The low column density HI Universe

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M81 group, Yun et al. (1994)

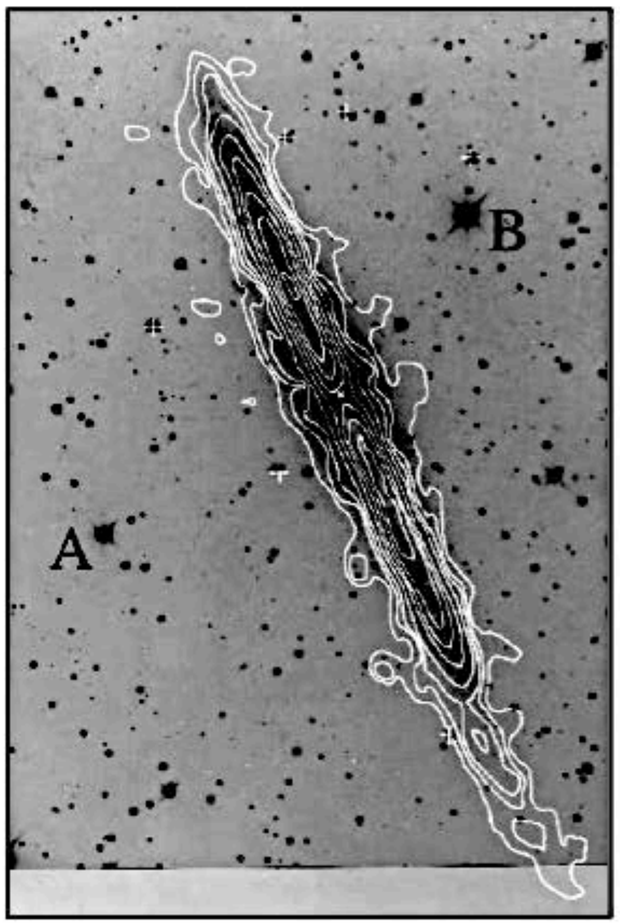
1979: *Sancisi & Allen* → 1997: *Swaters et al.* → 2007: *Oosterloo, Fraternali & Sancisi*

