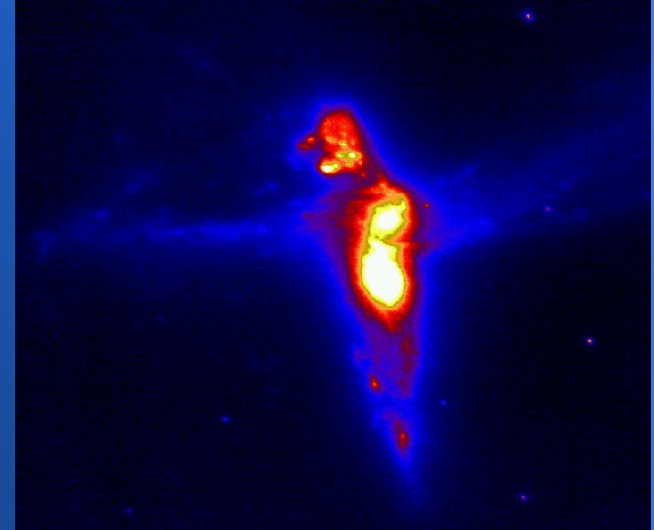


The SUNBIRD / SALT survey

Spatially resolved history of SFR in LIRGs, starbursts and interactions

- triggering of SF
- galactic winds
- metallicity gradients
- stellar populations
- super star clusters



Petri Väisänen (SAAO / SALT)

Zara Randriamanakoto, Rajin Ramphul, Abiy Tekola, Alexei Kniazev, Sudhanshu Barway (SAAO / UCT) + international collaborators

