

# Ca II H&K observations of COROT primary candidates

G. Cutispoto, I. Pagano, S. Messina

INAF – Catania Astrophysical Observatory

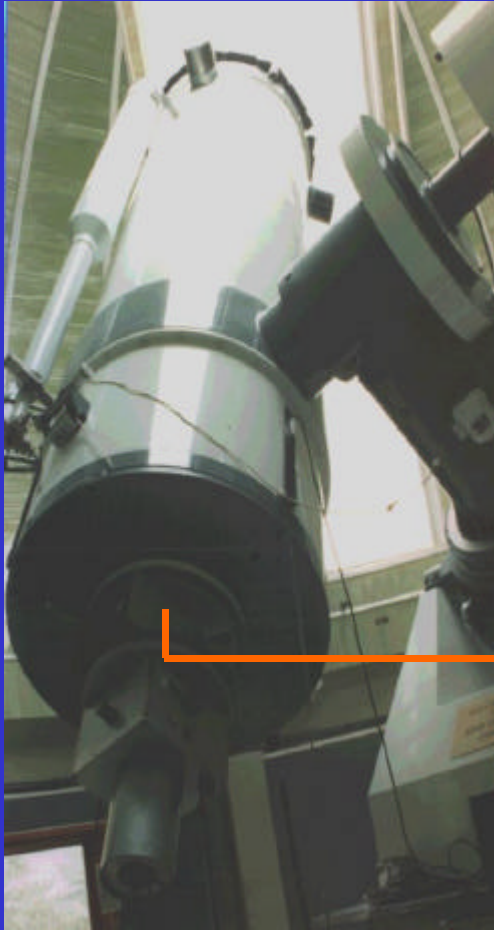
COROT Week 5

December 10-12, 2003 Berlin-Adlershof, Germany



# Observations

Have been carried out at the mountain station of Catania Astrophysical Observatory (Mt. Etna, Sicily, 1725 m a.s.l.) from Dec 2000 to Sep 2003



91-cm  
f/15 telescope

The spectrograph is fed by a fiber link



REOSC echelle spectrograph

1024x1024 CCD 24mm

R=15.000

Spectral range: 3760–4640 Å

# Log of observations

|           | Ca II H&K |         |      | Ha |
|-----------|-----------|---------|------|----|
|           | obtained  | reduced |      |    |
| HD 43318  | 13        | 13      | 100% | 4  |
| HD 43587  | 11        | 10      | 91%  | 4  |
| HD 45067  | 8         | 8       | 100% | 5  |
| HD 46304  | 8         | 8       | 100% | 3  |
| HD 49434  | 8         | 8       | 100% | 4  |
| HD 49933  | 8         | 8       | 100% | 3  |
| HD 55057  | 9         | 7       | 78%  | 3  |
| HD 57006  | 10        | 8       | 80%  | 3  |
| HD 171834 | 32        | 14      | 44%  | 7  |
| HD 174866 | 23        | 10      | 43%  | 8  |
| HD 184663 | 24        | 10      | 42%  | 6  |

# Reductions

The spectra have been reduced using the IRAF package

**We computed the EW of the H & K lines**

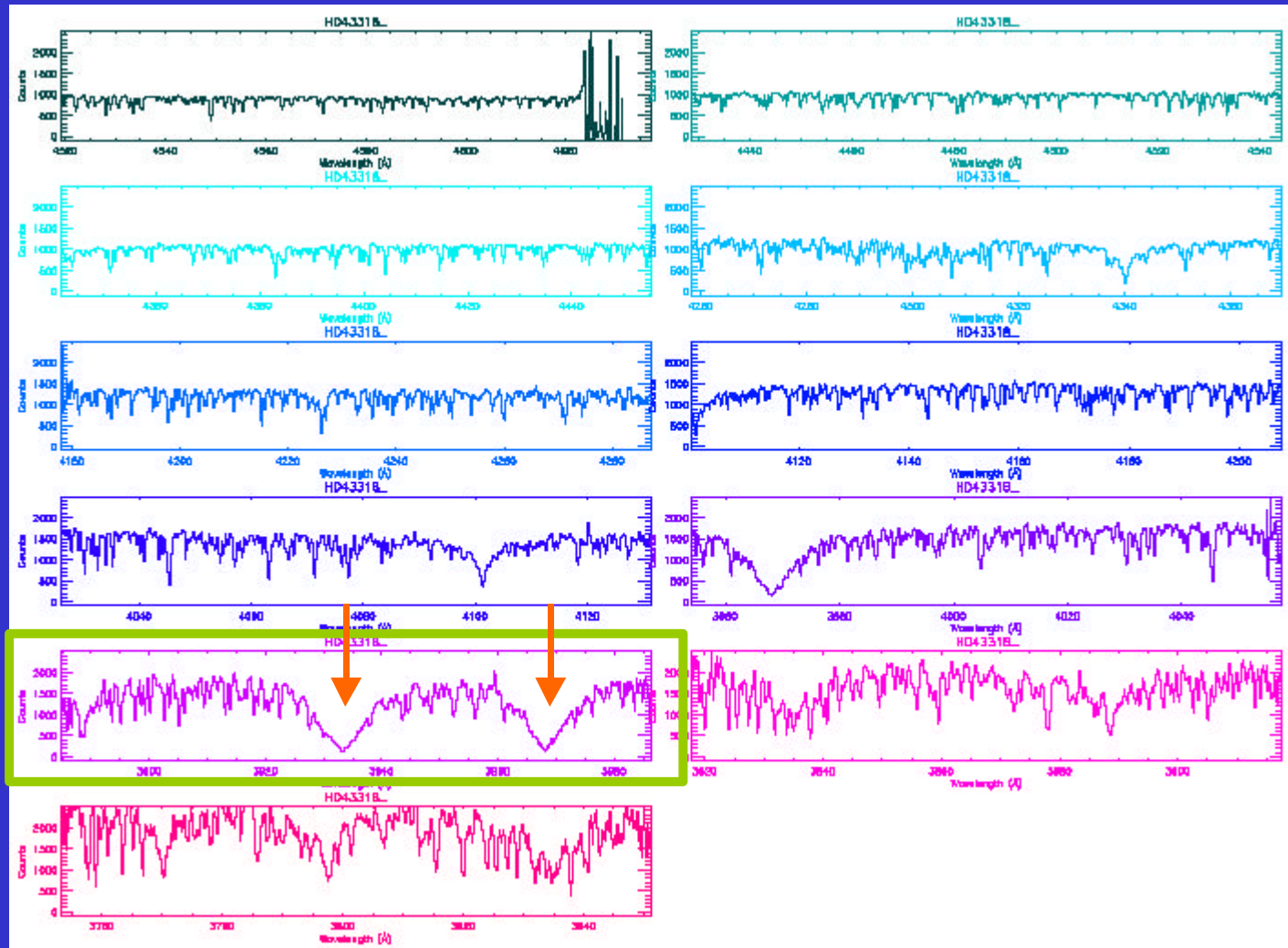
(integrating a region 14 Å wide centered at the line centers and measuring the continuum between 3913-3925 Å and 3991-4024 Å, for the H & K line, respectively)

