



Galaxy Evolution in BOSS

Claudia Maraston

***Institute of Cosmology and Gravitation
University of Portsmouth – UK***

Particular thanks to:

**Janine Pforr, Christy Tremonti, Daniel Thomas, Bruno
Henriques, David Wake, Kevin Bundy, Alexie Leauthaud**

Martin White for stimulating activities

David Schlegel for testing models

Outline

- ✦ **Galaxy Evolution Working Group**
definition and aims
- ✦ **Overview of projects and selected results**
- ✦ **Tools available for the collaboration**
- ✦ **Synergies with other WGs**
- ✦ **Outlook**

Galaxy Evolution with BOSS

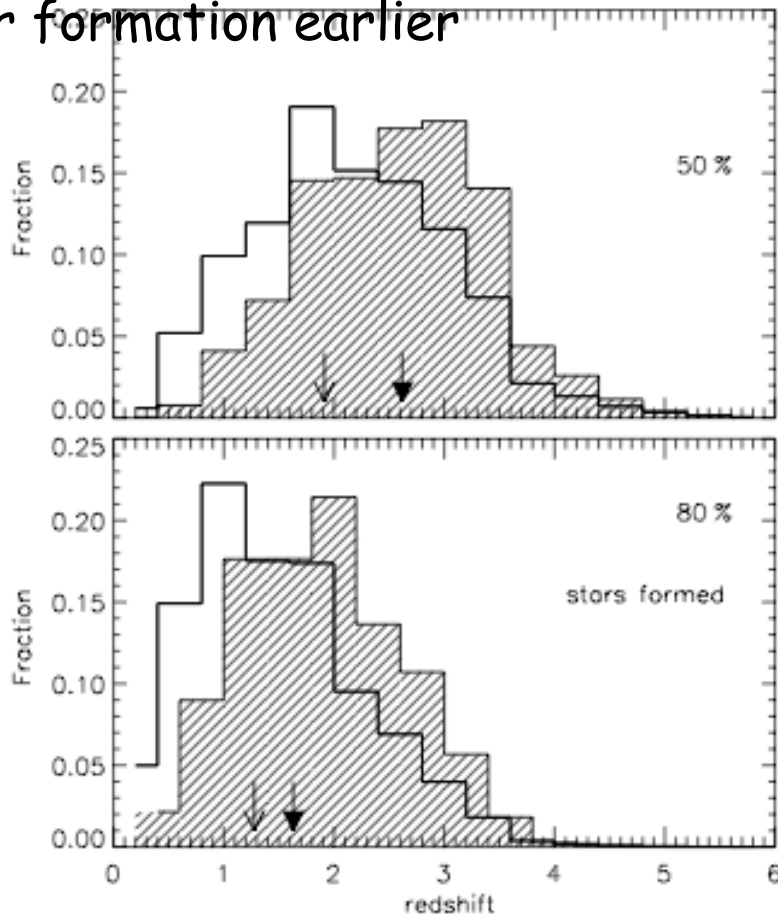
- ✦ BOSS provides excellent spectroscopic (and photometric) galaxy data for 2 million Luminous Red Galaxies out to $z \sim 0.6-0.7$
 - ** Unprecedented statistics of spectra in the critical range for massive galaxy assembly
 - *** evolutionary history of LRG population
 - *** chemical evolution
 - ** emission-line galaxies: radio-mode AGN feedback as SF quenching

Working group definition and aim

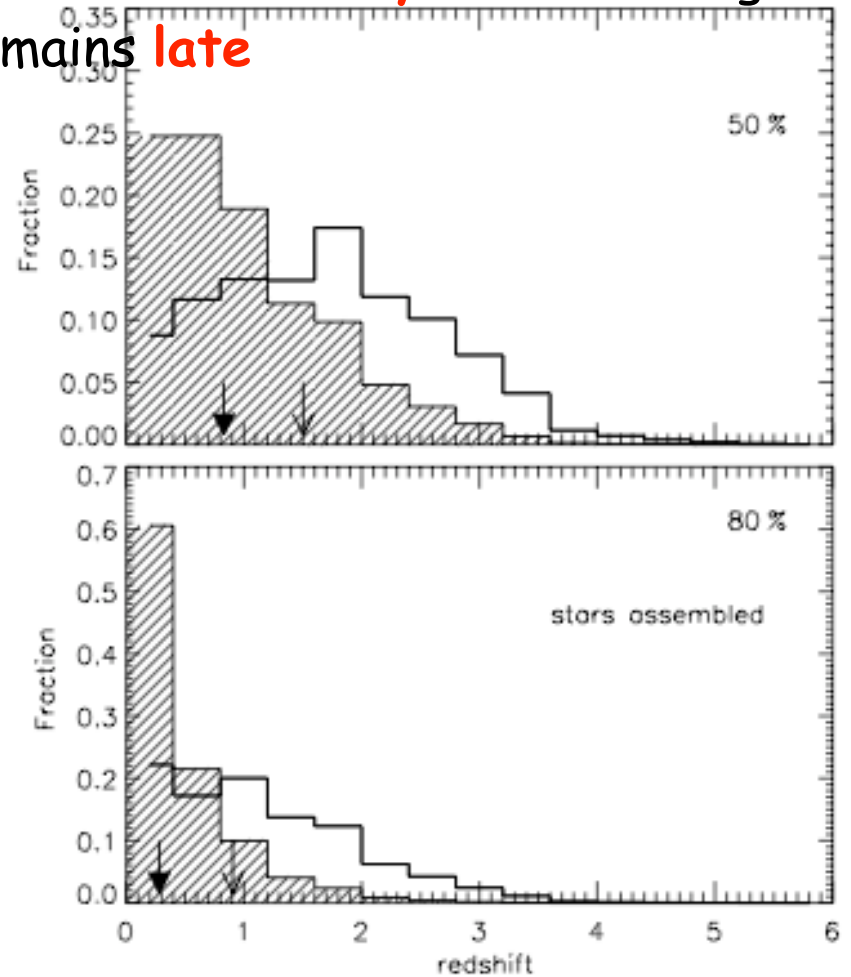
- ✦ stellar and dynamical mass evolution
- ✦ chemical evolution
- ✦ stellar population properties
- ✦ AGN properties of emission line galaxies
- ✦ the relation between AGN and galaxy evolution and supernovae host galaxies
-
- ✦ input to BOSS galaxy target selection
- ✦ pipeline development
- ✦ galaxy clustering
- ✦ catalogues of galaxy quantities - stellar masses, ages, photometric redshifts, emission-line ratios, velocity dispersions, etc.

