Ionized and molecular gas studies to unveil AGN feedback at high-z

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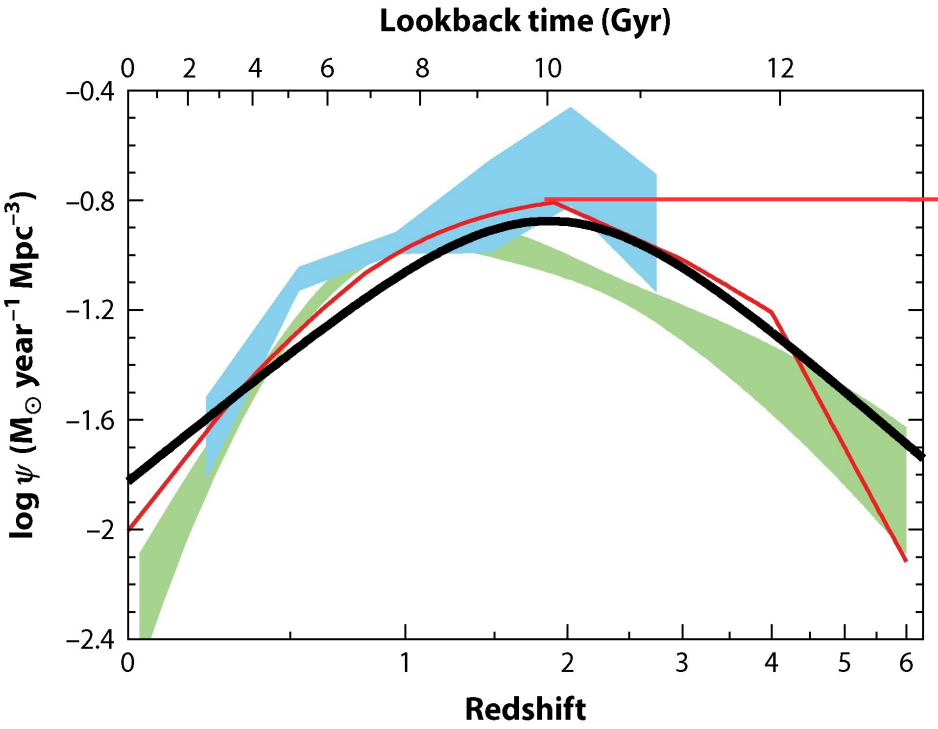
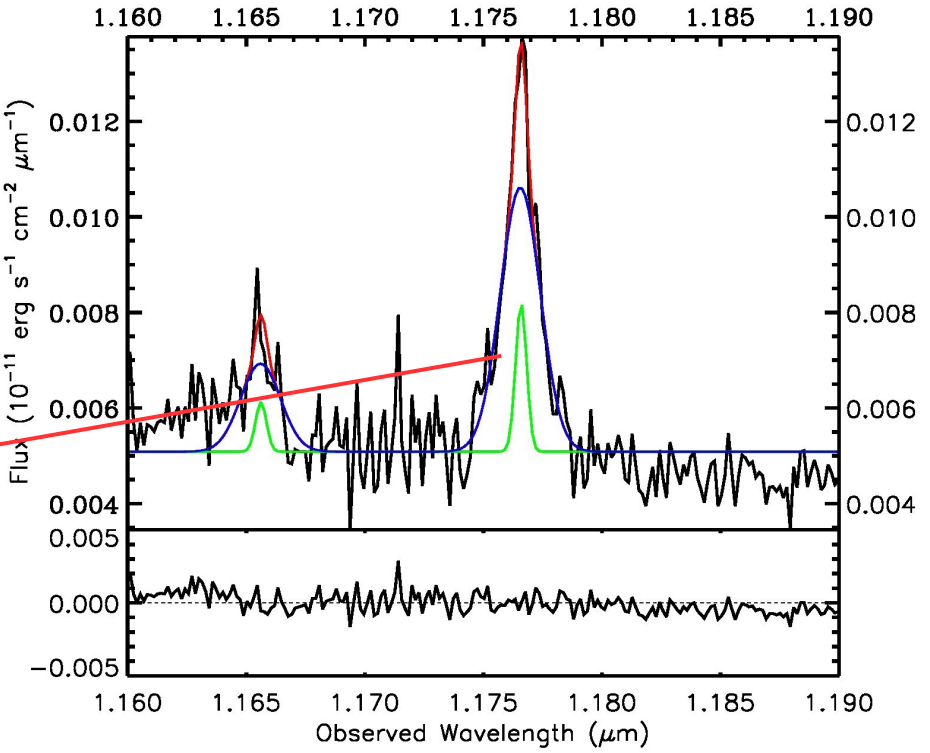
Radiative AGN feedback at high-z



