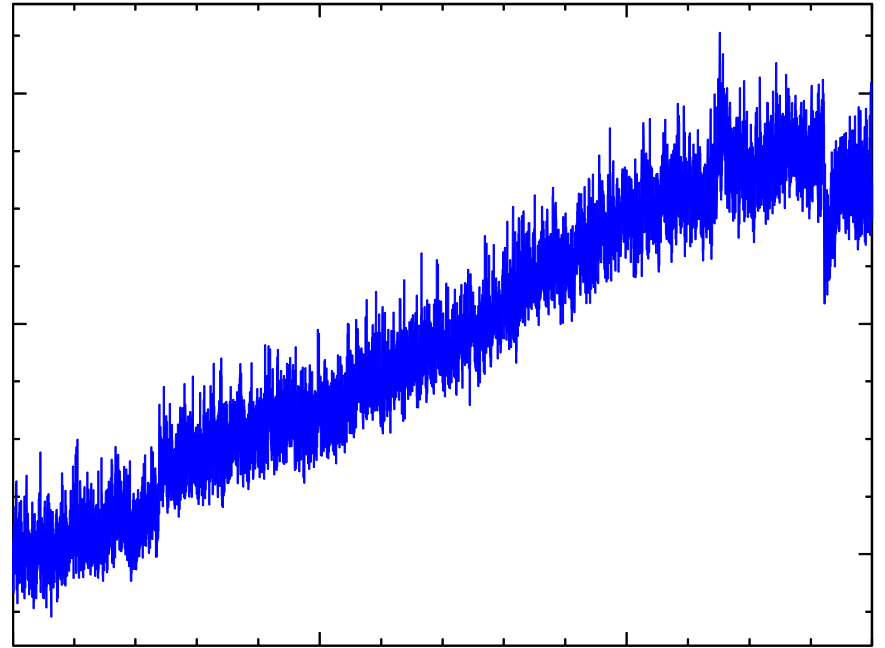
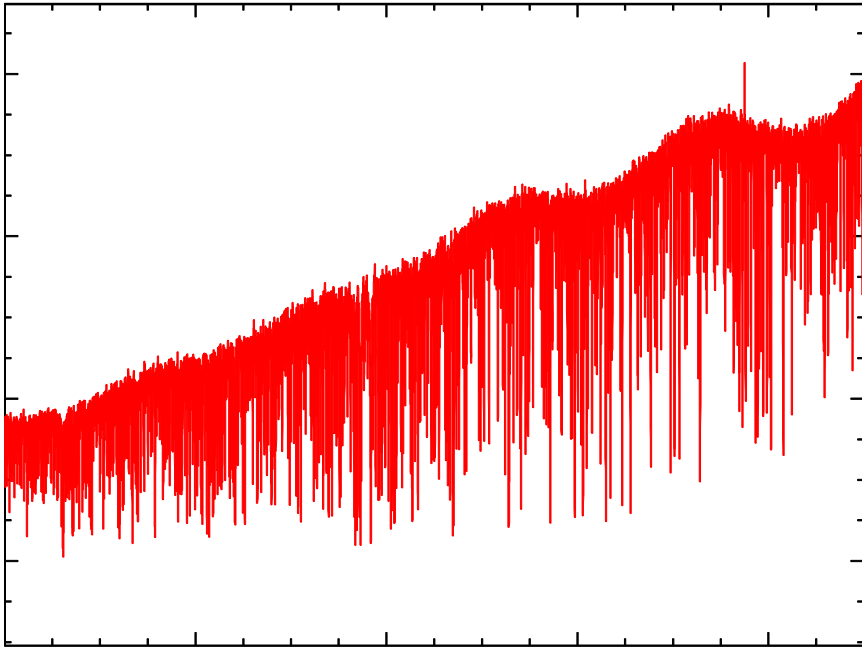


Accurate stellar parameters with the GES-CoRoT collaboration

GES team: Thomas Masseron, Andy Casey, Karin Lind, Ulrike Heiter, Maria Bergemann, Laura Magrini, Angela Bragaglia, Elena Pancino, Carmela Lardo, Marica Valentini, Bertrand Plez, Thibaut Merle, Rana Ezzedine, Arnas Drazdauskas, Guilherme Teixeira, Sergio Sousa, Elena Franciosini, Marica Valentini, Michael Weber, Carlos Allende Prieto, Francesco Damiani, Paolo Donati, Elisa Delgado Mena, Vardan Adibekyan, Eduardas Puzeras, Grazina Tautvaisiene, Sarunas Mikolaitis, Edita Stonkute, Sophie Van Eck , Paula Jofre *as task representatives*