Massive galaxy mass assembly occurs late

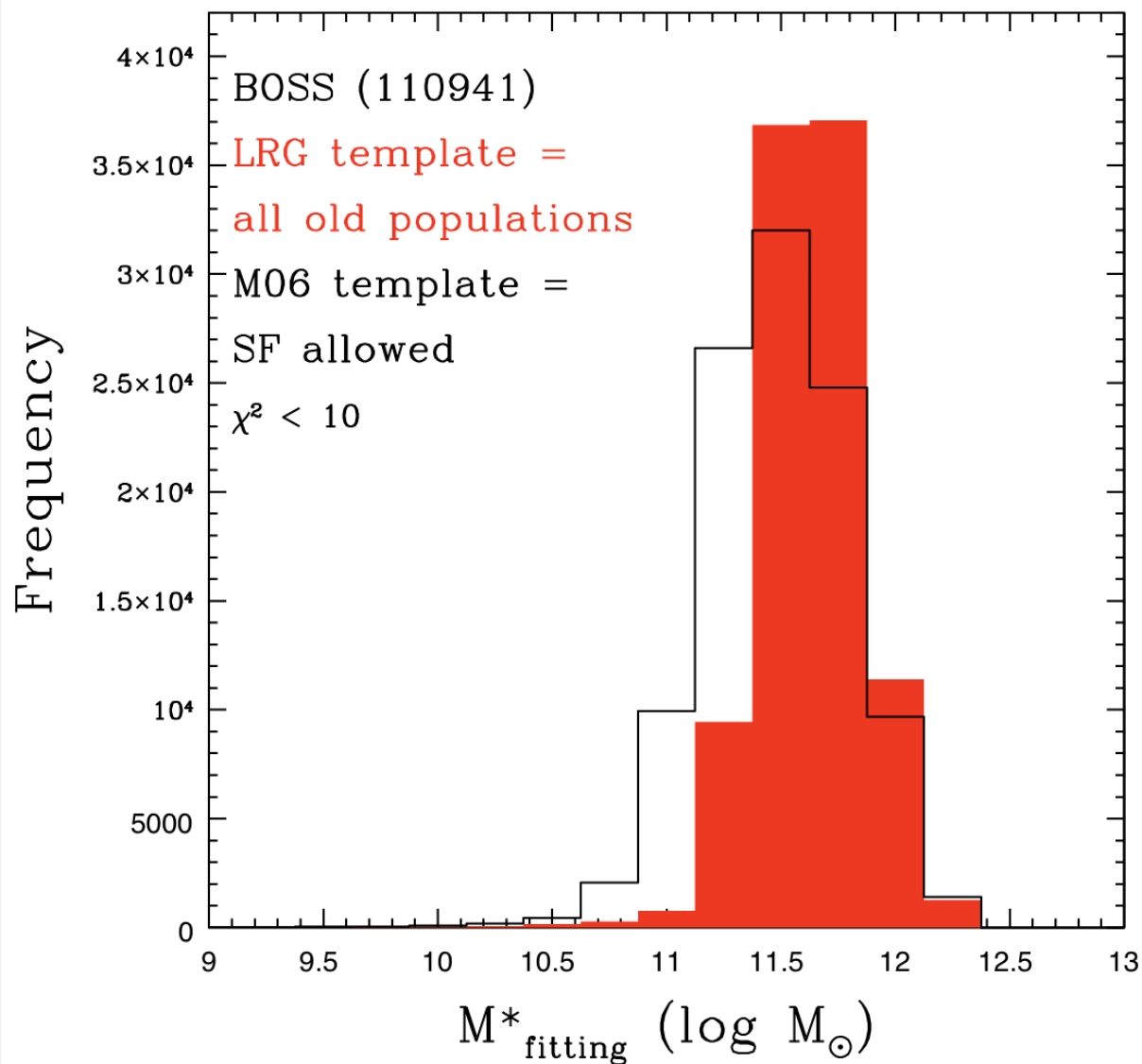
AGN feedback quenches
star formation earlier



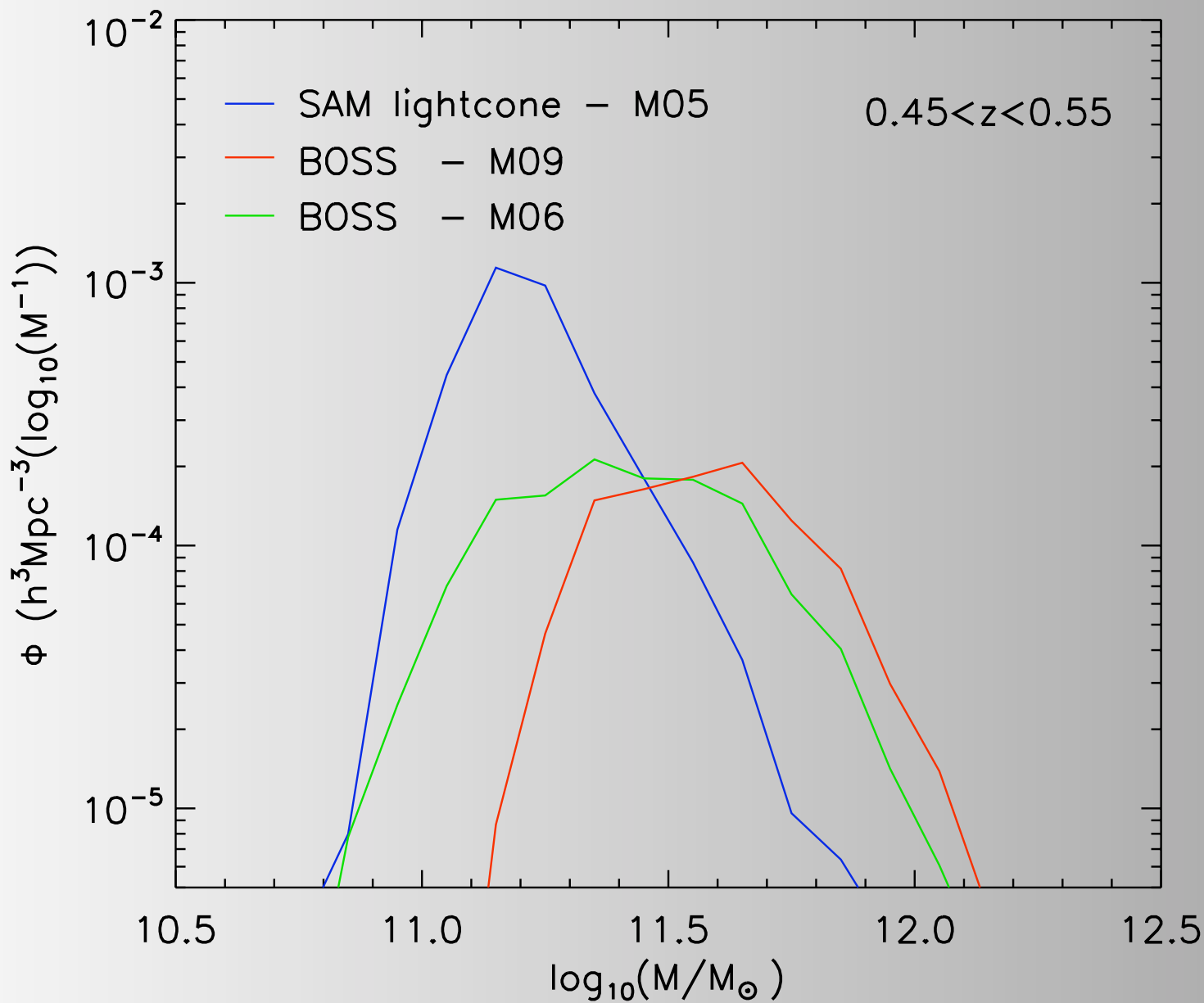
But **mass assembly** of the final galaxy
remains **late**



