Observations
We have observed the nearest galaxies of the Sculptor group in neutral hydrogen (H\textsc{i}) emission with the Australia Telescope Compact Array (ATCA) to:

- Study the kinematics and dynamics of the galaxies,
- Search for extra-planar gas and "missing satellites".

Parameters
- Array configurations: EW 352 / EW 367
- Covered area: 2° × 2°
- Number of pointings: 32
- Integration time: 96 h per galaxy
- Angular resolution: 90′ × 180′ (∼ 1 kpc)
- Velocity resolution: 4 km s\(^{-1}\)
- σ H\textsc{i} sensitivity: 10\(^{-17}\) cm\(^{-2}\) / 10\(^{3}\) M\(_{\odot}\)

NGC 300
Main results:
- Extended, twisted H\textsc{i} disc (Fig. 1), > 1° in diameter.
- Compact inner gas disc aligned with stellar disc.
- Extended outer gas disc with different orientation.
- Rotation curve measured out to almost 20 kpc (Fig. 2).
- Maximum rotation velocity of 100 km s\(^{-1}\) at 10 kpc.
- Declining rotation curve across outer disc.
- Asymmetries in H\textsc{i} disc suggest ram-pressure distortion of outer gas disc (Fig. 3 & 4).

NGC 55
Main results:
- Extended, asymmetric H\textsc{i} disc (Fig. 5).
- Asymmetries again suggestive of ram-pressure.
- Apparent "thickness" of the disc due to warping of the outer disc, not gas in the halo.
- We discovered a population of extra-planar gas clouds (Fig. 5 and 6) around NGC 55.
  - Typical H\textsc{i} masses of a few times 10\(^{3}\) M\(_{\odot}\).
  - Six clouds presumably at distance of NGC 55, two clouds (6 and 7) most likely foreground from the Milky Way or Magellanic Stream (Fig. 7).

Summary & Conclusions
- Ram-pressure interaction does occur in groups (not just massive clusters) under reasonable assumptions on the density of the IGM and relative velocity of galaxies.
- We find strong asymmetries in the outer gas discs of NGC 55 and 300 suggesting the presence of ram-pressure.
- We are currently working on numerical simulations (Bekki et al., in prep) to support the observations and determine the density of the IGM.
- NGC 55 is surrounded by a population of extra-planar gas clouds or high-velocity clouds (HVCs).
- H\textsc{i} masses comparable to HVCs around the Milky Way (e.g. complex C; Wakker et al. 2007; Thom et al. 2008).
- Origin of gas clouds around NGC 55 not yet clear, but similar detections near M31 (Thilker et al. 2004; Westmeier et al. 2005) suggest combination of different origins (tidal stripping, gaseous satellites, outflows, etc.).
- Future H\textsc{i} surveys with ASKAP and MeerKAT will allow us to study the evolution and interaction of galaxies in the nearby universe in much greater detail:
  - WALLABY (PIs: B. Koribalski, L. Staveley-Smith)
  - Mongoose (PI: E. de Blok)

References
- Puche, Carignan & Bosma 1999, AJ, 100, 1468