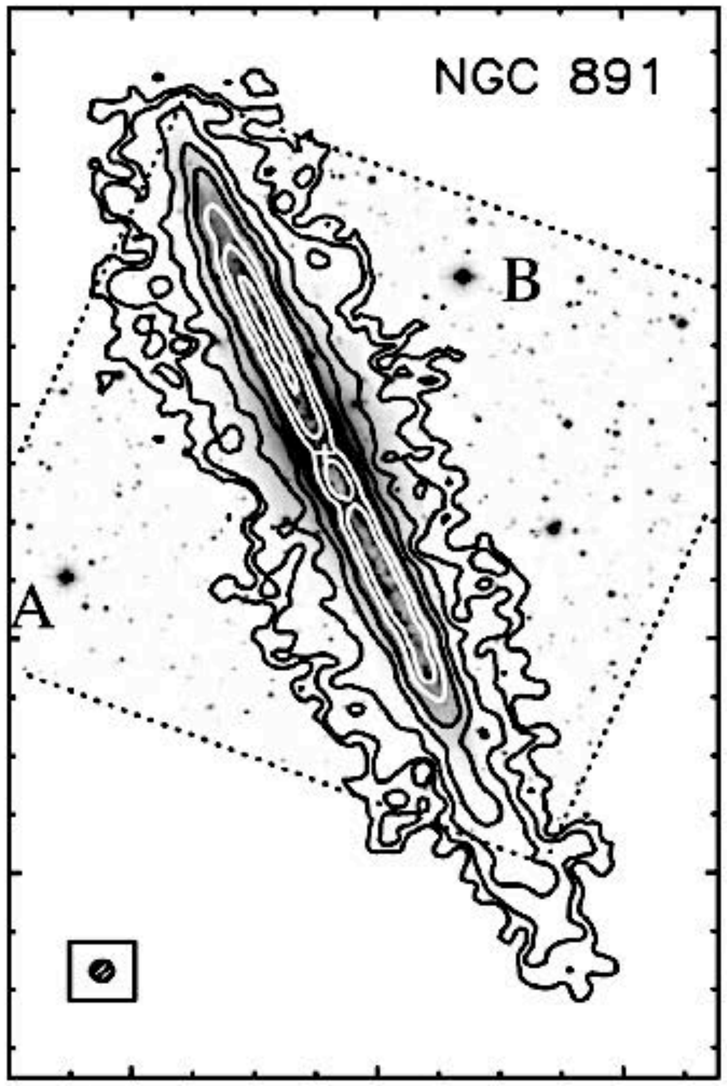
Minimum column density

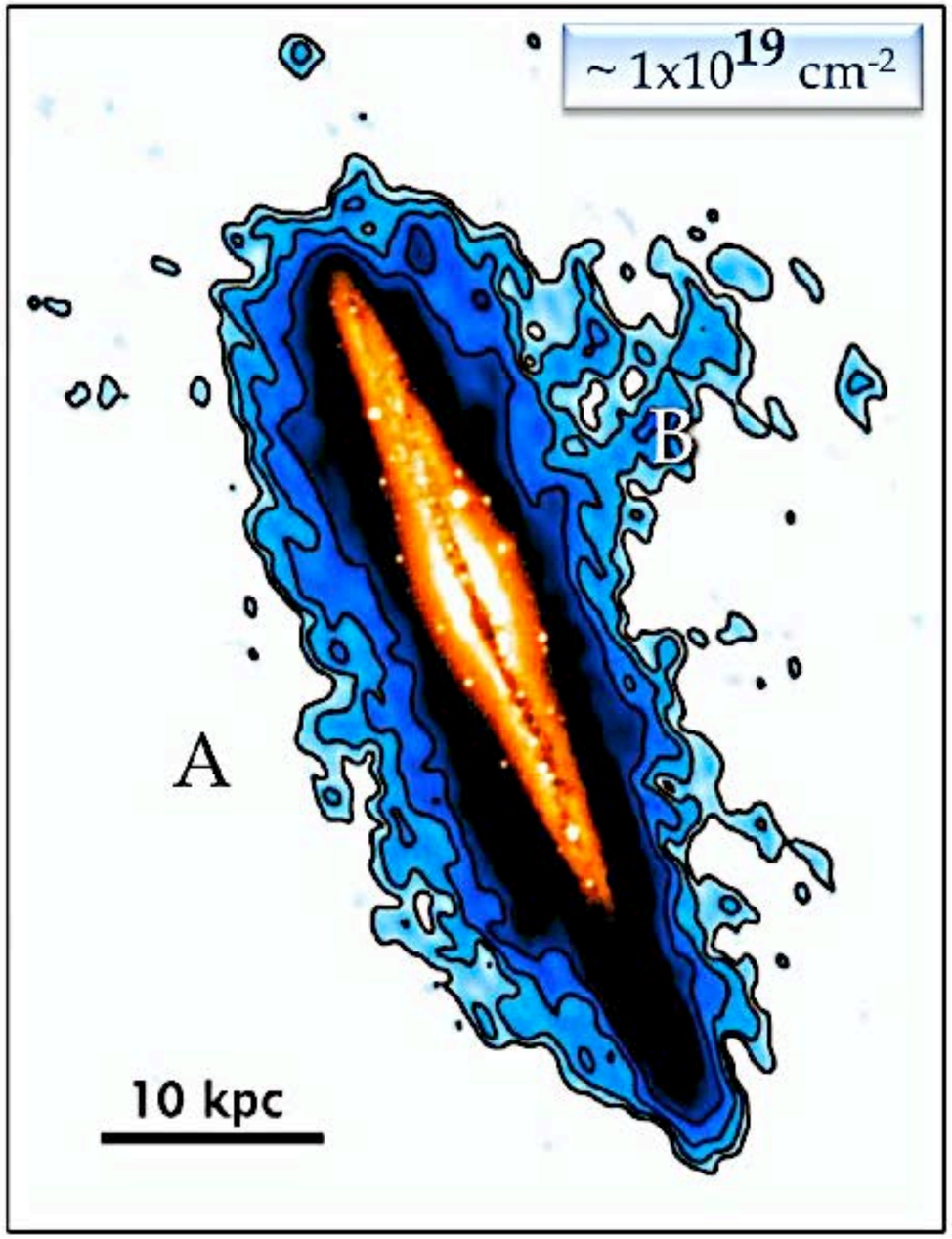
~ $1x10^{21}$ cm^{-2}

~ $1x10^{20}$ cm^{-2}

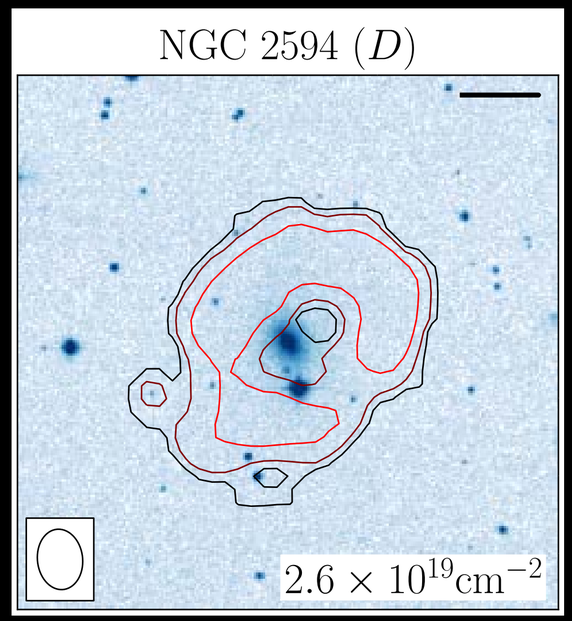
~ $1x10^{19}$ cm^{-2}

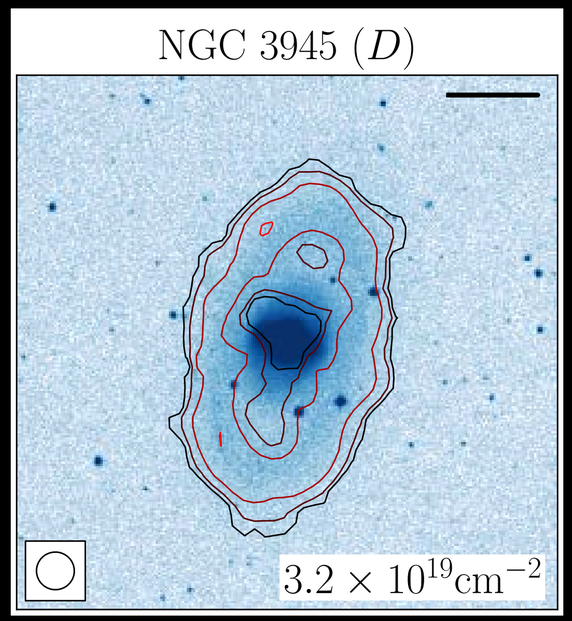


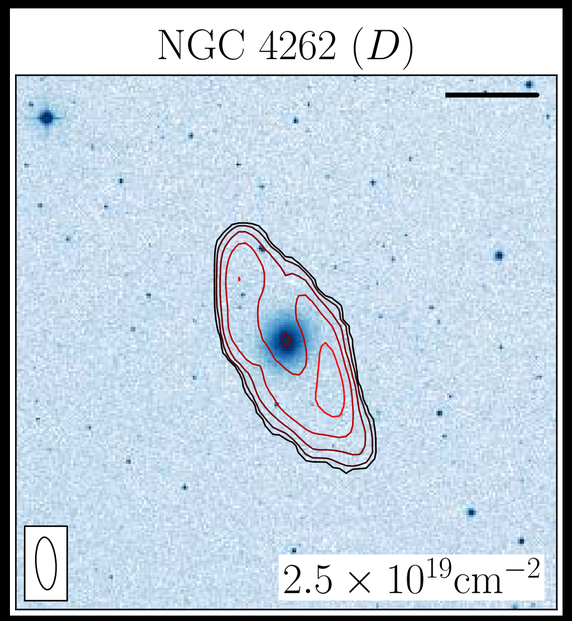


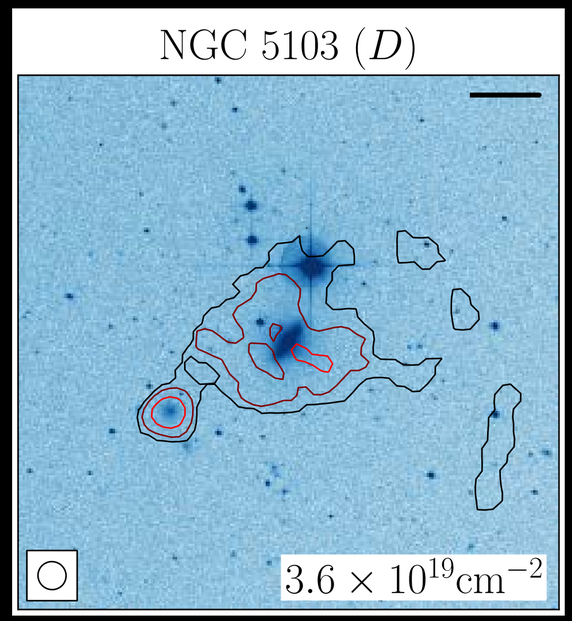


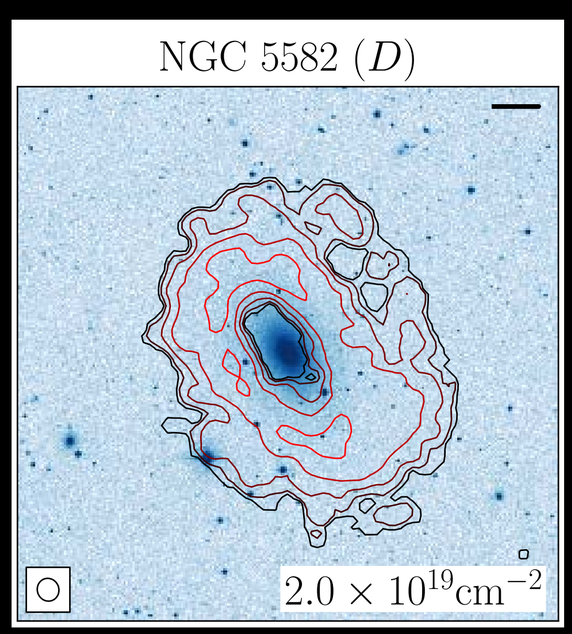
de Blok et al. (2015)