Madau & Dickinson 2014

Epoch of maximum BH accretion and star formation activity

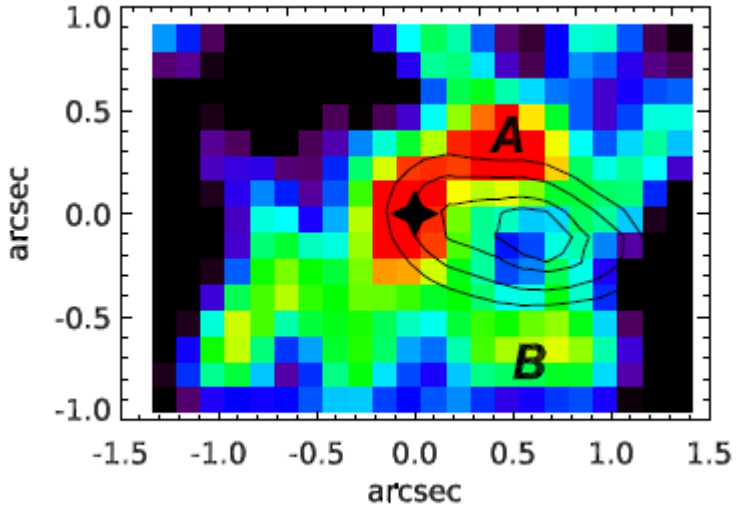
→ Ideal to test Radiative AGN feedback



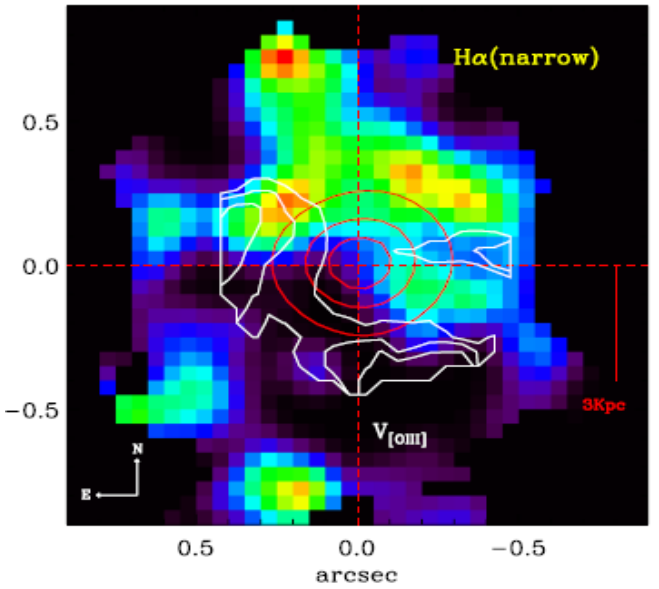
Tracing outflows in NLR using [OIII]5007

e.g. Kakkad et al. (2016)

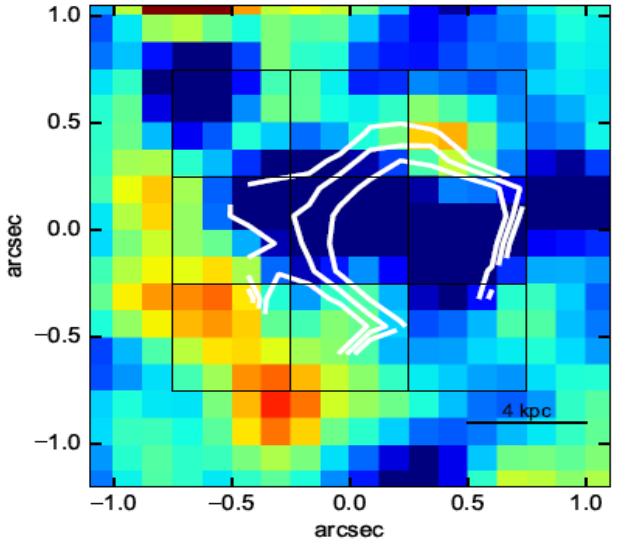
Impact of Ionized outflows on host galaxy

