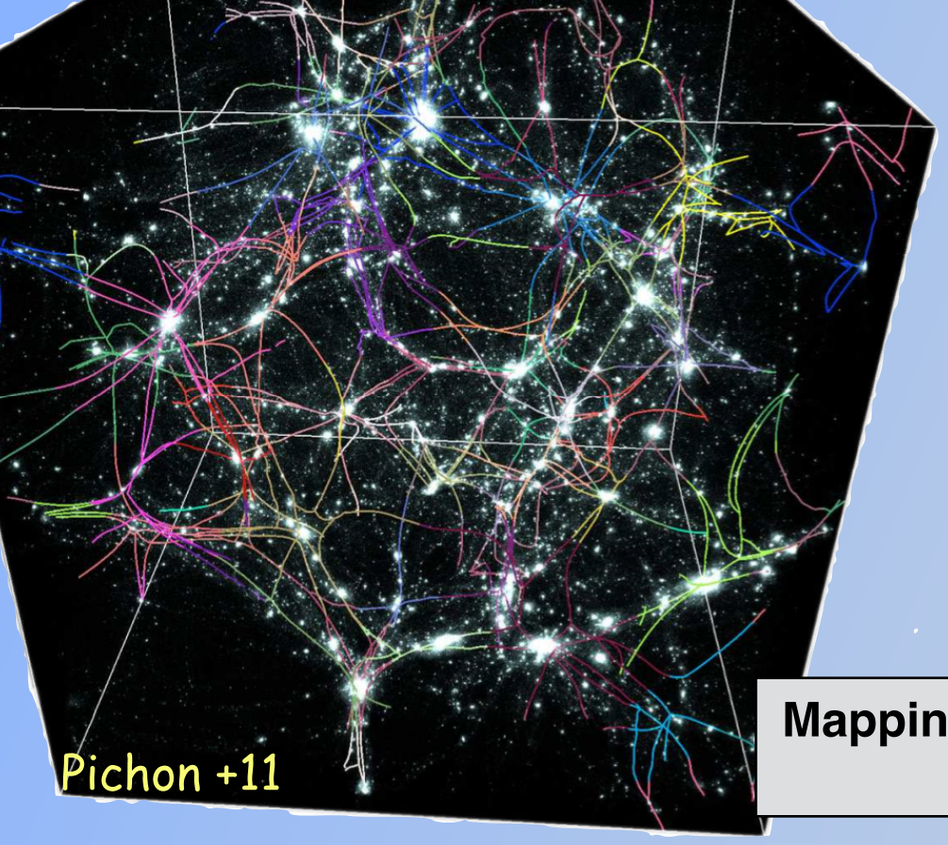
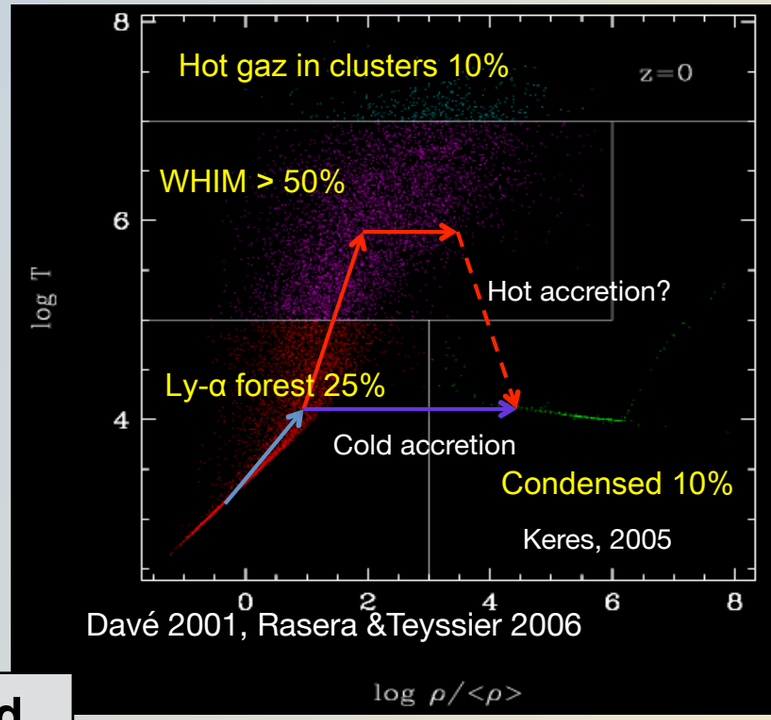