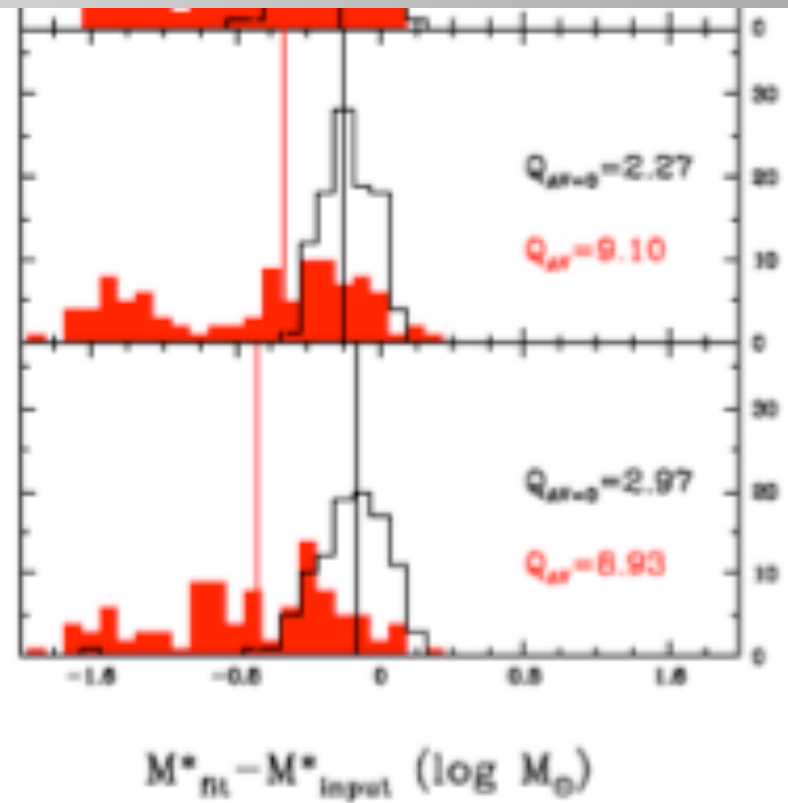
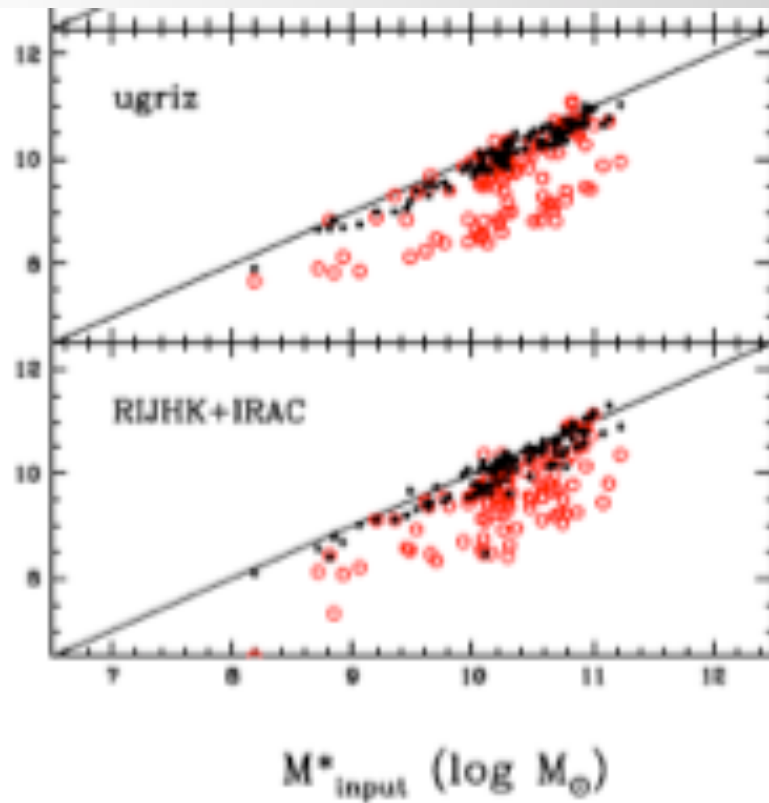
Stellar Masses of BOSS galaxies



