

**Monitoring of atmospheric dust with photoelectric photometer. Dust from icelandic volcanic ashes above Italy: evidence for too much alarmism on mass-media**

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## INSTRUMENTS used in this research

### *Hardware*

owned by Osservatorio Astronomico di Capannori  
(O.A.C.):

- Schmidt-Cassegrain Telescope with 30 cm aperture f/10
- Photoelectric photometer Optec SSP-5A second generation with photomultiplier tube Hamamatsu R6358 (low noise multialkali, red extended), with UBV filters

# INSTRUMENTS used in this research

## *Software*

owned by Osservatorio Astronomico di Capannori  
(O.A.C.):

- *Optec SSPDataQ2*  
for photoelectric data reduction

## METHODS used in this research

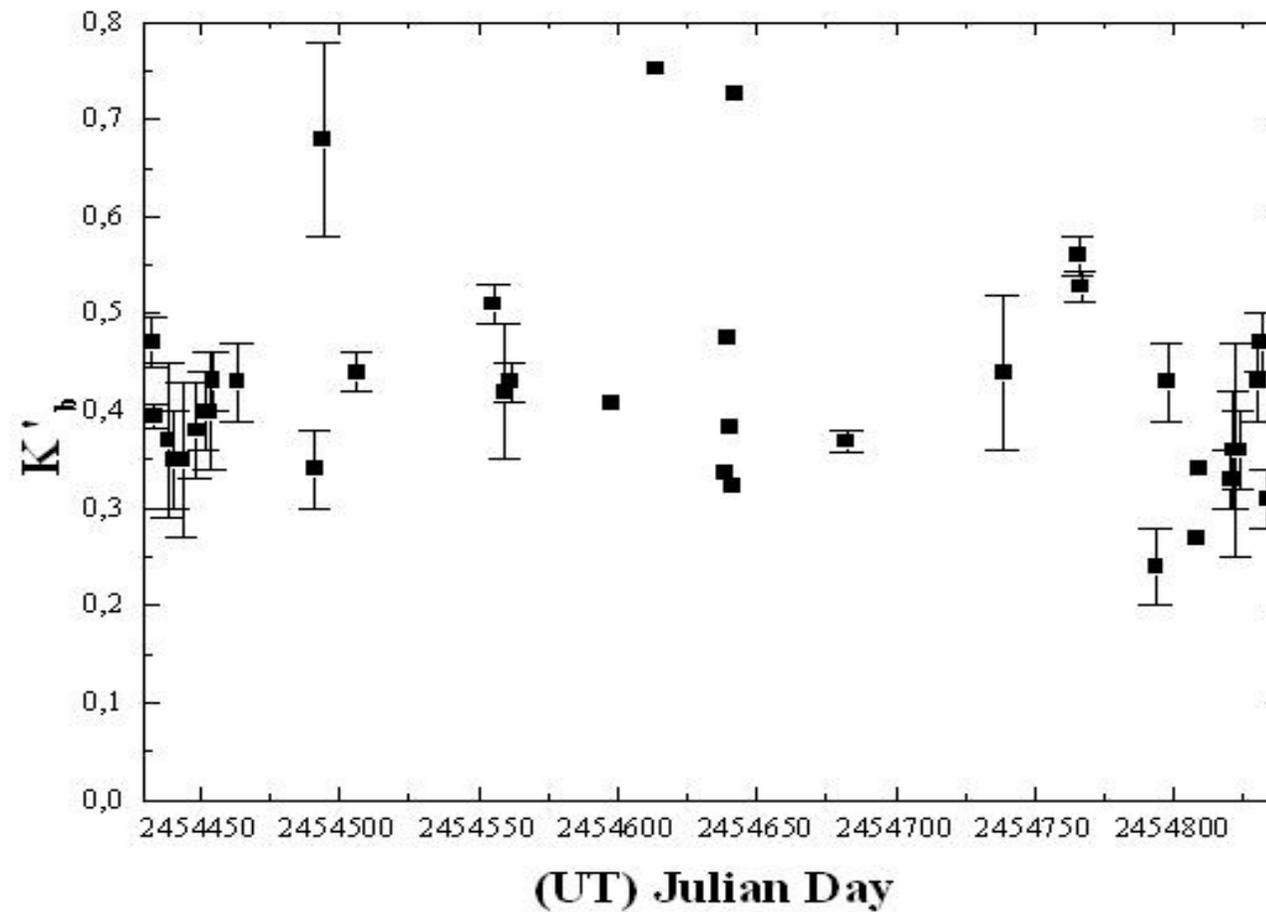
- UBVR photoelectric photometry of standard stars
- Plot of Bouguer's lines (Langley plots)



