A spectroscopic survey of X-ray selected AGN in the northern XMM-XXL field

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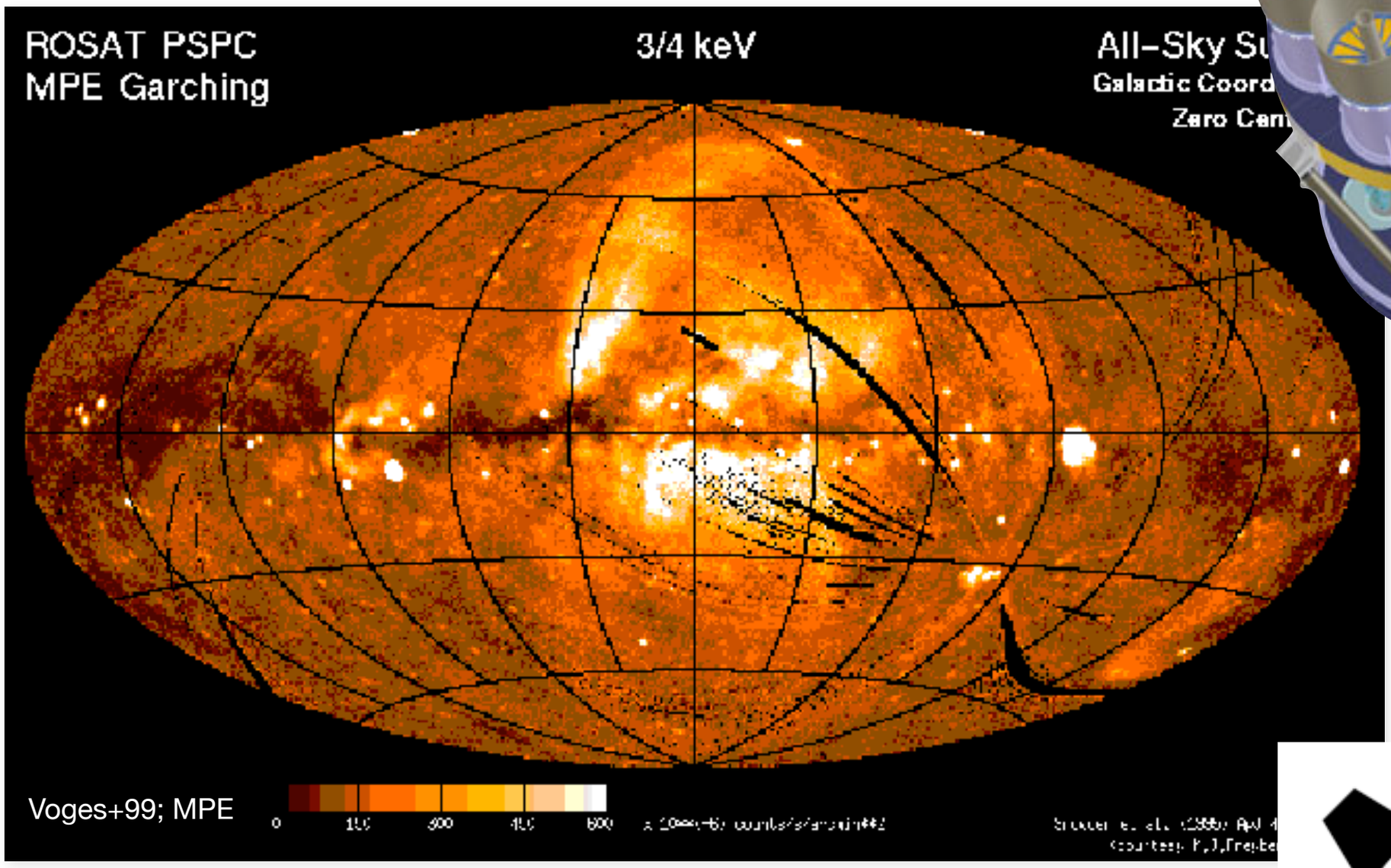
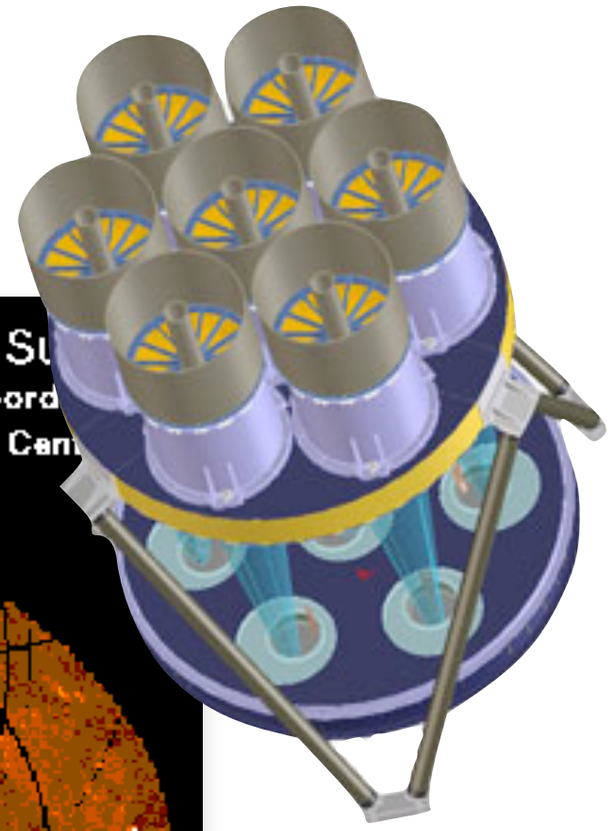
X-ray Observations of AGN

- less affected by obscuration
- suffer low contamination by star-forming processes