**And the "S" index:  $S=(H+K)/(V+R)$**

where H and K are the flux in a 1 Å band centered at lines center, and V and R are the fluxes in a 10 Å band centered at 3910 Å and 4010 Å (a criterium defined by Frasca et al. A&A 2000 364,179)

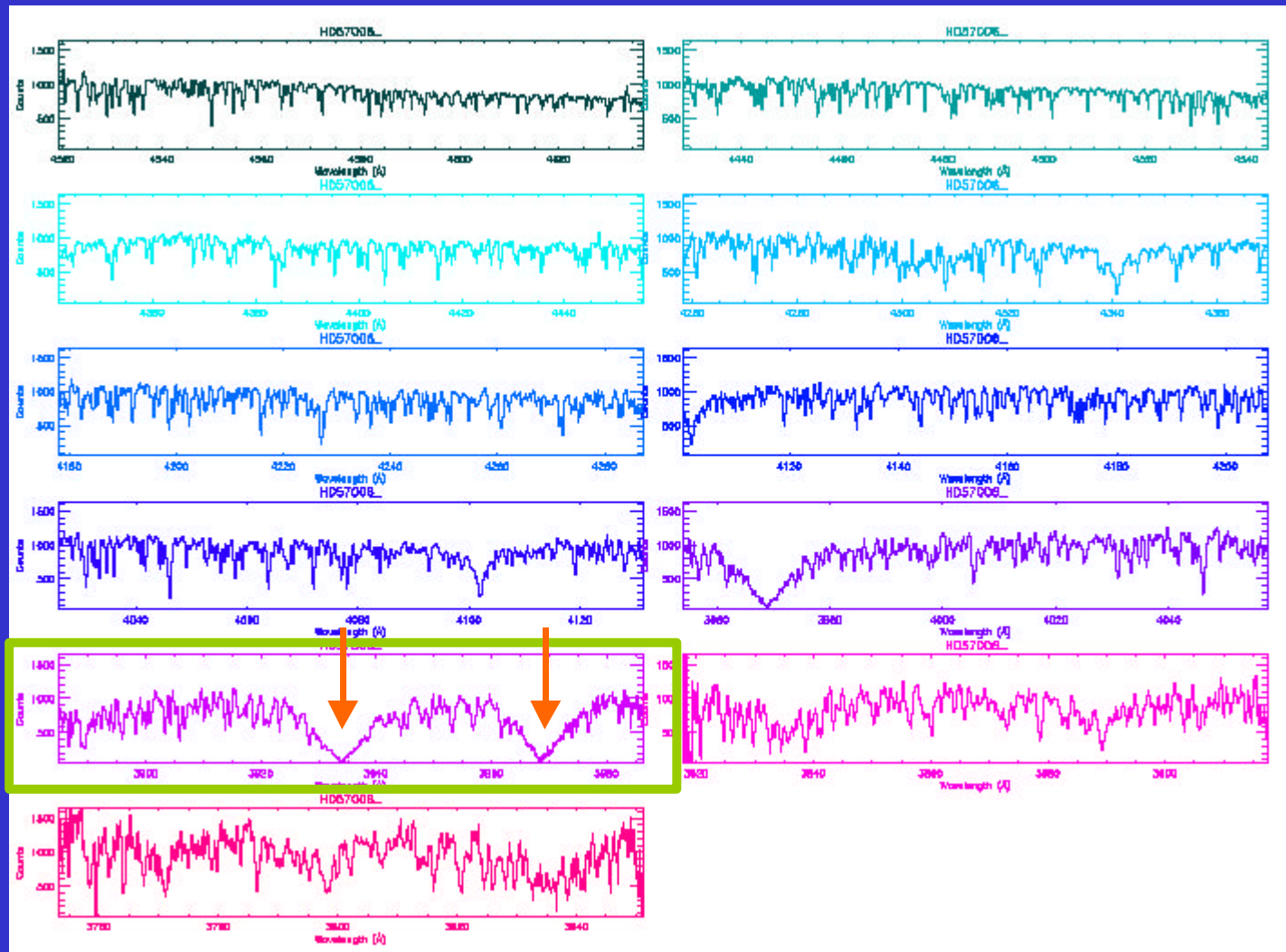
# A reduced spectrum

HD 43318 (a "slow" rotator)