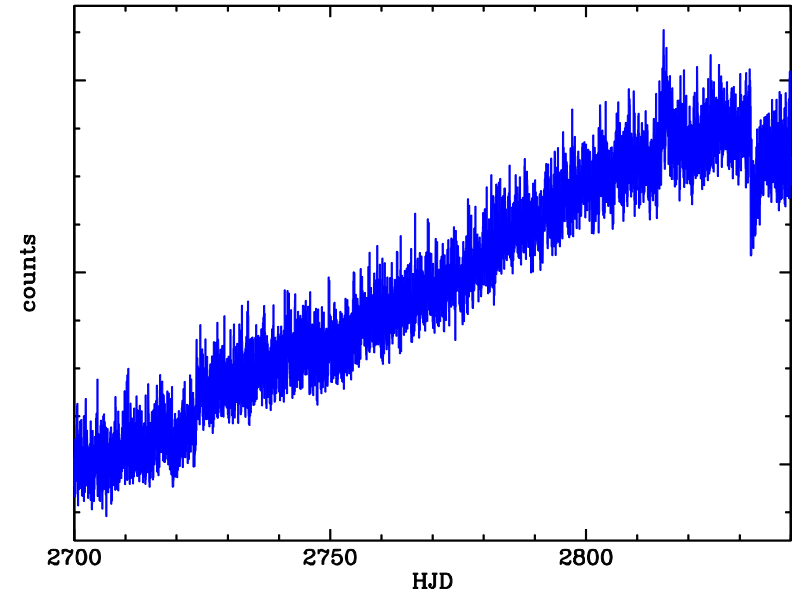
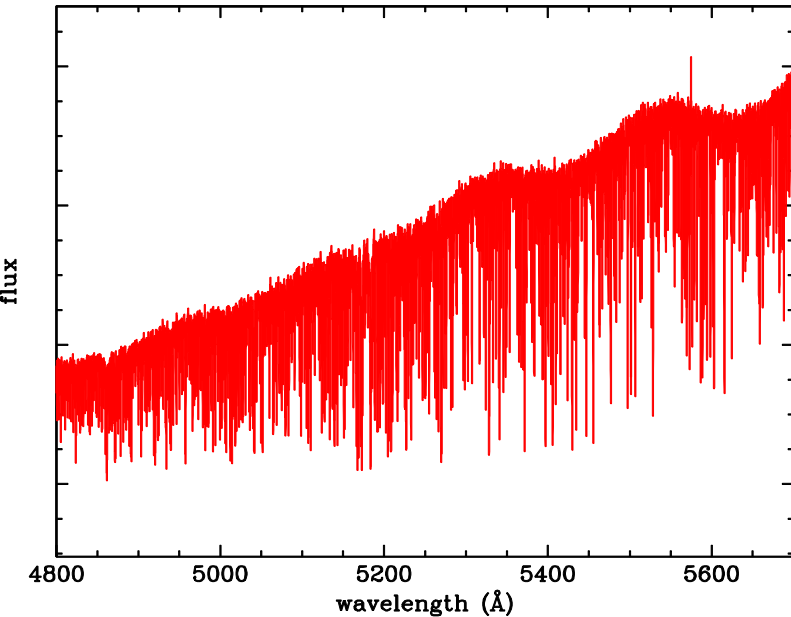
CoRoT team: Josefina Montalban, Andrea Miglio, Marica Valentini, Thierry Morel *and all the Corot nodes*

What is it about?



Objective:

Determine the most accurate stellar parameters
from **spectrum** and **light curve**

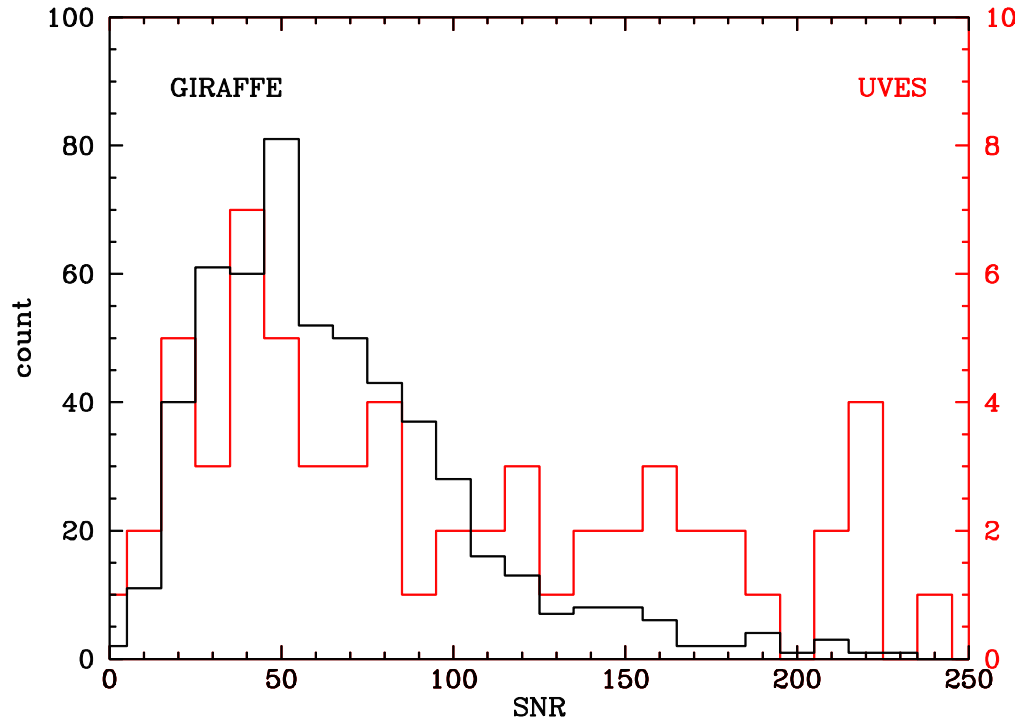


Teff (<100K)