Hierarchical mass assembly



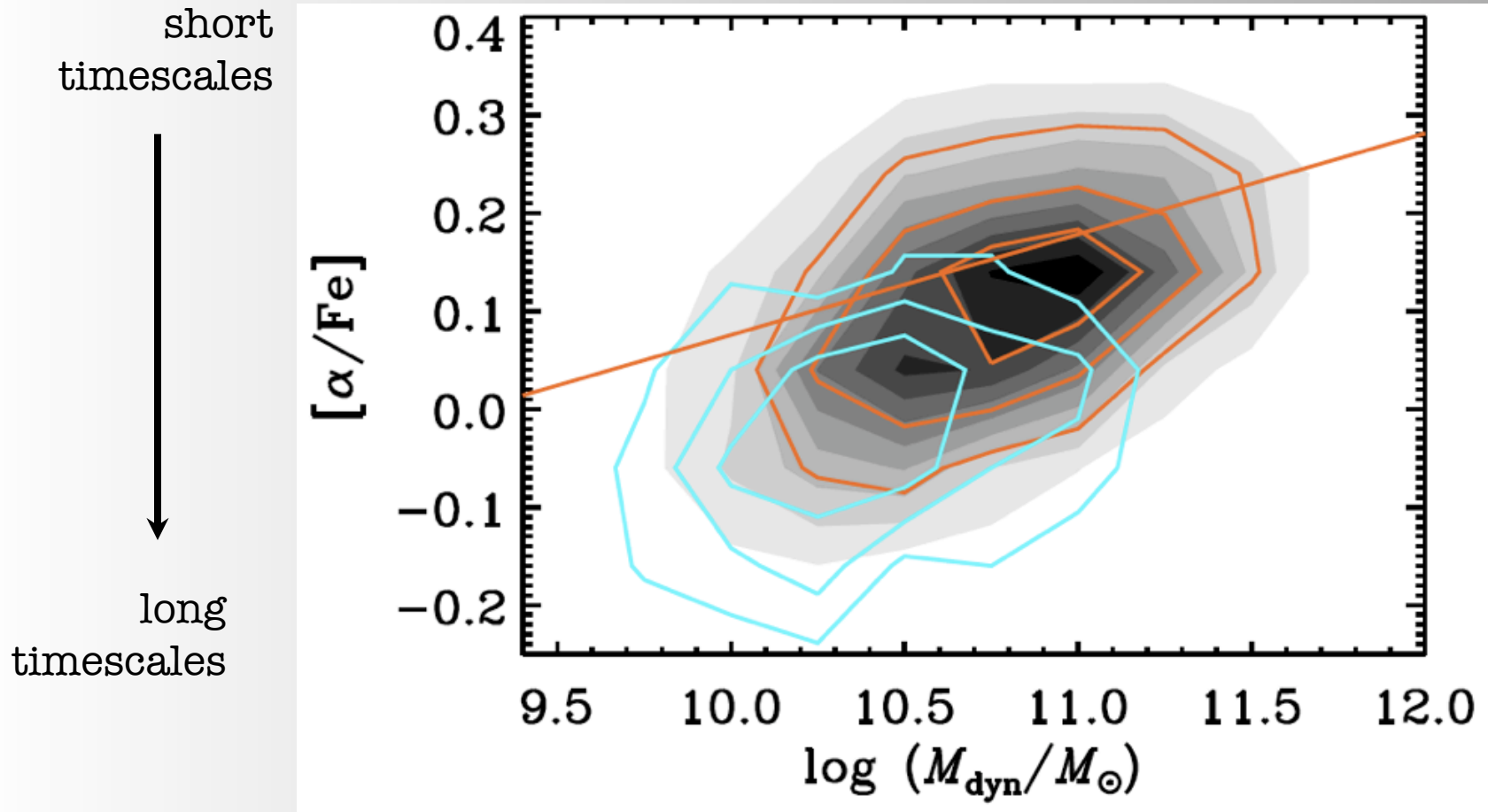
Mass calculation and product release



<https://trac.sdss3.org/wiki/BOSS/galevwg/Products> : catalogue of M^*

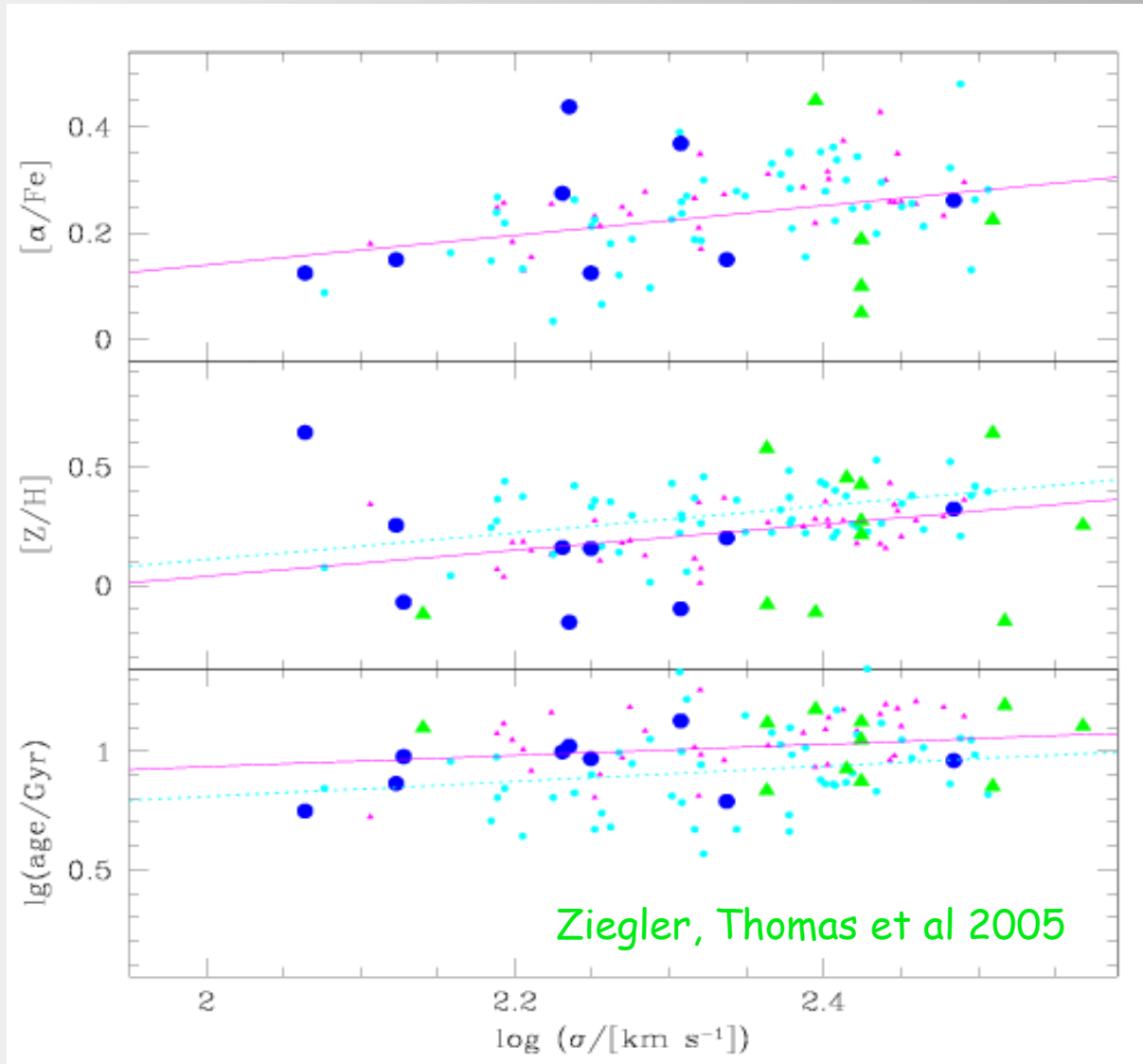
The formation history of massive galaxies