# Another reduced spectrum

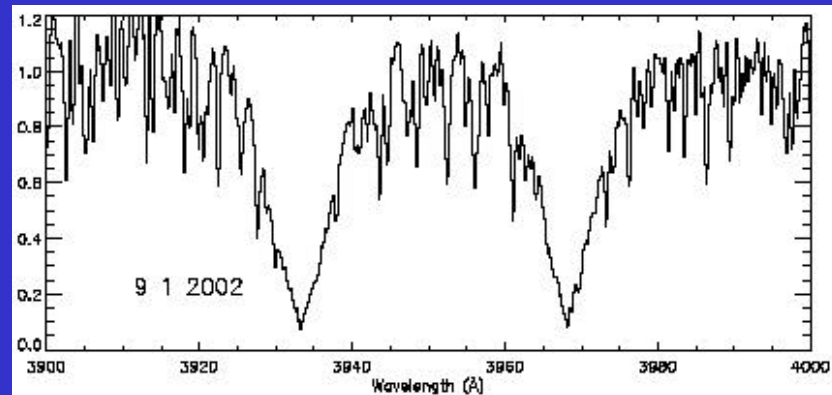
HD 57006 (a "fast" rotator)



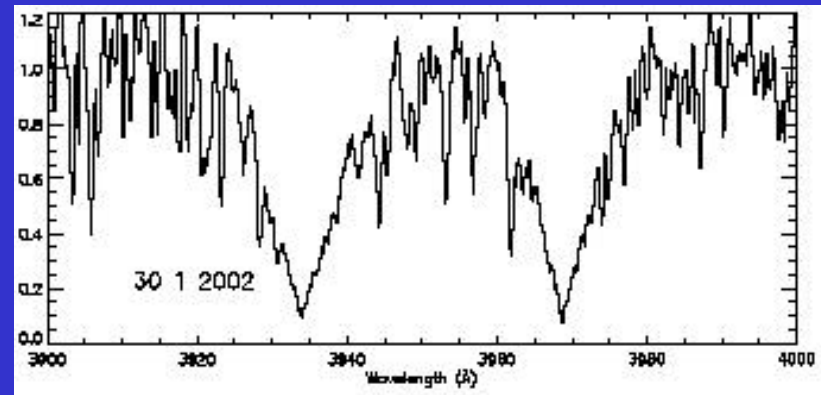
# Spectra in the Ca II H&K region

(normalized flux vs. wavelength)