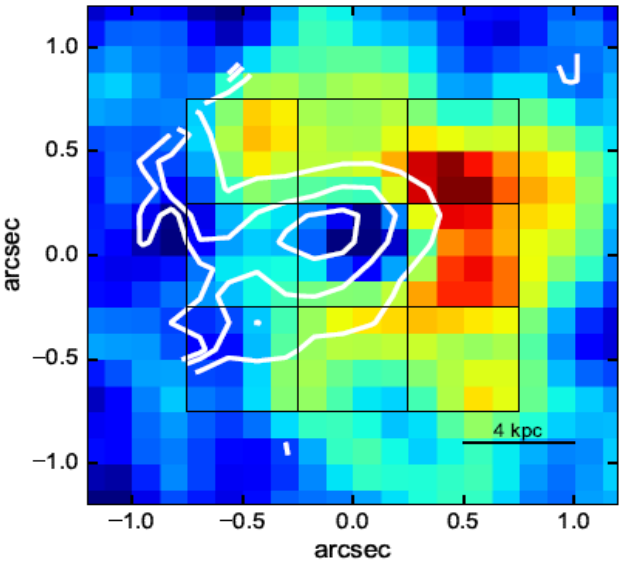


Cresci +2015



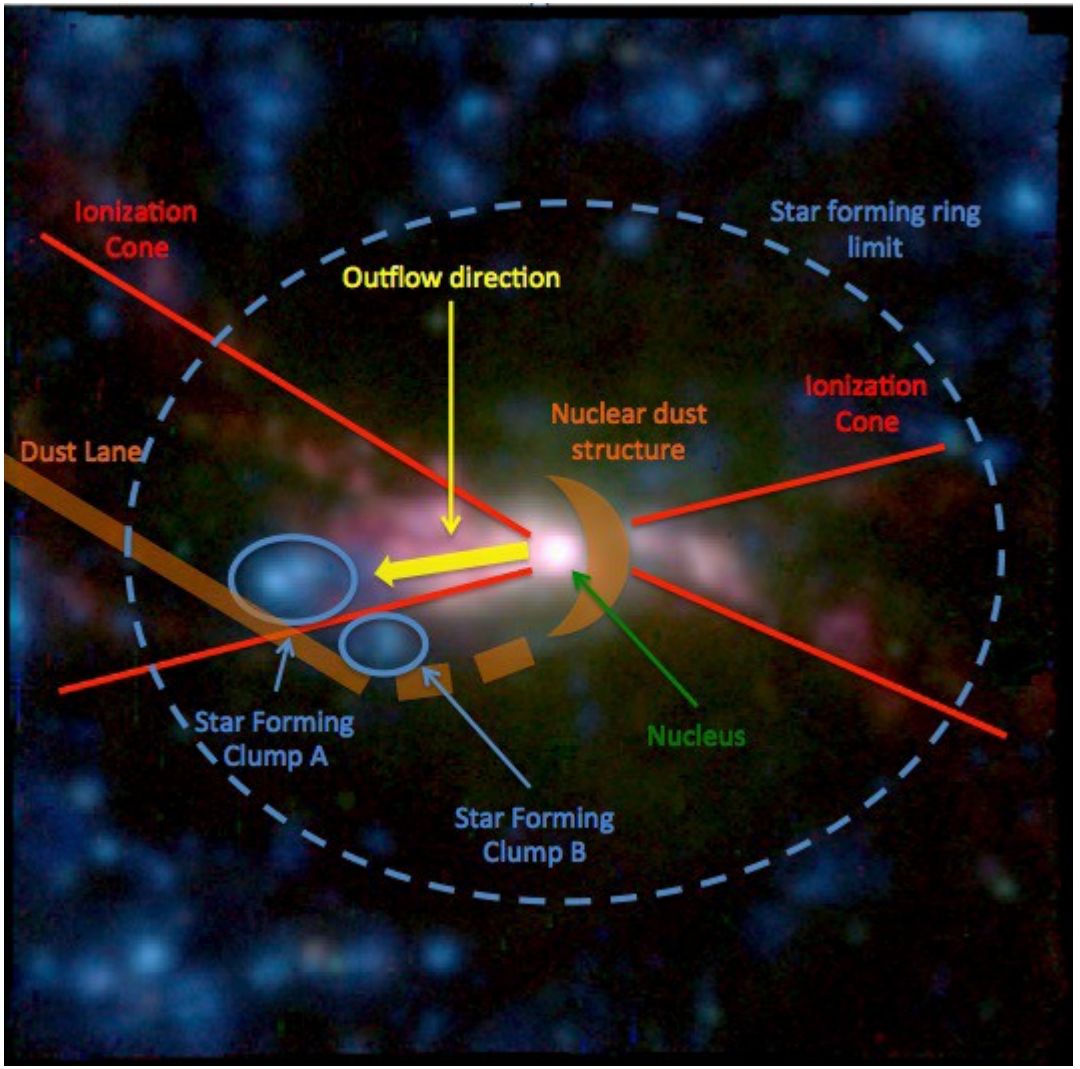
Cano-Diaz +2012