SDSS-II

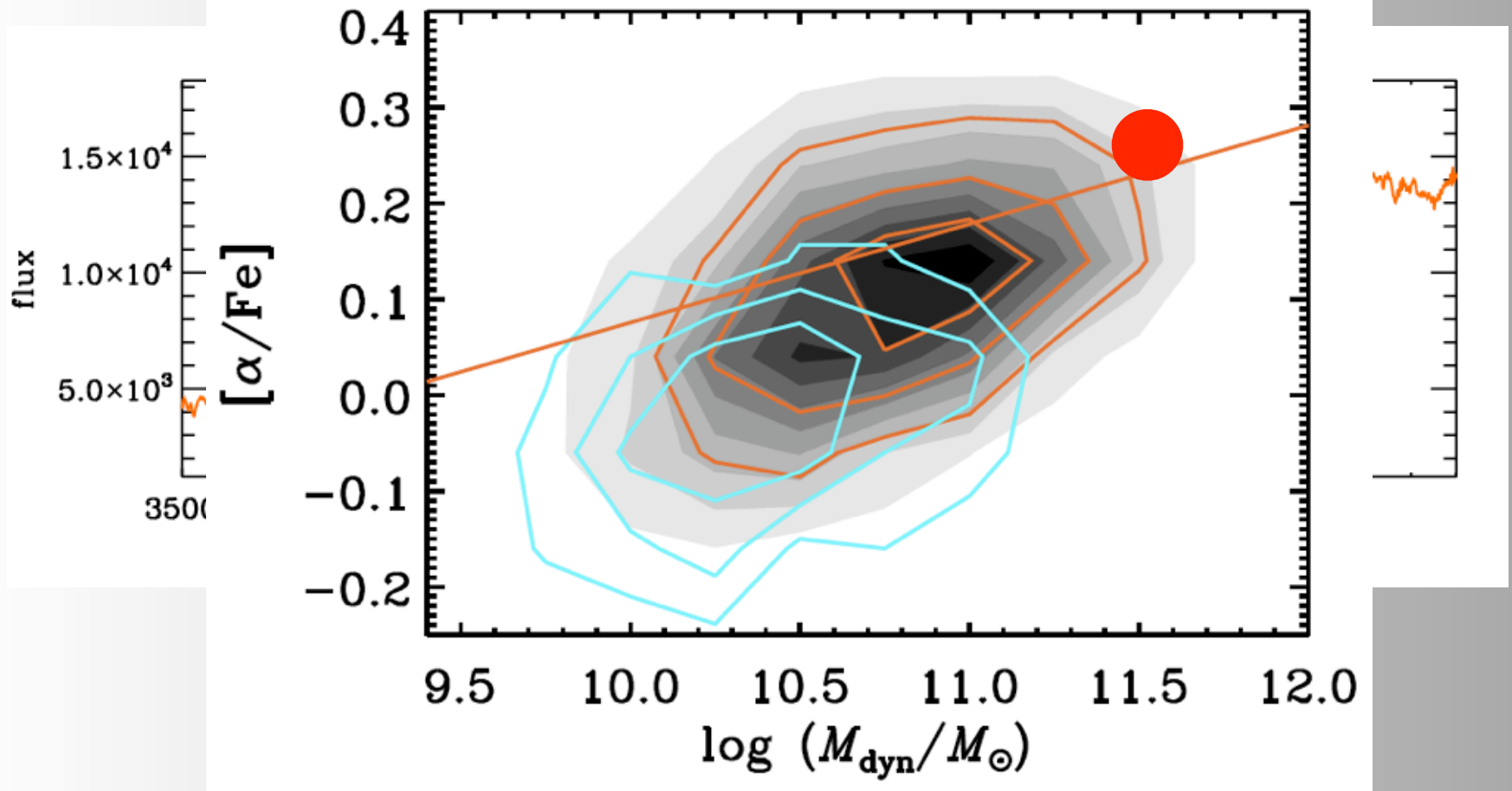


Thomas, CM et al 2010

Sparse data at high redshift

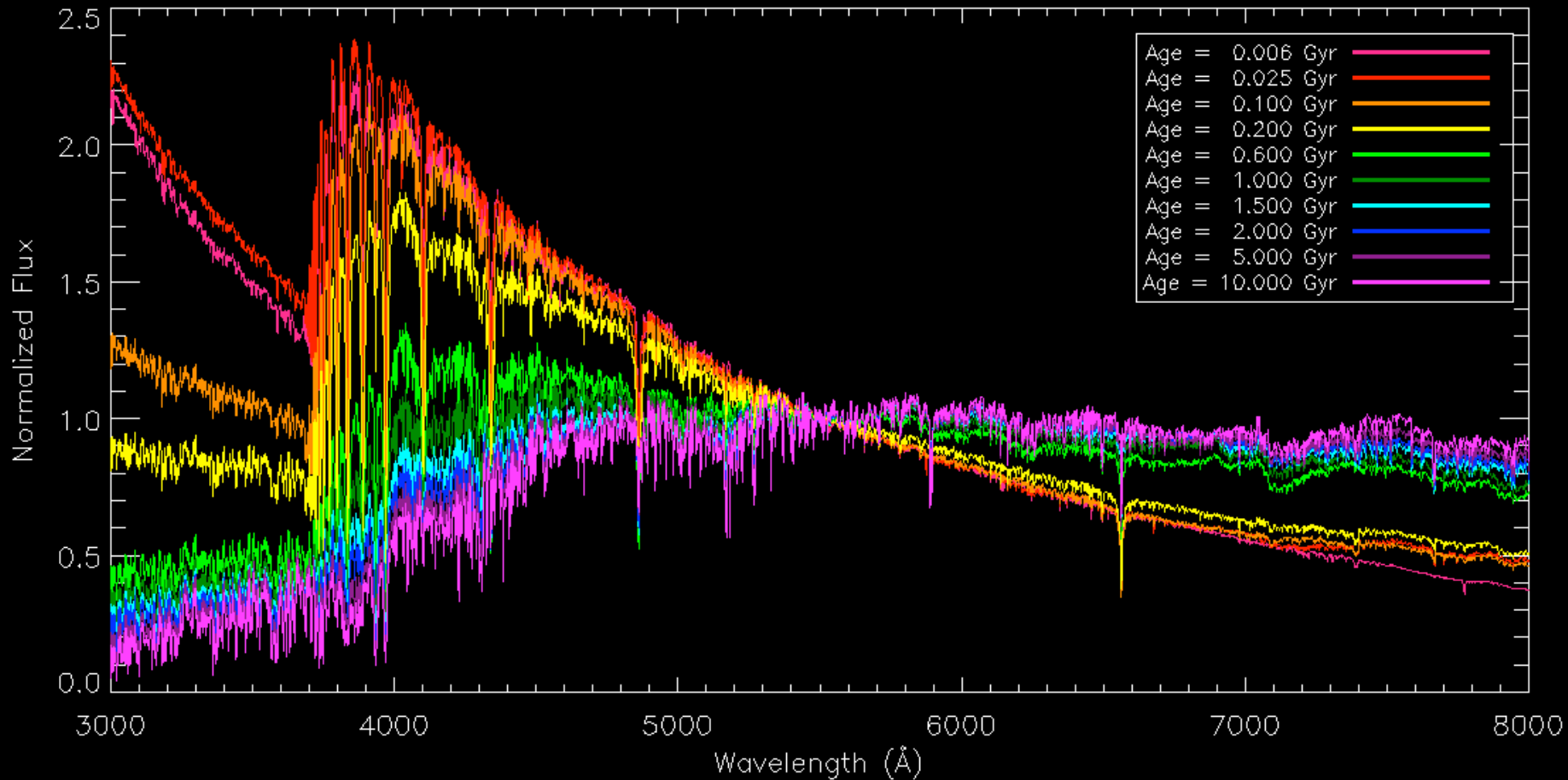


The BOSS LRG@z>0.5



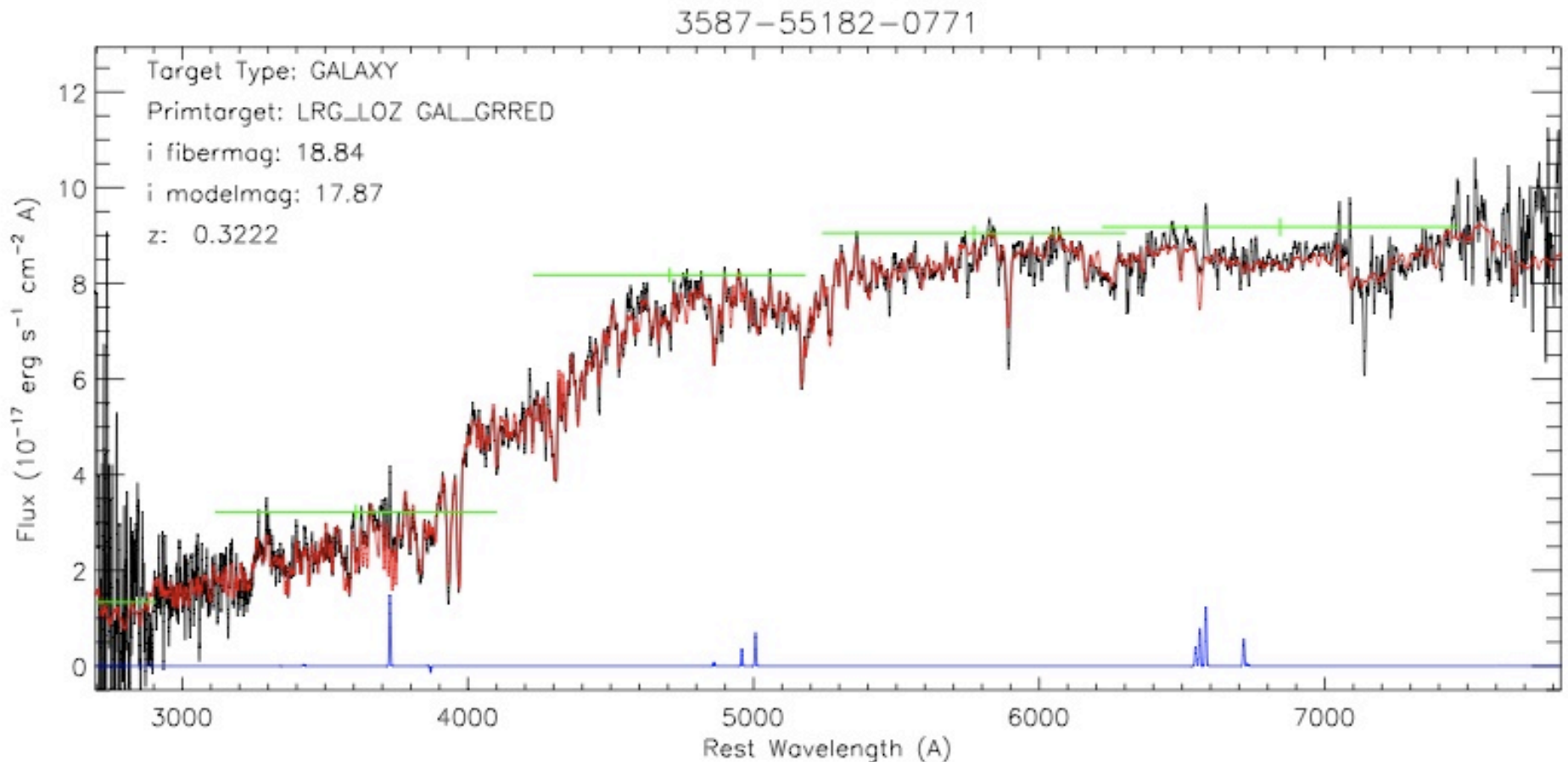