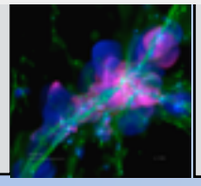
The Cosmic Web contains most of baryons:
10% in stars
+ 10% in CGM
+ 80% in IGM as filaments



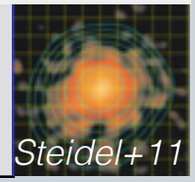
Mapping CW is the key element to understand the co-evolution IGM - galaxies

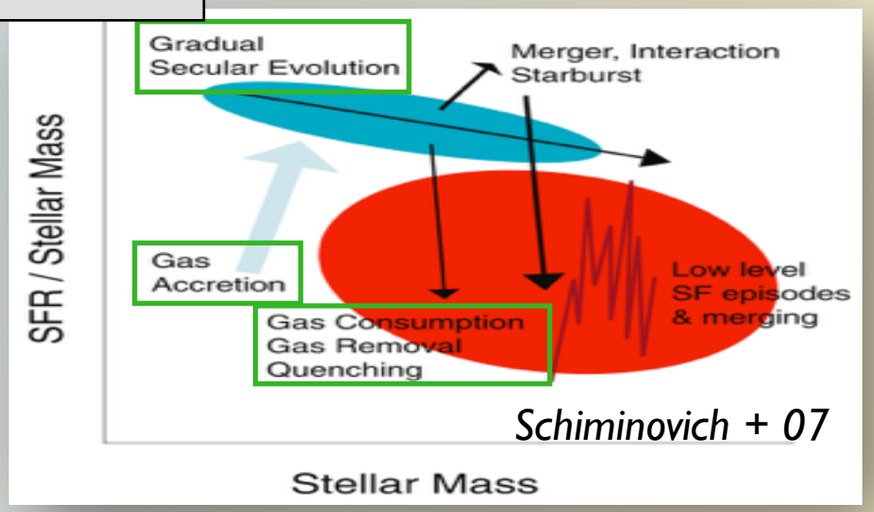
Galaxies : Complex interplay between
infall - SFR - feedback

Gas accretion :
* Merging vs smooth accretion
* IGM : Hot vs Cold mode

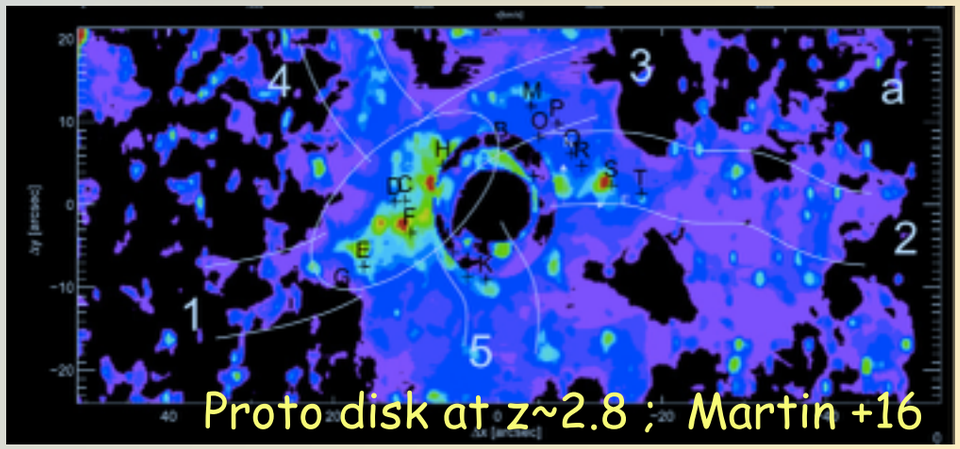


Feedbacks
* AGN driven / SN / stellar wind
* quench or keep gas @ high T





New Paradigm for galaxy formation in CDM :
* **collapsing virialized gas forms a hot halo and *slowly cools to fuel SF***
* ***cold accretion flows transports 10^4 K gas from CW filaments to gal. disks: direct channel to fuel SF & transfer of AM***

