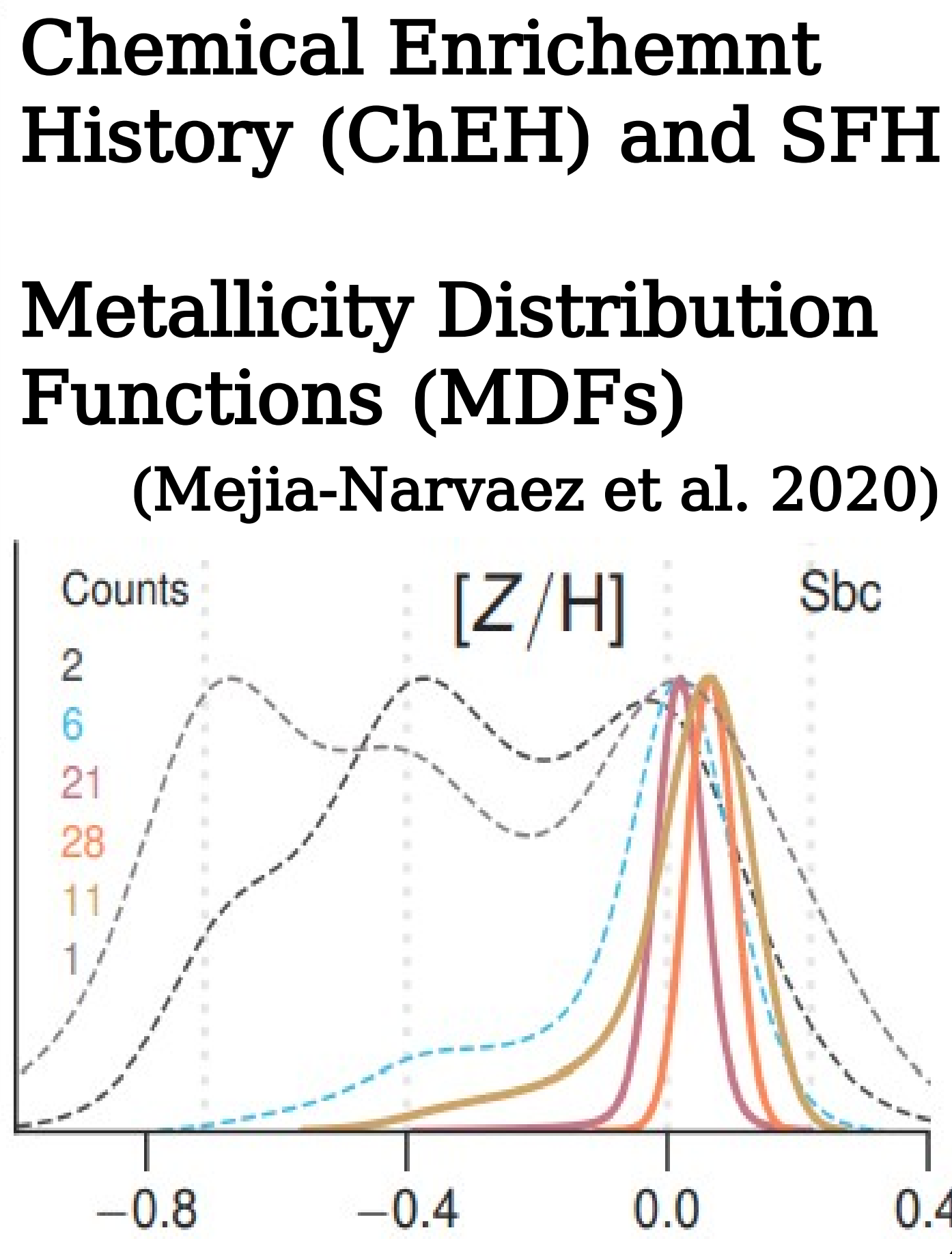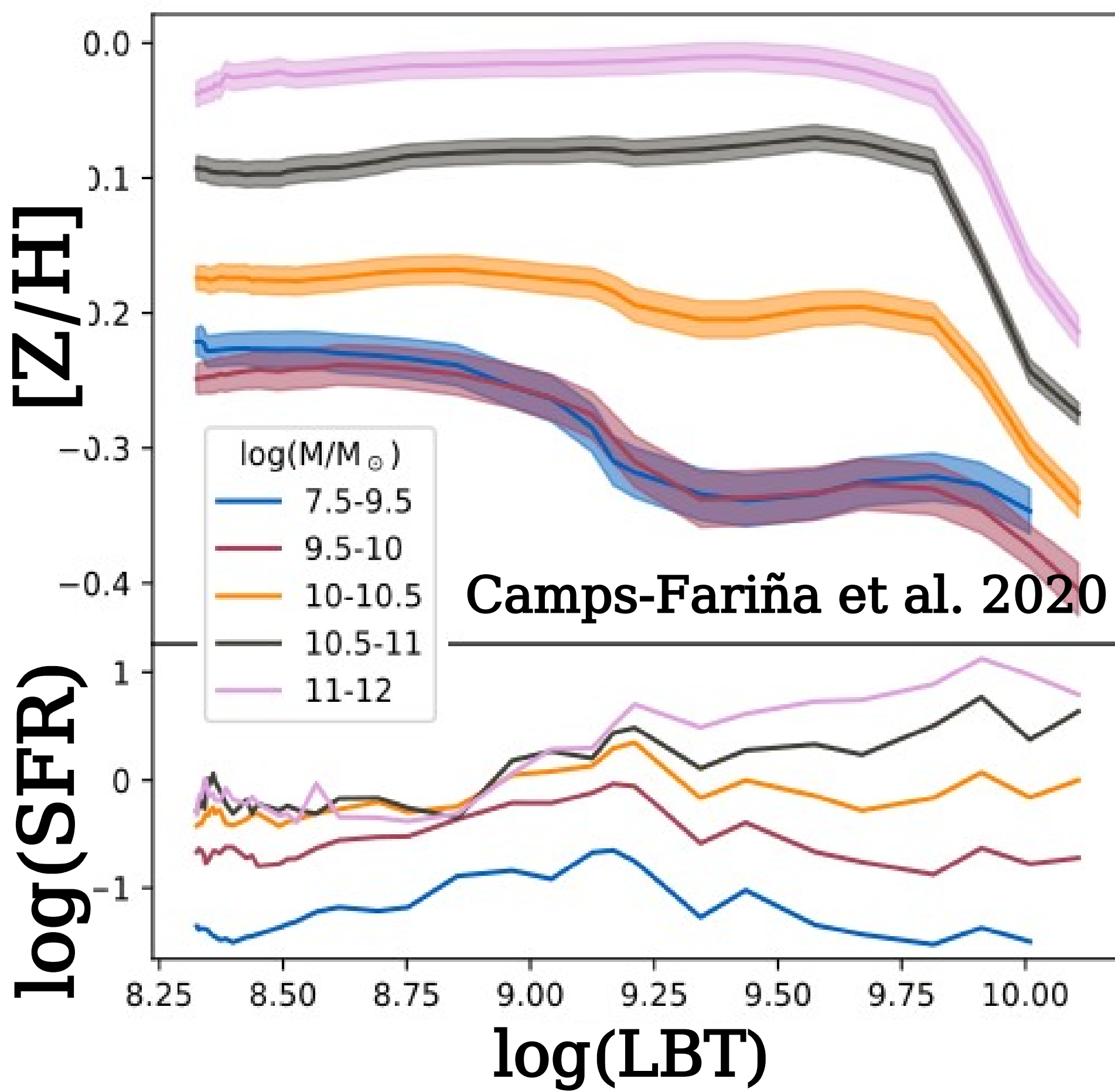