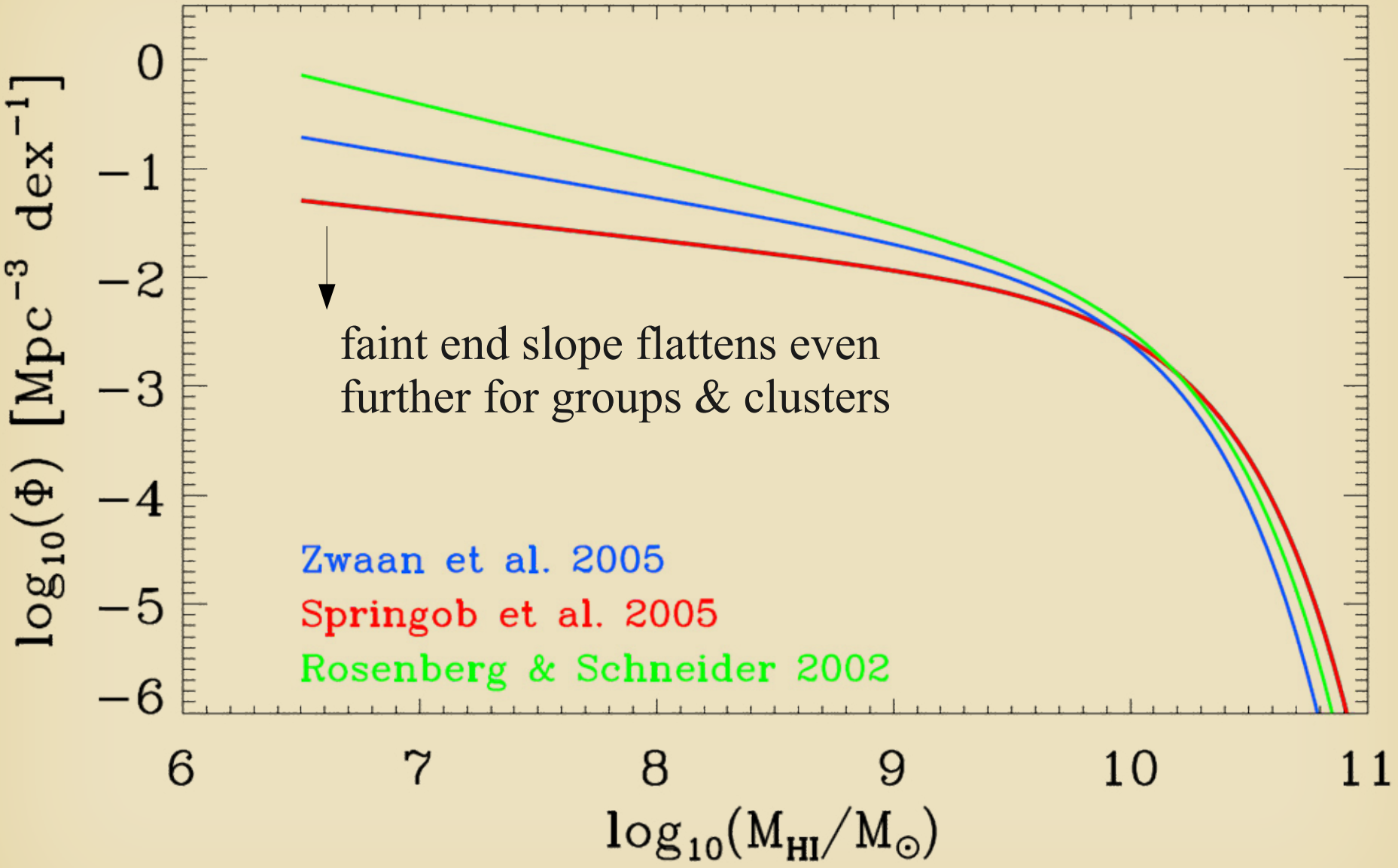


Mapping HI to very low (~10^{18} cm^{-2}) column densities traces the interface between disks and the intergalactic medium.