Carniani +2016

Radiative feedback at low-z



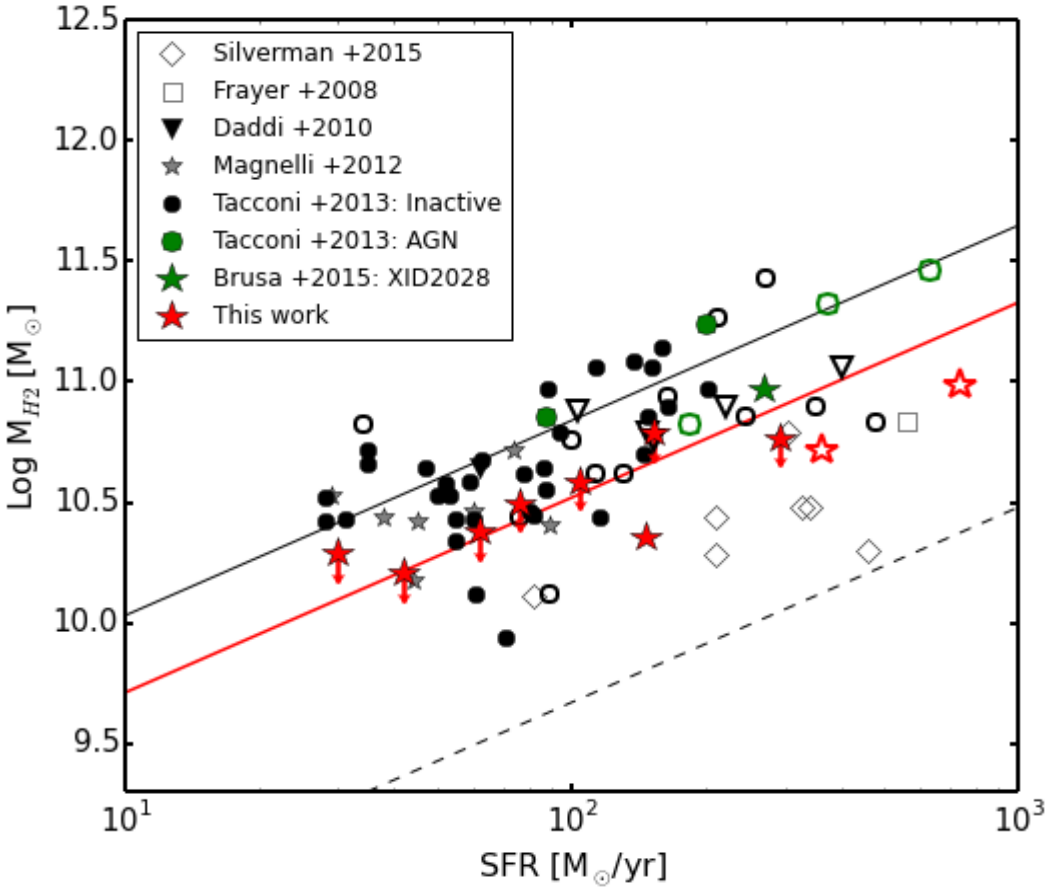
Cresci et al. 2016

What about molecular gas?

