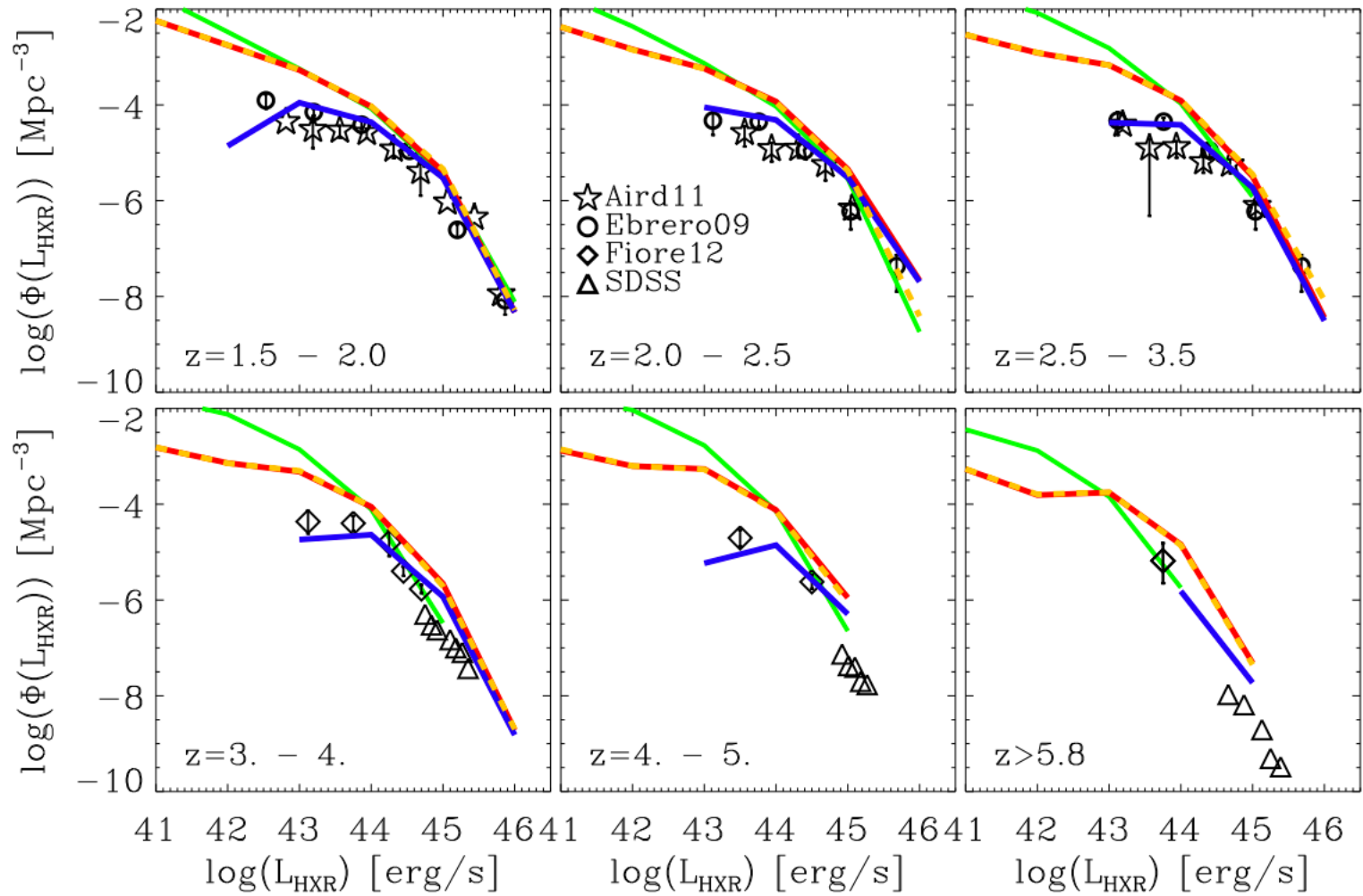
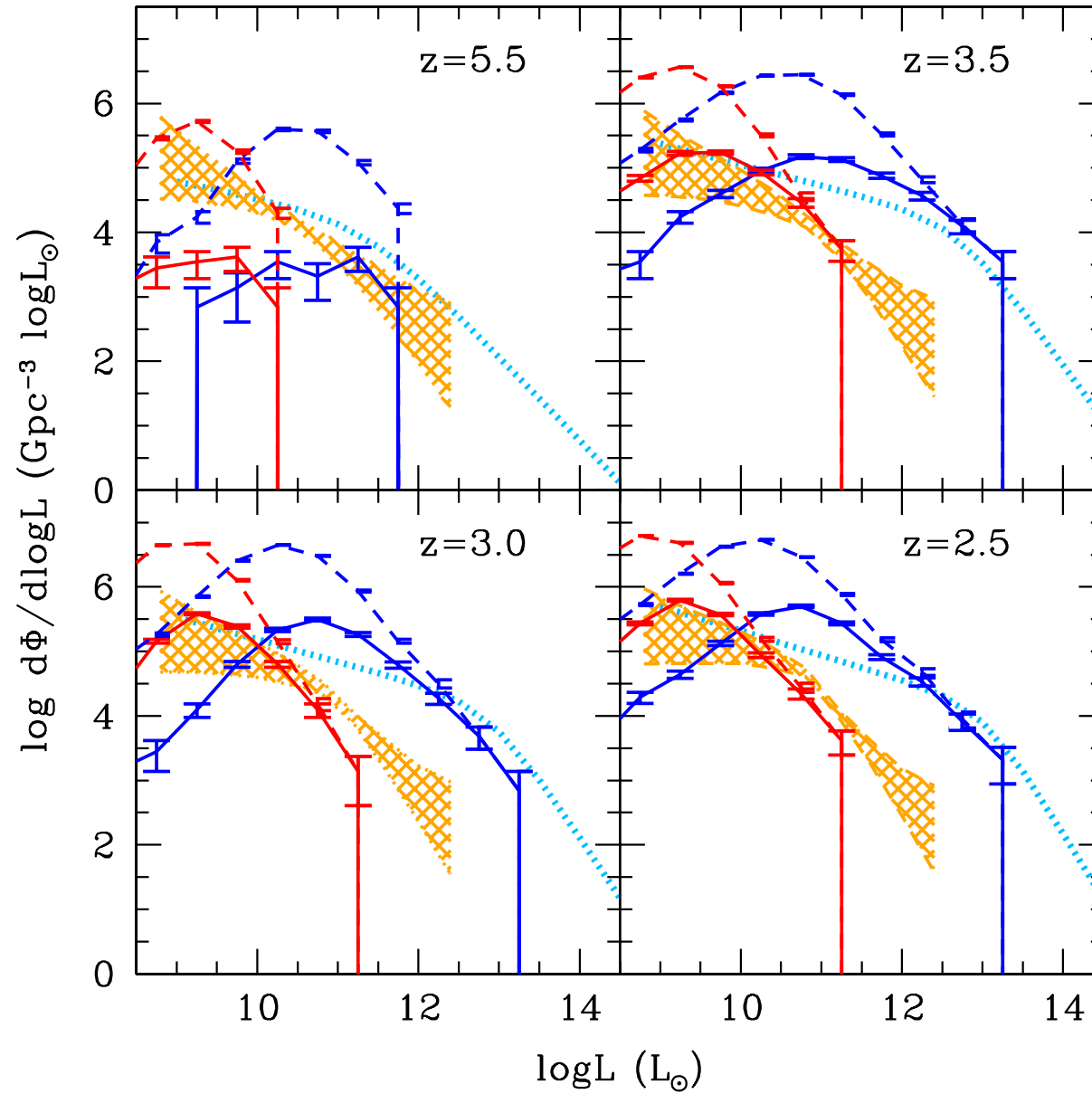
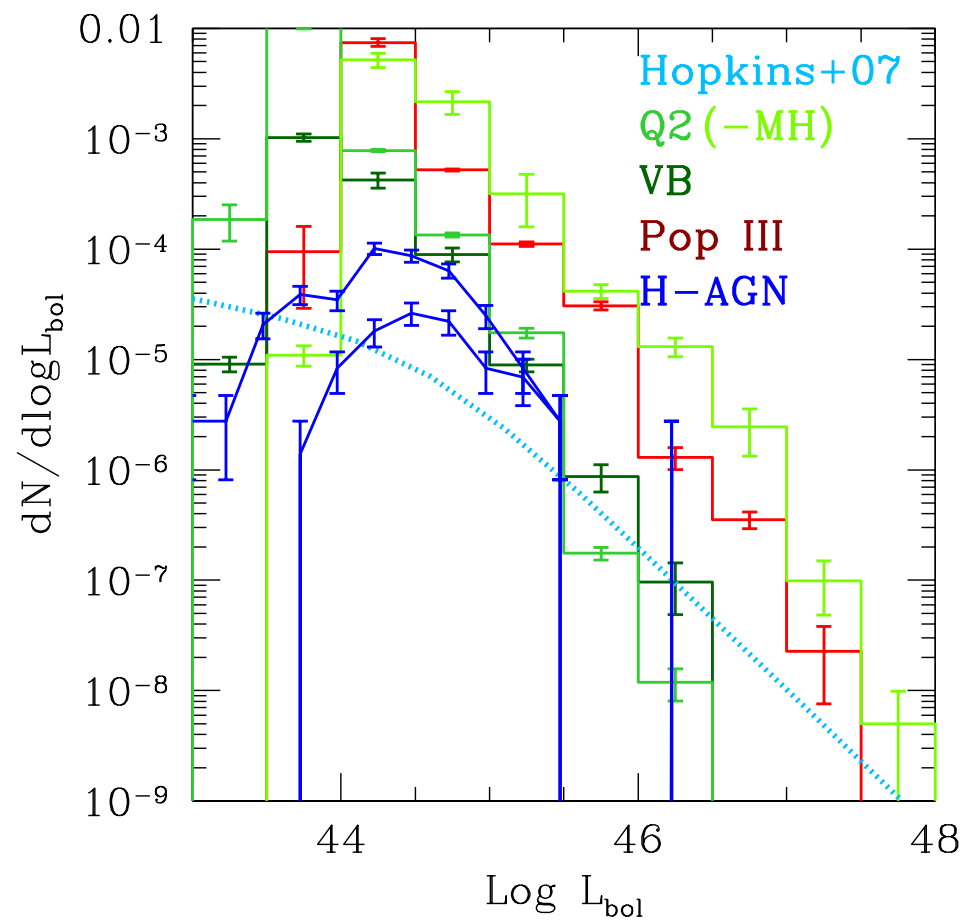
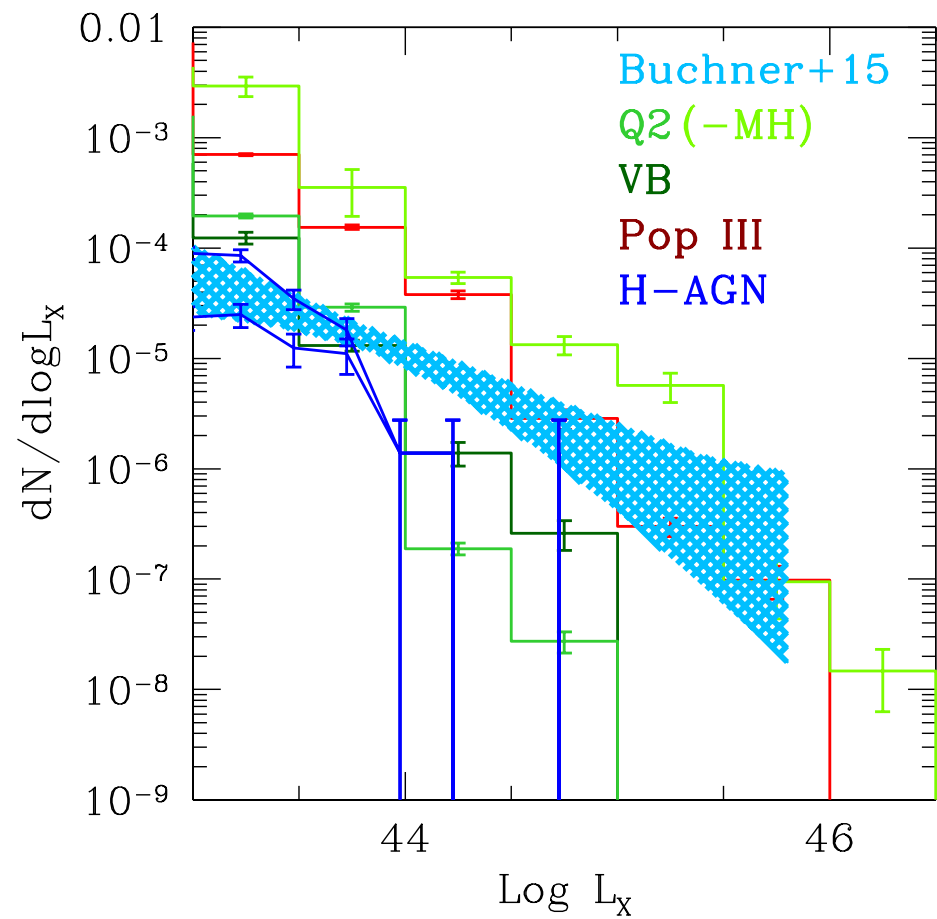


