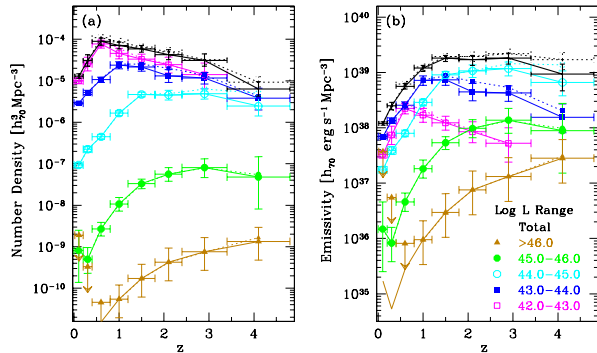


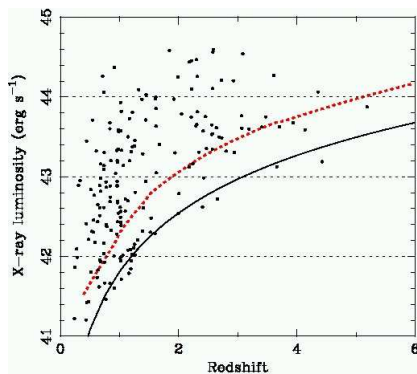
**ABSTRACT:** While the recent *Chandra* and *XMM-Newton* surveys have generated plentiful AGN samples, they do not detect significant numbers of moderate-luminosity AGN at high redshift ( $z > 3$ ). To pin down the cosmic evolution (i.e., luminosity function) of X-ray emitting AGN up to  $z \sim 5$ , the region surrounding the CDF-S is being observed by *Chandra* to reach comparable depths over an area  $4\times$  larger. The expanded areal coverage is crucial to measure the full extent of the large scale structures evident in the CDF-S and study the AGN clustering properties. We are beginning an optical spectroscopic identification program of the X-ray sources detected in the Extended Chandra Deep Field-South (E-CDF-S) using VLT/VIMOS. With extensive observations of this region in various wavebands (e.g. COMBO-17, GEMS *Spitzer*/HST, ESO Deep Public Survey), we are carrying out one of the deepest multi-wavelength campaigns to date.

## Evolution of X-ray emitting AGN



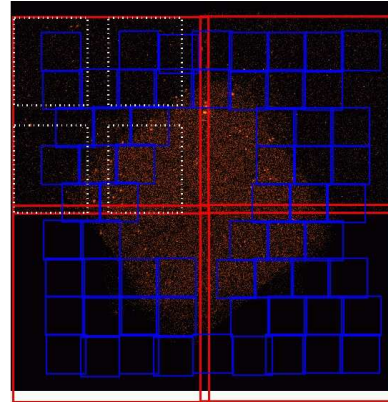
Co-moving space and luminosity density versus redshift for five different luminosity classes (Hasinger et al. in prep) show that luminous AGN ( $\log L_X > 44$ ; 0.5-2 keV) evolve in a different manner than lower luminosity ( $\log L_X < 44$ ) AGN. **It is apparent that a larger sample at  $z > 3$  is needed.**

## Chandra Deep Fields



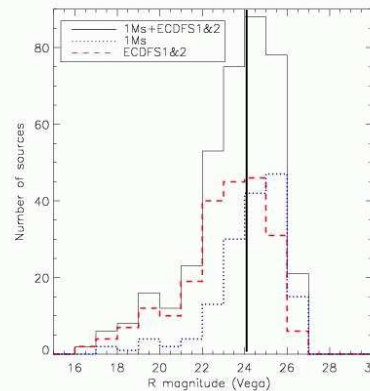
Luminosity/redshift distribution of X-ray sources in the CDF-N+S. With most AGN at  $z < 1.5$ , a wider area survey is needed to have significant statistics at  $z > 3$ . The E-CDF-S (solid line; detection limit) will be  $3\times$  more sensitive than the 100 ksec *XMM-Newton* observation of the Lockman Hole (dotted line; Hasinger et al. 2001).

## E-CDF-S sky coverage



E-CDF-S *Chandra* pointings shown as red squares ( $17' \times 17'$  each) overlaying the 1 Msec CDF-S and **two new observations to the north**. The two southern *Chandra* observations are scheduled this fall. The blue squares mark the GEMS HST/ACS coverage. The dashed regions mark the footprint of the VLT/VIMOS multi-slit spectrograph.

## Optical magnitude distribution



Optical magnitude of the counterparts to X-ray sources in the 1 Ms CDF-S (dotted), E-CDF-S (dashed) and combined (solid). **The optical limit ( $R = 24$ ) of our survey will enable us to identify a high fraction ( $\sim 70\%$ ) of the X-ray sources.**