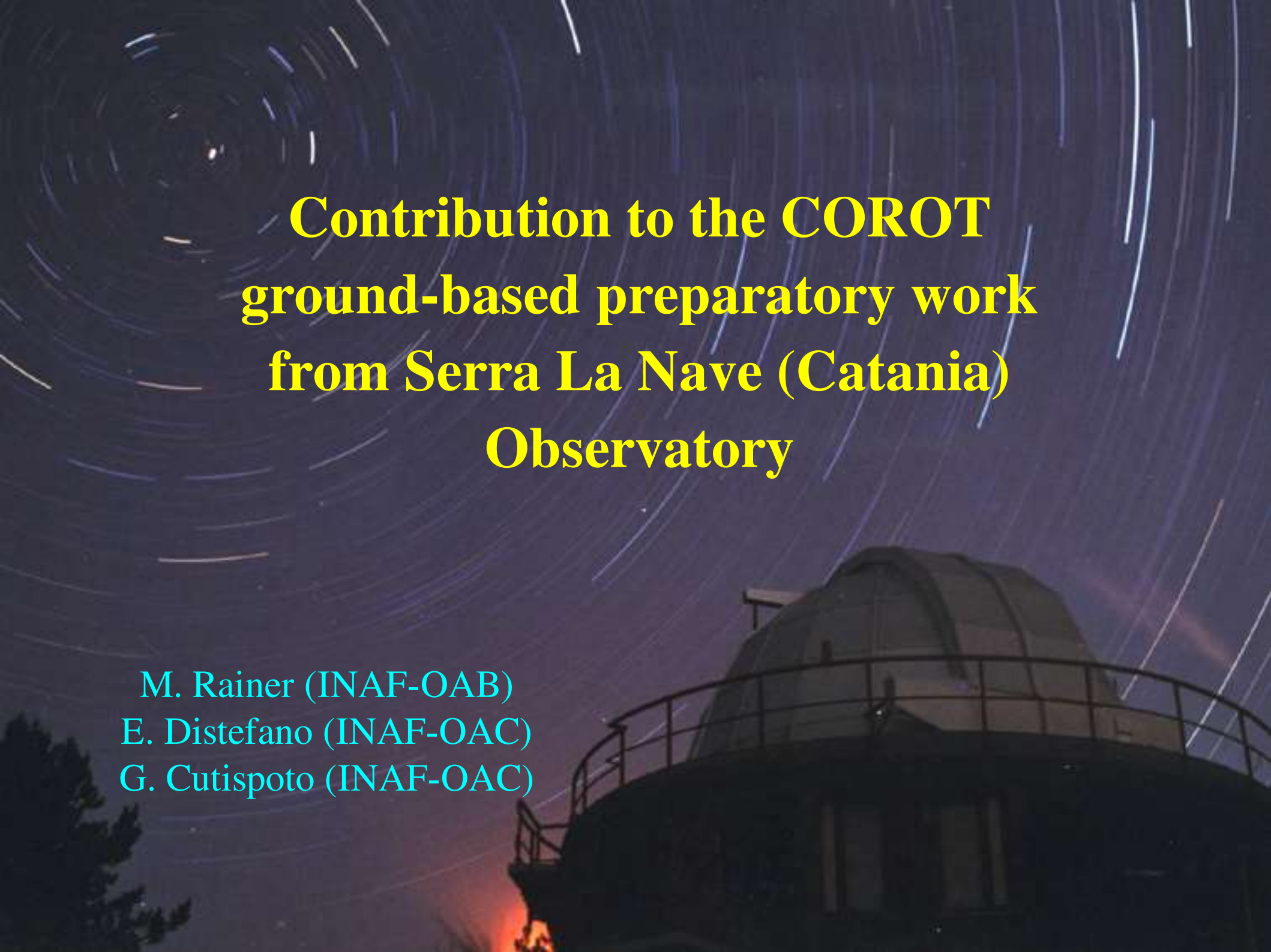
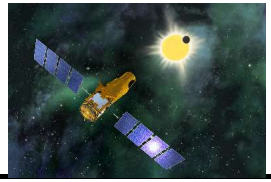


Contribution to the COROT ground-based preparatory work from Serra La Nave (Catania) Observatory

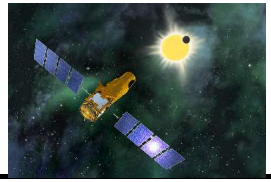
M. Rainer (INAF-OAB)
E. Distefano (INAF-OAC)
G. Cutispoto (INAF-OAC)



During the 6th Corot Week was established the need for further ground-based observations in order to choose the secondary asteroseismology targets.