stacked spectrum with 18,663 galaxies

High-res stellar population models



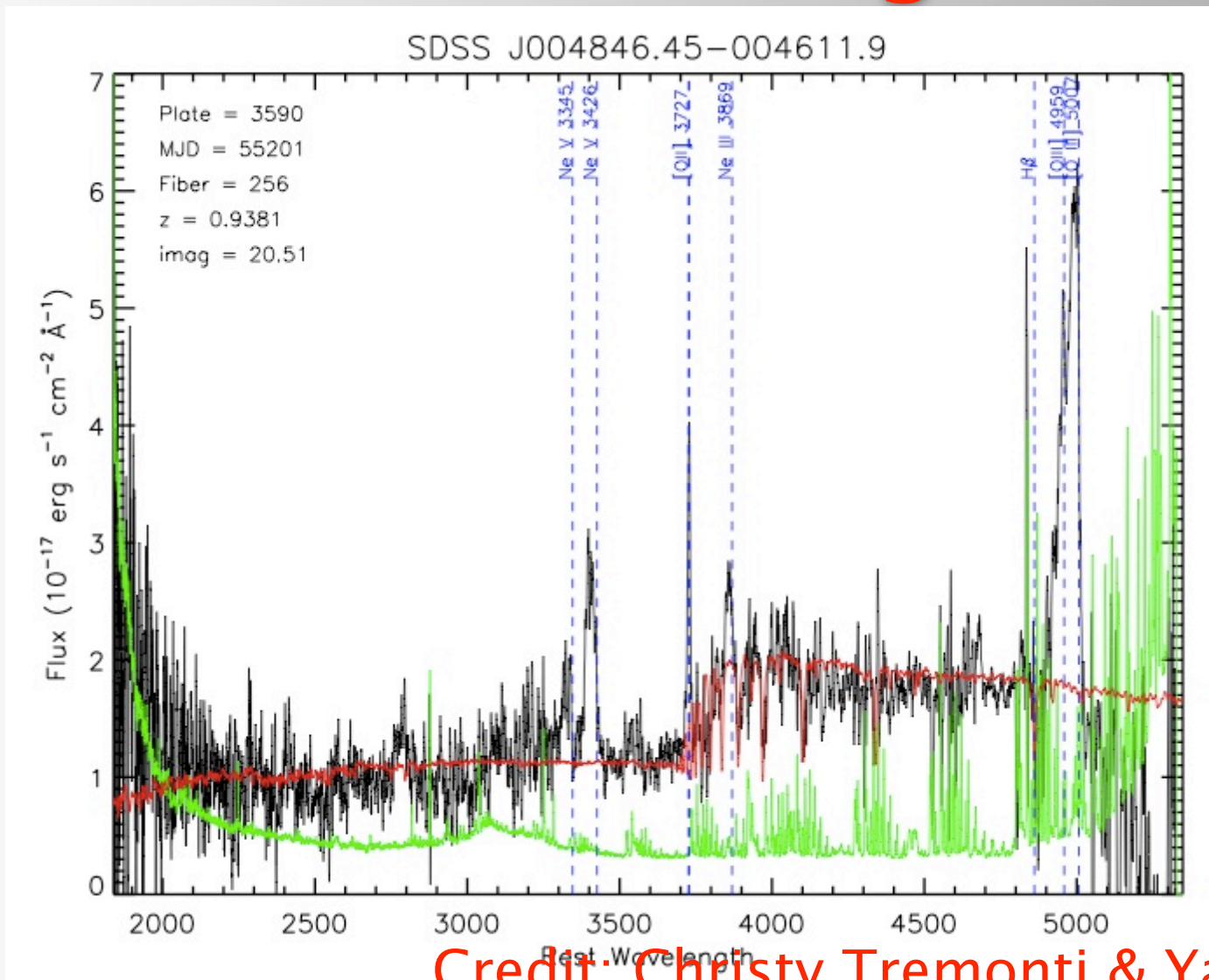
Maraston & Stromback @ [/wiki/BOSS/galevwg](https://wiki.bosc.org/wiki/BOSS/galevwg)