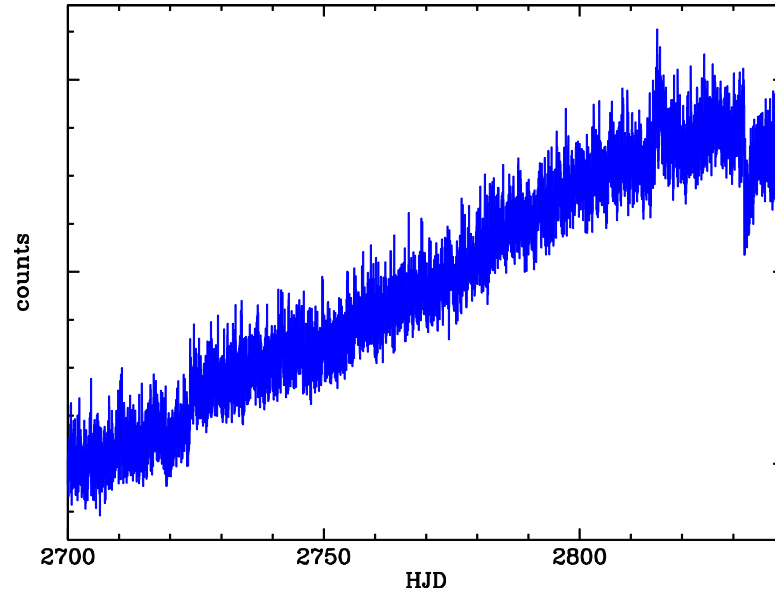
Logg (0.02-0.2)

The sample

- 506 Red giants in the Galactic center field (LRc01) selected to have both seismic CoRoT and spectroscopic (GES DR2 and DR3) data
- 461 GIRAFFE (HR10, HR15 and HR21) and 55 UVES (580) spectra



Surface gravities

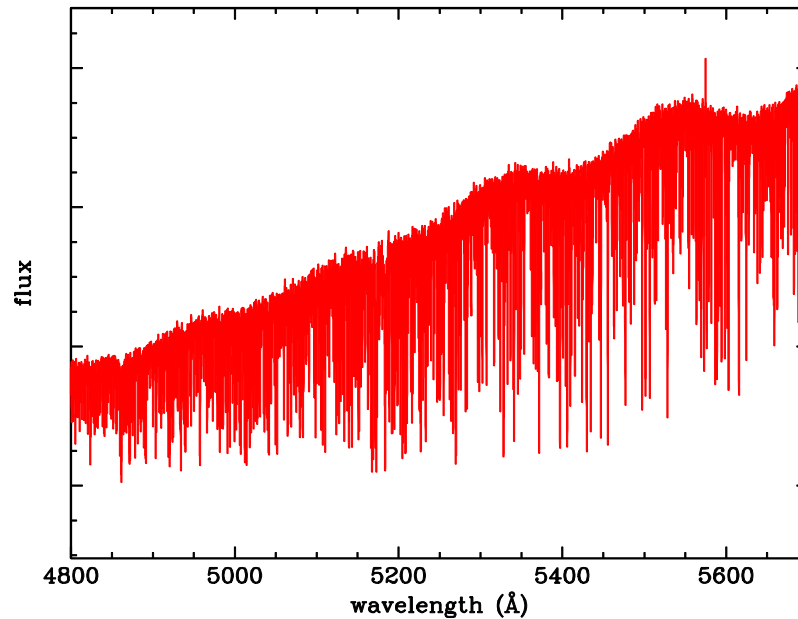


$$\log g = \log g_{\odot} + \log \left(\frac{\nu_{\max}}{\nu_{\max\odot}} \right) + \frac{1}{2} \log \left(\frac{T_{\text{eff}}}{T_{\text{eff}\odot}} \right)$$