The sample

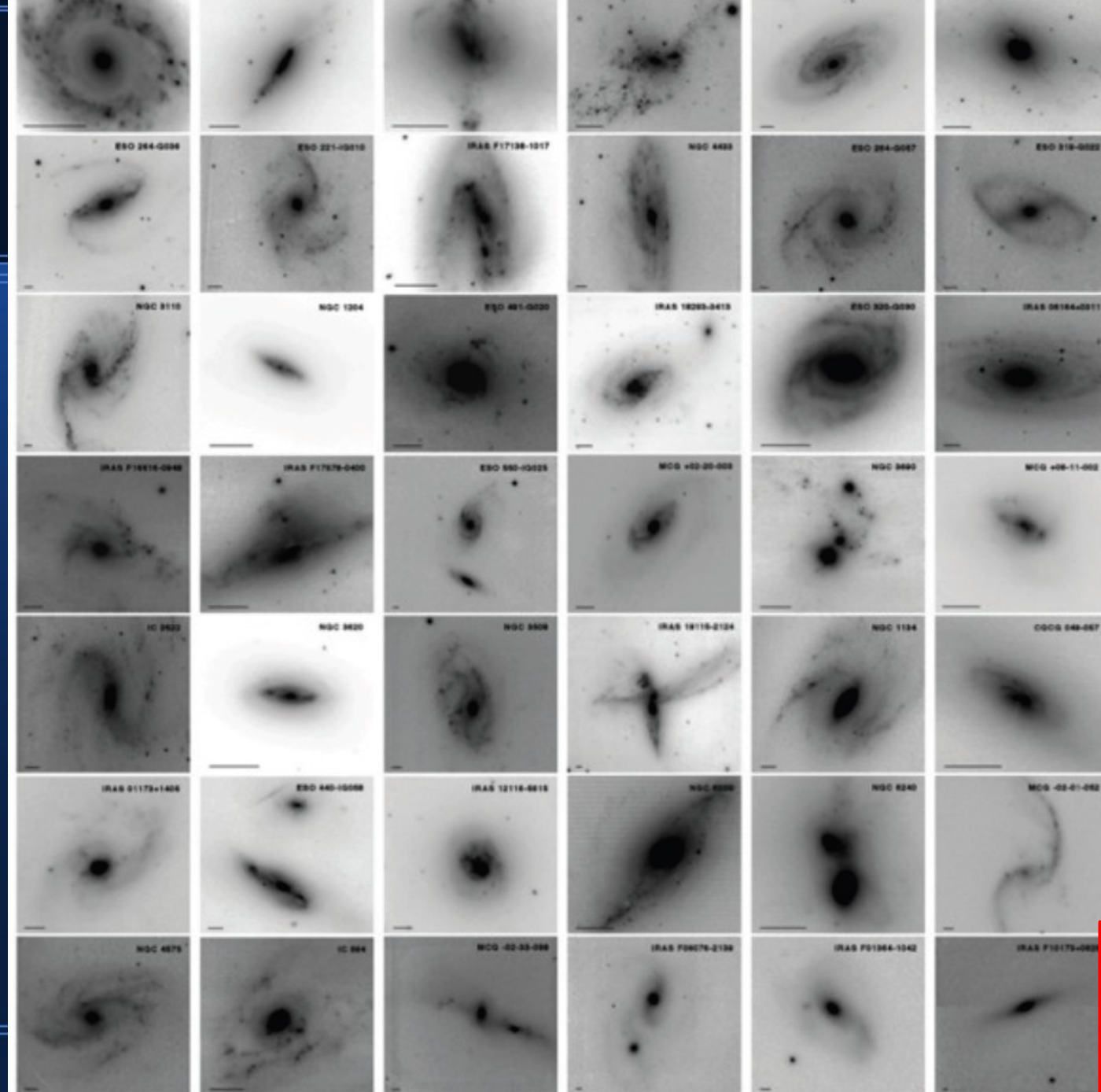
~40 infrared
luminous galaxies

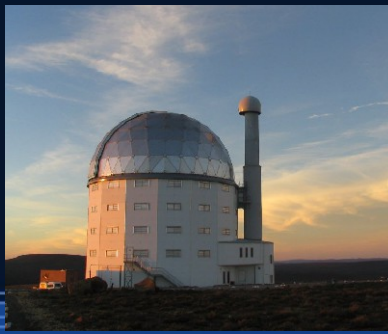
PSF resolution $\sim 0.1''$

- VLT & Gemini
- HST
- eVLA

$$30 \lesssim D_L(\text{Mpc}) \lesssim 200$$

$$10.59 \leq \log L_{IR}(L_{\odot}) \leq 11.87$$





SALT spectroscopic work

Spectral follow-up at SALT (Periods 2011-3 to 2014-1) *Whole sample* with:

- PG900 (R~1000) for *metallicities*, extinctions and SP-fitting
- PG1800 (R~3000) at H- α λ π η α and NaD for kinematics and gas inflows
- Fabry-Perot imaging spectroscopy in next step for most complex cases

- Metallicities: **central abundances & gradients tell about interactions**

- **Stellar population modelling** with UlySS (Koleva et al.) and Starlight (Cid Fernandes et al.)

- **Kinematics and dynamical** masses – helping to piece together history

Papers in preparation (pending completion of survey):