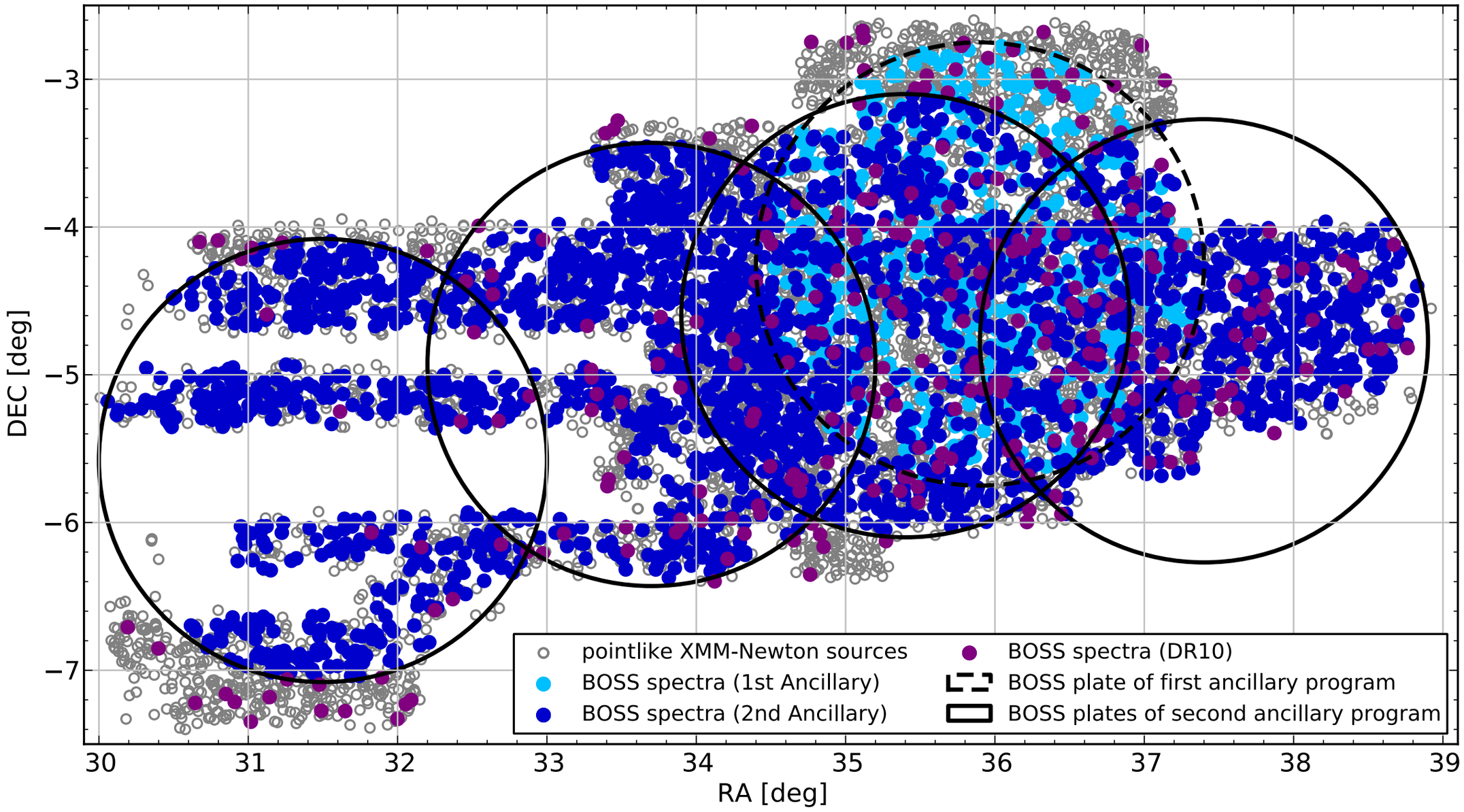
all-sky observation of AGN:

- ROSAT: F(0.1-2.4 keV) ~ 2 * 10^{-12} erg cm^{-2} s^{-1}, 2 AGN deg^{-2}
- eROSITA: F(0.5-2.0 keV) ~ 1 * 10^{-14} erg cm^{-2} s^{-1}, 90 AGN deg^{-2}

SPIDERS

XMM-XXL north

depth: $F_{full} > 1 \cdot 10^{-15}$ erg cm^{-2} s^{-1}
area: 22 deg^2
multi-wavelength coverage