The observations performed so far have not been sufficient to complete the choice of the targets, so we decided to extend the survey up to magnitude 9.5.

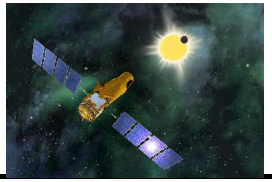
Having already some indications on the probable main targets, the decision was made to observe only in the sorround of these objects, in order to minimize the time needed for the new observations.



The plan was to observe both in the center and anti-center direction with CFHT (ESPaDOnS). In case some backup observations were needed, we presented a proposal for FEROS, but only in the center direction.

Unluckily, the CFHT proposal was rejected: the anti-center direction was left uncovered.

So in the 7th Corot Week Cutispoto proposed to use the Serra La Nave Observatory to substitute the missing observations, as a new original contribution from Italian astronomers to the mission preparation.



The M. G. Fracastoro Mountain Station is located at Serra La Nave (Mt. Etna), at 1735 m a.s.l.

Longitude +14° 58'.4
Latitude +37° 41'.5

Telescopes
91-cm Cassegrain
61-cm Schmidt
80-cm Automated Photoelectric Telescope

91-cm Telescope

Optical configuration . . . . . .Cassegrain

Main mirror:

– diameter . . . . . .91 cm

– curvature . . . . . paraboloid

– focal length . . . . . 4.143 m

– focal ratio f/4.6

Secondary mirror:

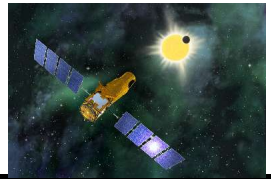
– diameter . . . . . .24 cm

– focal length . . . . . .-1.427 m

Cassegrain focus:

– equivalent focal length . . . . 14.275 m

– equivalent focal ratio f/16



FRESCO

(Fiber-optic Reosc Echelle Spectrograph of Catania Observatory)

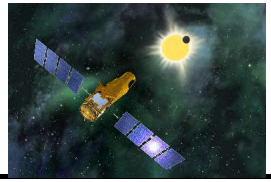
Echelle grating . . . . . .128x254 mm
. . . . . .79 l/mm
. . . . . blazed at 63.433°
Echellette grating . . . . . .160x106 mm
. . . . . .300 l/mm
. . . . . blazed at 4.3°

Single dispersion:

Only the echellette grating is used. The linear dispersion is ~ 90 Å/mm (R=1000), the spectral range recorded is ~ 2500 Å.

Cross-dispersion:

Both the echelle and the echellette gratings are used. The linear dispersion varies from 3.5 (Hγ) to 6.8 Å/mm (Hα, R=21000). The spectral range covered is ~ 2500 Å in 19 orders.



We worked in the cross-dispersion mode, which allowed us to cover the spectral range 4300-6800 Å with 19 Echelle orders.

Due to the faintness of the stars, the exposure time was quite long (~1 hour). The bad weather conditions lowered the S/N ratio to a value of about 70.