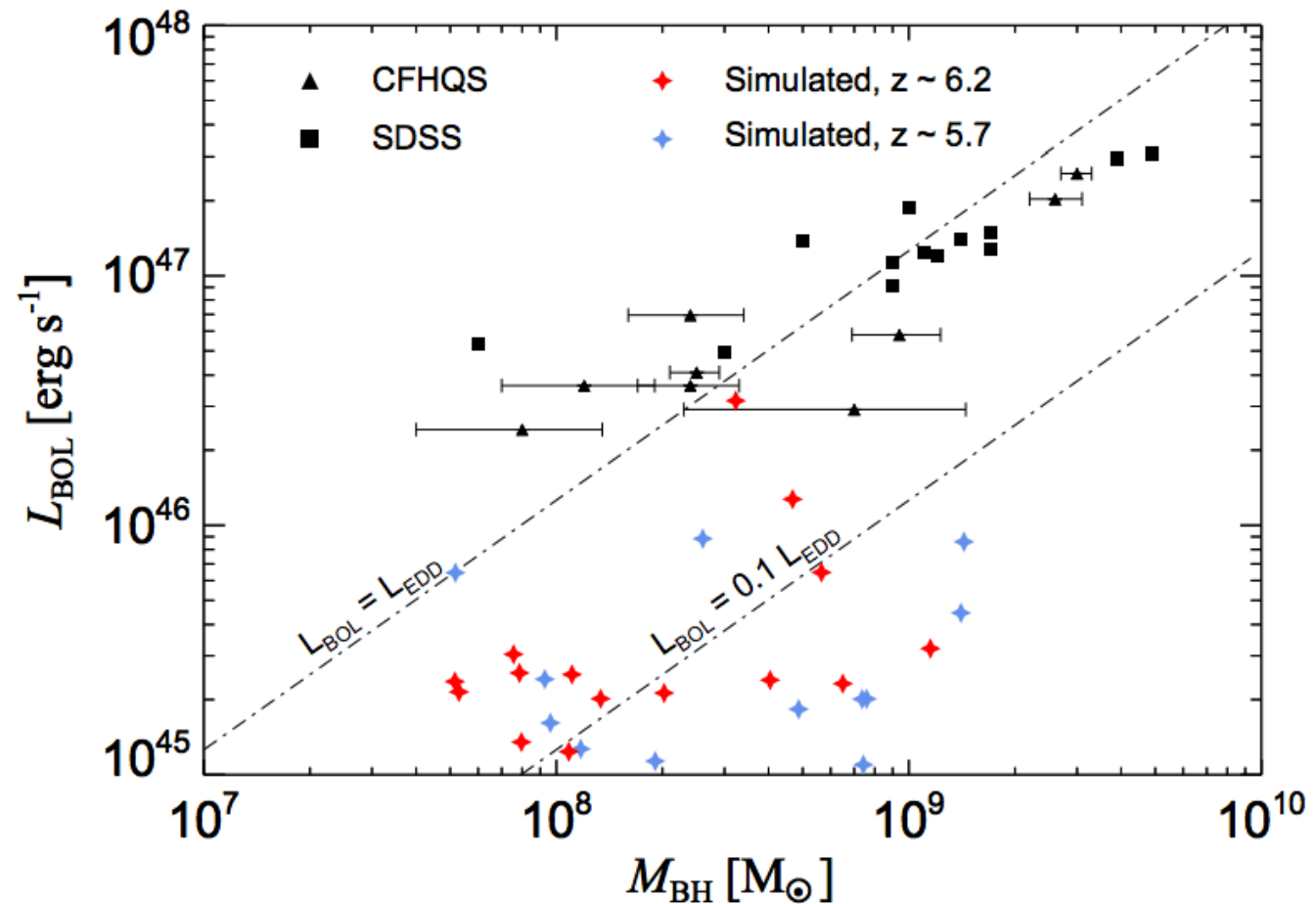
Models vs observations





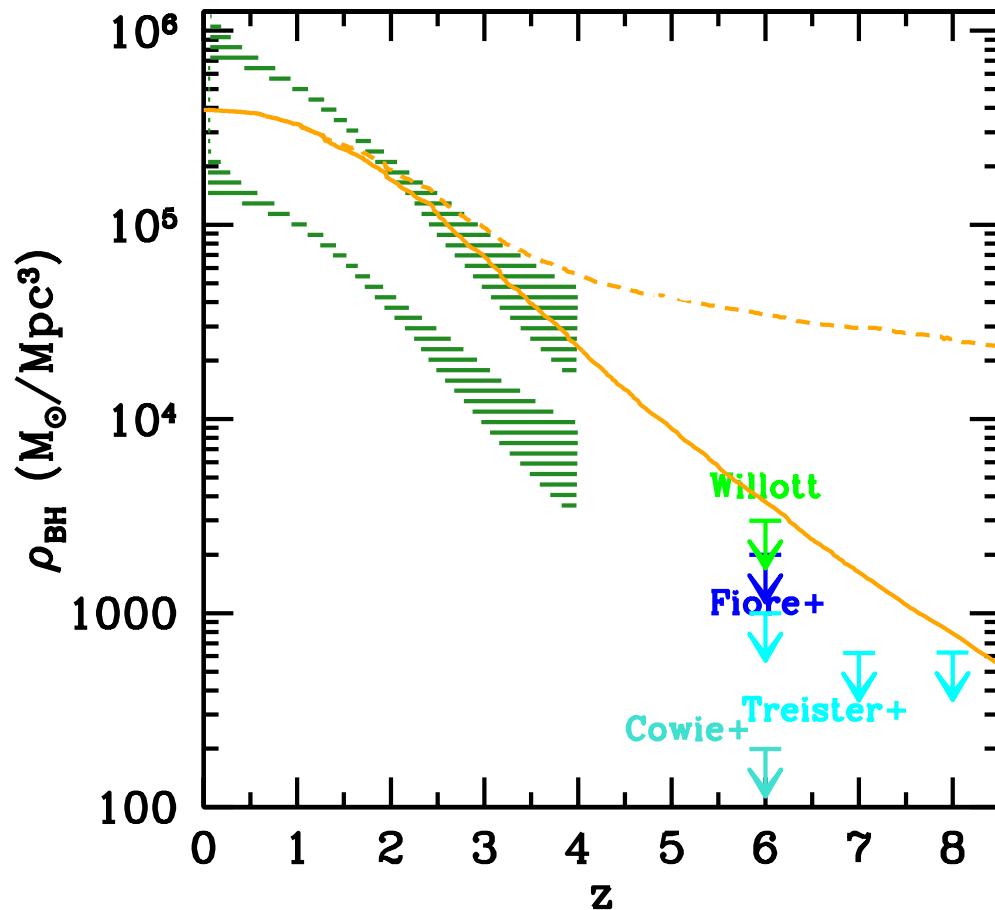
Bolometric (blue) and hard X-ray (2-10 keV, red) LF at different redshifts. The dashed curves include all BHs in Horizon-AGN in halos with mass $> 8 \times 10^{10} M_{\odot}$, while the solid curves include only BHs in halos with mass $> 5 \times 10^{11} M_{\odot}$, where SN feedback should not quench BH growth (Dubois et al. 2015). The dotted light blue curve is the bolometric LF proposed of Hopkins et al. 2007 (see also Ueda et al. 2015 and Shankar et al. 2009). The orange hatched region is the hard X-ray LF by Buchner et al. 2015 corrected for Compton thin and thick AGN.