Datasets in XMM-XXL north

Georgakakis+11

XMM
Newton
n = 8445

DR8

SDSS
n = 5294

15 < r < 22.5
n = 4237

BOSS
n = 3126

$F_{full} > 1 \cdot 10^{-15}$
erg cm^{-2} s^{-1}

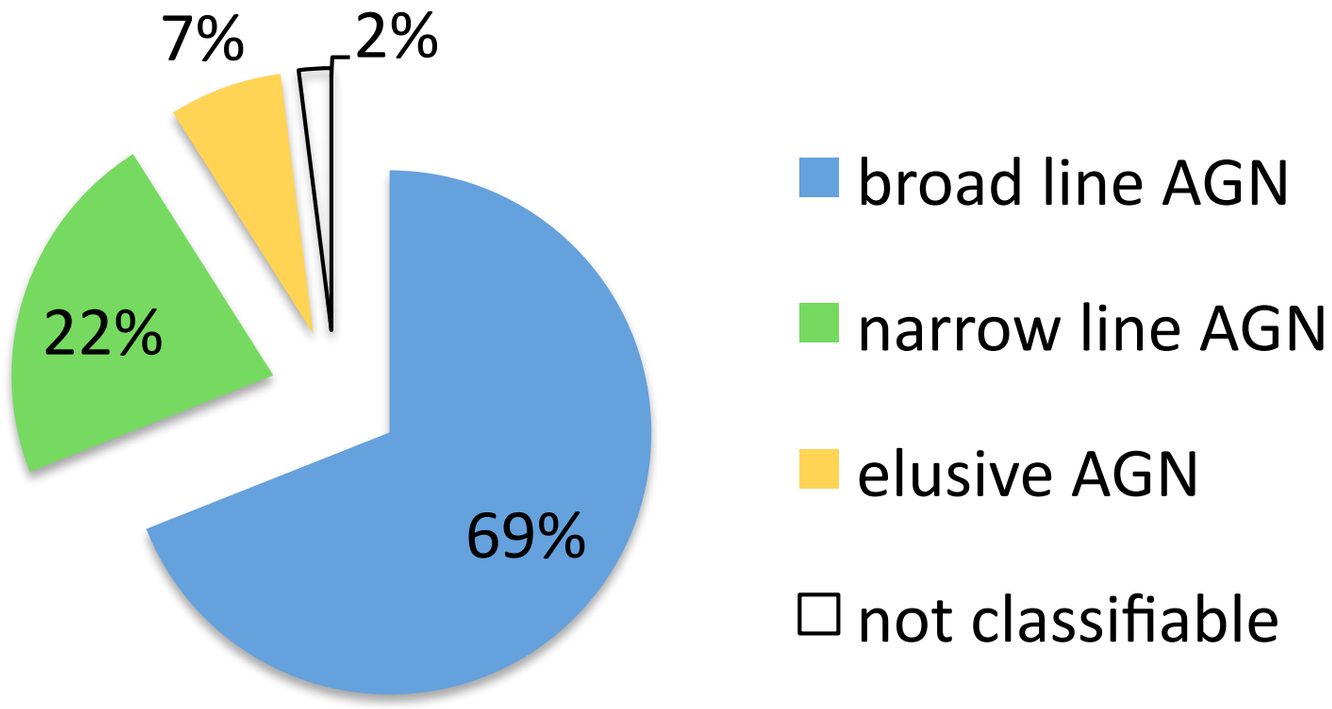
WISE
n = 5715

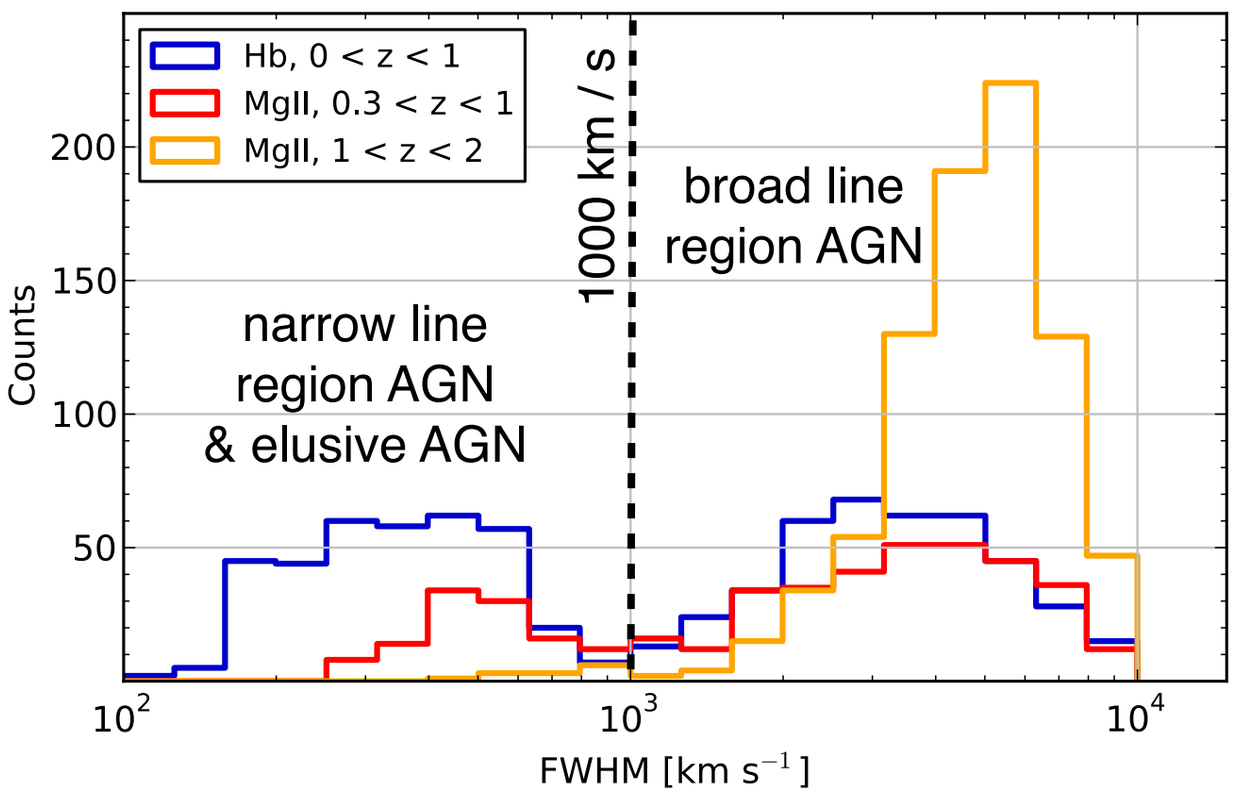
all WISE

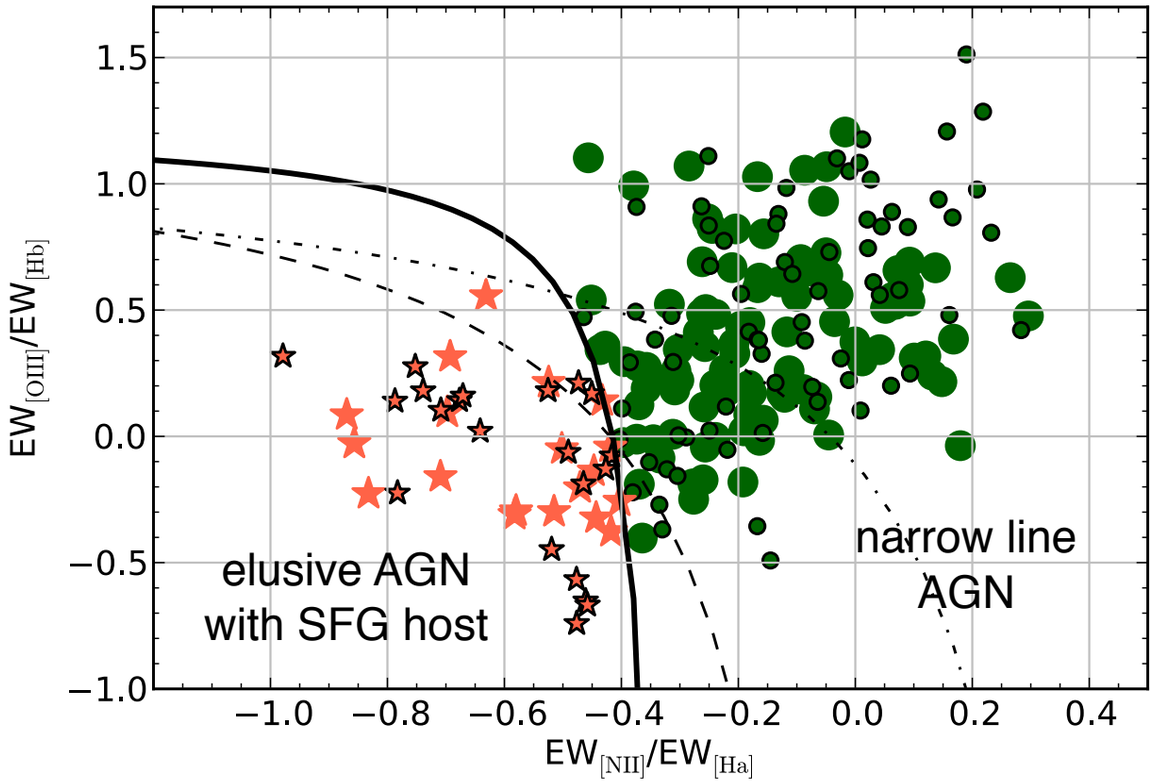
spectroscopic completeness: 74 %
redshift success: 87 %
(after visual inspection)

What kind of AGN does X-ray select?