Exposure time: ~1 hour

S/N ratio: ~ 70

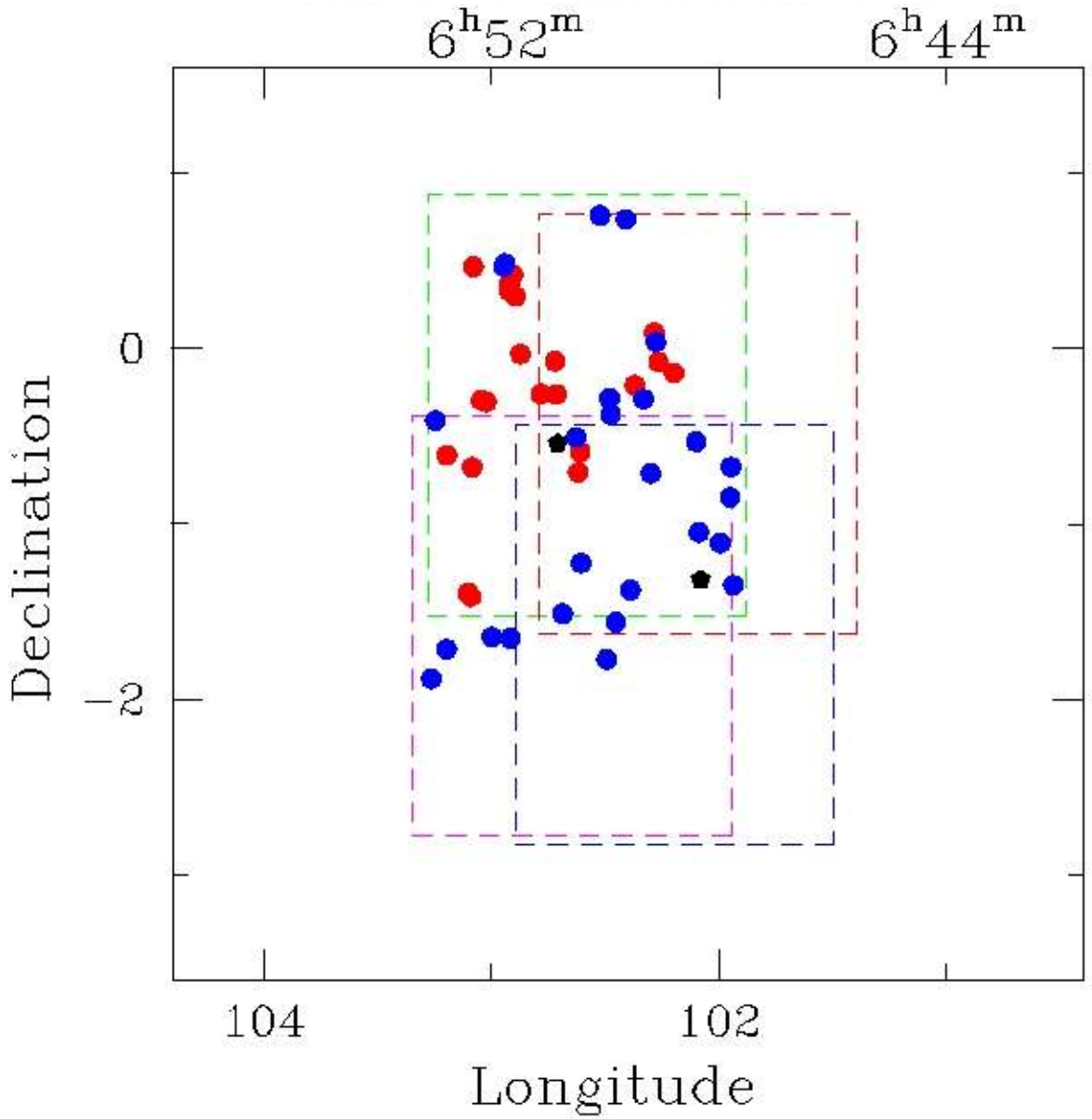
Spectral range: 4300-6800 Å

R = 21000

The climatic conditions severely hindered our observations, preventing us from completing the whole survey.

A large number of observing nights was lost due to the snow or the strong wind.

Anyway, we have been able to observe almost half of the targets and the spectra proved to be of good quality.