# Time series of $K'_b$ coefficient

**Atmospheric extinction coefficient  $K'_b$  versus time.**

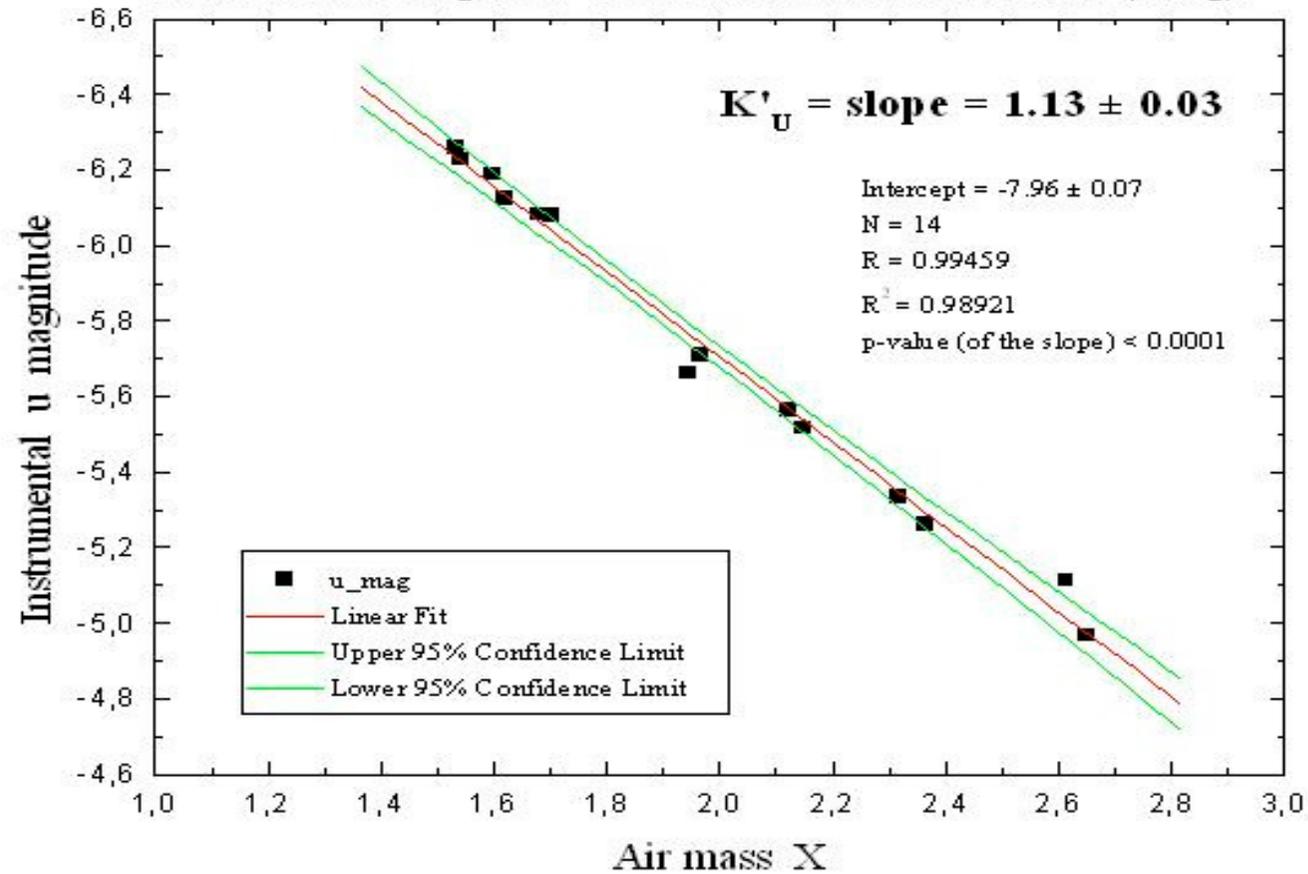
Band: B. Site: Lucca. Time range: 27 Nov 2007 - 1 Jan 2009.



# Bouguer line with dust in the sky: U band

Determining  $K'_U$  with the method of Bouguer's line.