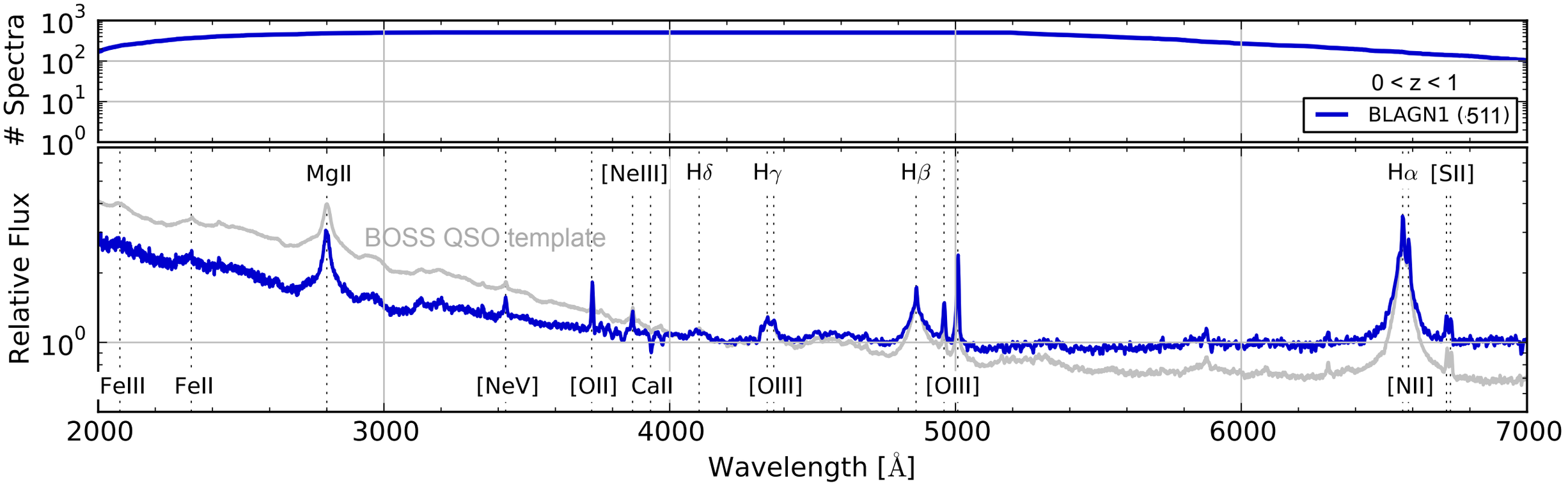
Classification of X-ray sources

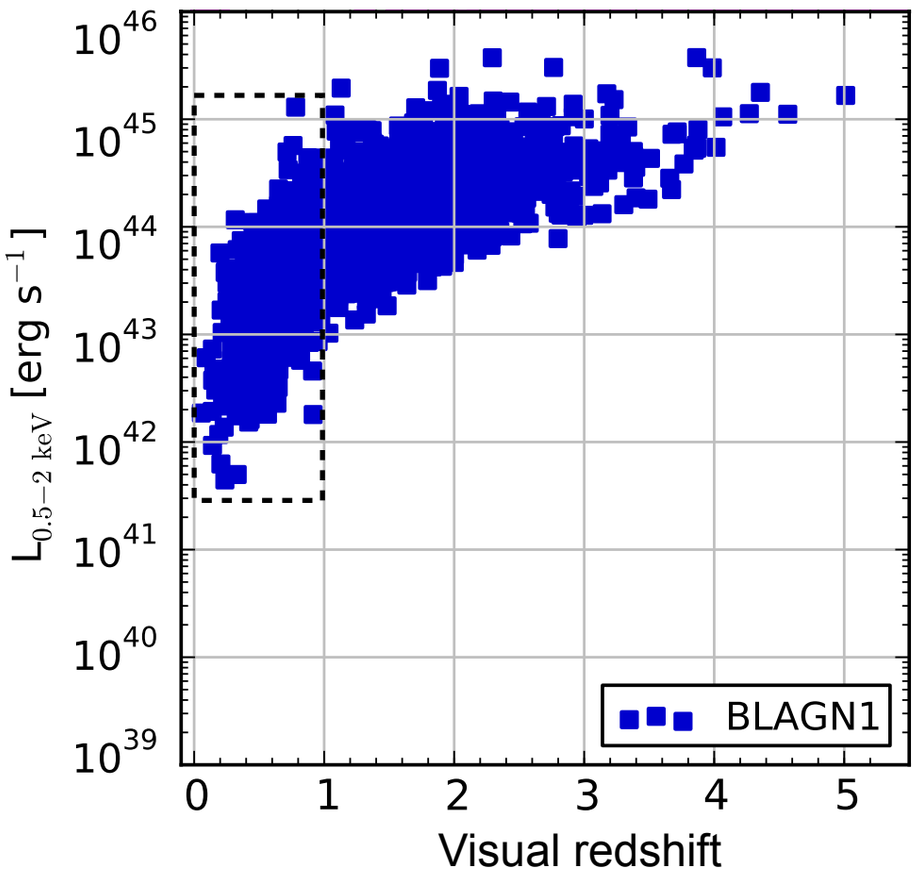




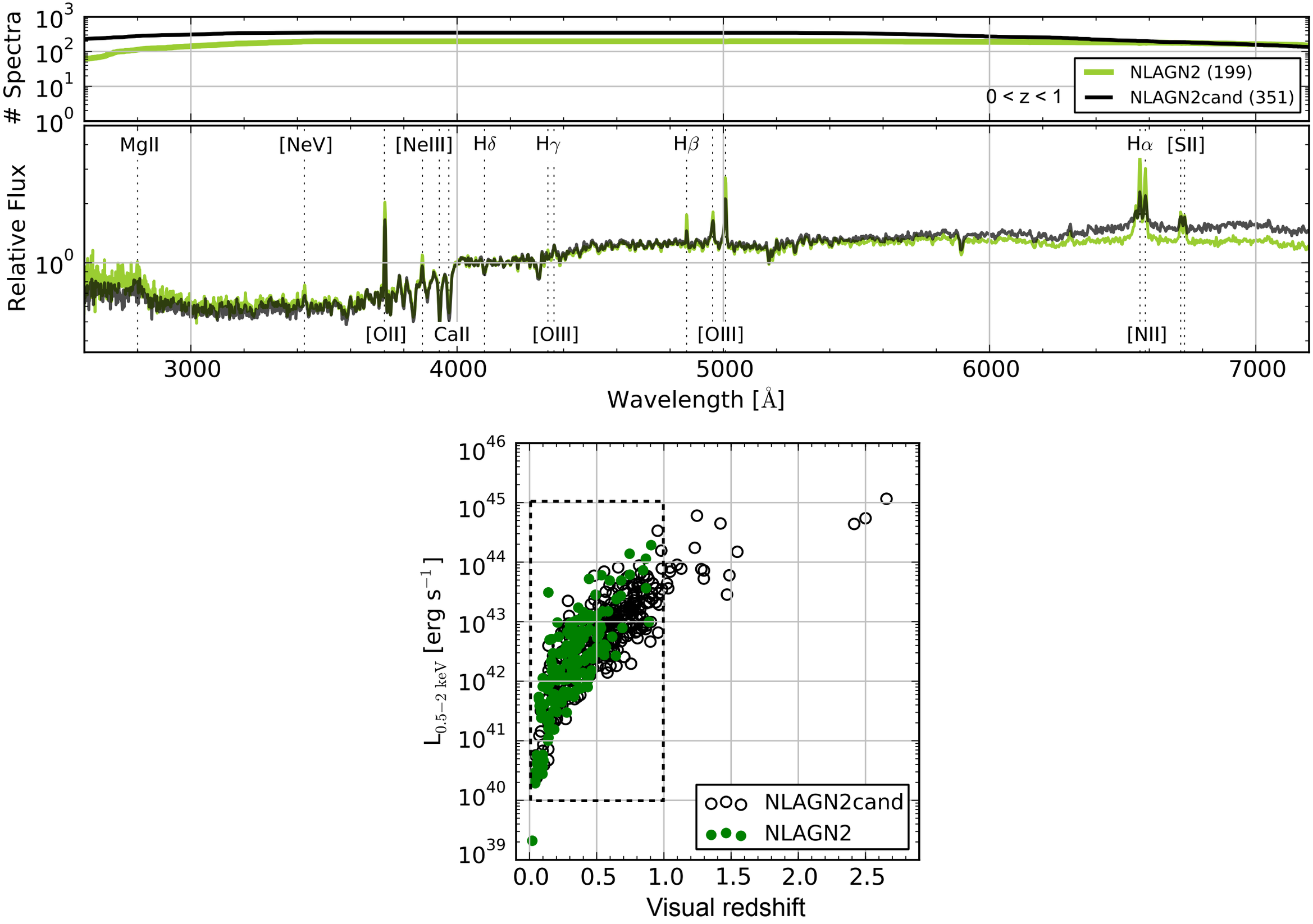


Classification: Broad Line AGN

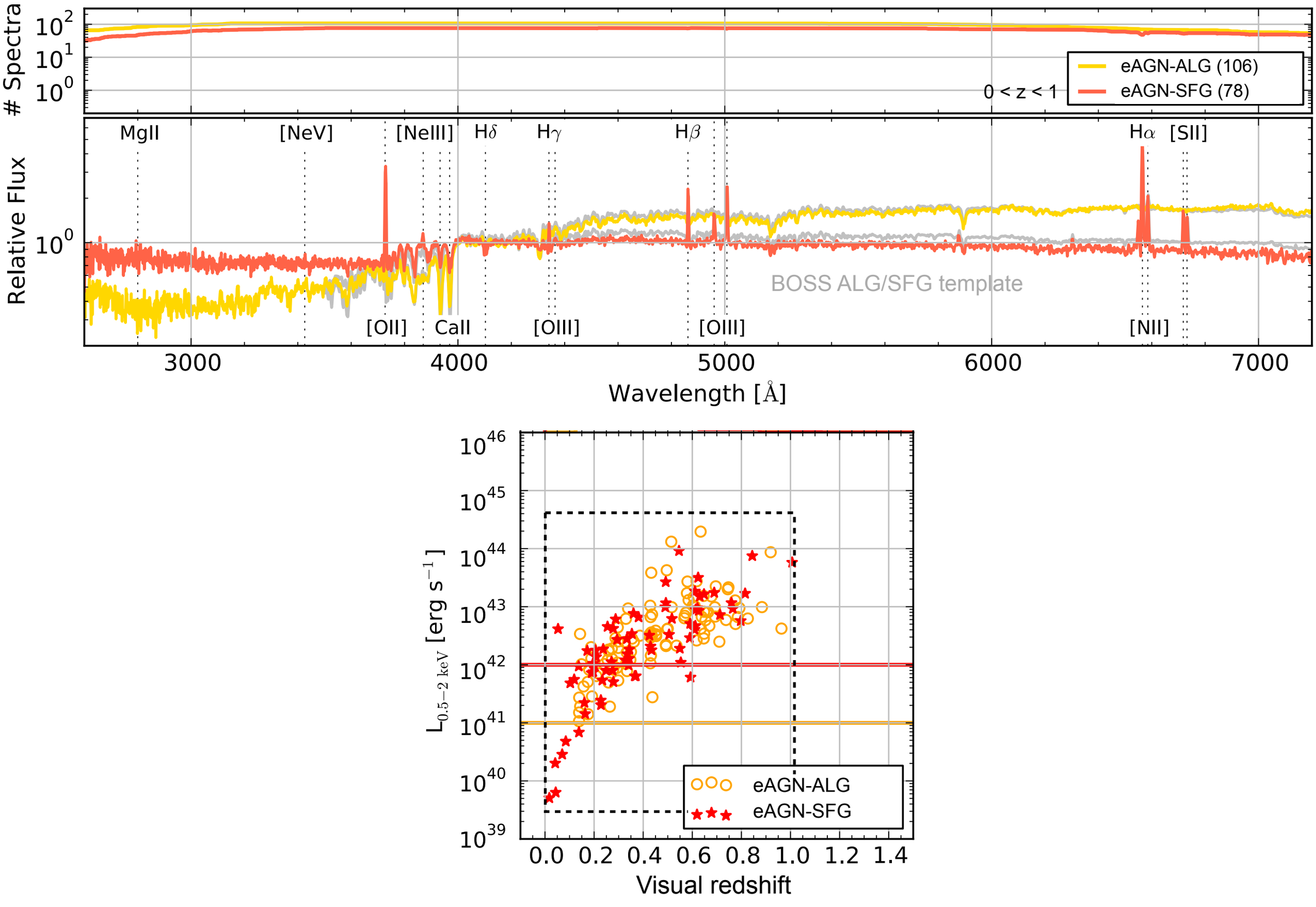




Classification: Narrow Line AGN