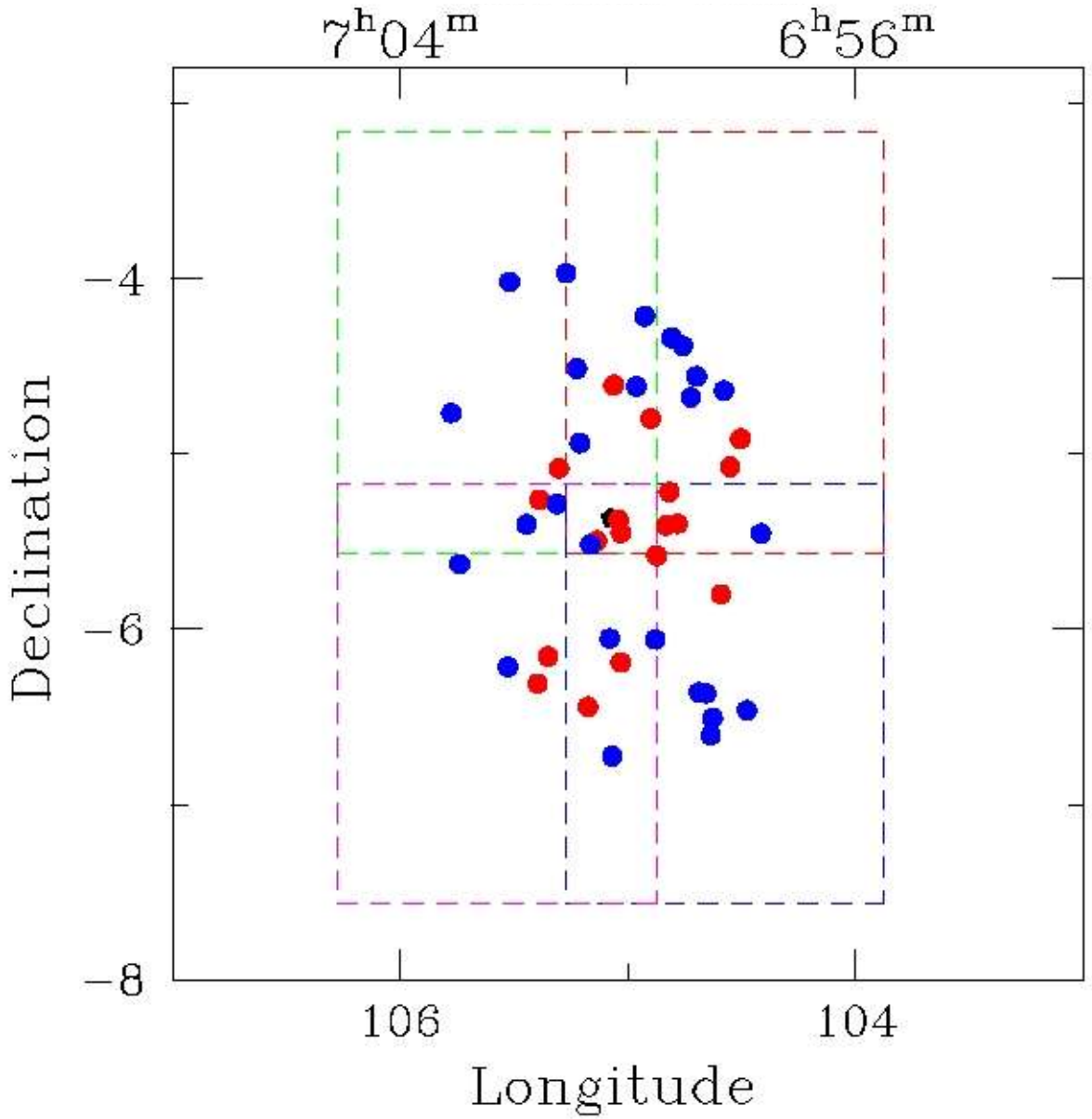
HD 49933+HD 49434

Main targets

Targets observed (22)

Remaining targets (27)