Teff provided by spectroscopists

6 nodes involved in analysing the seismic data and determining ν_{\max}

Effective temperatures and metallicities

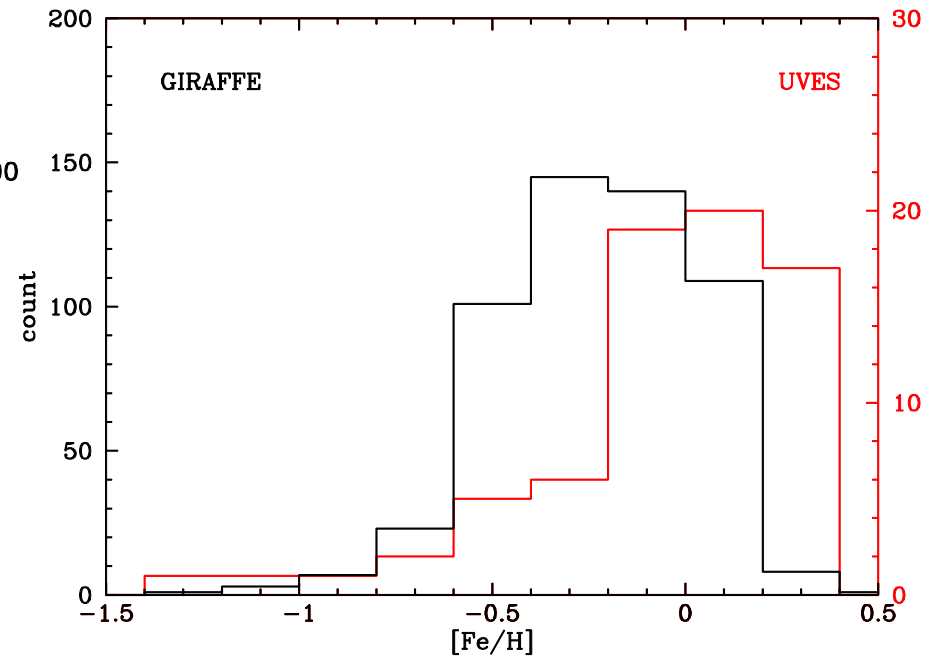
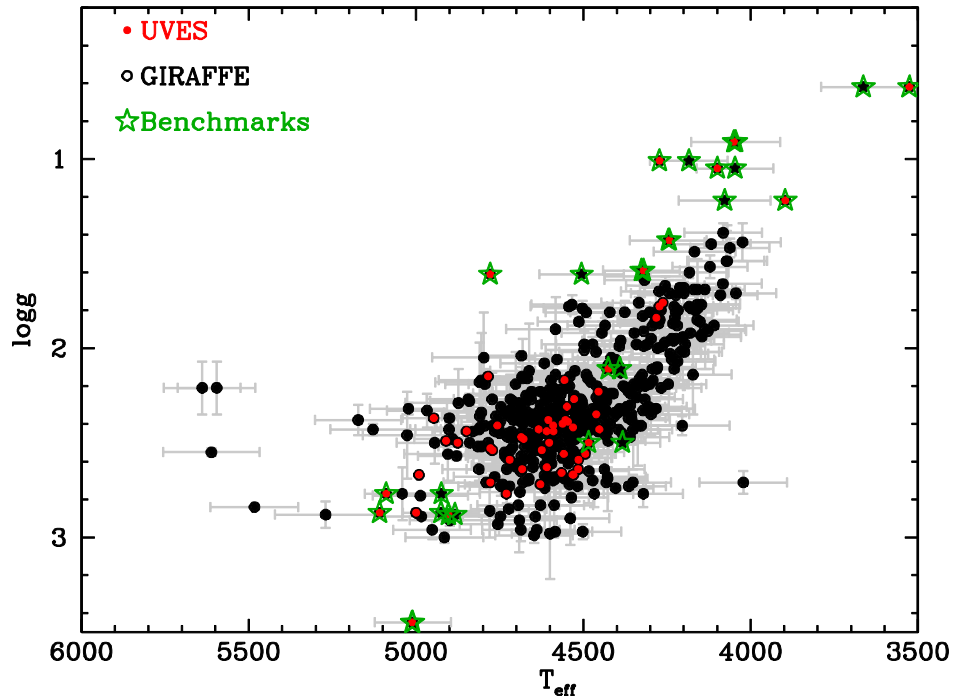


- Reduction by standard GES but 25 stars were co-added on wavelength space
- Not a standard GES analysis
- Logg (fixed) provided by seismologists
- Benchmarks to estimate our accuracy but not used for calibration