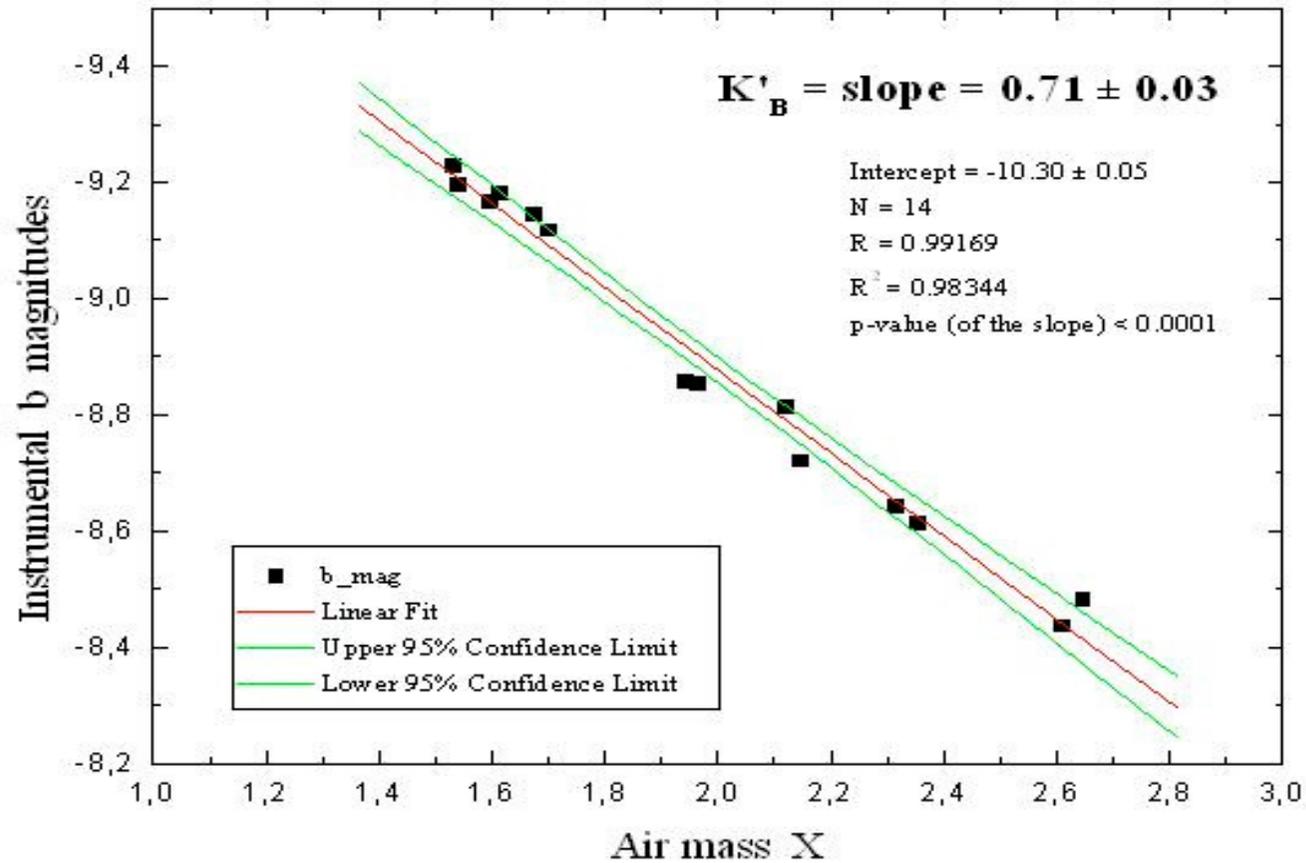
Band: U. Date: August 23<sup>rd</sup> 2009. Site: Lucca. Star: M45 F (rising).



# Bouguer line with dust in the sky: B band

Determining  $K'_B$  with the method of Bouguer's line.