Total targets: 49



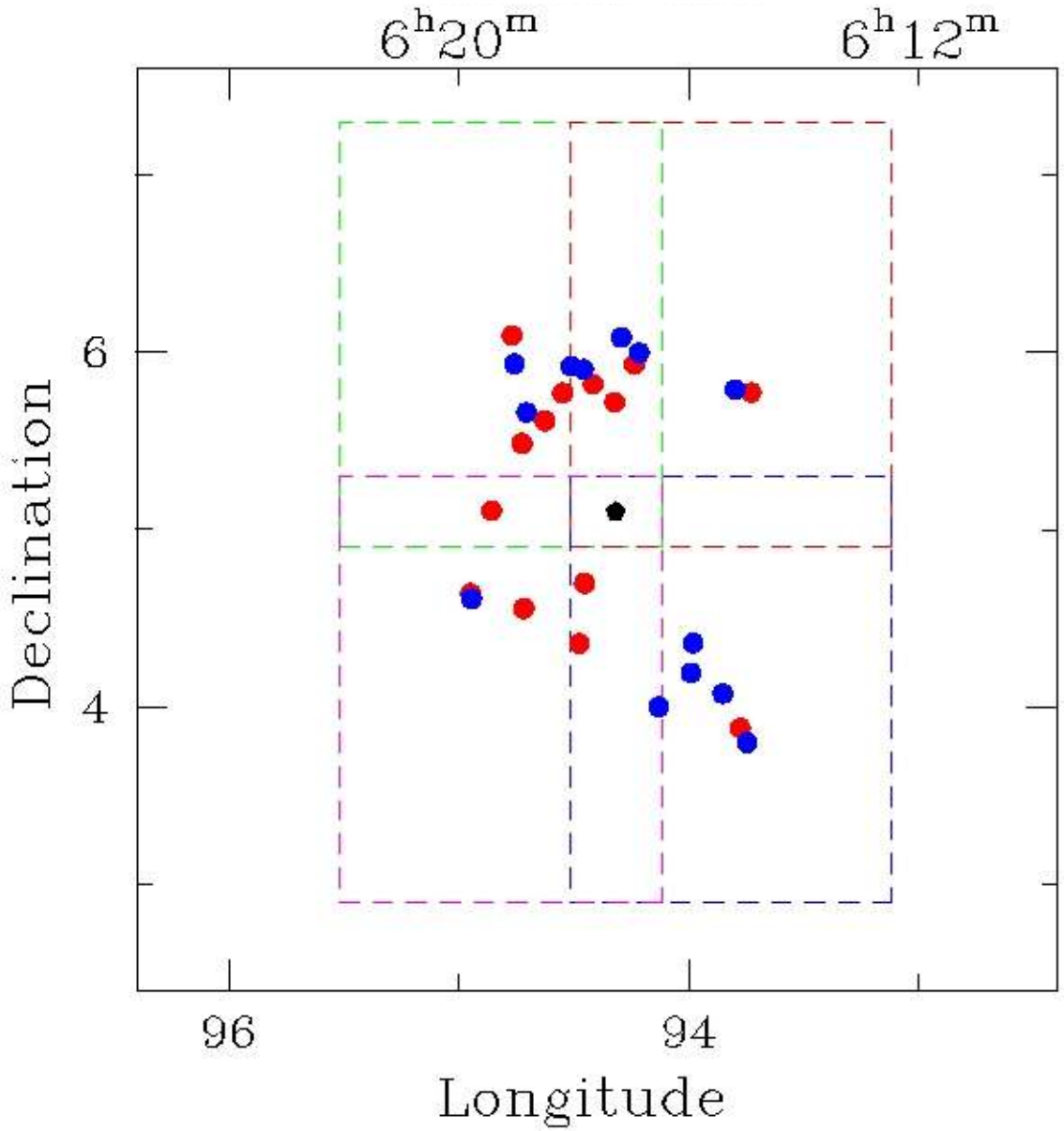
HD 52265

Main target

Targets observed (18)

Remaining targets (28)