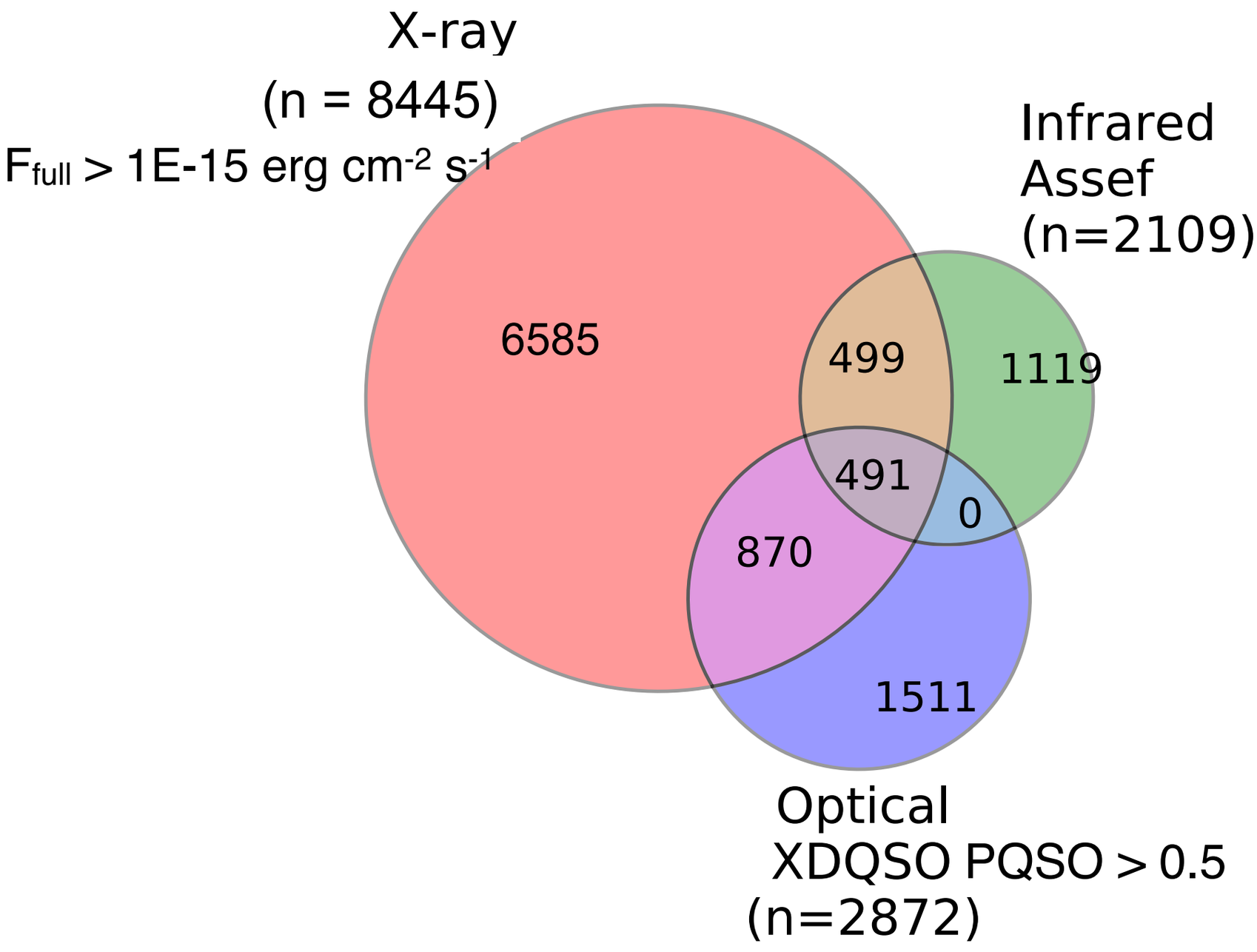


Classification: Optically Elusive AGN



How does the X-ray selection compare to other AGN selections?

Comparison of AGN selections in XMM-XXL north



Optical AGN selection

(XDQSO selection, Bovy+11)