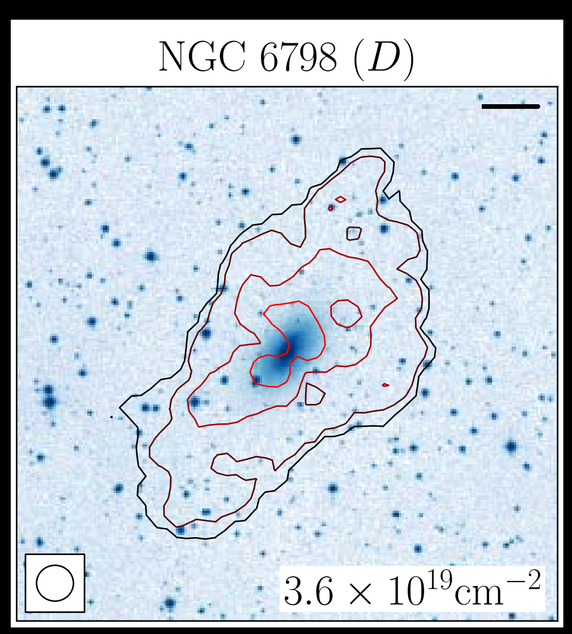


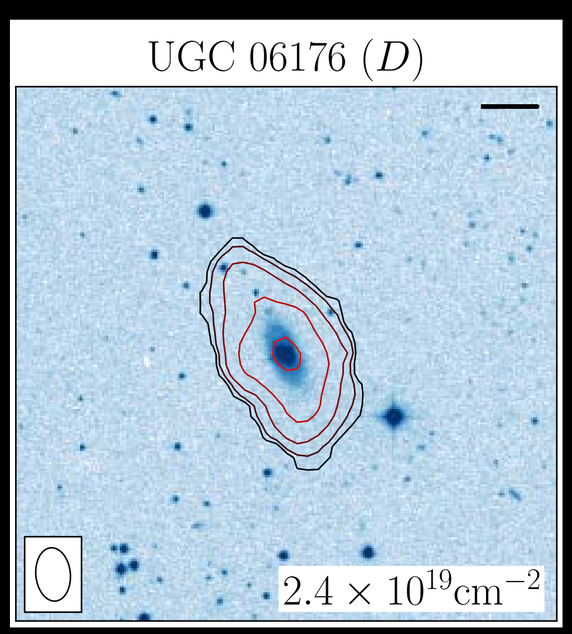


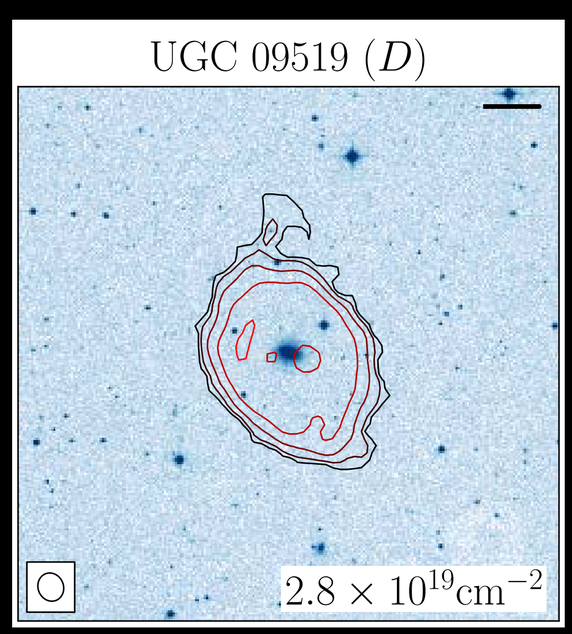




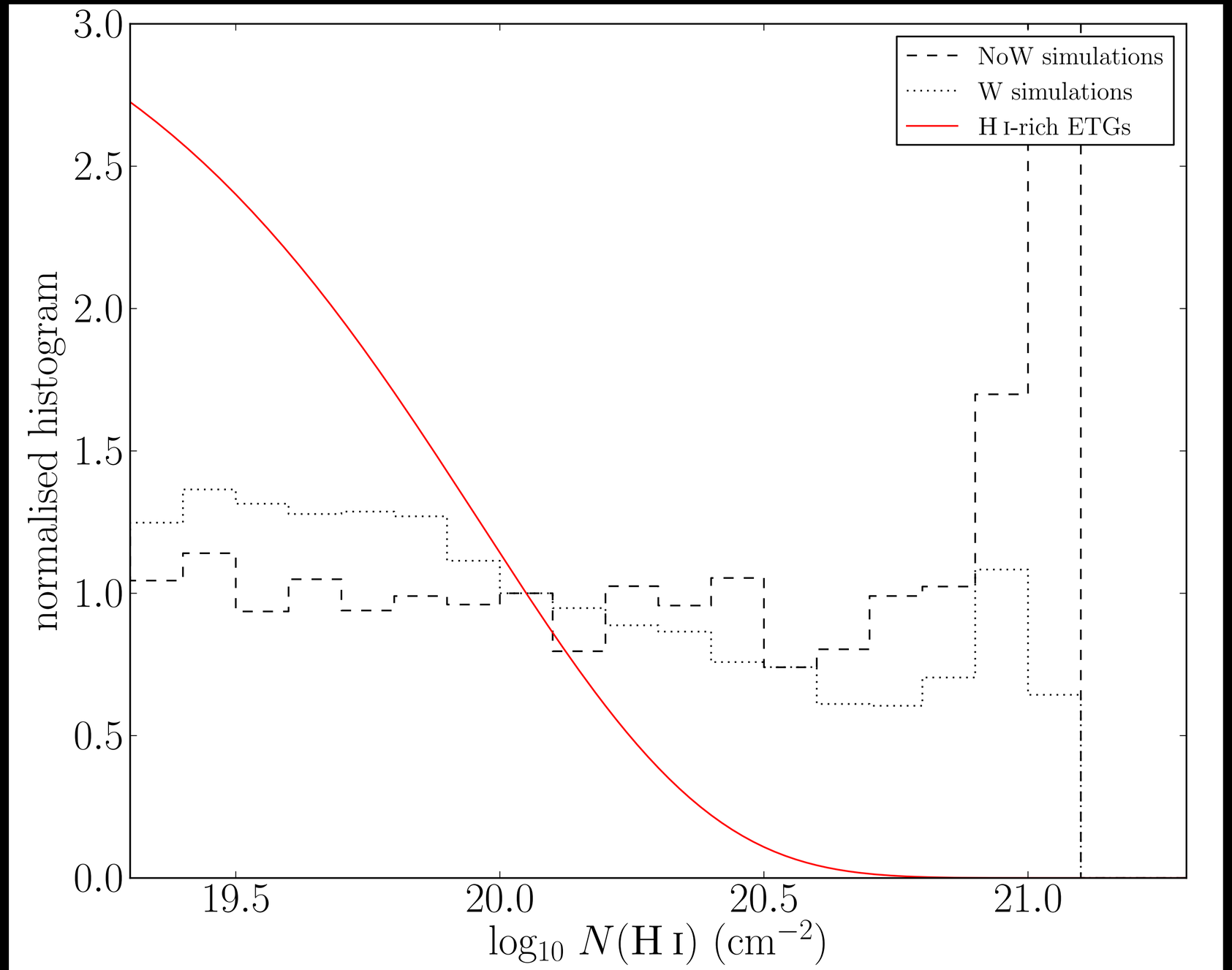








Serra et al. (2012)



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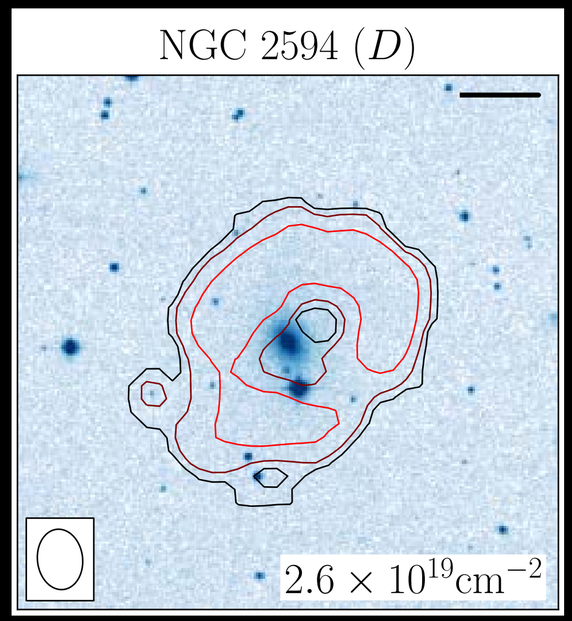