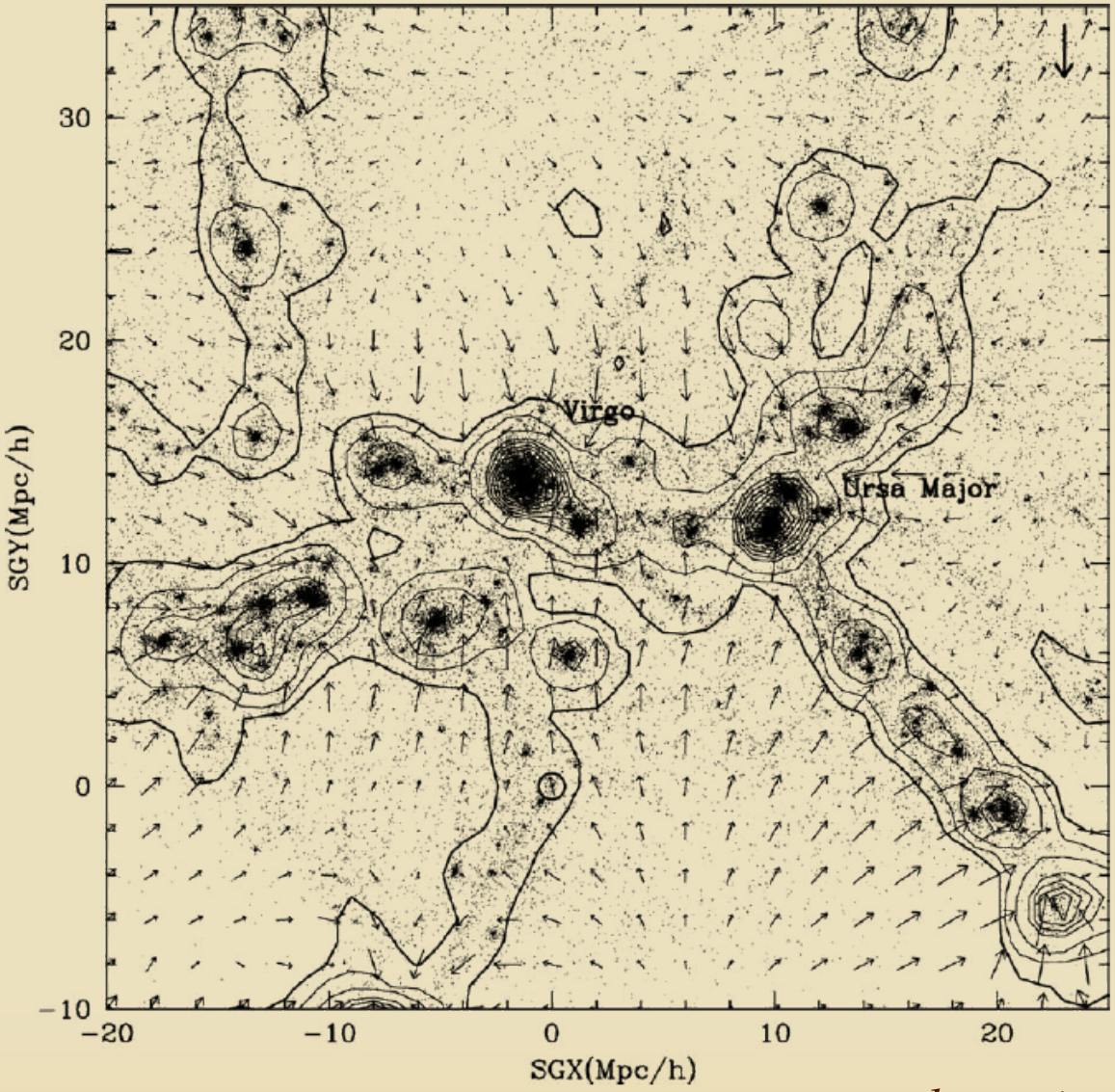
Oosterloo, Fraternali, & Sancisi 2007

The HI mass function varies with environment.



A. Martin, ALFALFA

Large scale structure formation shocks illuminate the cosmic web in radio continuum.



schematic, Klypin+2003

SKA will map the neutral gas content of large samples of galaxies, across environment, to low column densities. Allowing us to :

Analyze the mechanics and relative importance of interactions between galaxies and ram pressure stripping in removing HI and suppressing star formation.

Trace the disk gas interface with the ionized intergalactic medium and search for evidence of accretion.

Measure the HI mass function with precision at $z > 0$.

And, in radio continuum, map the cosmic web of large scale structure in the local universe.