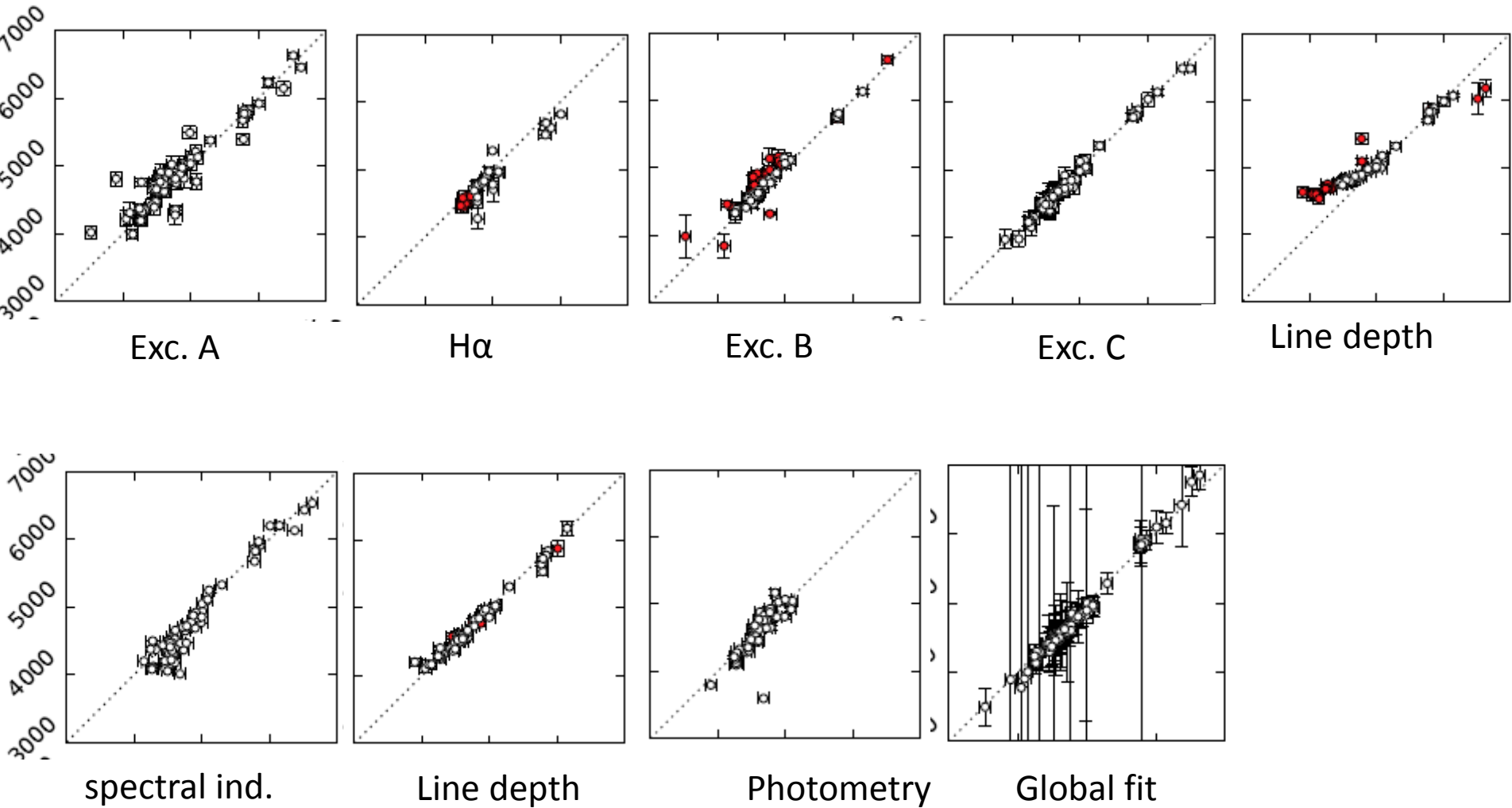
Spectroscopic methods

Method	Pros	Cons
Exc. balance	Provides Fe abundance and microturbulence	NLTE-3D effects
Line depth ratio	Model independent	Sensitive to heavy blends
H α	Very sensitive to Teff	Weak in red giants
Global fitting	Uses all spectrum info	fix 1D grid do not provide Fe abundance
Spectral indices	Model independent	Require an extensive calibration
Photometry	Relies on the SED	reddening

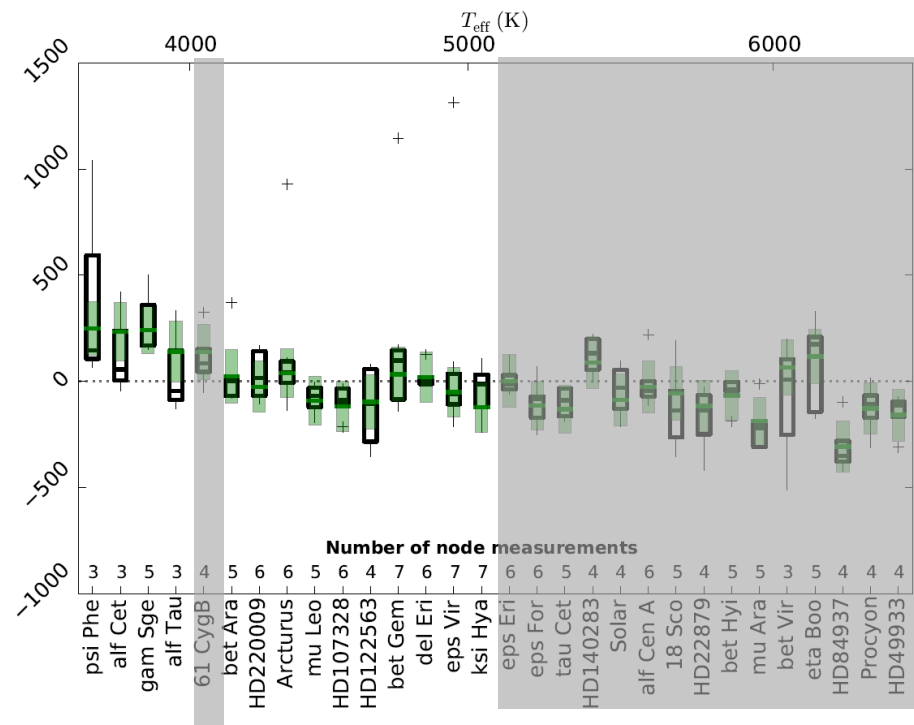
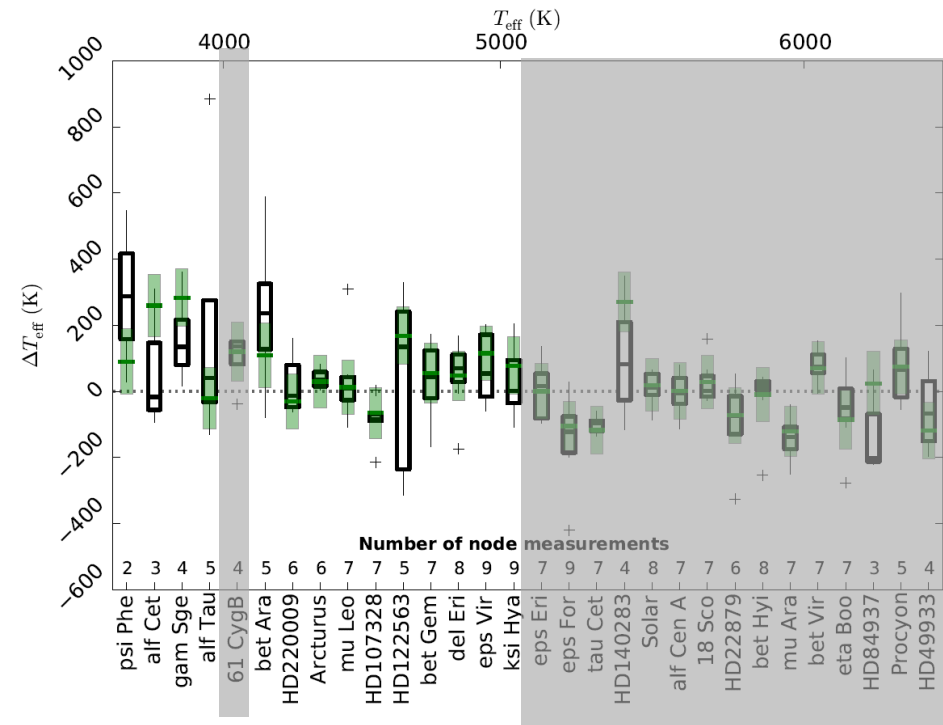
Results (2nd iteration)