“At $z = 6.2$, accretion onto the massive black holes shown in this plot is limited by thermal AGN feedback and therefore proceeds in short Eddington bursts, followed by more quiescent accretion periods. Thus, at any given time at this redshift, only a small fraction of QSOs will be at their luminosity peak and bright enough to have been detected in published surveys”

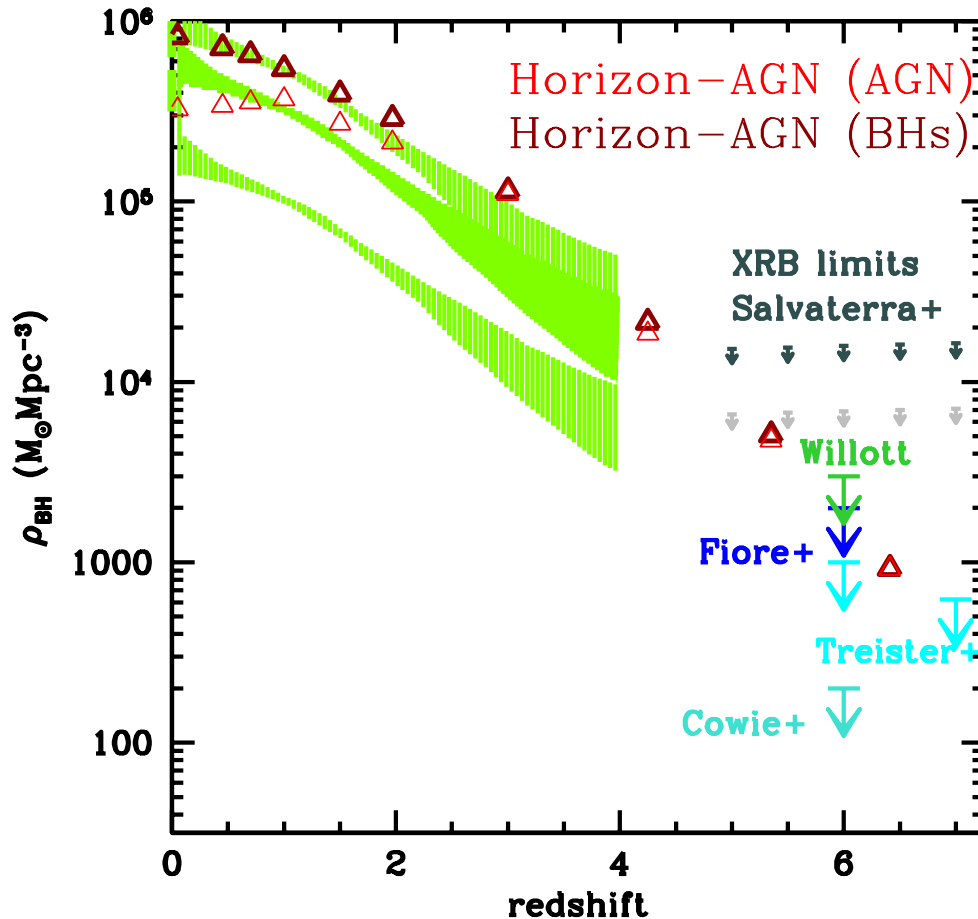
Soltan's argument



Soltan's argument:
measures mass accreted
by AGN

Not all MBHs are AGN:
the total mass density
may be higher, quiescent
MBHs are not included
(also obscured AGN are
unaccounted for – ask A.
Comastri!)

Soltan's argument



Soltan's argument:
measures mass accreted
by AGN

Not all MBHs are AGN:
the total mass density
may be higher, quiescent
MBHs are not included
(also obscured AGN are
unaccounted for – ask A.
Comastri!)