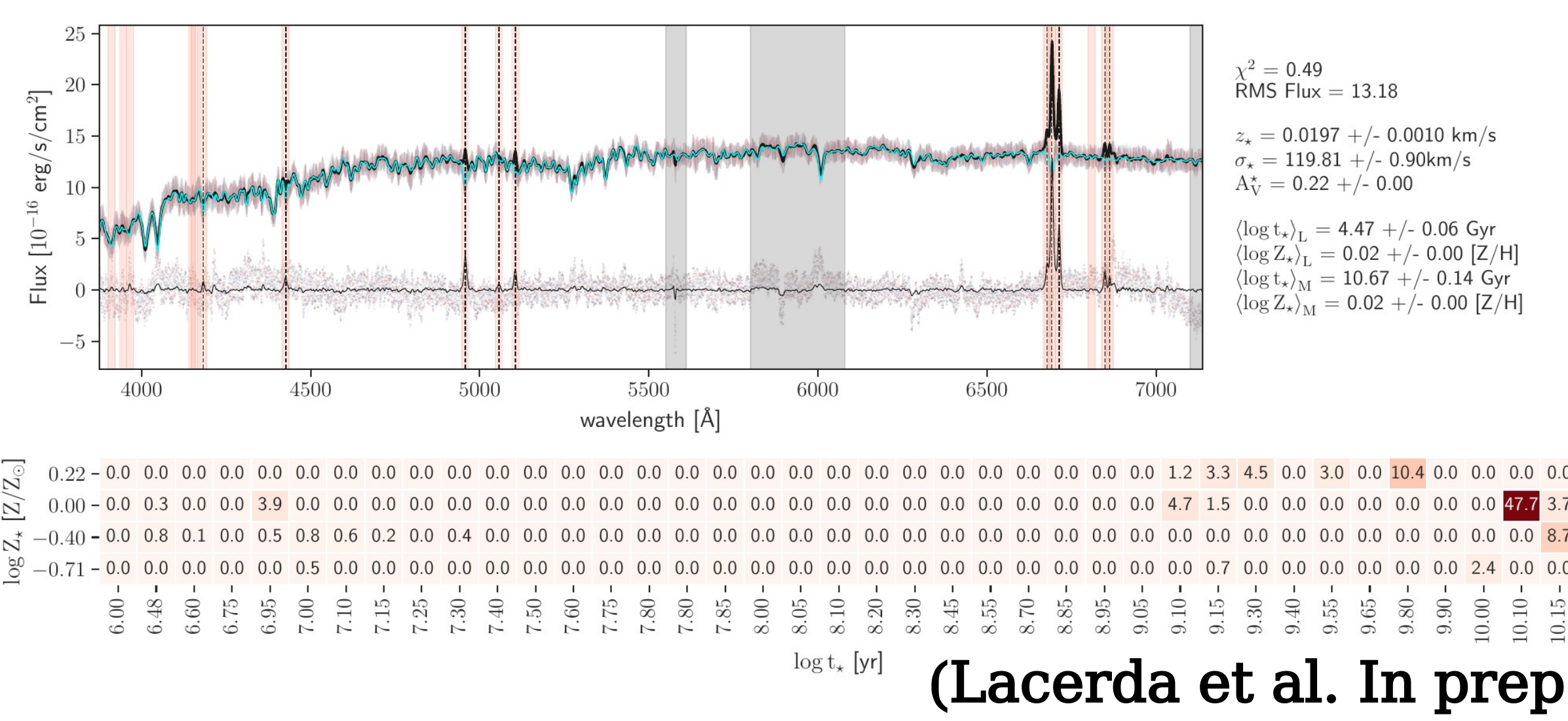