Relative errors



Absolute error estimate



$$\sigma_{\text{Teff}}(\text{UVES})=80\text{K}$$

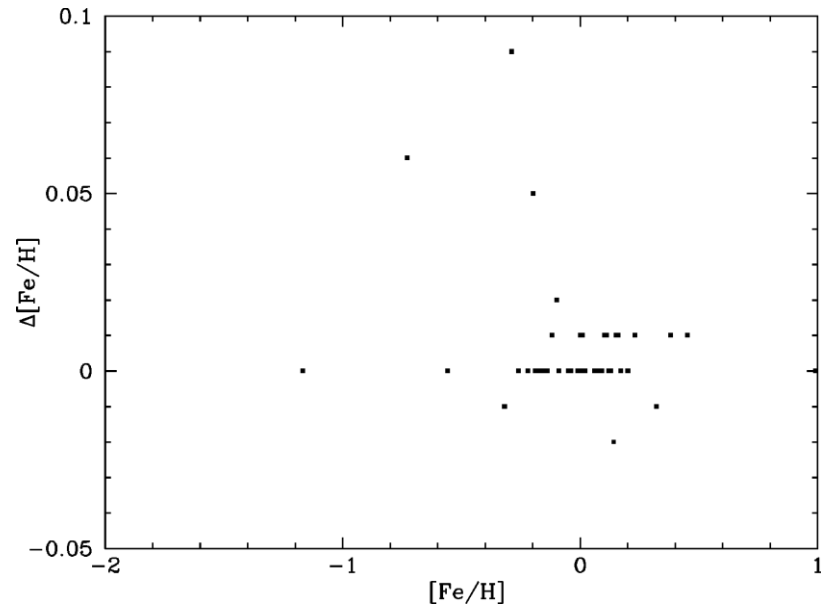
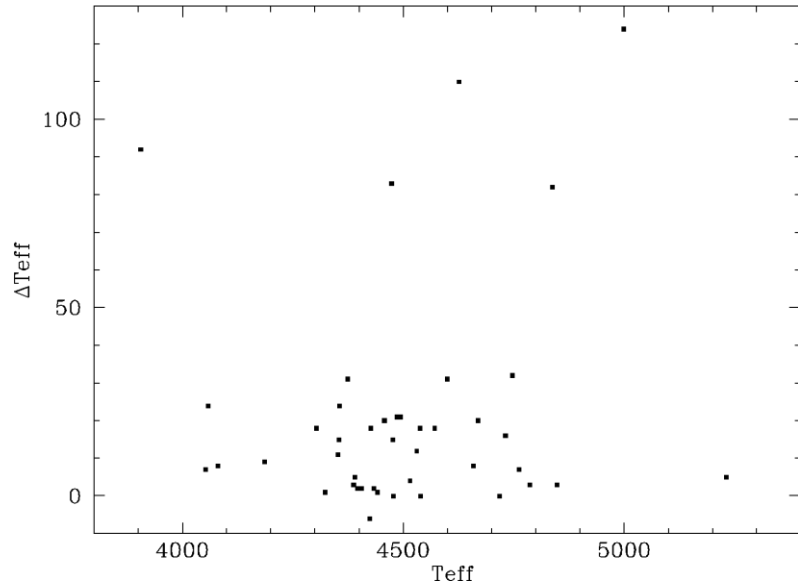
$$\sigma_{\text{Fe}}(\text{UVES})=0.06$$