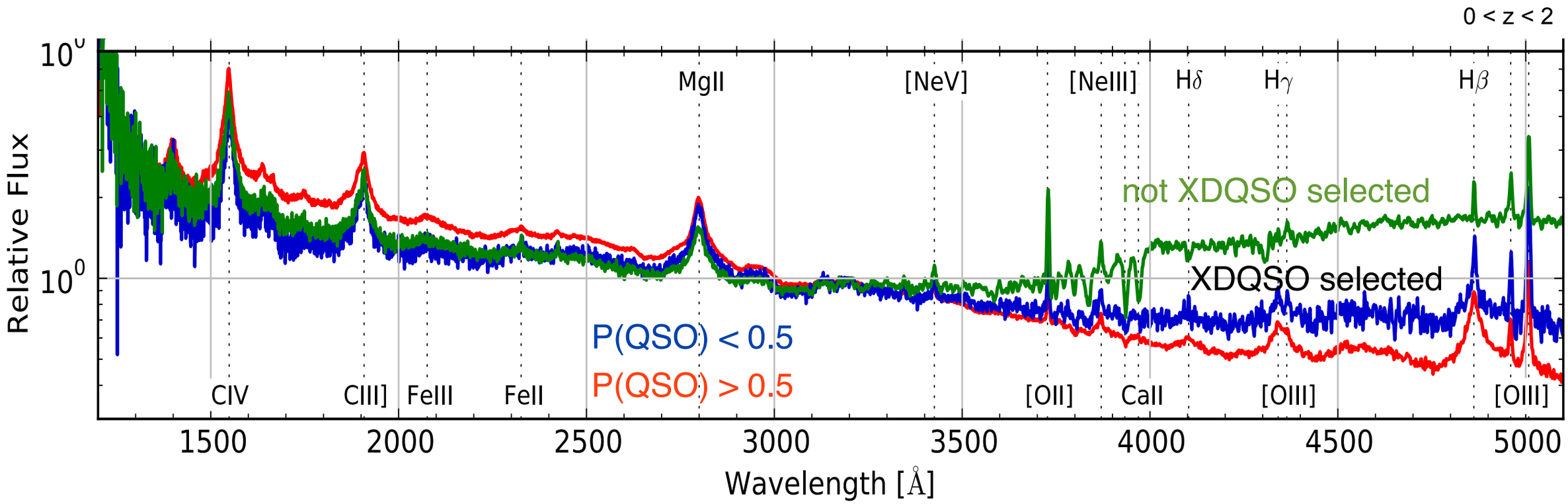
X-ray AGN selection

- obscured AGN
- AGN with host contribution
- elusive AGN
- optically extended AGN