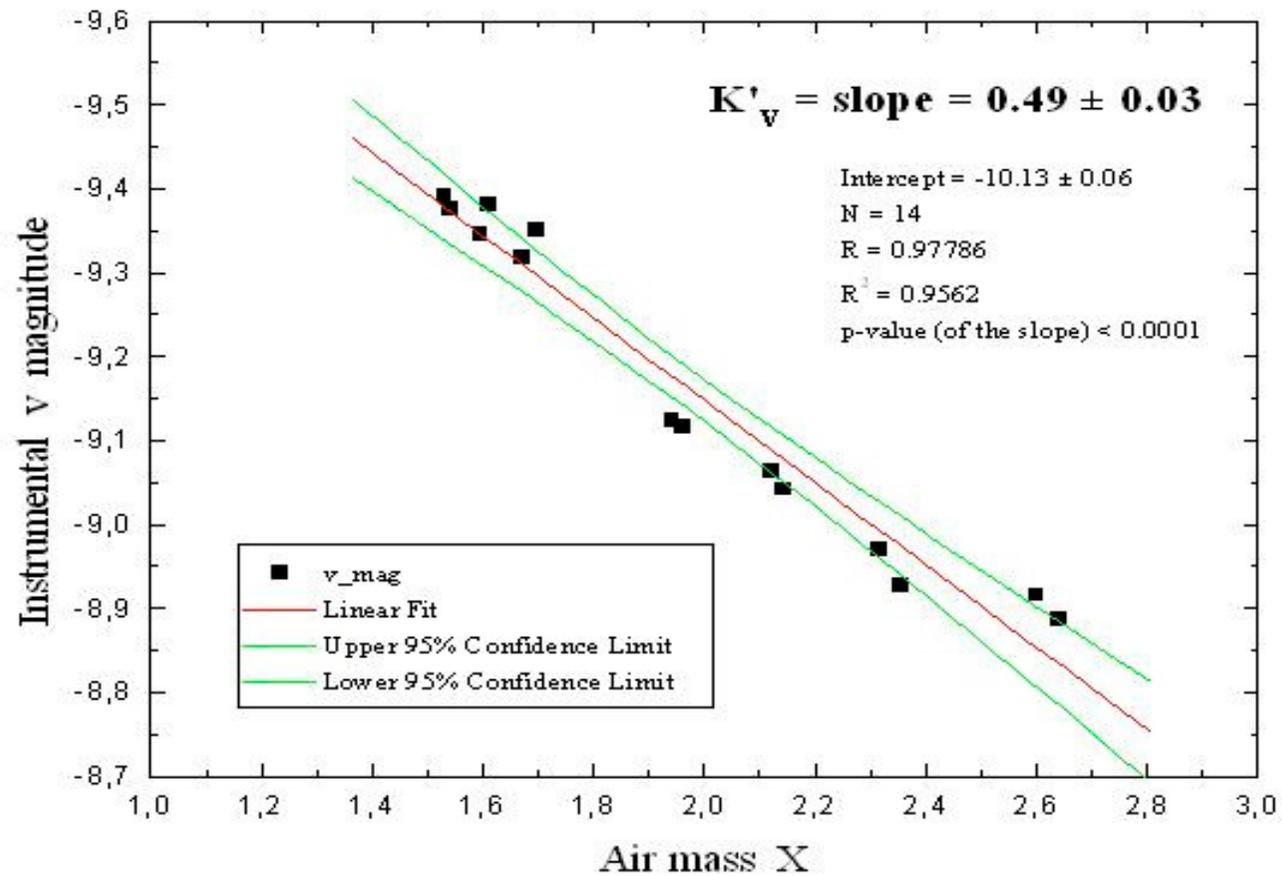
Band: B. Date: August 23<sup>rd</sup> 2009. Site: Lucca. Star: M45 F (rising).



# Bouguer line with dust in the sky: V band

Determining  $K'_v$  with the method of Bouguer's line.

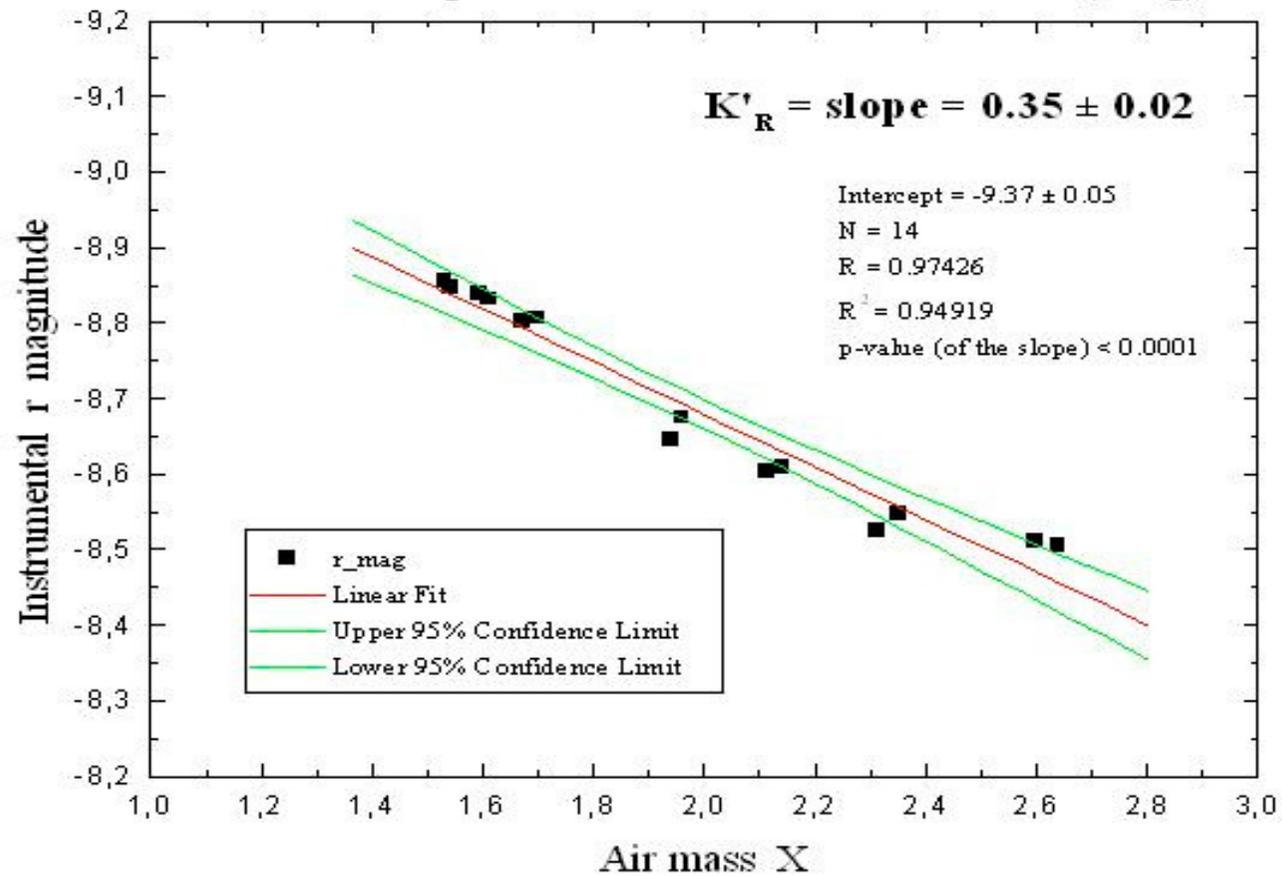
Band: V. Date: August 23<sup>rd</sup> 2009. Site: Lucca. Star: M45 F (rising).