$$\sigma_{\text{Teff}}(\text{GIRAFFE})=115\text{K}$$

$$\sigma_{\text{Fe}}(\text{GIRAFFE})=0.2$$

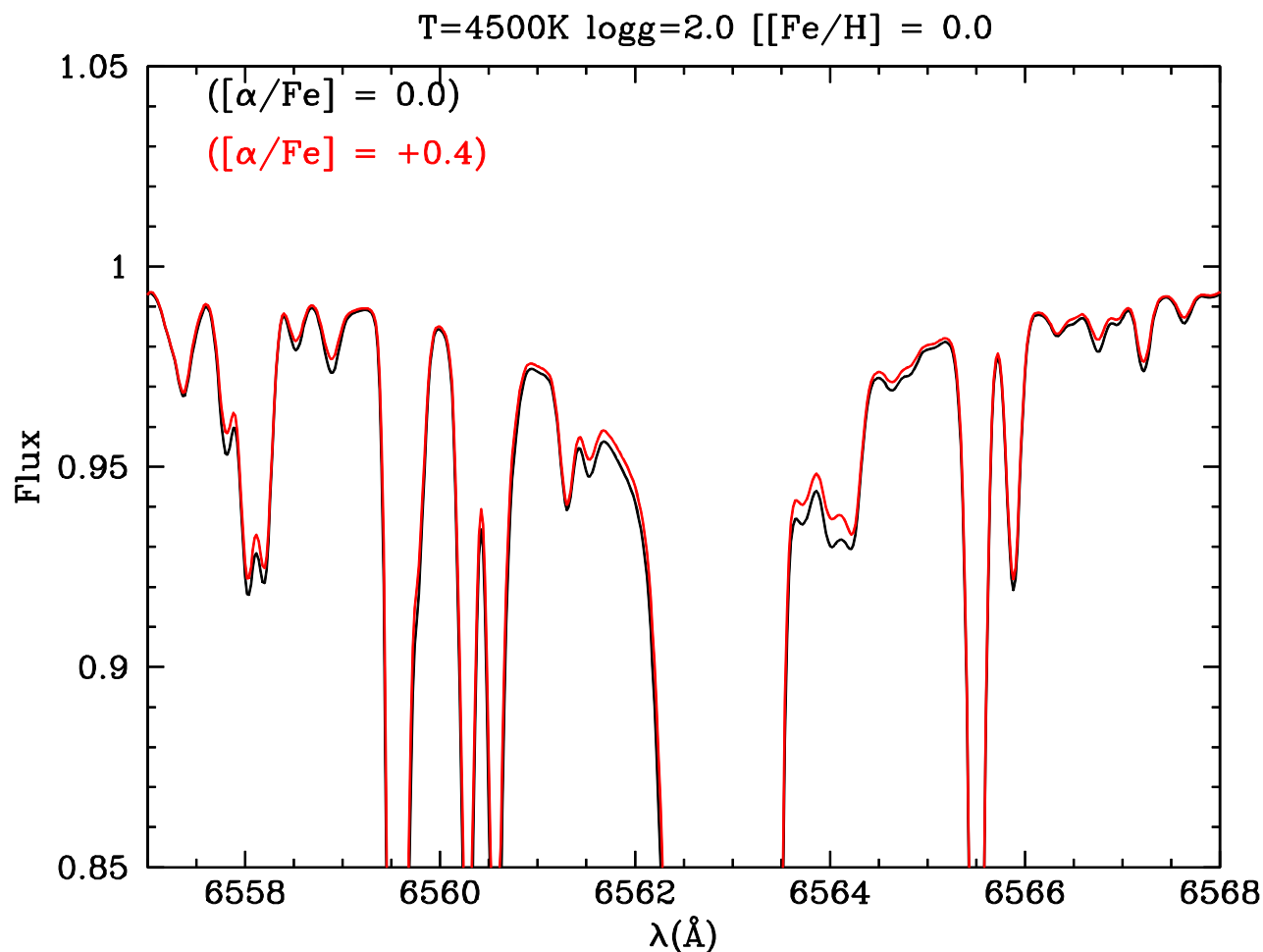
Very satisfying, and it will still improve!

NLTE effects on Fe lines



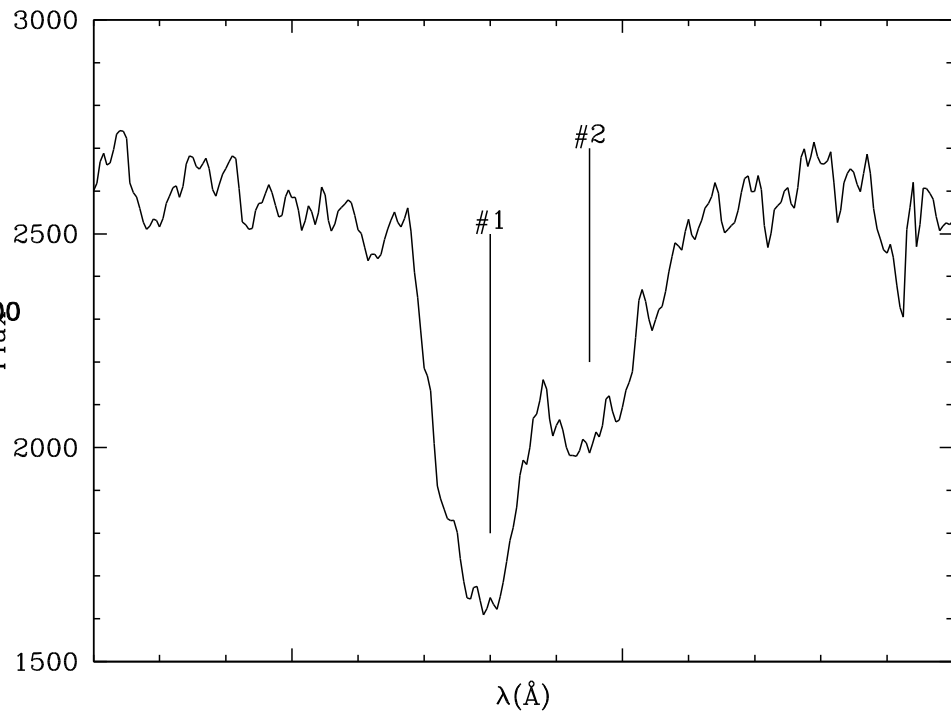
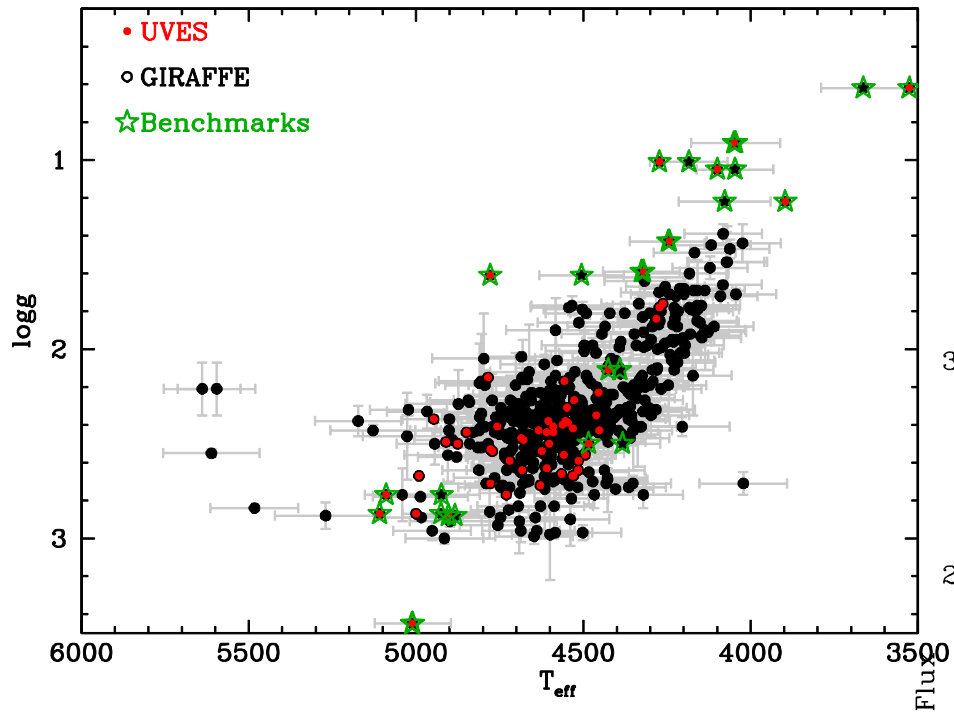
They do not seem to affect significantly our recommended T_{eff} but we will definitely provide them.