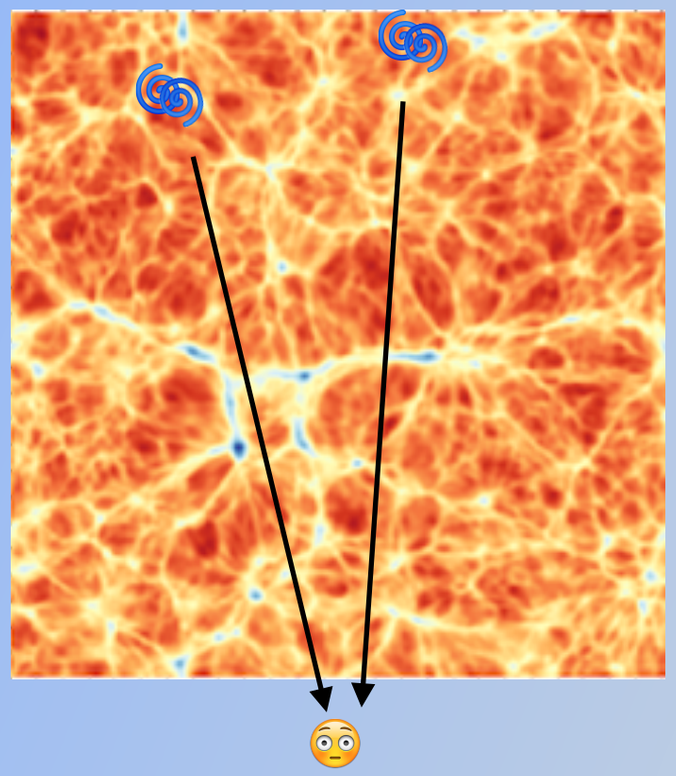


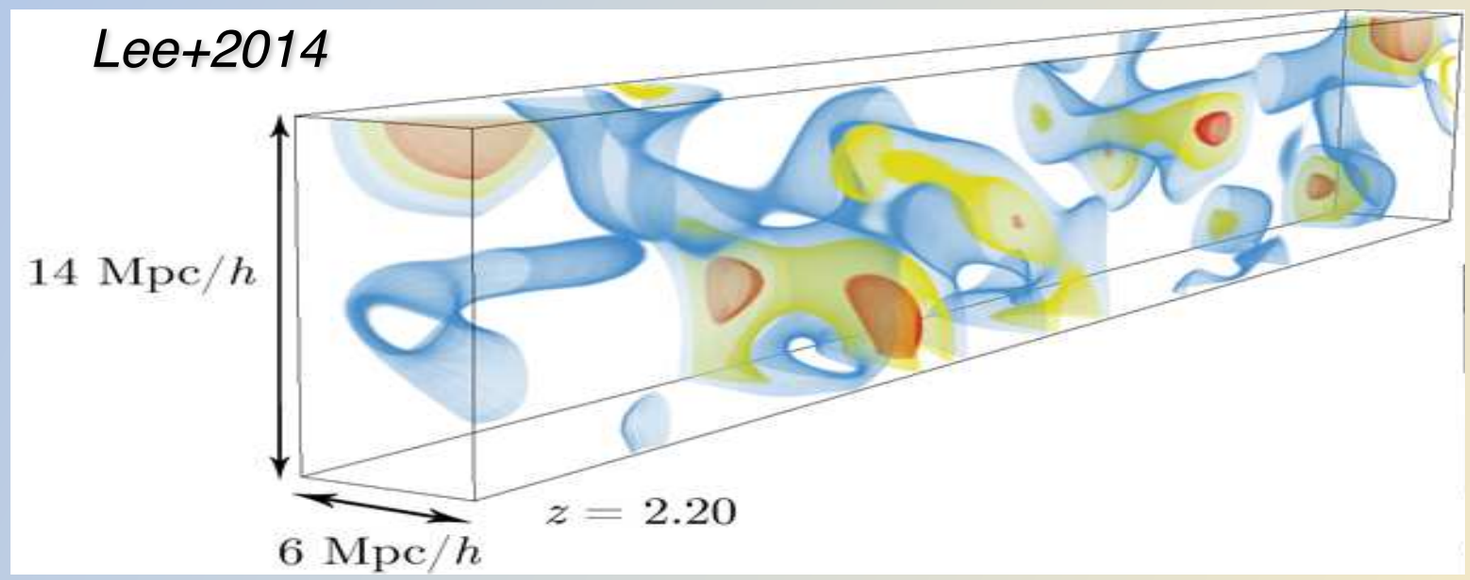
Strategy to Map the Cosmic Web

-1- with the IGM

* in emission with CIV, OVI… lines in UV & X: with FIREBALL (UV) at z<2