# Bouguer line with dust in the sky: R band

Determining  $K'_R$  with the method of Bouguer's line.

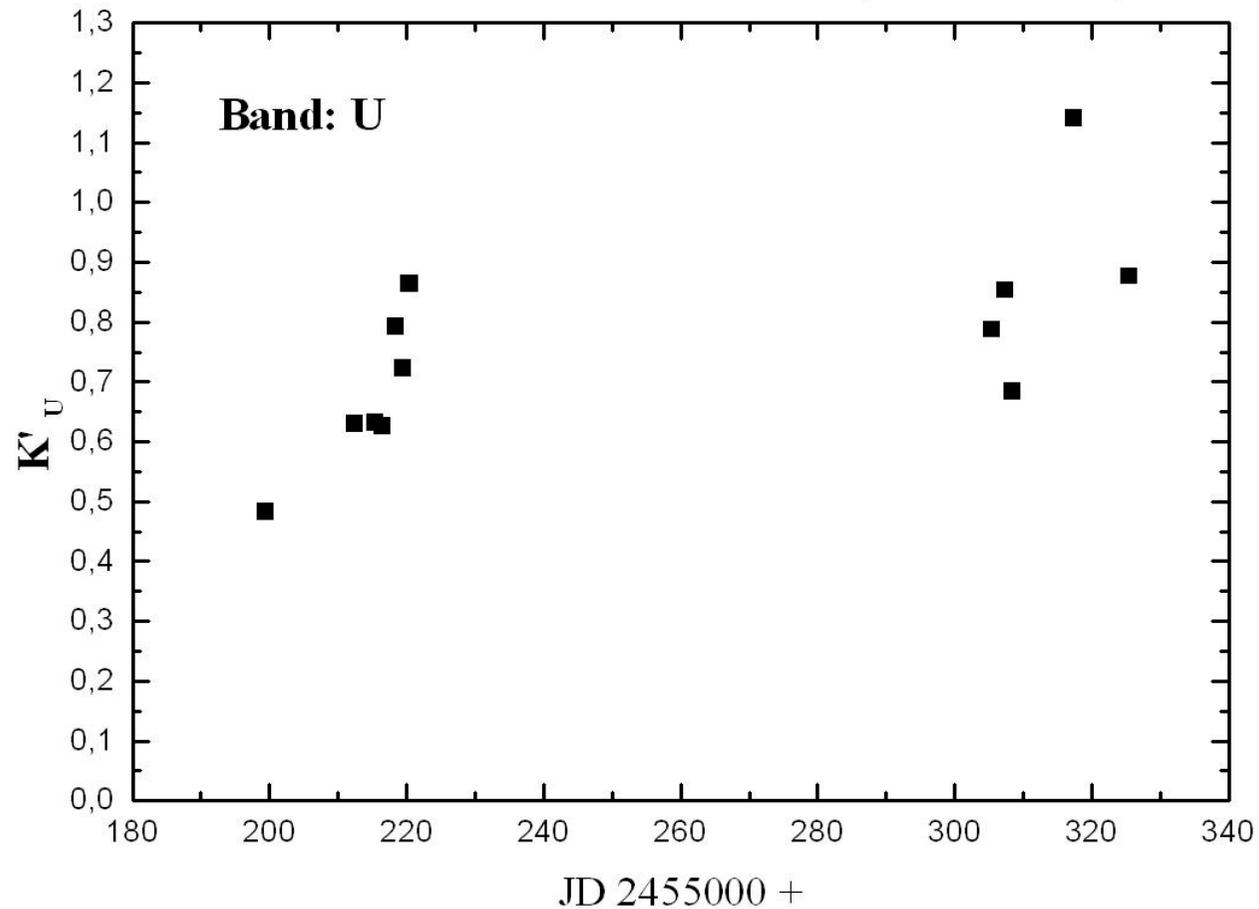
Band: R. Date: August 23<sup>rd</sup> 2009. Site: Lucca. Star: M45 F (rising).