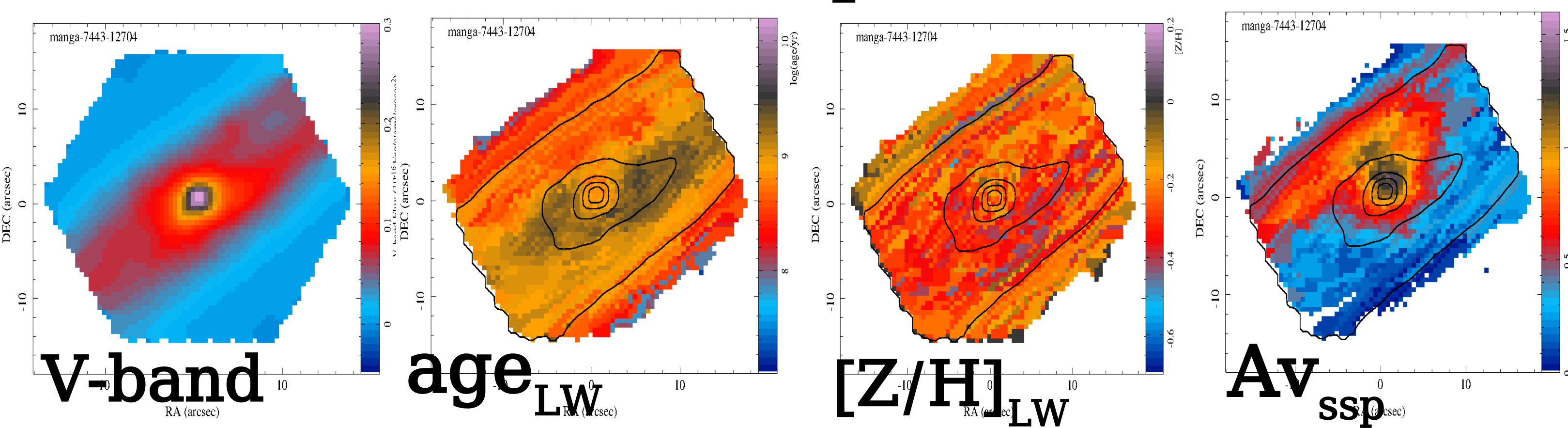# Pipe3D, a pipeline for IFS galaxy surveys