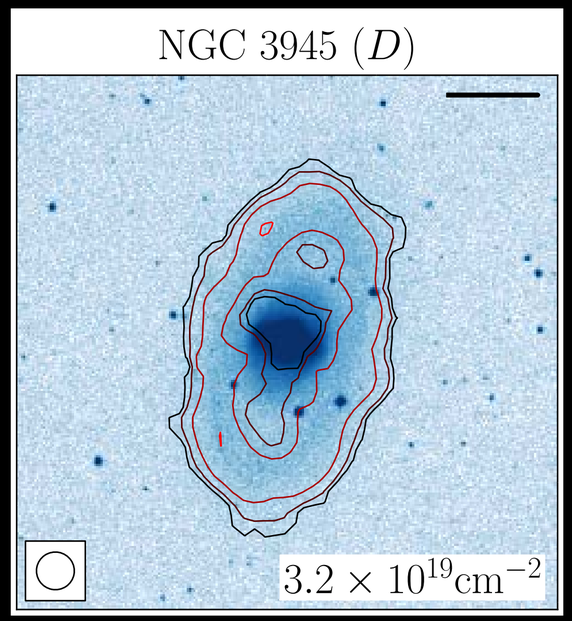

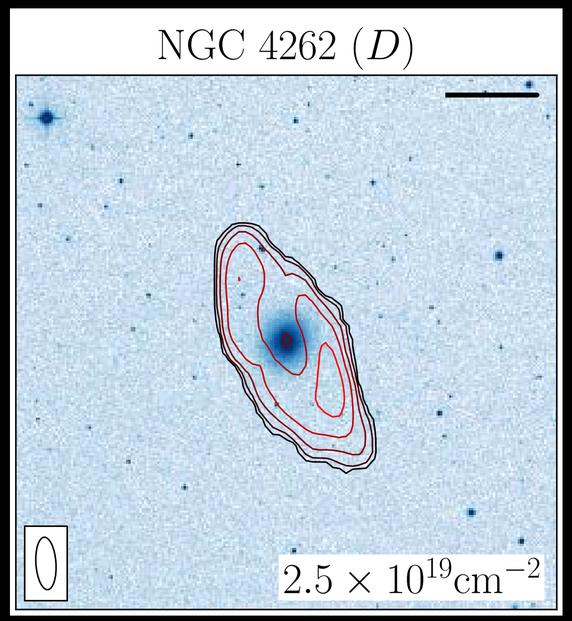

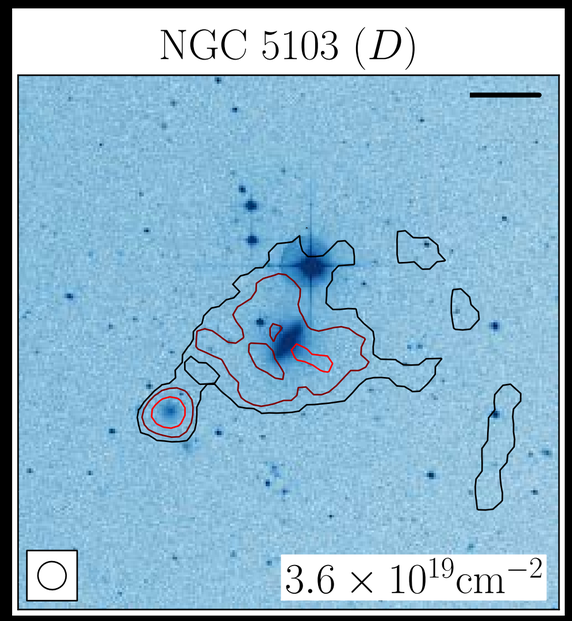

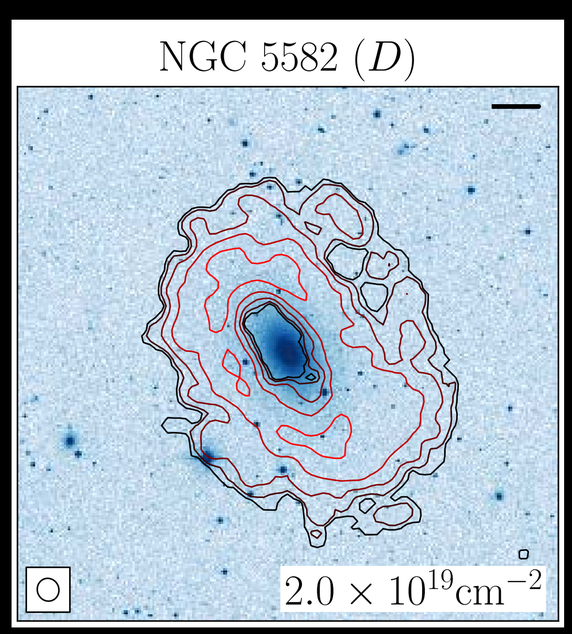

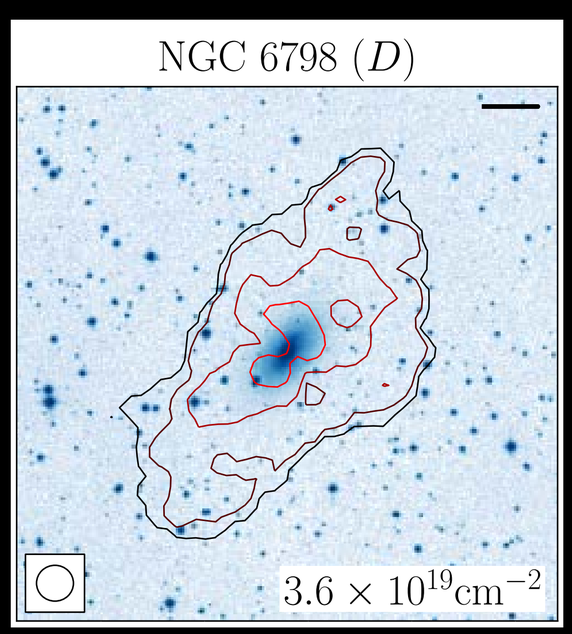

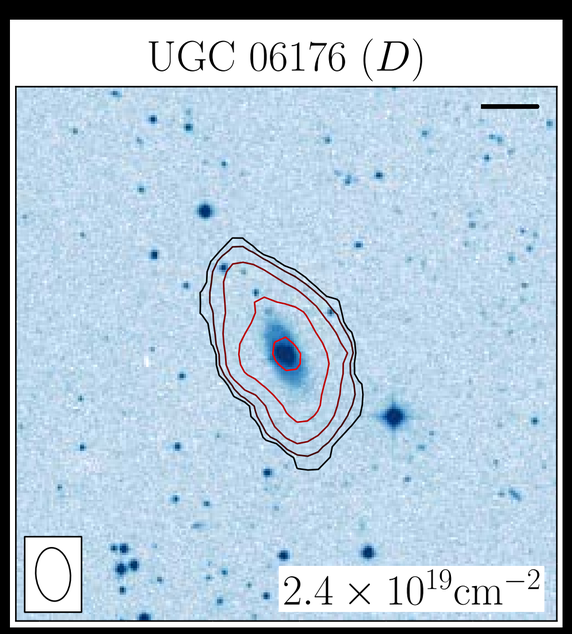

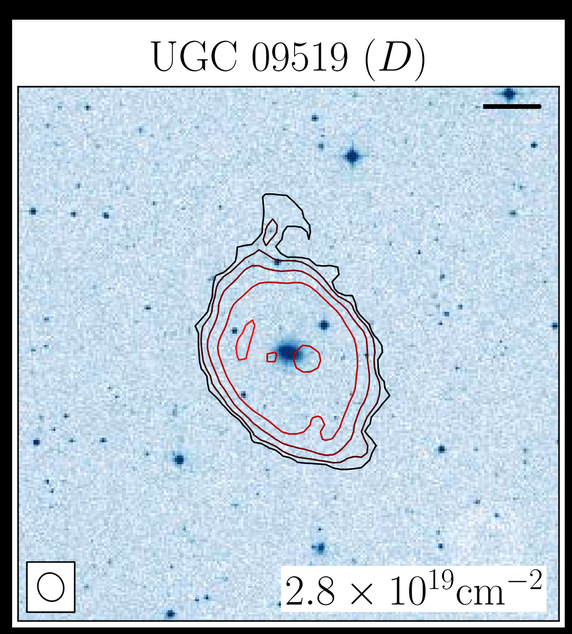