- optically pointlike AGN
- broad line AGN
- weak host contribution

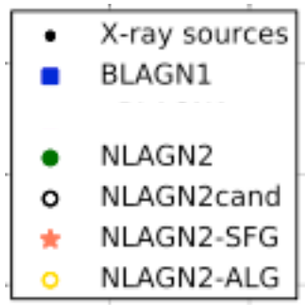
Optical AGN selection

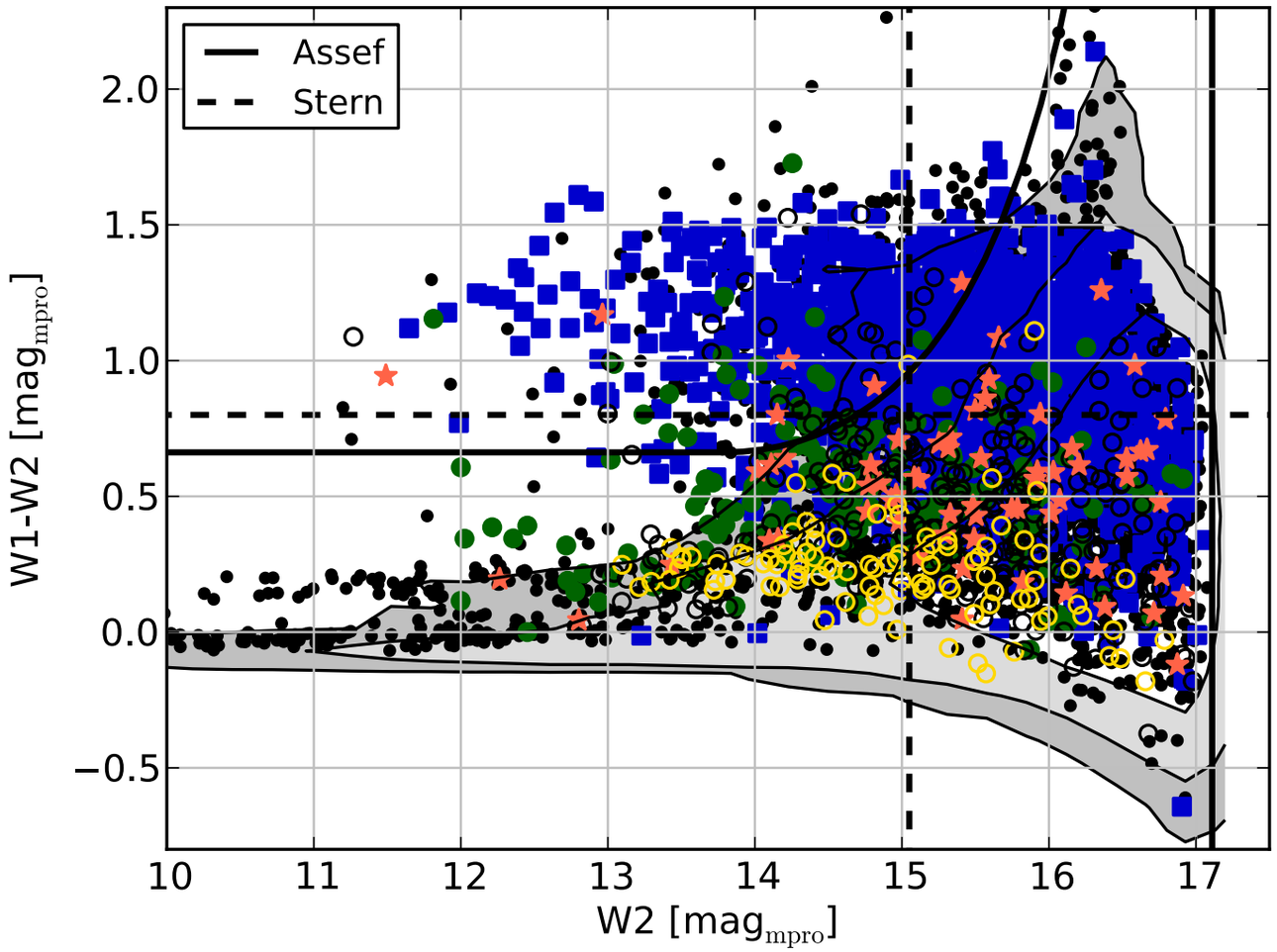
- X-ray faint AGN

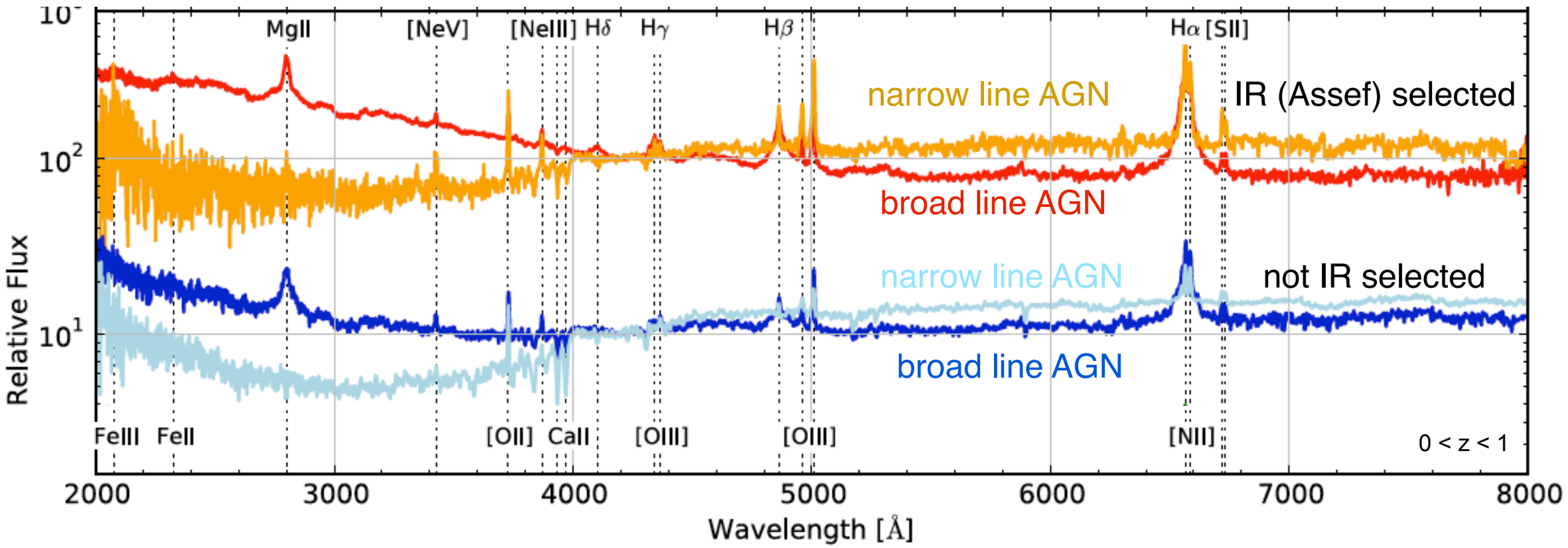


Infrared AGN selection

(Stern+12, Assef+13)







Infrared AGN selection

(Stern+12, Assef+13)

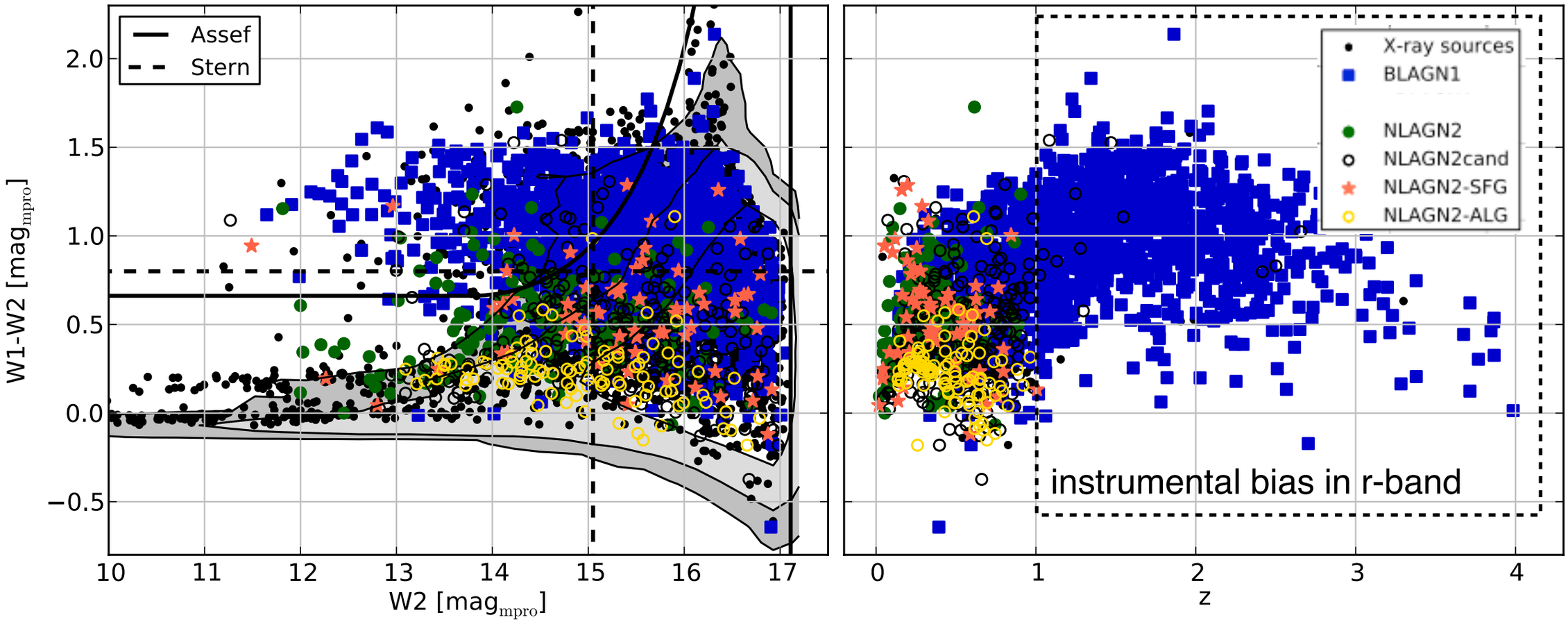
X-ray AGN selection
(instrumental bias in r-band)

- obscured AGN
- IR-faint AGN suffering host dilution
- elusive AGN

- broad line AGN
- narrow line AGN
- weak host dilution
- IR luminous AGN

Infrared AGN selection

- X-ray-faint AGN
- IR luminous objects



Summary

- Survey in XMM-XXL north is the **largest contiguous spectrocsopic survey** of X-ray selected AGN (~2700 reliable redshifts, $0 < z < 5$, 22 deg^2)

- **AGN classification** of X-ray selected AGN:
  broad line AGN (69%), narrow line AGN (22%), elusive AGN (7%)

- **X-ray** probes **wide variety** of AGN: obscuration & host contribution

soon to come: Menzel et al. 2015 (in prep.)

SPIDERS