# U band: time series of $K'$ in 2010

**Time series of  $K'_U$  from January 2<sup>nd</sup> to May 8<sup>th</sup> 2010**

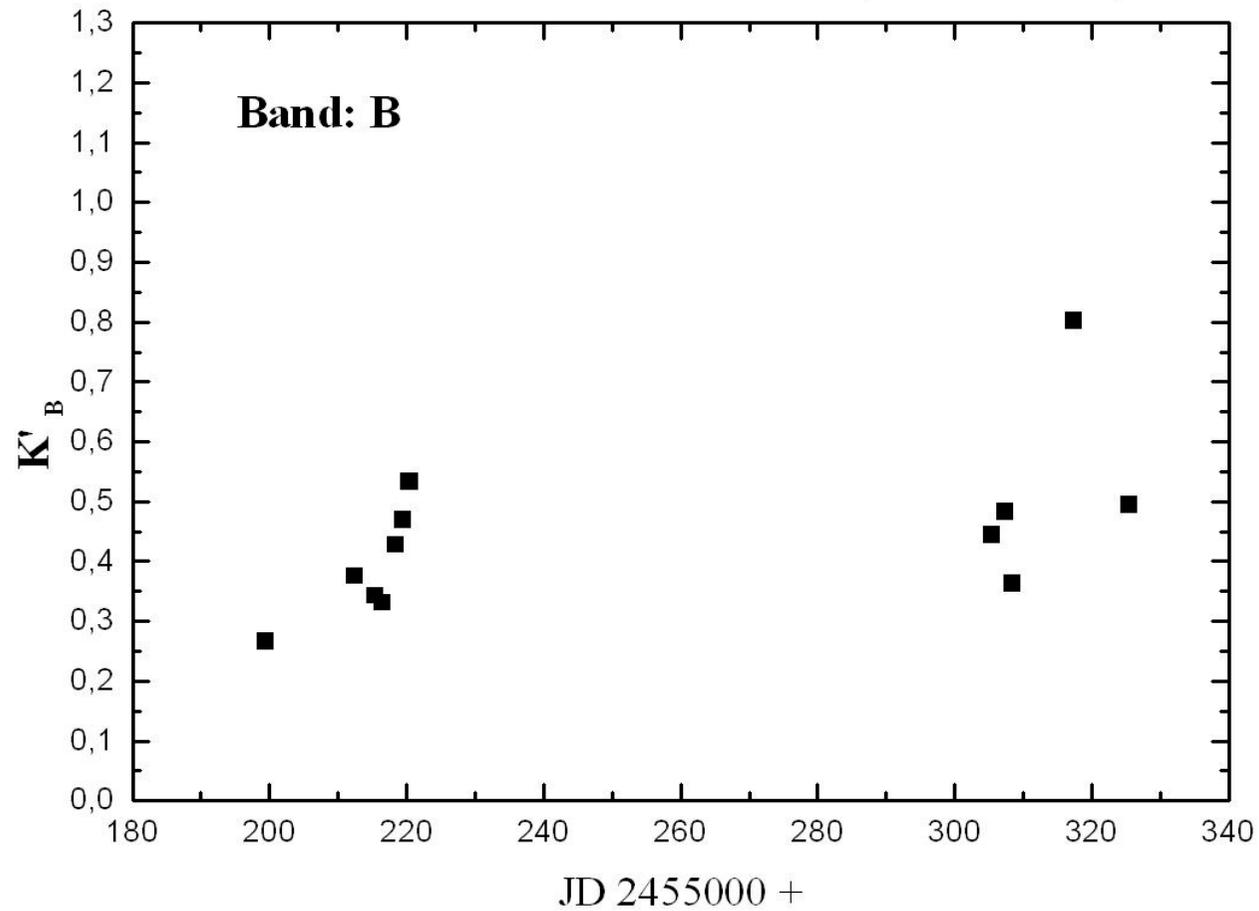
Site: Lucca. Instruments: OAC 0.30-m telescope and SSP-5A photometer