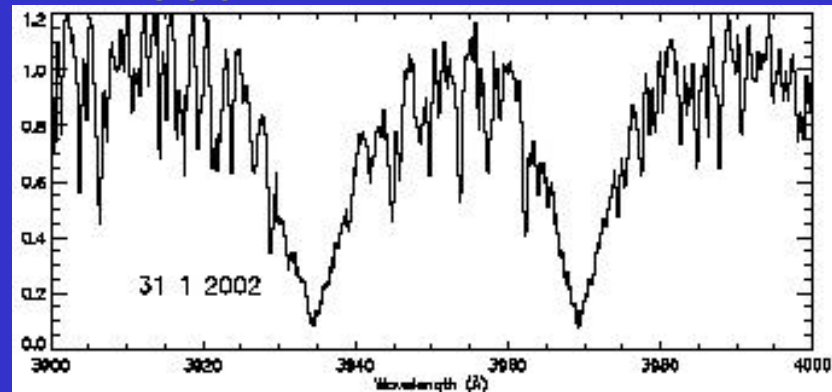
## HD 43318



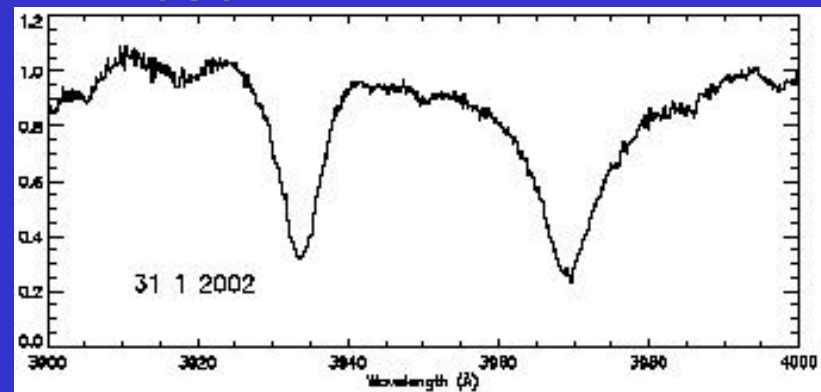
## HD 43587



## HD 45067



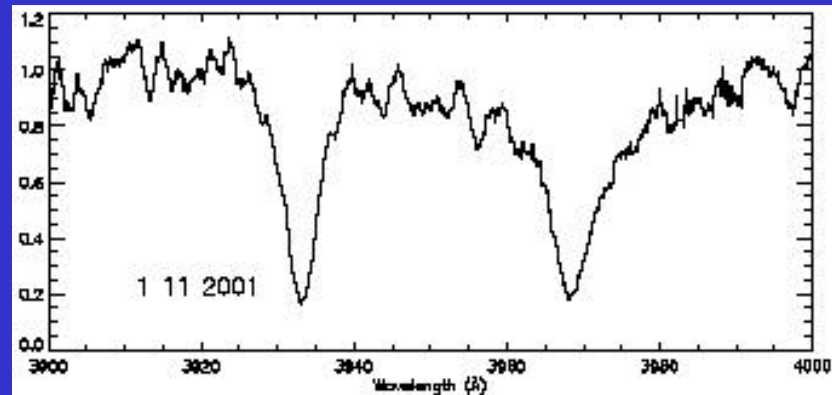
## HD 46304



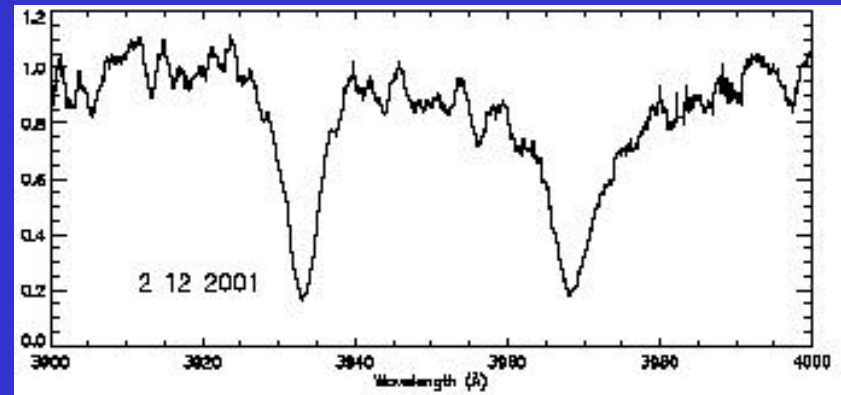
# Spectra in the Ca II H&K region

(normalized flux vs. wavelength)