Molecular gas in AGN host galaxies

- Could act as a “smoking gun” for AGN feedback
- Outflows expected to affect the molecular gas first rather than star formation directly
- Previous studies focused more on the brightest targets

Molecular gas properties of moderate luminosity AGNs on the Main Sequence

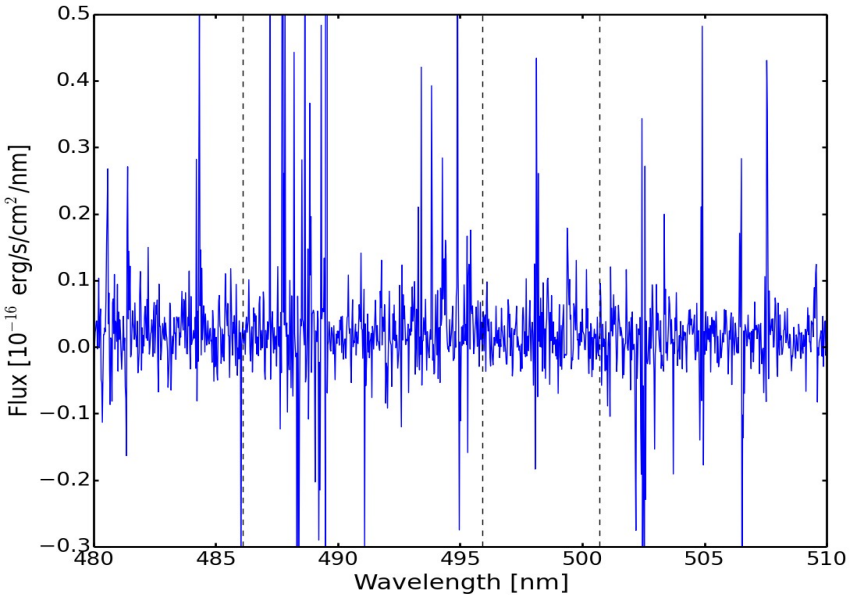


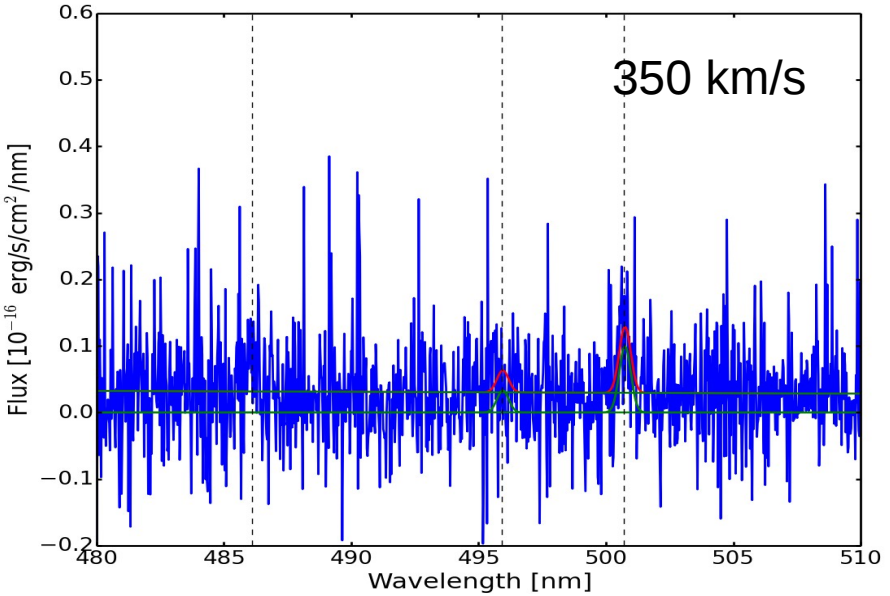
ALMA CO(2-1)