Total targets: 46



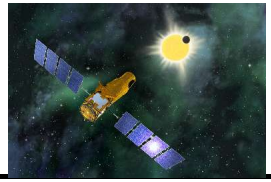
HD 43587

Main target

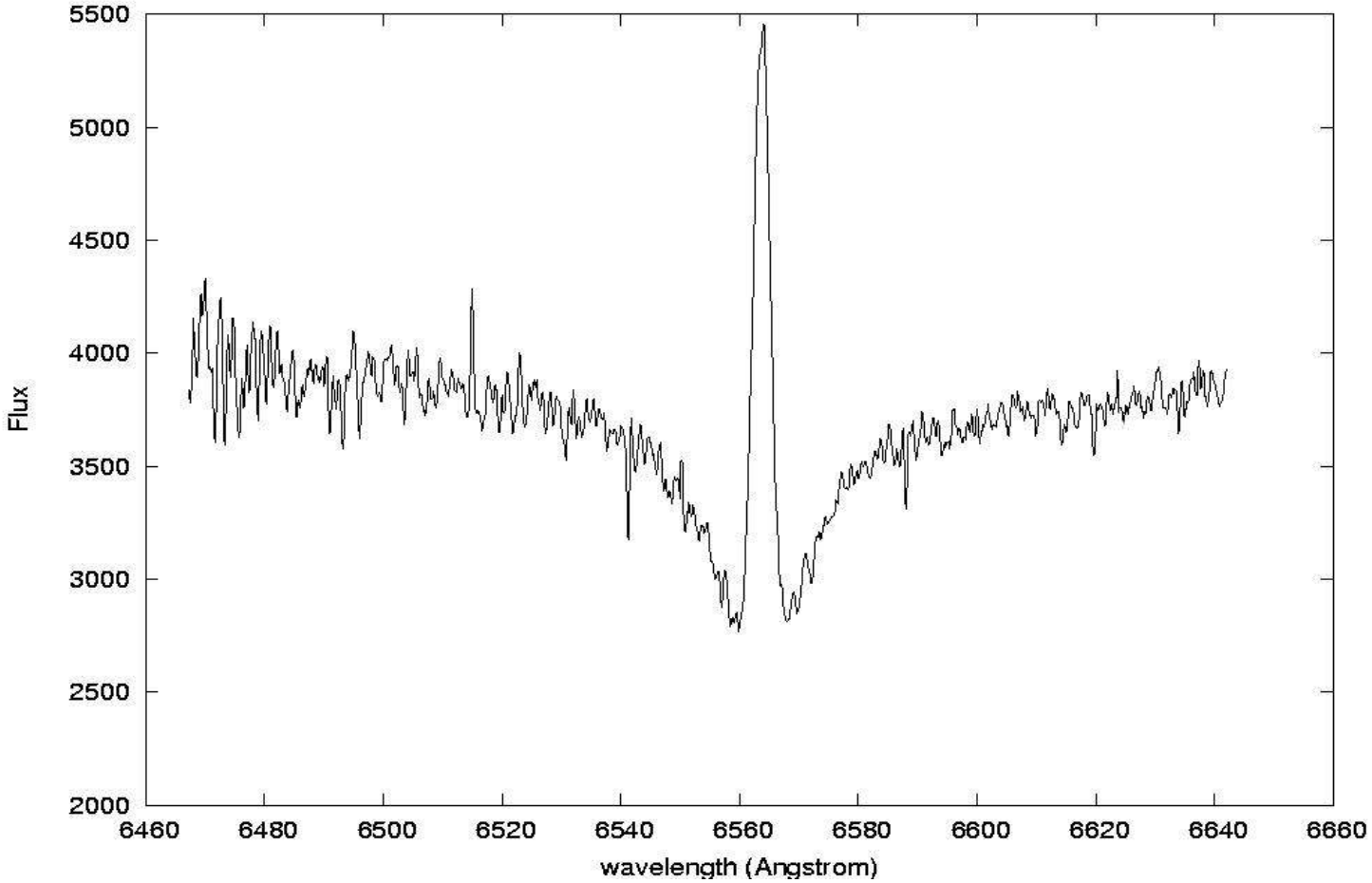
Targets observed (14)

Remaining targets (13)

Total targets: 27



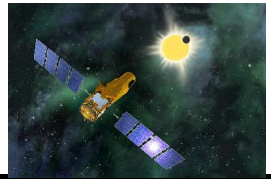
Hα order



HD50087

Spectral type B8III

$m_V = 9.08$



Future observations

During this summer, the Serra La Nave observatory will be used to observe in the center direction, so to have some back-up observations to cover for eventual problems during the FEROS nights (17-21 June 2005).

In autumn the anti-center observations will start again, in order to cover all of the remaining targets as soon as possible: the good quality of the spectra influenced the decision made not to present another ESO proposal for the anti-center direction.

The observatory is available for any other observational plan. For the proposal submission see:

http://w3c.ct.astro.it/sln/general.html