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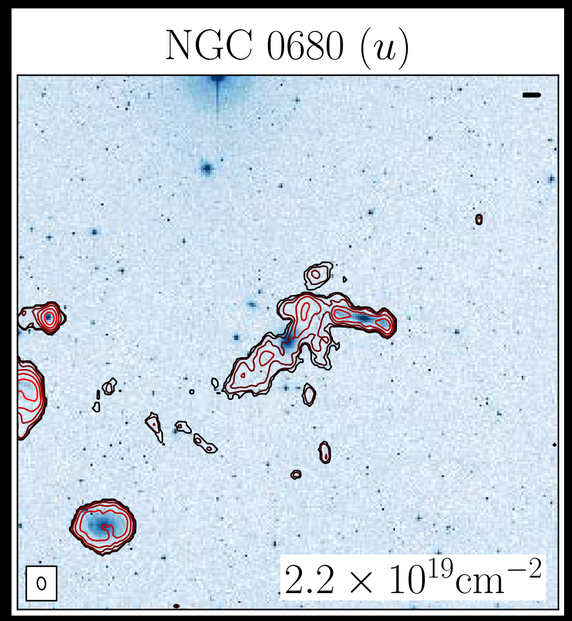
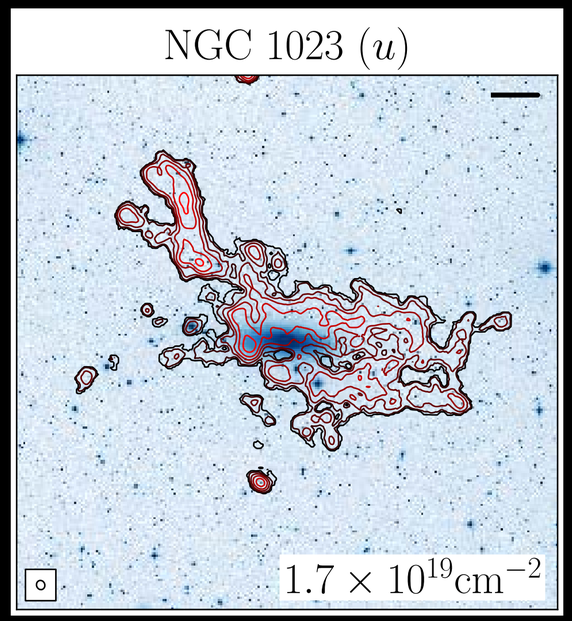
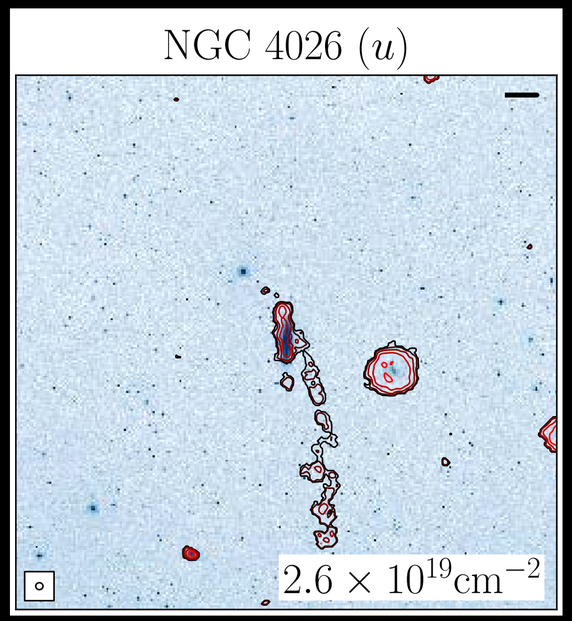
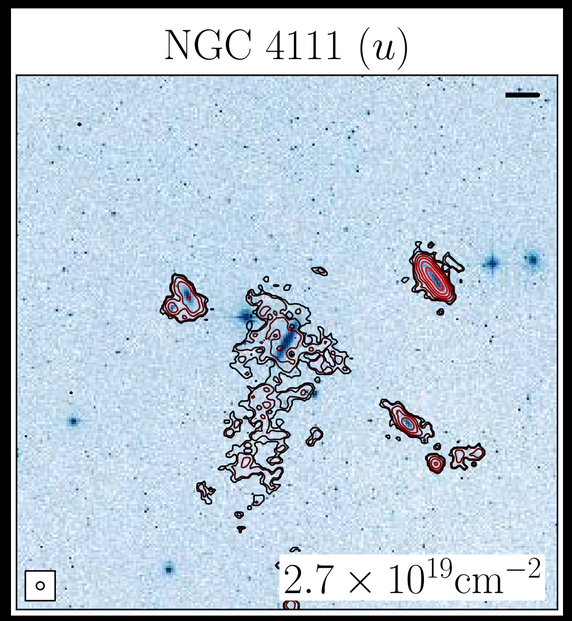
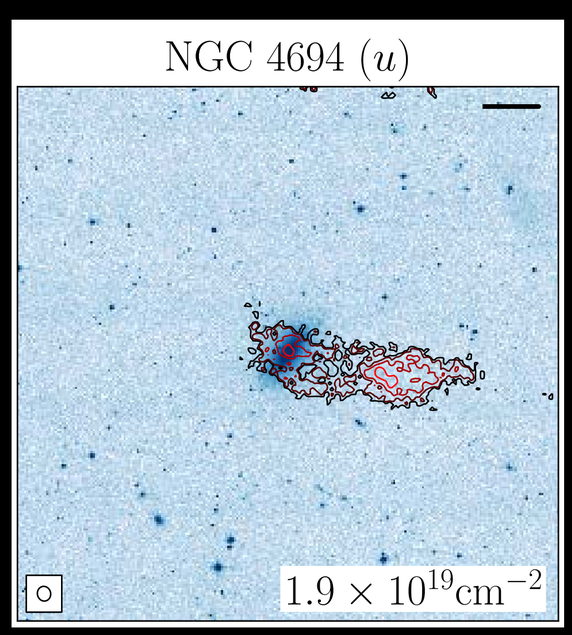
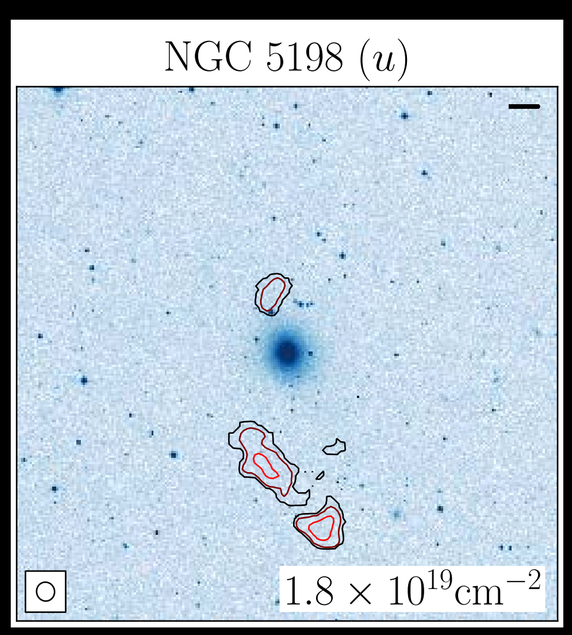