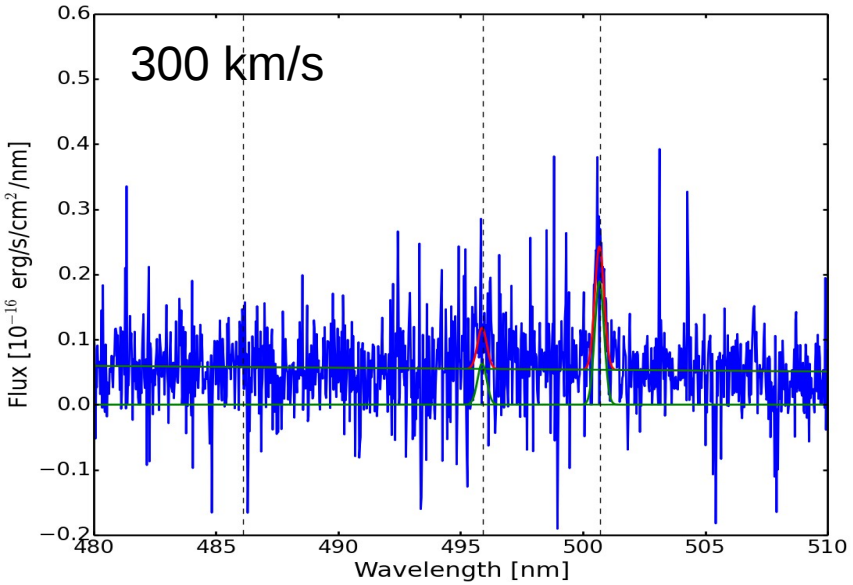
Kakkad +2017

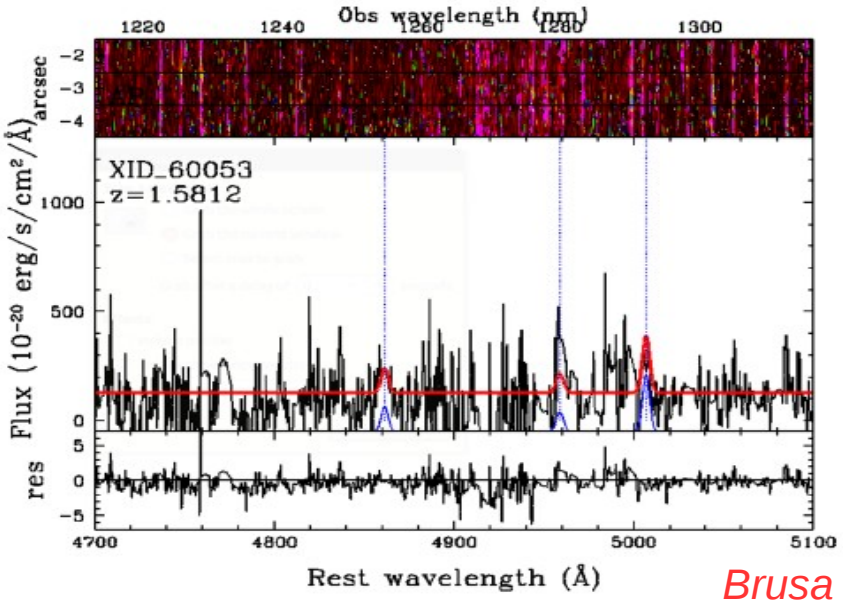
For galaxies with similar SFR, X-ray selected AGNs tend to show lower molecular gas content compared to non-AGNs

No link with presence of Ionized outflows!!









Brusa +2015

Conclusions

- Evidence building up for spatial anti-correlation between ionized outflow and star formation at low and high-z
- X-ray selected AGNs in Main sequence show lower molecular gas content compared to non-AGNs
- No direct link between the presence of outflows and the observed low molecular gas
- Move to a statistical sample → SUPER survey