* in absorption with Ly-a forest
  with QSO and LBGs : IGM tomography at z>2

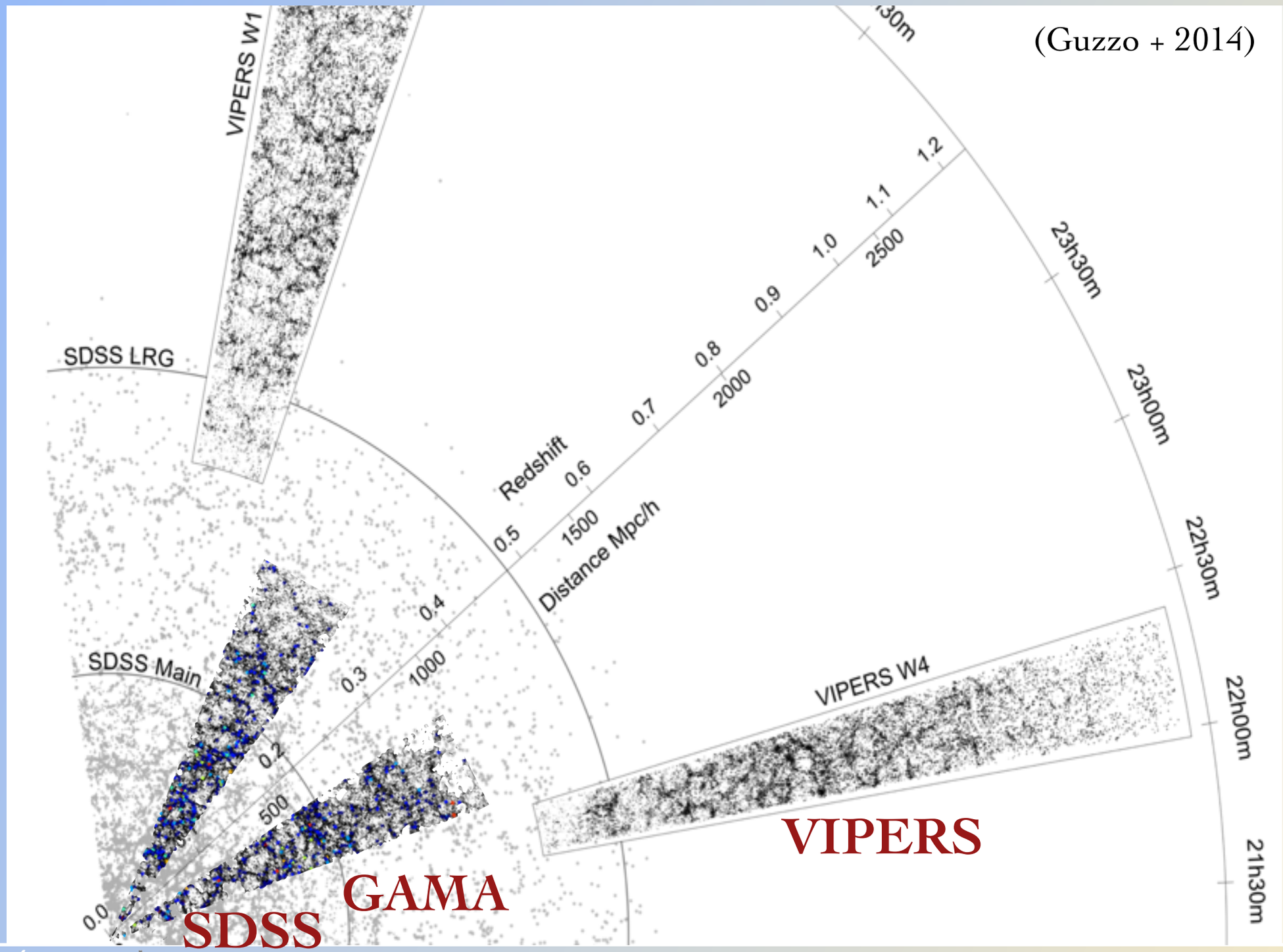




Strategy to Map the Cosmic Web

-2- with the Large Scale Structure

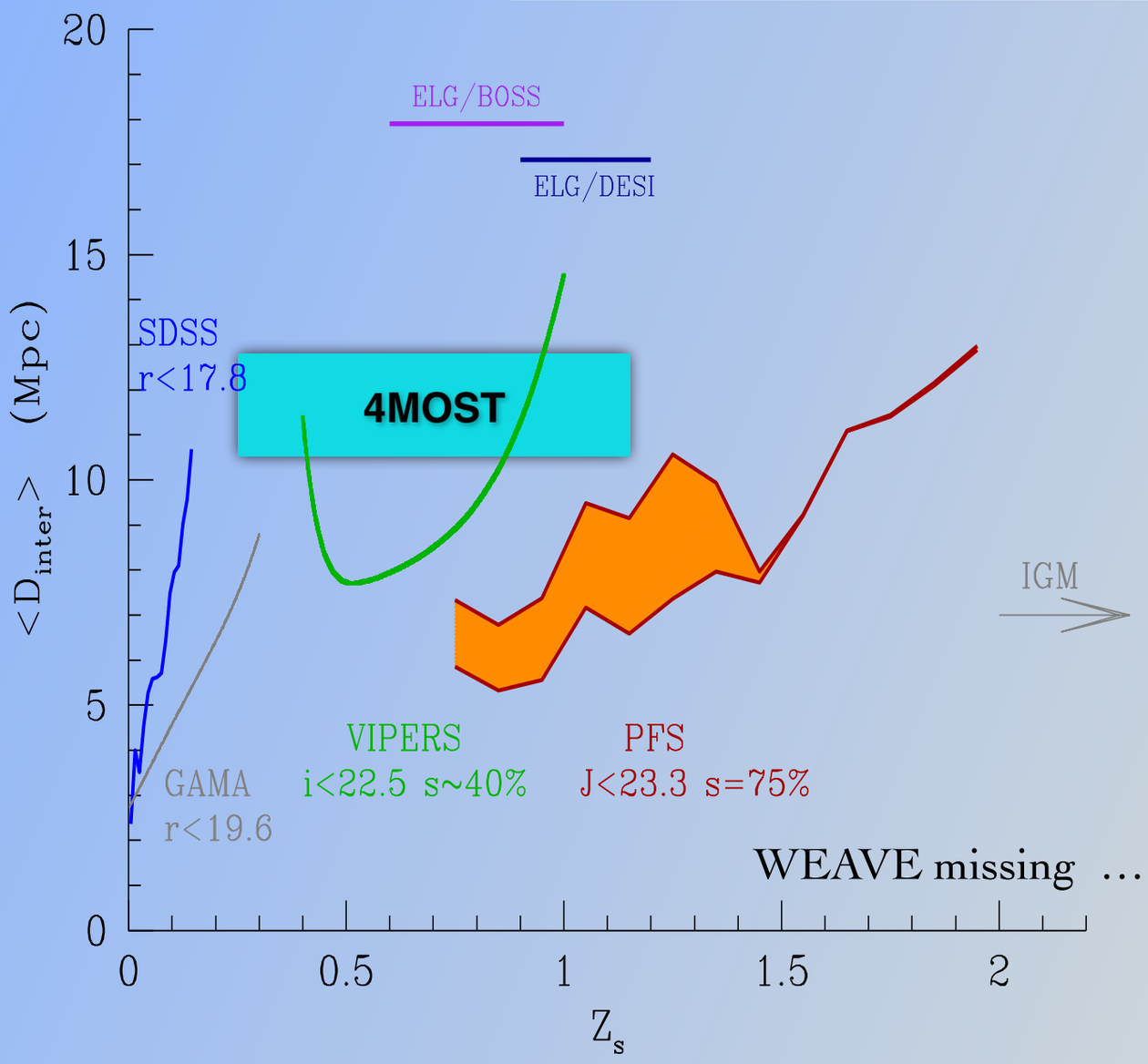
* Galaxy Redshift Survey : wide range of sampling



Mapping the Cosmic Web over cosmic time

Compilation of present and future surveys with their respective efficiencies to map the CW : volume density