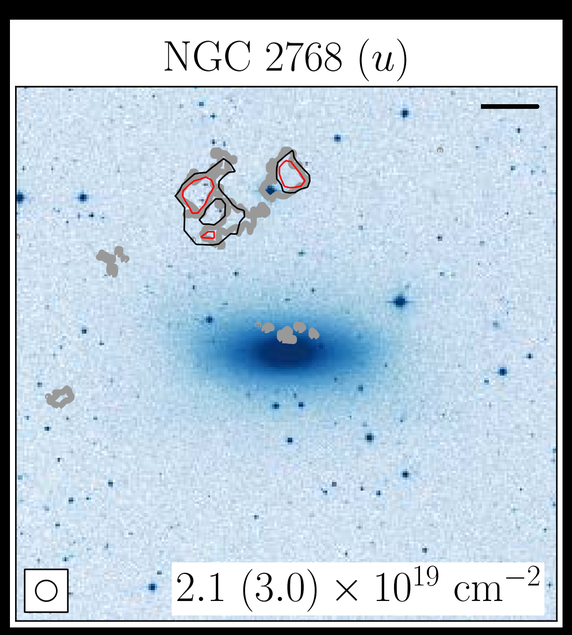


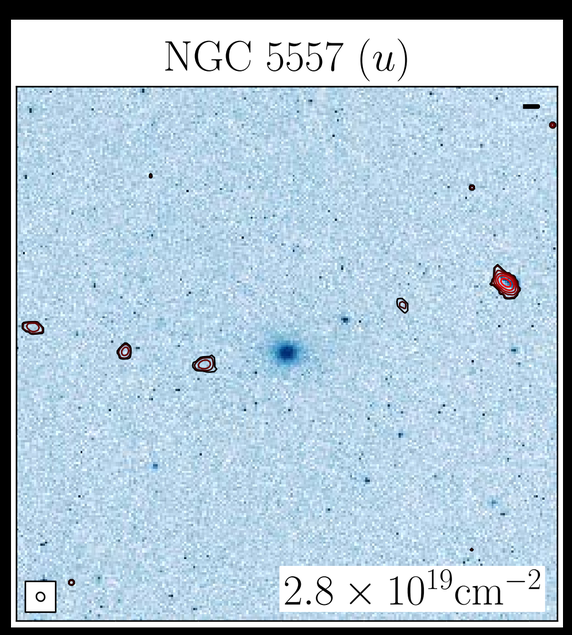






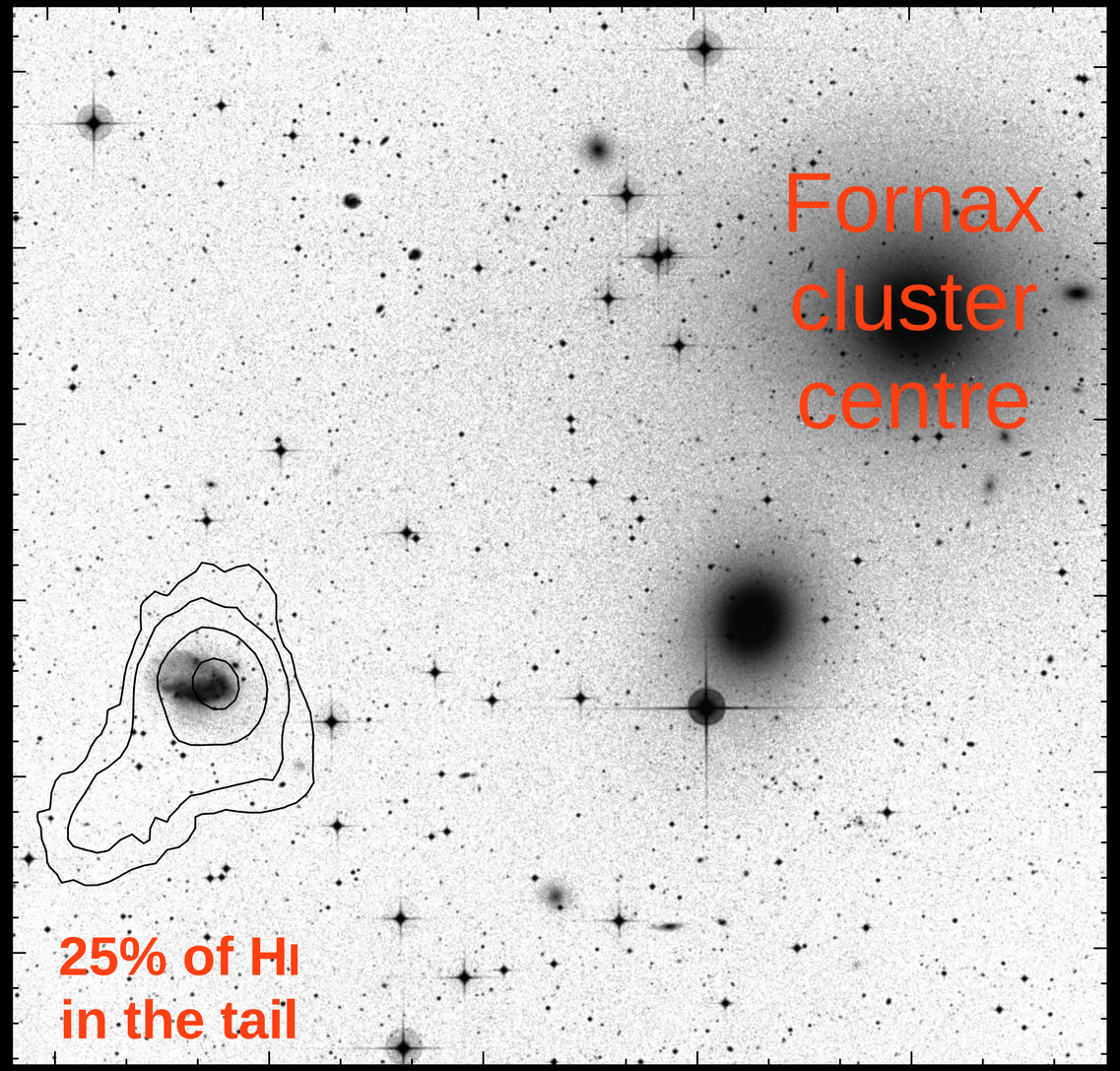






Serra et al. (2012)

NGC 1427A in the Fornax cluster



Hilker et al. (1997, 2005)
Chaname et al. (2000)
Gregg et al. (2003)

Serra et al. (2013)