# B band: time series of $K'$ in 2010

**Time series of  $K'_B$  from January 2<sup>nd</sup> to May 8<sup>th</sup> 2010**

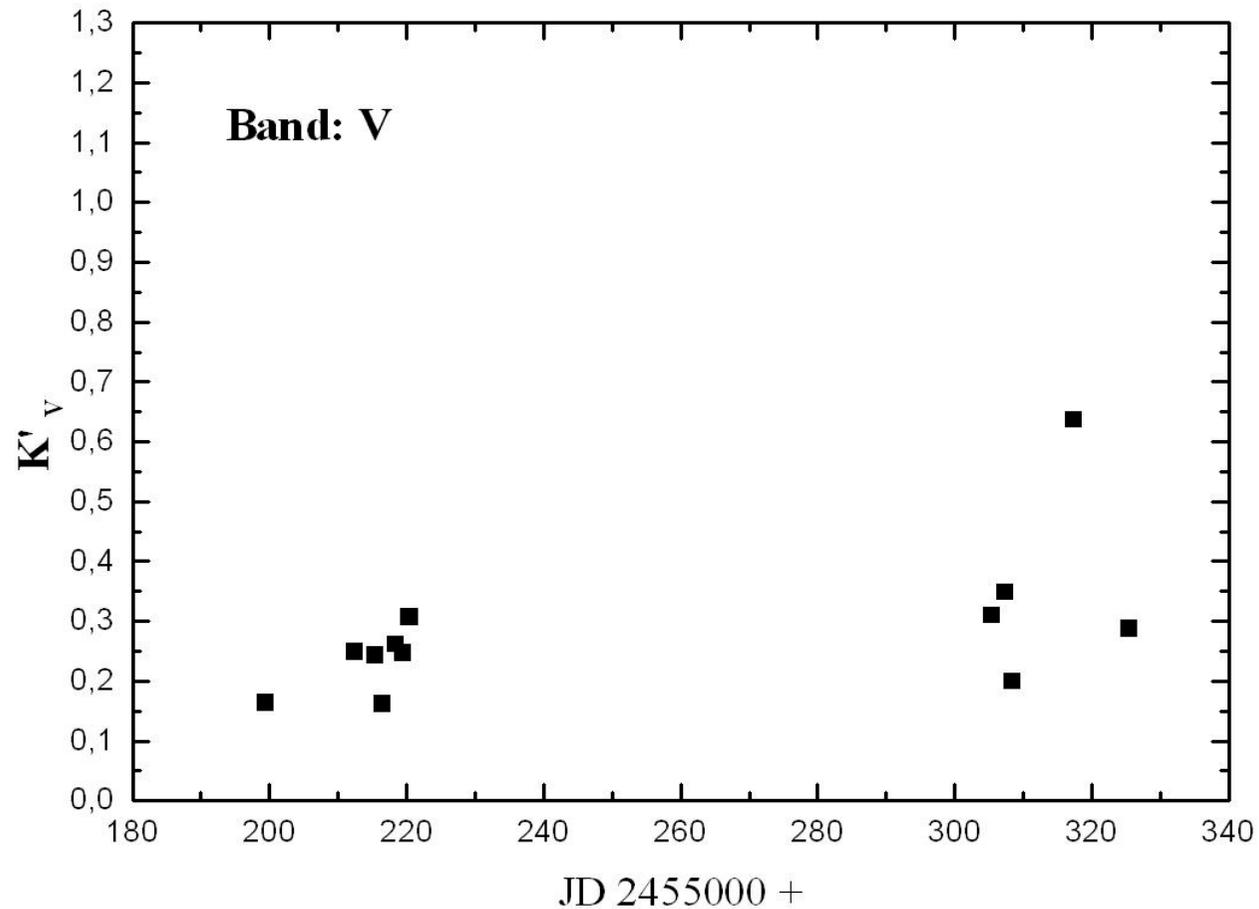
Site: Lucca. Instruments: OAC 0.30-m telescope and SSP-5A photometer