Galaxy Redshift Surveys



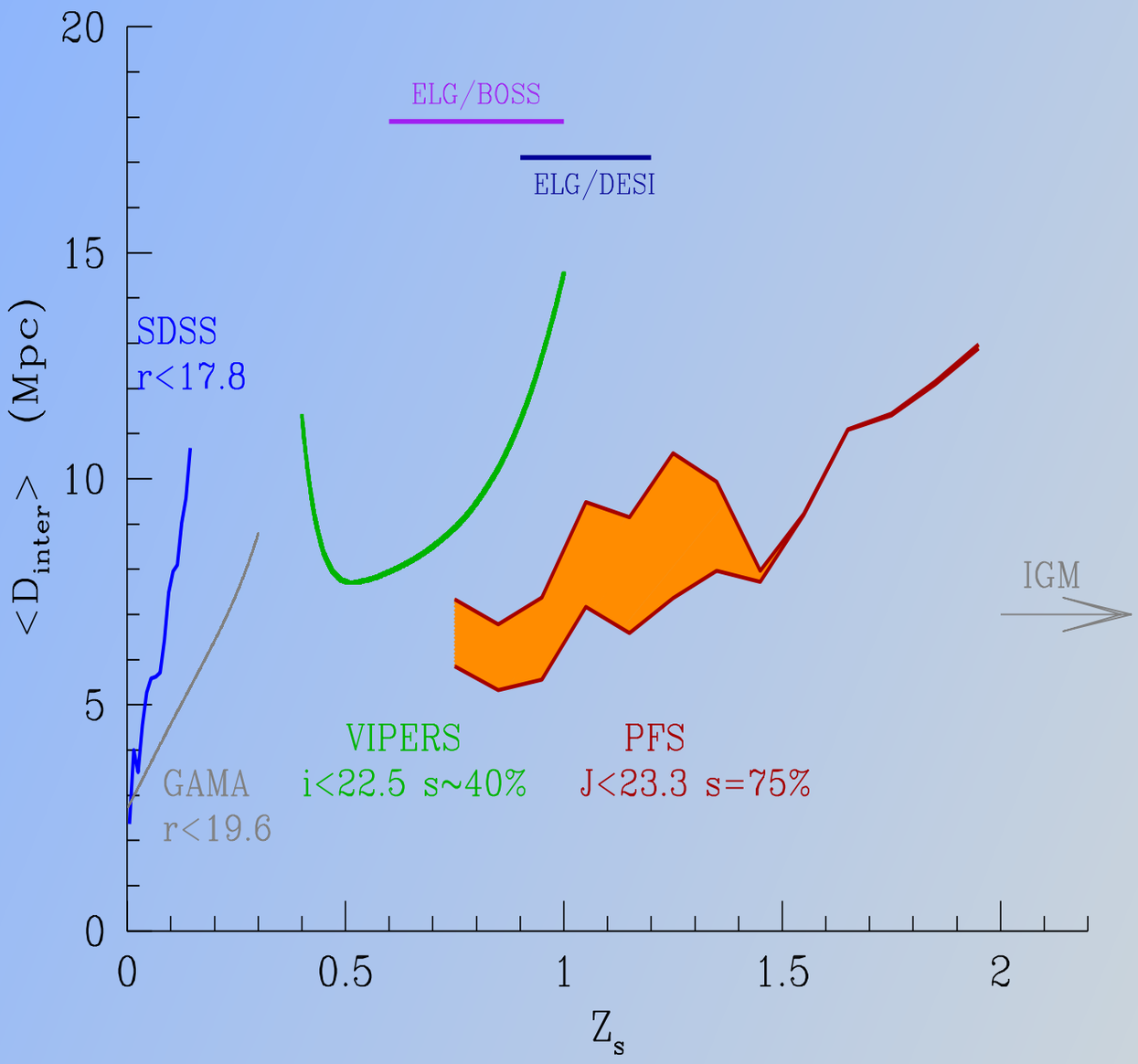
* future at ESO not optimal :
  - VIMOS (decommissioned) .
  - focus on 4MOST z<1
    12 million sources 20<V<22
  - WEAVE ?
  - MOONS (+ MUSE …) too small

* on-going discussion at ESO for the need of a dedicated 8-10m telescope (R. Ellis) ?

* future of CFHT : 10m telescope MSE ?

Mapping the Cosmic Web over cosmic time

Galaxy Redshift Surveys



PFS will be unique in the LSS reconstruction with high contrast up to z~2

but 25 deg2 only!

Mapping the Cosmic Web over cosmic time

Galaxy Redshift Surveys

Hα lines

ELG/BOSS

ELG/DESI

Euclid

WFIRST ?