Alpha elements abundance effect



Although the effect seems small, we are running tests to evaluate the impact

Outliers



Conclusions

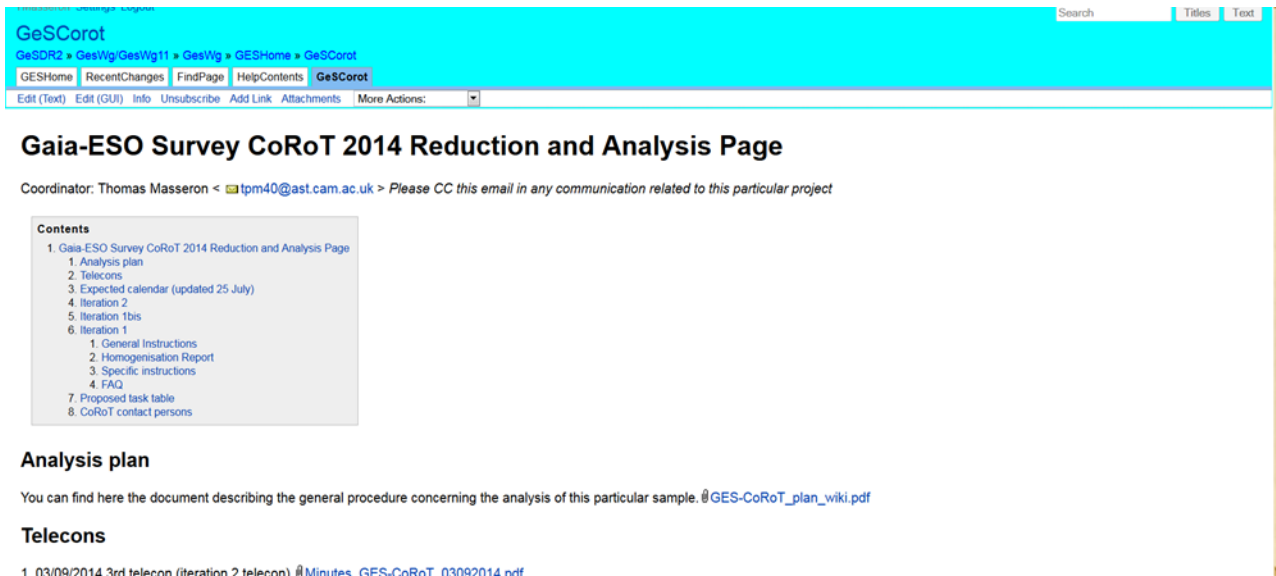
Good parameters suitable for survey calibration (GES,...) and great science (See M. Valentini's talk)

We will provide (soon)

- ✓ Abundances
- ✓ equivalent widths
- ✓ rotational velocities
- ✓ NLTE corrections,
- ✗ Parallaxes (wait for Gaia!)
- ✗ Interferometry (to faint)
- ✓ Comparison with other surveys
- ✓ flags
- ✓ and errors!

3 iterations we are now beginning the 3rd and last one!

You can stay tuned at



The screenshot shows the GeSCorot website interface. At the top, there is a navigation bar with links for 'GeSCorot', 'GeSDR2', 'GesWg/GesWg11', 'GesWg', 'GESHome', and 'GeSCorot'. Below this is a secondary navigation bar with 'GESHome', 'RecentChanges', 'FindPage', 'Help/Contents', and 'GeSCorot'. A search bar and 'Titles'/'Text' tabs are also visible. The main content area features the title 'Gaia-ESO Survey CoRoT 2014 Reduction and Analysis Page' and the coordinator's name, Thomas Masseron, with his email address 'tprm40@ast.cam.ac.uk'. A 'Contents' section lists the following items: 1. Gaia-ESO Survey CoRoT 2014 Reduction and Analysis Page, 2. Analysis plan, 3. Telecons, 4. Expected calendar (updated 25 July), 5. Iteration 2, 6. Iteration 1bis, 7. Iteration 1 (with sub-items: 1. General Instructions, 2. Homogenisation Report, 3. Specific instructions, 4. FAQ), 8. Proposed task table, and 9. CoRoT contact persons. Below the contents, there is a section for 'Analysis plan' with a link to the document describing the general procedure. At the bottom, there is a section for 'Telecons' with a link to the minutes of a 3rd iteration telecon.