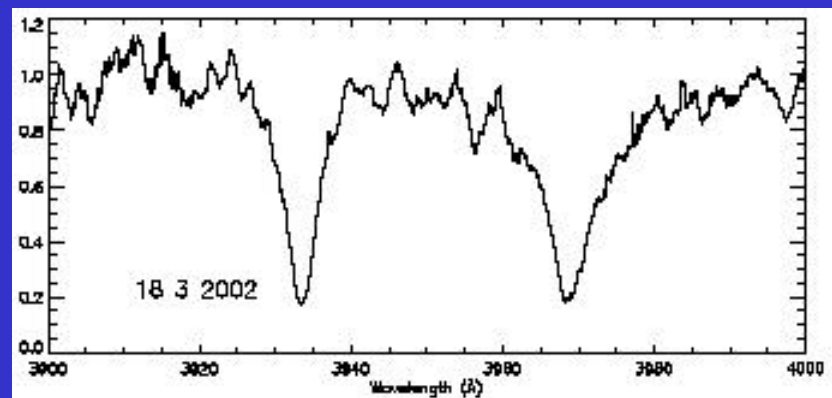
HD 49434



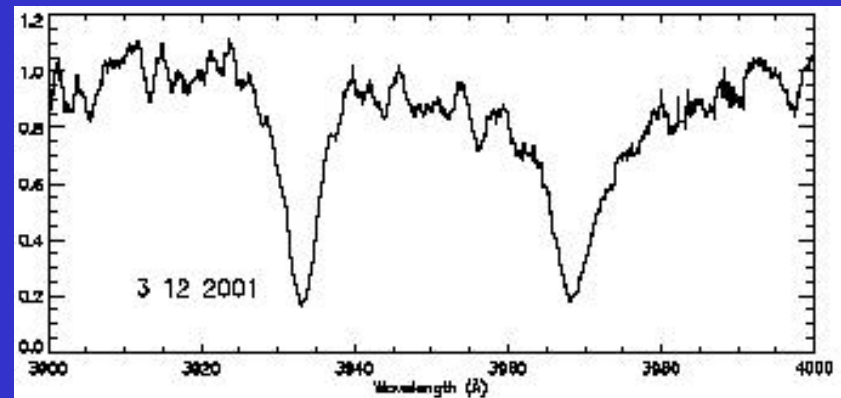
HD 49933



HD 55057



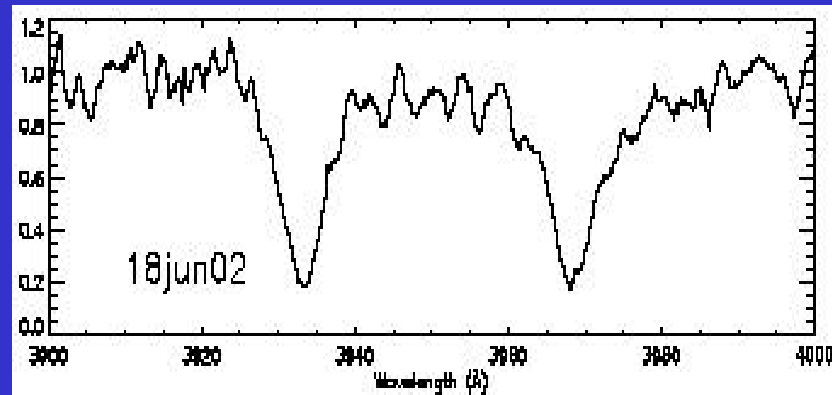
HD 57006



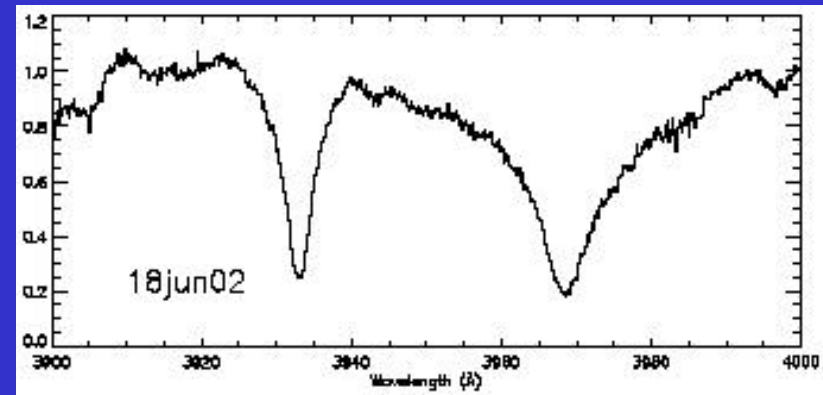
# Spectra in the Ca II H&K region

(normalized flux vs. wavelength)