0 Gyr

0.5 Gyr

1 Gyr

NGC 3193

NGC 3187

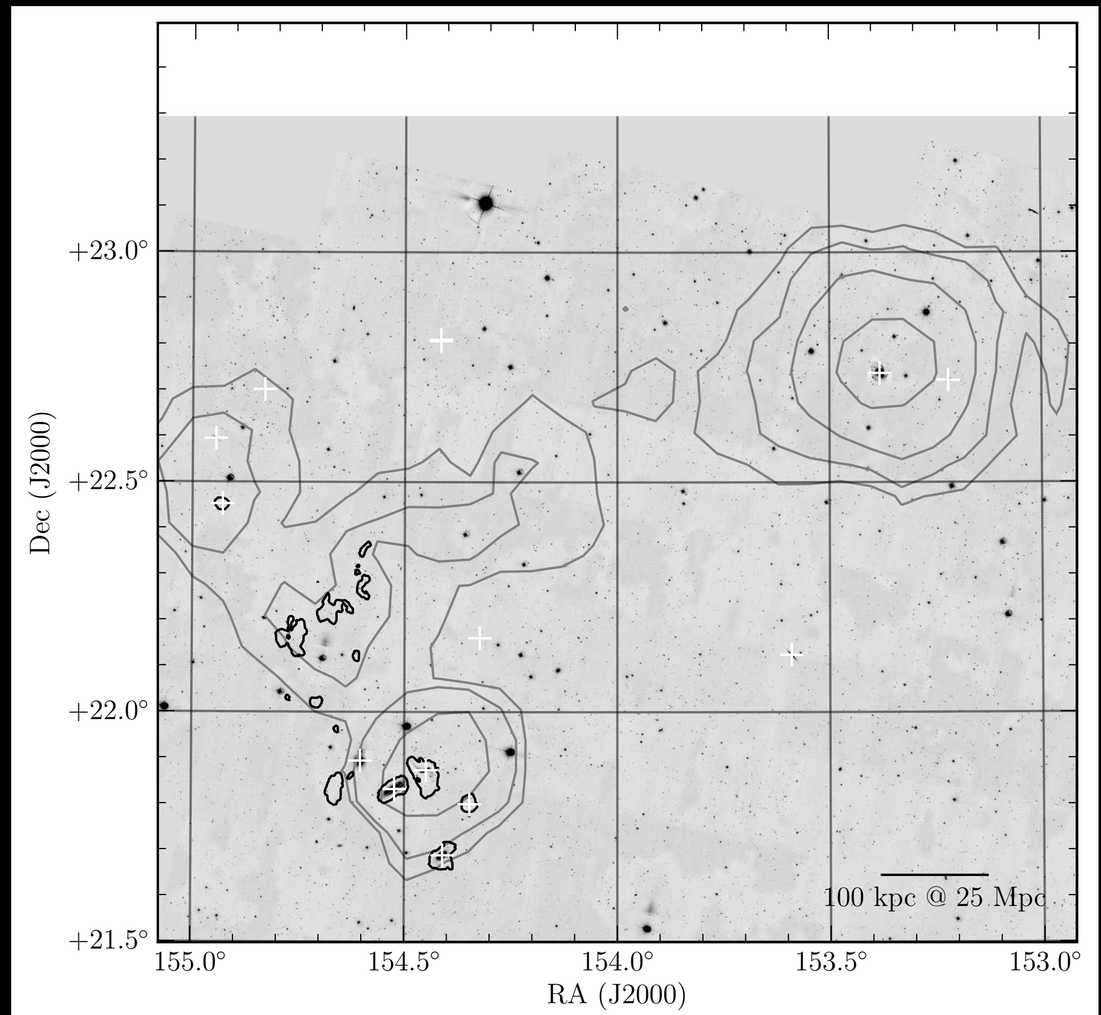
NGC 3190

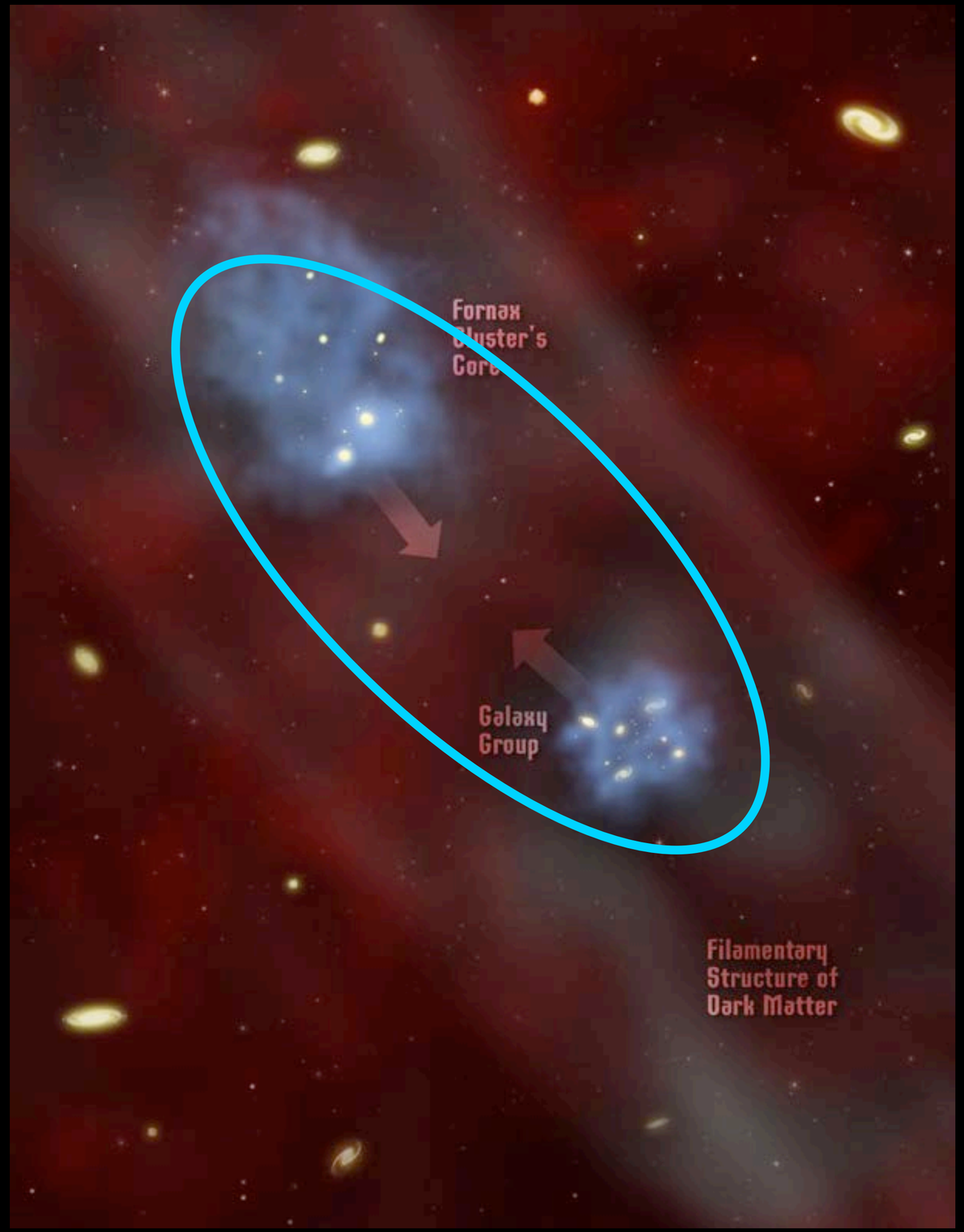
NGC 3185

>200 kpc tail

M(HI)=5×10⁸ M⊙

Parabolic orbit toy model:
NGC 3187 stripped of 1/3 of its HI by the group tidal field in ~1 Gyr
(à la Bekki et al. 2005)





MeerKAT HI survey of Fornax

~50 pointings, 2500 h

~11 deg^2

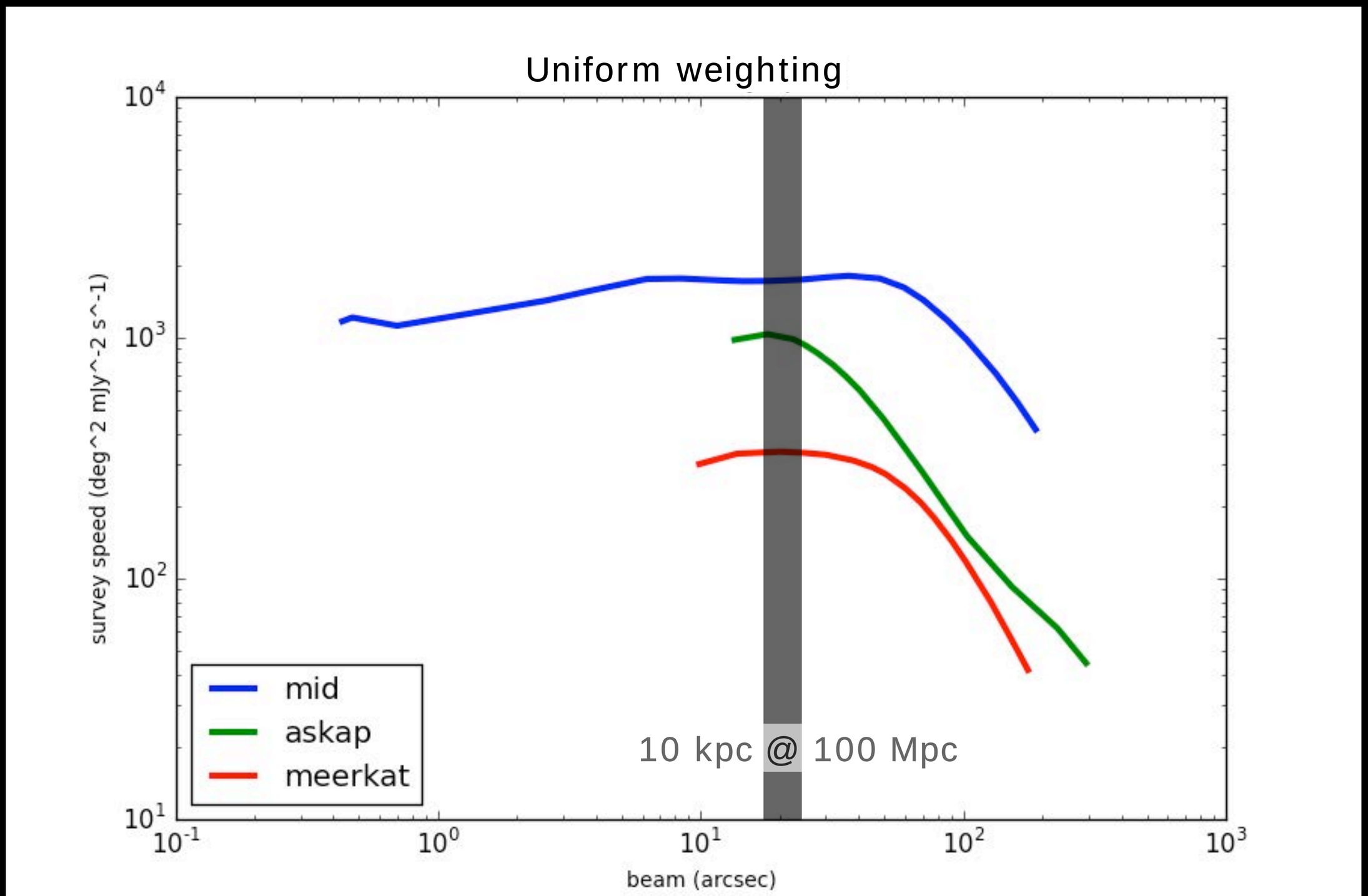
Sensitivity:

N(HI) = 10^{18} cm^{-2}

M(HI) = 10^5 M$_\odot$

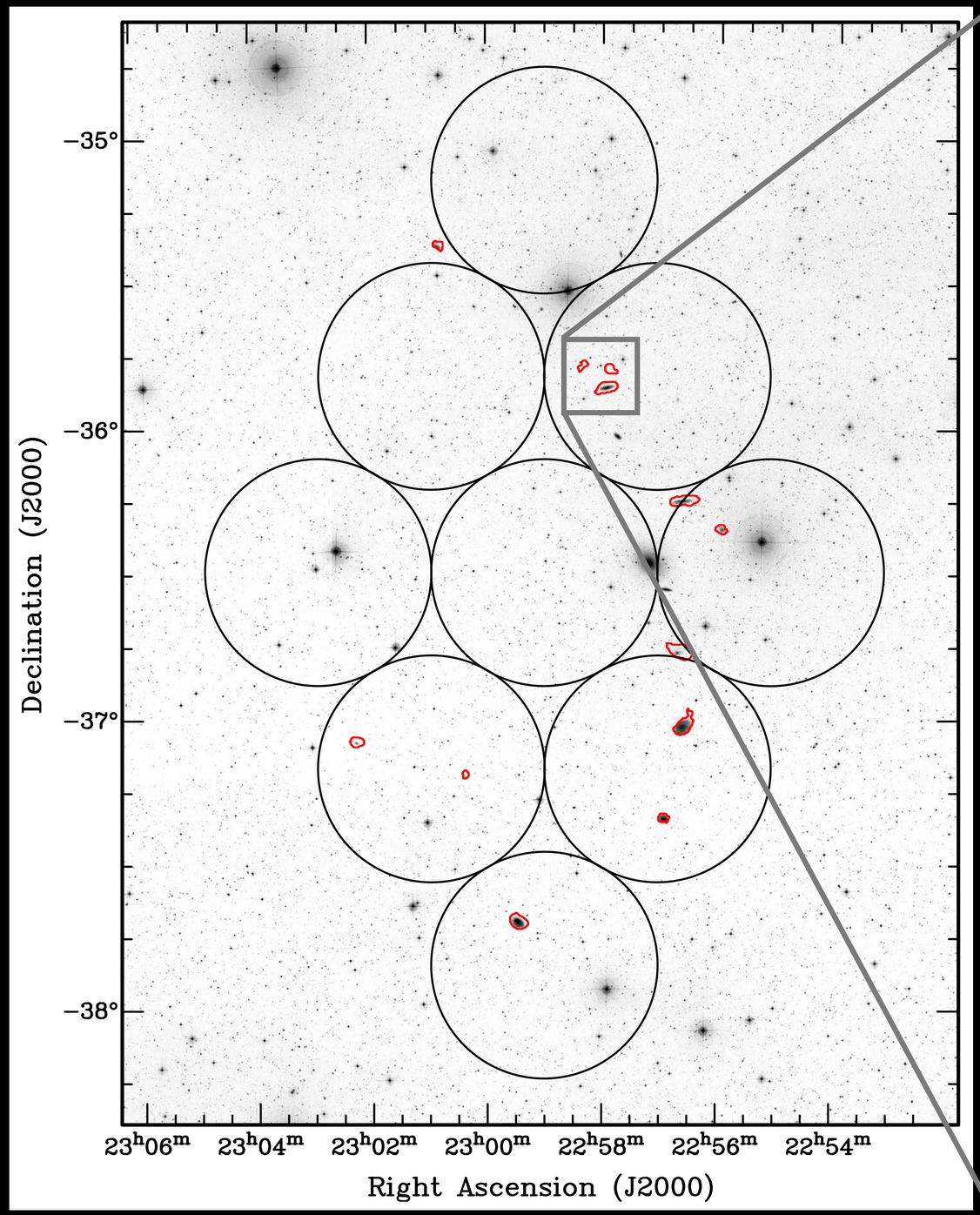
with

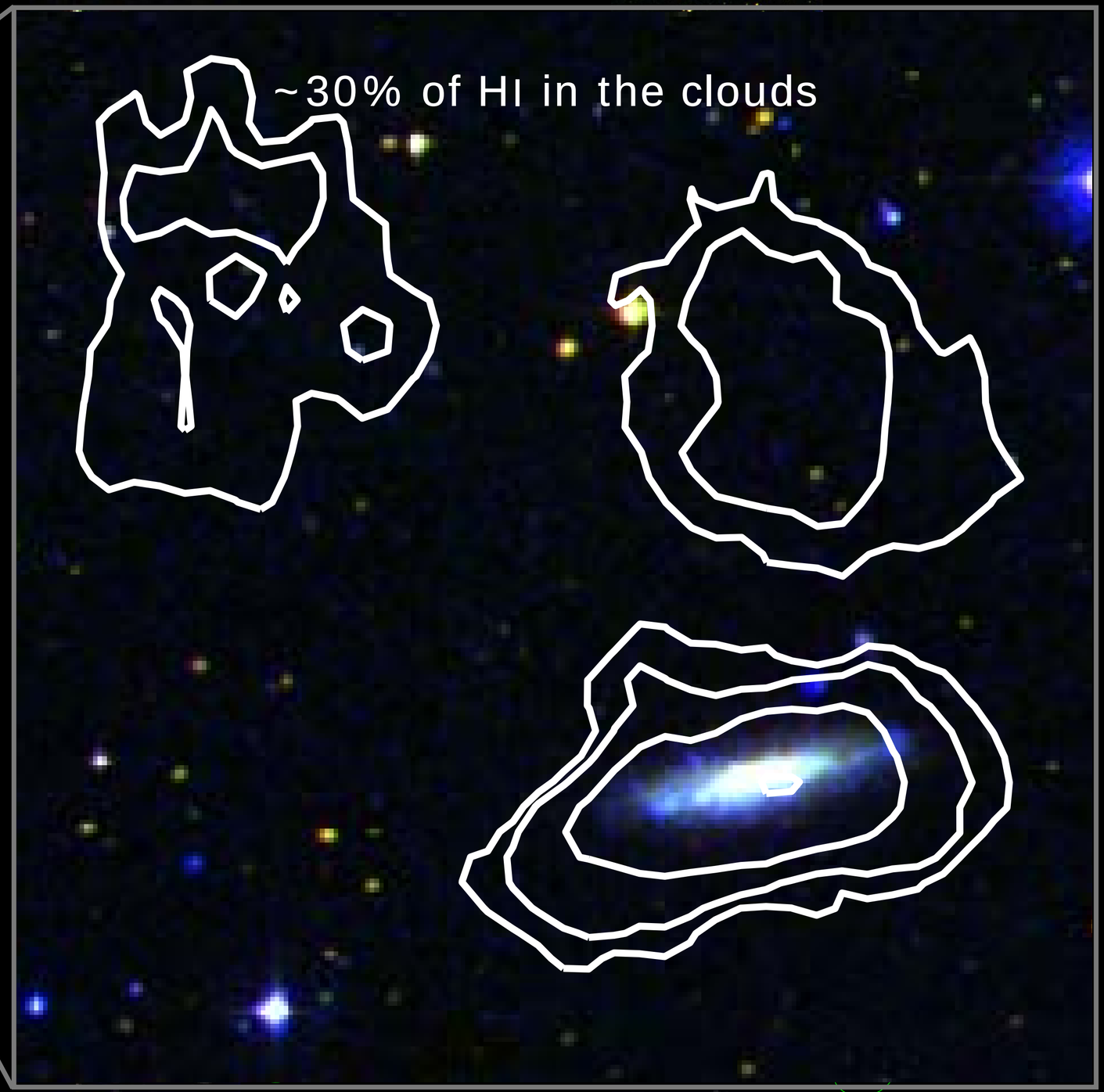
Bryan, van Gorkom (Columbia), Kraan-Korteweg, Jozsa (UCT), Peletier, Trager, Verheijen (Kapteyn), de Blok, Frank, Oosterloo, Pizzo (ASTRON)



“re-baselined” plot from Popping et al. (2015) SKA chapter

ASKAP imaging of HI in IC 1459





Summary

- HI at ~10^{19} cm^{-2} reveals fundamental processes driving galaxy evolution and invisible at other wavelengths
- SKA1/ASKAP ~10^{3} deg^{2} blind HI surveys will for the first time build a complete observational picture of these processes out to z~0.1