

B30a **Impact of environment on AGNs and their host galaxies in COSMOS**

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I will review results from our study of the physical mechanisms that are likely responsible for the buildup of supermassive black holes with cosmic time using the COSMOS survey. In particular, we investigate how Active Galactic Nucleus (AGN) activity is related to star formation in their host galaxies. X-ray emission from both Chandra and XMM-Newton enable us to identify those galaxies harboring AGN less affected by obscuration. The zCOSMOS redshift survey of 20,000 galaxies provides accurate distances, star formation rates and characterization of the local environment. We find a close relation between accretion onto SMBHs and ongoing star formation in their hosts likely indicative of a common gas supply and that drives a co-evolution scenario. We then investigate the impact of the environment on the joint evolution over a range of scales from large scale structures, galaxy groups and close kinematic pairs. We describe the implications of our findings for the migration of galaxies and their black holes onto local mass relations. To close, we will discuss progress that can be made with future surveys using Subaru including FMOS, HSC and PFS.