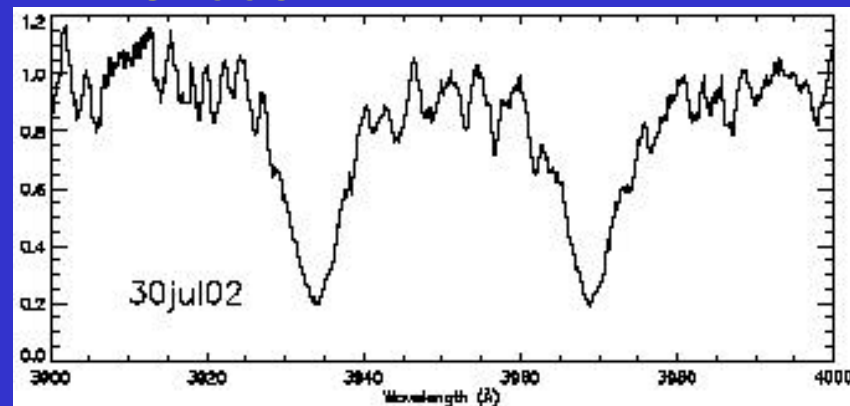
HD 171834



HD 174866

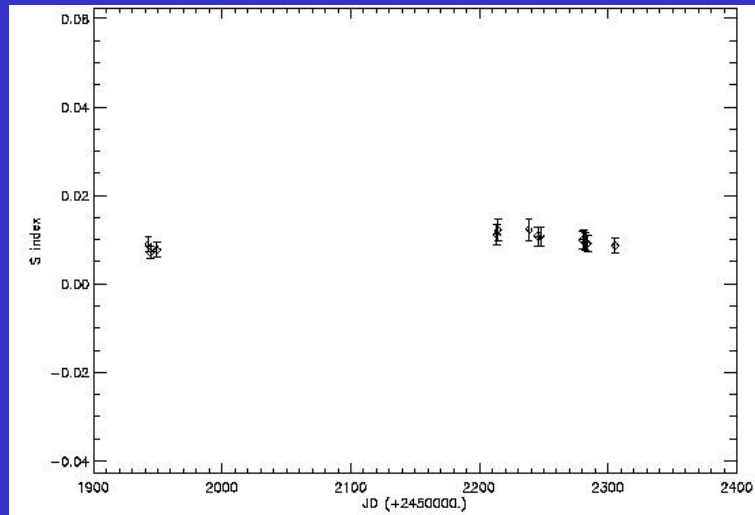


HD 184663

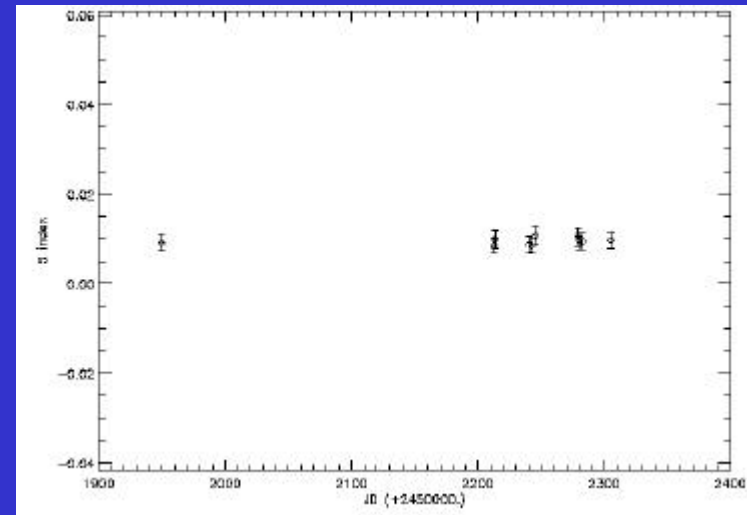


# S index

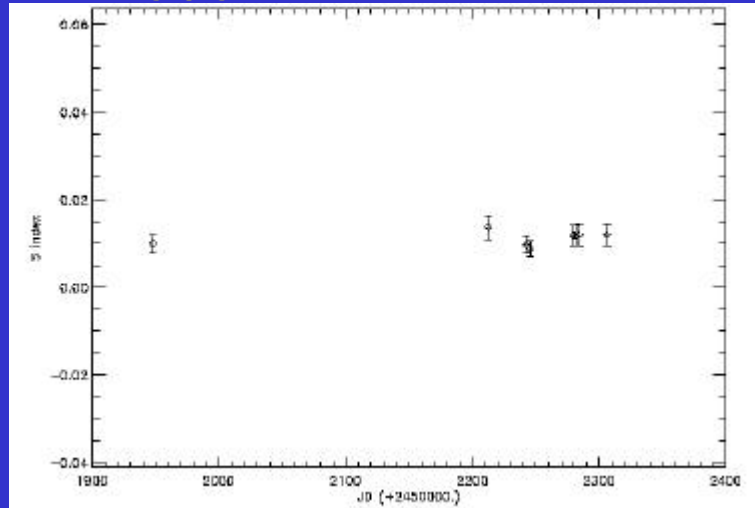
## HD 43318



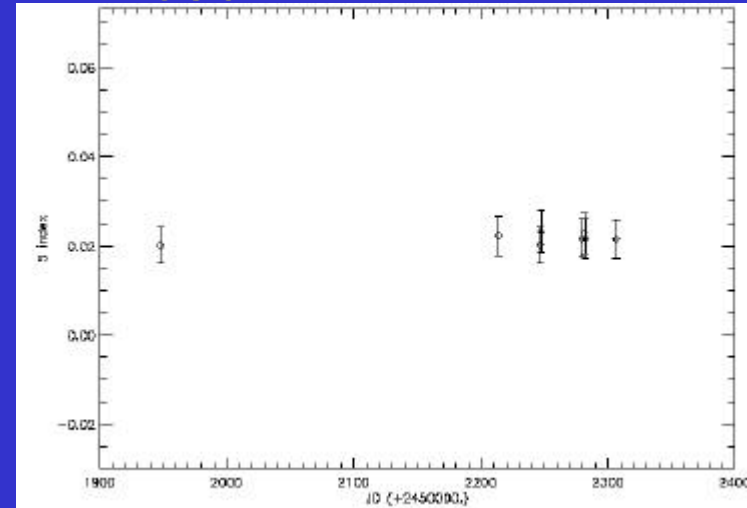
## HD 43587



## HD 45067

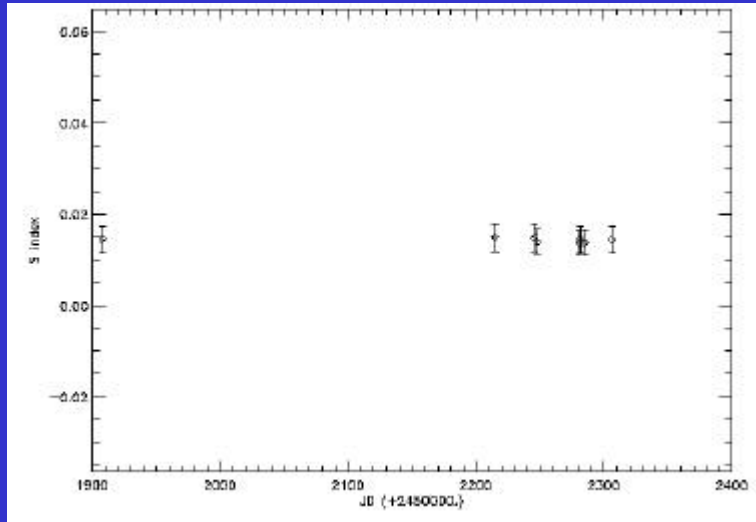


## HD 46304

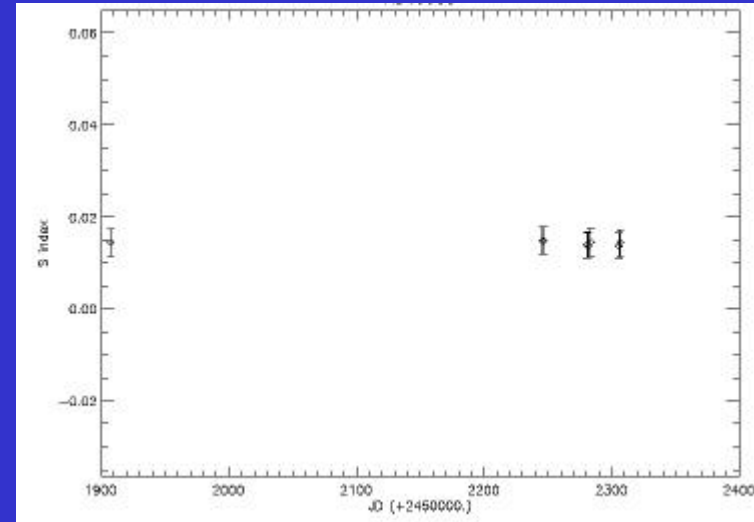