Ly-α Emitters

HETDEX *1 million LAE in 200 deg²*

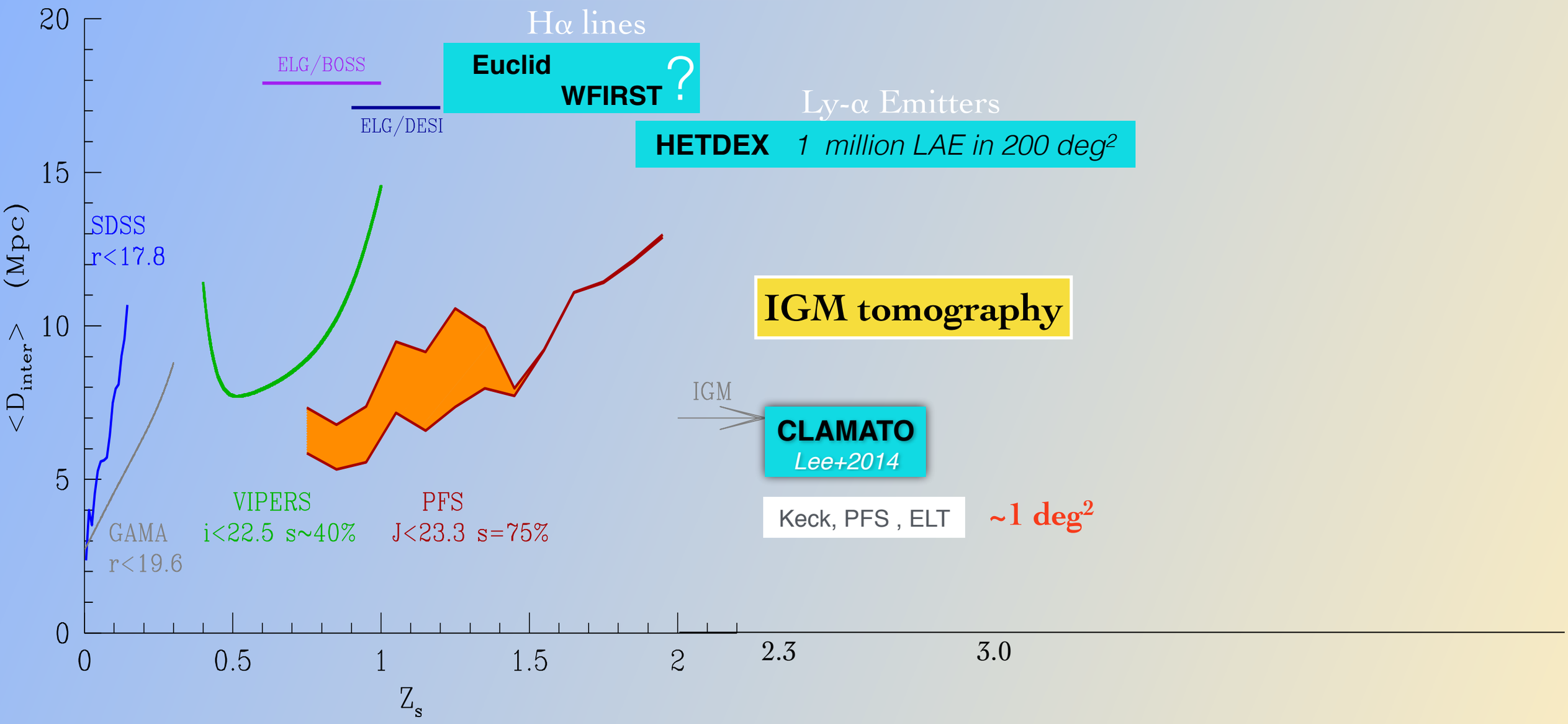
IGM tomography

IGM

CLAMATO
Lee+2014

Keck, PFS , ELT

~1 deg²



* Large Scale Surveys : HETDEX / DESI / Euclid / JWST
* High contrast mapping : IGM Tomography

Mapping the Cosmic Web over cosmic time

Galaxy Redshift Surveys

Hα lines

ELG/BOSS

Euclid

WFIRST ?

ELG/DESI

Ly-α Emitters

HETDEX *1 million LAE in 200 deg²*

Intensity Mapping

CONCERTO ?

star formation with atomic [CII] line at 158μm (sub-mm)

IGM tomography

IGM

CLAMATO
Lee+2014

Keck, PFS , ELT **~1 deg²**

SDSS r<17.8

GAMA r<19.6

VIPERS i<22.5 s~40%

PFS J<23.3 s=75%

$<D_{inter}>$ (Mpc)

20
15
10
5
0

0 0.5 1 1.5 2 2.3 3.0 4.5 8.0 up to reionization

Z_s

* Very High Redshift with Intensity Mapping in sub-mm

Mapping the Cosmic Web over cosmic time

Galaxy Redshift Surveys

Hα lines

ELG/BOSS

Euclid

WFIRST ?