S.F.Sánchez, E.Lacerda, A.Mejía-Narvaez, C.Espinosa-Ponce, C.Lopez-Cobá, H.Ibarra-Medel, A. Camps-Fariña, J.K.Barrera-Ballesteros

Pipe3D is a pipeline that derives the properties of the stellar populations and ionized gas emission lines from IFS observatations of galaxies (Sánchez et al. 2016). It has been succesfully applied to different IFU datasets, including MUSE, MaNGA, CALIFA and SAMI data (used in ~120 articles). The current version is fully coded in Python (Lacerda et al. in prep.), and include new features and improved performance.

Stellar Properties

V-band age$_{LW}$ [Z/H]$_{LW}$ Av$_{ssp}$

(Lacerda et al. In prep.)

Chemical Enrichemnt History (ChEH) and SFH

Metallicity Distribution Functions (MDFs)
(Mejia-Narvaez et al. 2020)

Camps-Fariña et al. 2020

The pipeline uses pyFIT3D (above) to decompose each spectra extracted from a spatially binned version of the cube (to increase S/N) in a set of SSPs, subtracting the best fitted model and fitting the emission lines with a set of Gaussian functions. It provides with the SFH, ChEH, and average stellar properties (Age, Z, Av, velocity, dispersion...)

Once subtracted the best fitted stellar population model, the cube containing just the emission lines is reanalized using a weighted moment analysis that provides with the main properties of ~200 emission lines (left), including the flux, EW, velocity and velocity dispersion.