# S index

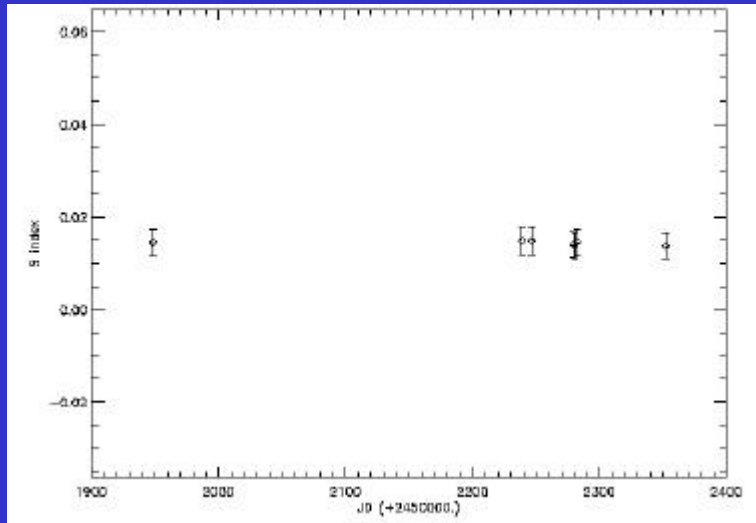
## HD 49434



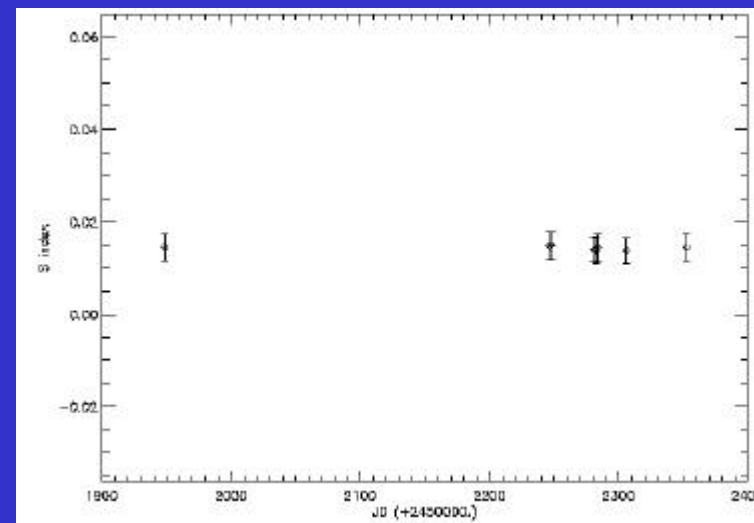
## HD 49933



## HD 55057

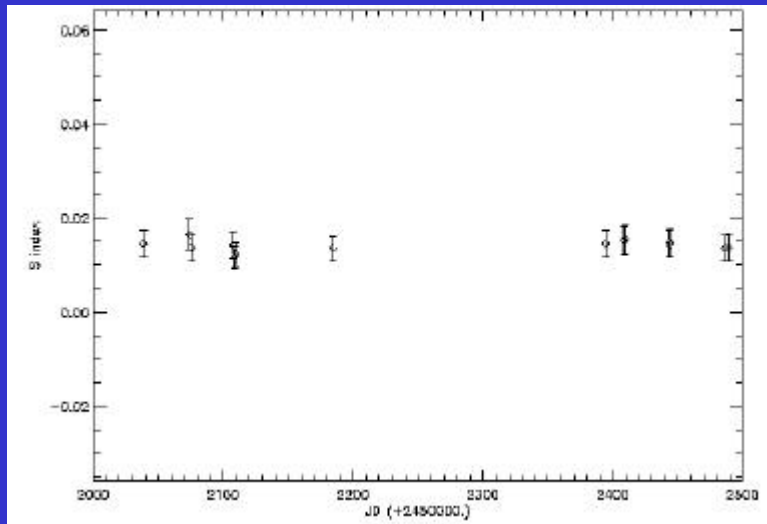


## HD 57006

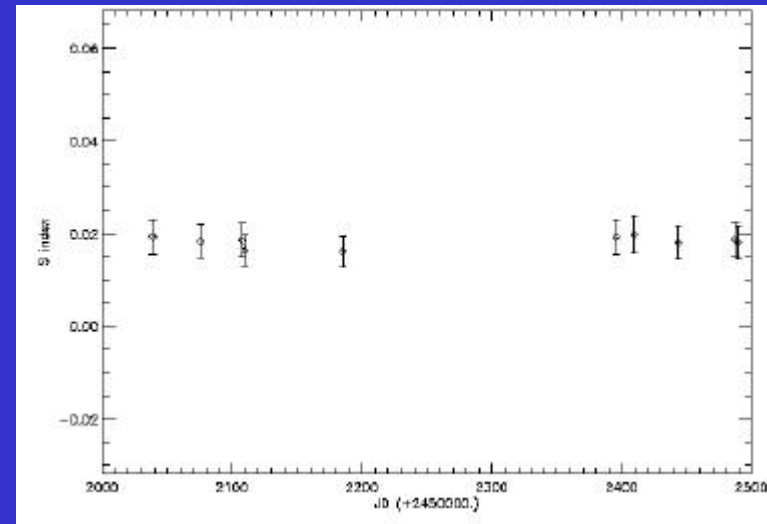


# S index

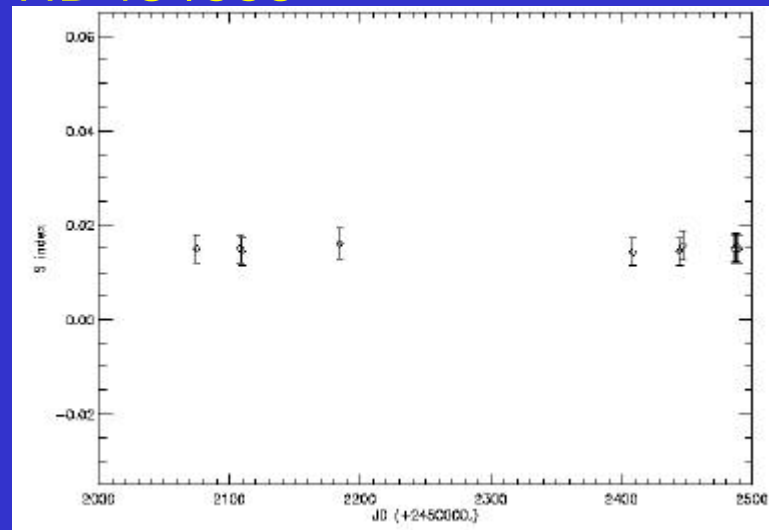
## HD 171834



## HD 174866

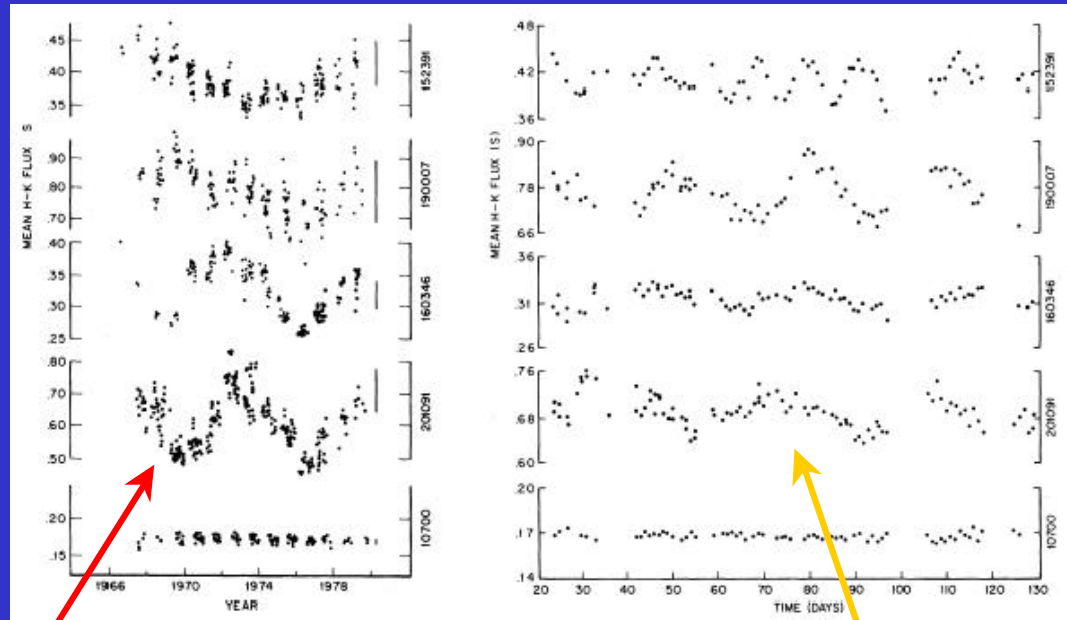
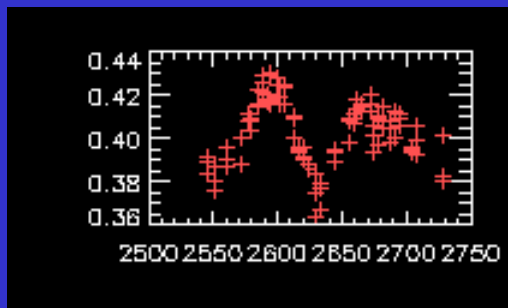
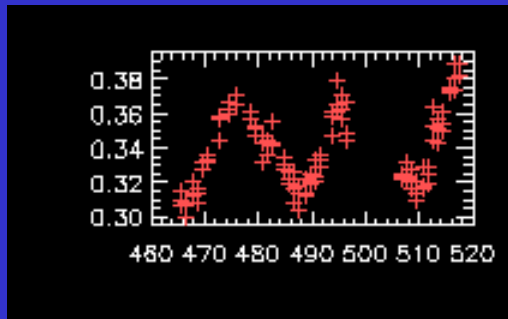


## HD 184663



# Results

No variation of the S index larger than 0.01 was observed



Active stars show long-term variation (due to activity cycles) up to 0.3

And short-term variation (due to rotational modulation) up to 0.1

**We cannot rule out S index variation of the order of 0.005**

(these variations, in term of flux, could be higher than the those observed in active stars; detailed calculations are in progress)