ELG/DESI

Ly-α Emitters

HETDEX *1 million LAE in 200 deg²*

Intensity Mapping

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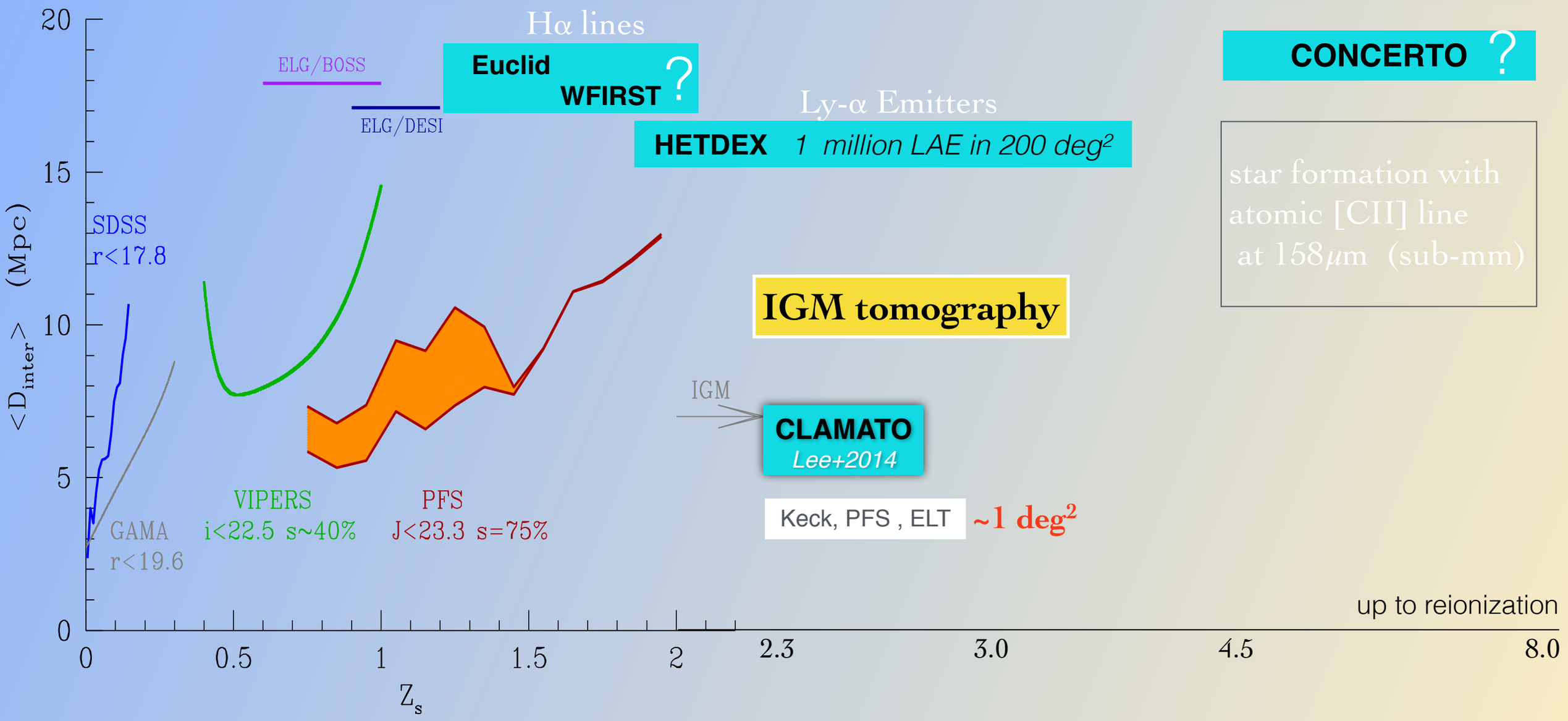
Lee+2014

Keck, PFS , ELT **~1 deg²**



* GECO involved in almost all the future projects
joint effort around this thematic : mapping tools + simulations + theory + …

The Influence of Cosmic Web on galaxy Evolution