Vaisanen et al. - SUNBIRD/SALT survey paper + HII/Stellar extinctions

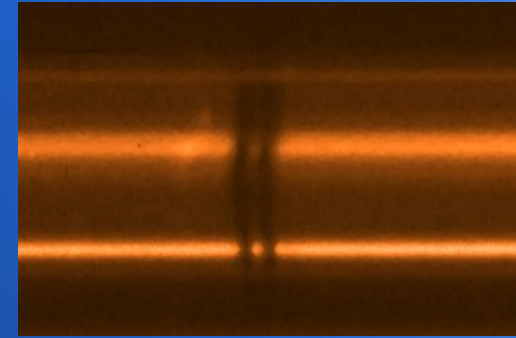
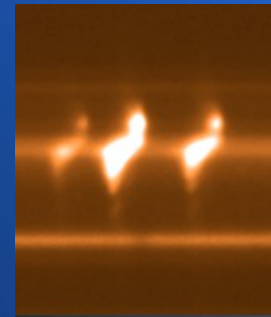
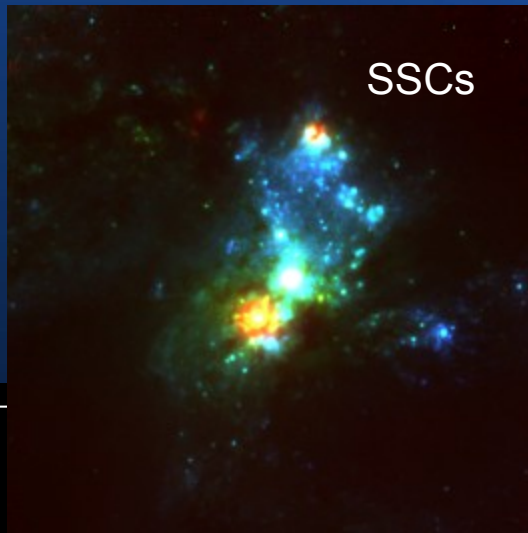
Tekola et al. - Metallicity gradients in interactions

Ramphul et al. - Multi-component stellar populations in interactions

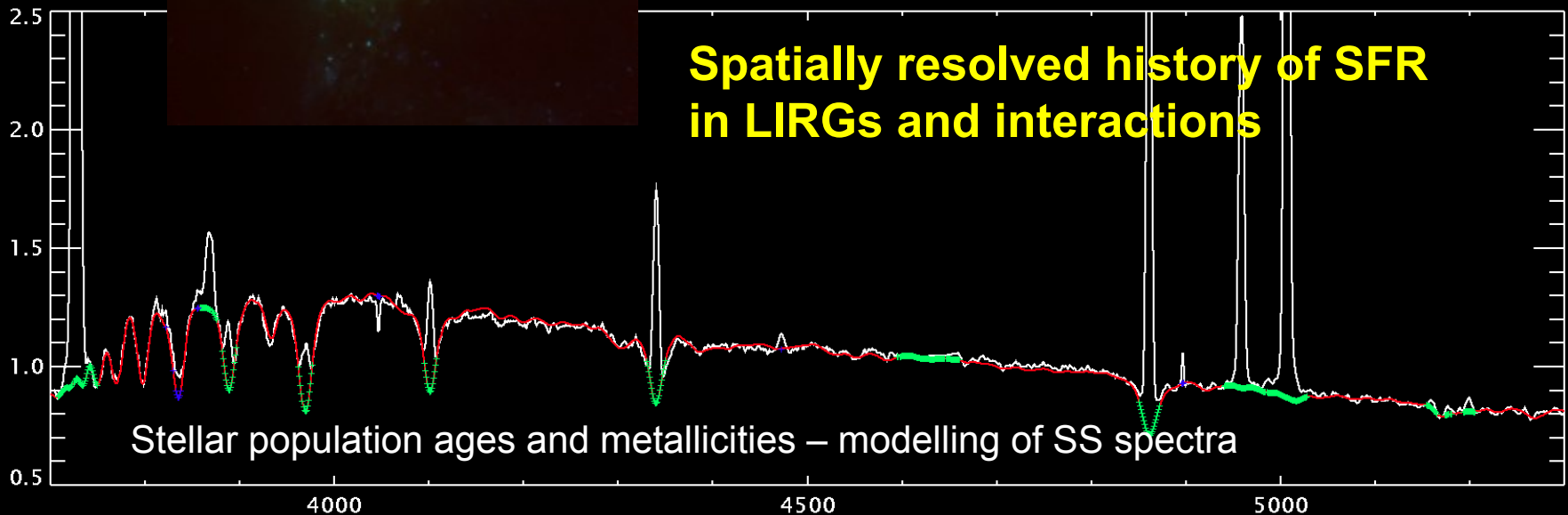
Randriamanakoto et al. - Age/Mass distributions of Super Star Clusters

(+ 2 SSC papers in 2013 already)