Composite templates for best-



Credit: Christy Tremonti & Yanmei Che

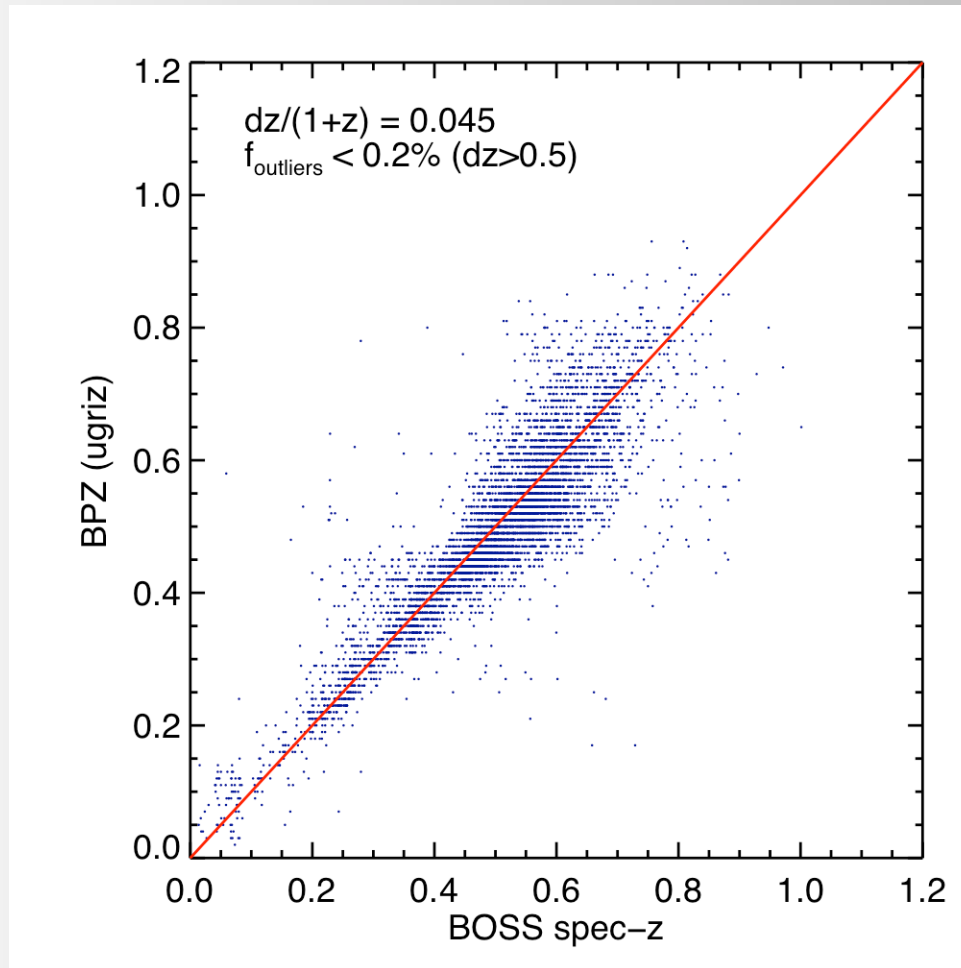
AGN feedback in galaxies



Credit: Christy Tremonti & Yanmei Che

C. Maraston - BOSS meeting
January 09

Providing BOSS with rest-frame near-IR magnitudes: Bandmerge with



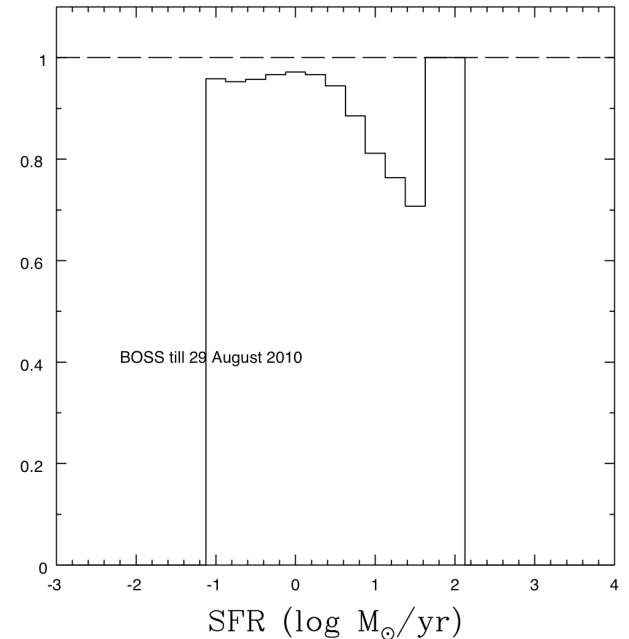
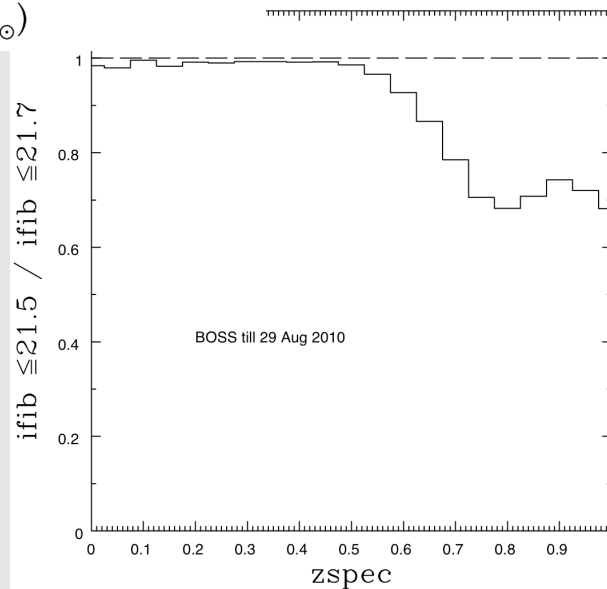
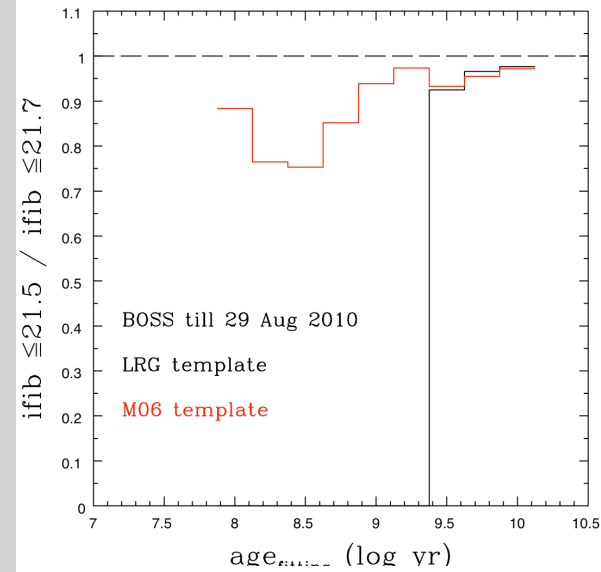
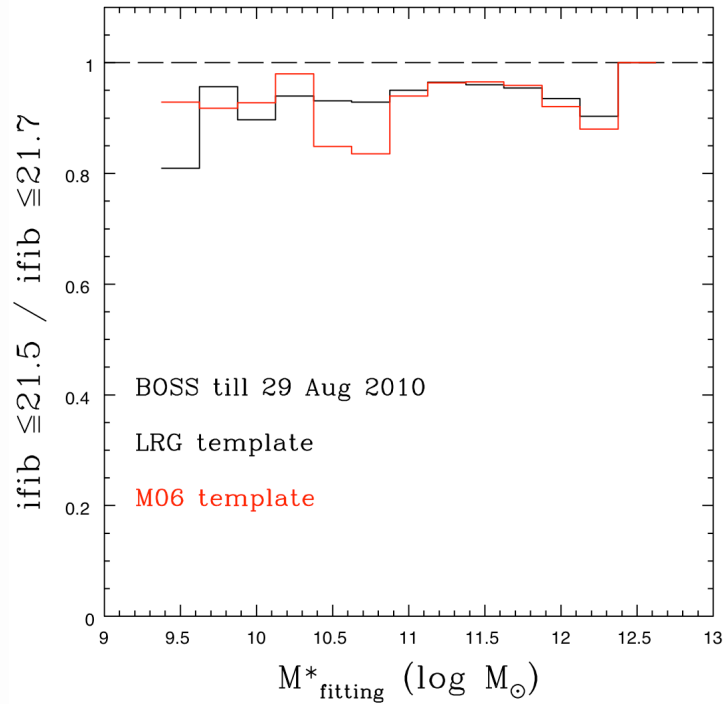
for improving M^*
and photo-z

Credit: Kevin Bundy

Synergies with other working groups

- ** target selection via models and visual inspection of spectra talk by N. Padmanabhan
effect of magnitude cut
- ** pipeline via models for the software v5.14
redshift success > 95%
model atmospheres
- ** clustering through stellar masses
- ** follow-proposals:

Effect of ifiber magnitude cut on galaxy properties



Credit: J. Pforr,
CM, D. Thomas

BOSS galaxy evolution meeting in Japan

[Welcome](#) [Registration](#) [Participants](#) [Program](#) [Travel](#) [Organization](#)

Evolution of massive galaxies and their AGNs with the SDSS-III/BOSS survey

October 25 - 28, 2010

Institute for the Physics and Mathematics of the Universe
(IPMU)
The University of Tokyo

This workshop aims to bring together individuals from the BOSS community with a strong interest in studies of luminous galaxies and/or AGNs (+QSOs) in order to foster collaborative efforts across these disciplines. The format of the meeting will involve a mixture of science presentations, working group sessions and ample time for interaction and discussion. Topics will include the following:

- Mass function of luminous galaxies
- Environmental drivers of galaxy evolution
- Stellar populations

Organising Committee: John Silverman (IPMU), Guinevere Kauffmann (MPA), Naoki Yasuda (IPMU), Mamaru Doi (Univ. of Tokyo), Masayuki Tanaka (IPMU)