The result is stored in a set of FITs datacubes, packed in a single file with several extensions (Pipe3D cube). This analysis was used in the Pipe3D SDSS-IV VAC for DR14 and DR15, and will be used for DR17 (comprising ~10,000 datacubes)

(a) NGC4030

g,r,i [Oiii],Hα,[Nii]
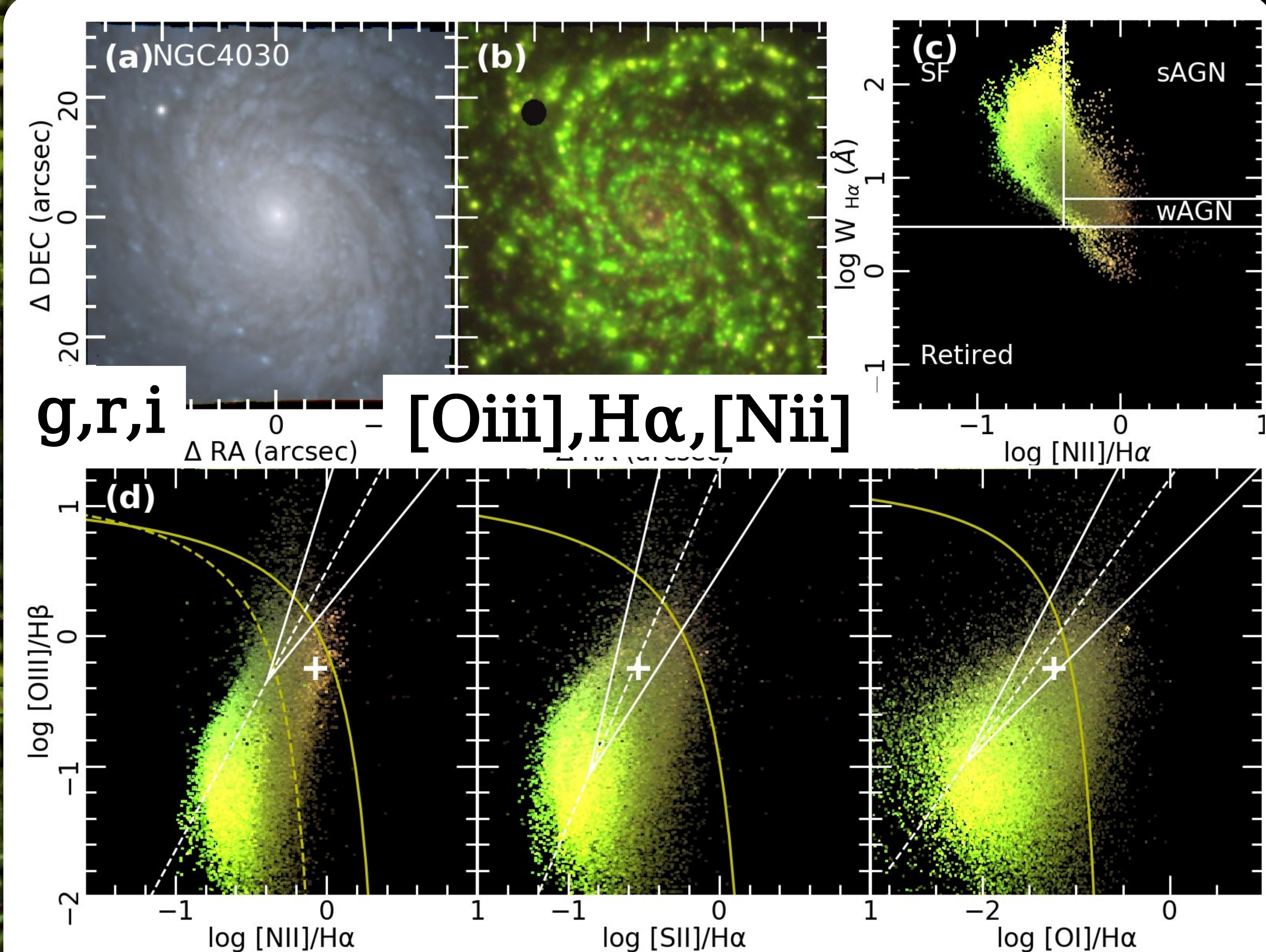
Emission Line properties (Lopez-Coba et al. 2020)