Gas inflows and outflows, feeding and quenching of starburst



**Spatially resolved history of SFR
in LIRGs and interactions**

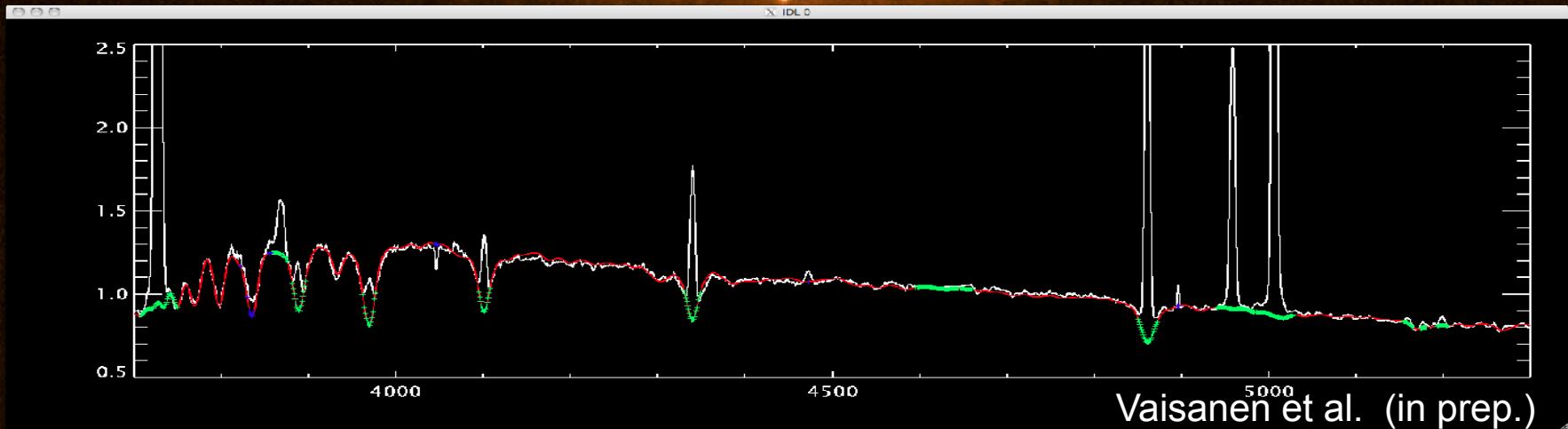


Our lowest mass target, a near-LIRG with **BCD-like spectrum**.

Evidence of a recent merger-event from both kinematics and metallicities.
Huge amount of super star clusters.

Starlight:

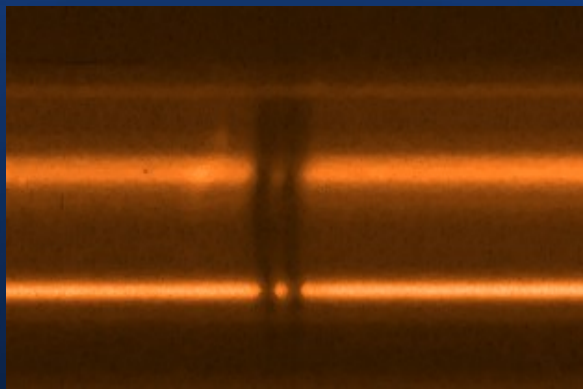
- 1/5 Solar metallicity
- 50% light from 6 Myr old pop
- 20% light from 100 Myr



Gas flows – example from IRAS 18293-3413

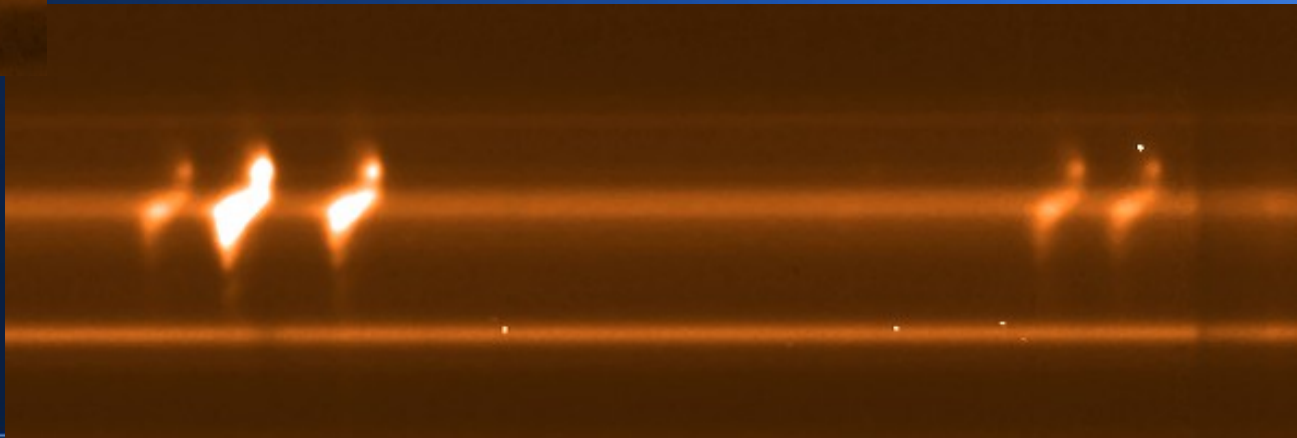
- SALT spectrum confirms minor companion, and shows very strong cool-gas motions, **galaxy wide 10+ kpc scale winds**. SSC triggered?

Vaisanen et al. (in prep.)



Na I D (and He I)

H α , [NII] and [SII]

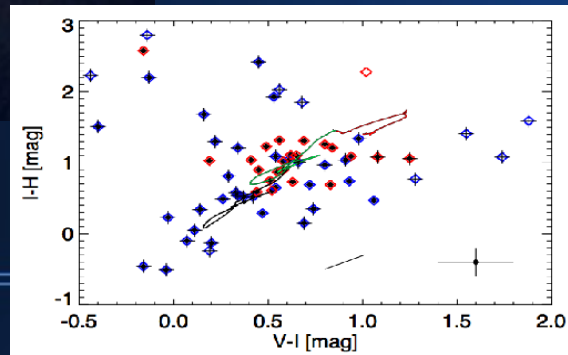
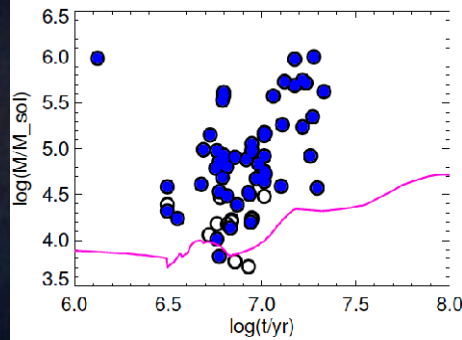
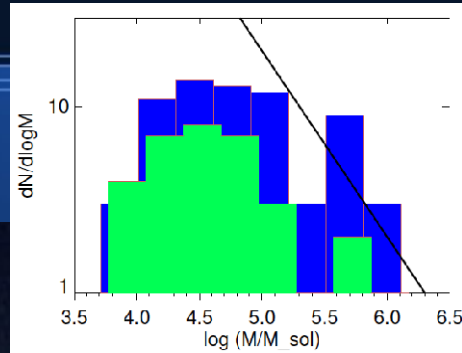


Growth of a bulge ?

NGC 2328



Barway, Vaisanen et al., in prep.



- Listed as an early type, surf.brig. profiles detect no bulge
- SALT spectra show an intense very young starburst, 5 Myr + 50 Myr, plus old evolved pop.
- HST data reveal SF to be in a 300 pc ring or nuclear spiral
- SSC modelling shows the populations to be 5-100 Myr age
- SSCs formed ONLY in this latest episode of SF.
- SF trigger by lower metallicity minor merger? SSCs disrupt to centre and grow bulge??