# V band: time series of $K'$ in 2010

Time series of  $K'_V$  from January 2<sup>nd</sup> to May 8<sup>th</sup> 2010

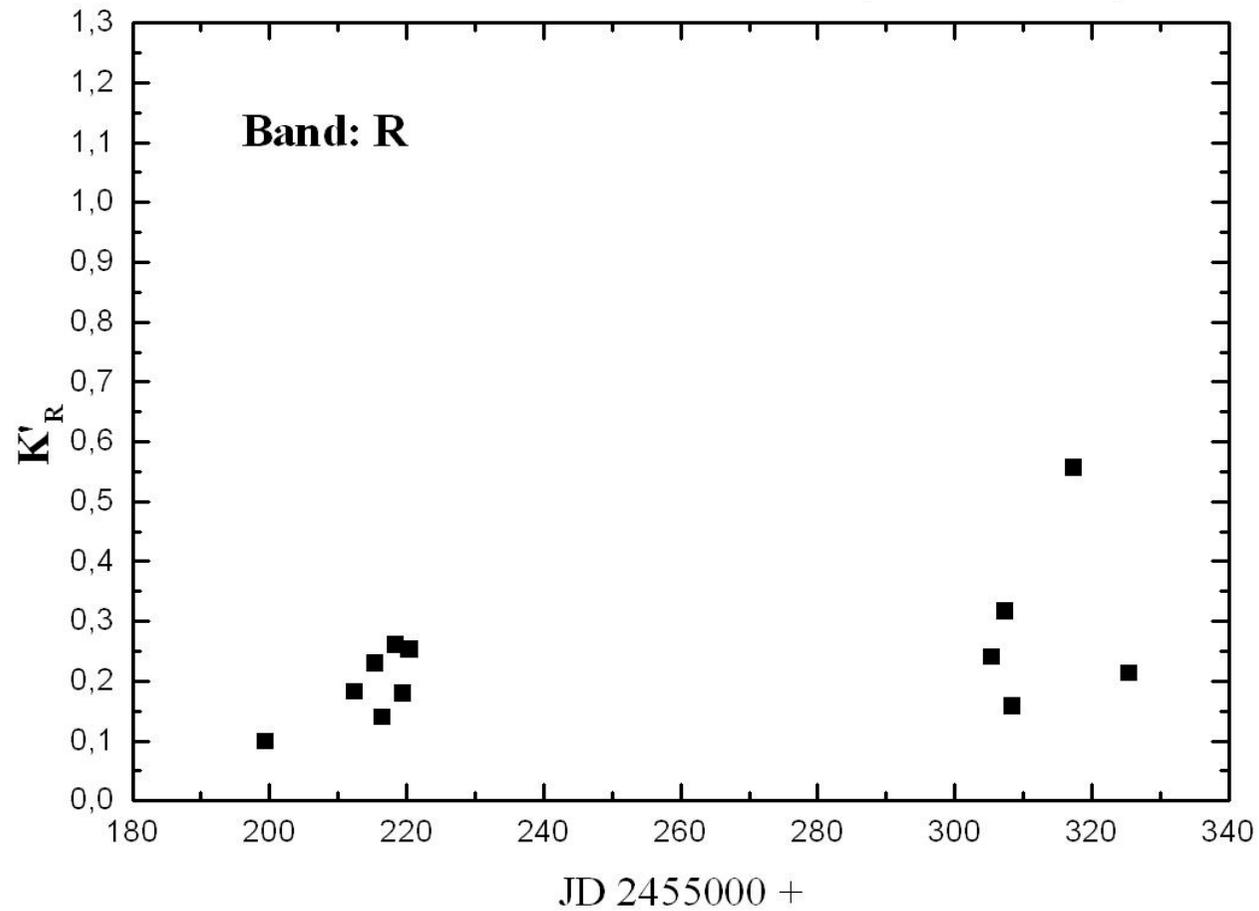
Site: Lucca. Instruments: OAC 0.30-m telescope and SSP-5A photometer



# R band: time series of $K'_R$ in 2010

**Time series of  $K'_R$  from January 2<sup>nd</sup> to May 8<sup>th</sup> 2010**

Site: Lucca. Instruments: OAC 0.30-m telescope and SSP-5A photometer



# Conclusions

- Since about 3 years OAC started a program for long term monitoring of first order atmospheric extinction coefficient  $K'$  in the UBVR photometric bands; until now we have performed measurements in 181 nights, obtaining valid results in 165 of them.
- From crossed checks with LIDAR data from IFAC-CNR of Sesto Fiorentino we found that  $K'$  measurements with Langley plots from OAC show very good correlations with LIDAR measurements.
- Particularly, OAC measurements show clear peaks in correspondence to saharian dust waves detected by IFAC-CNR LIDAR.
- About measurements performed from April to May 2010, in conjunction with the predicted volcanic dust waves from Iceland, we have not found any significant growth of  $K'$ , except of a feeble growth (close to the detection limit) on April 20th night; these findings are in excellent agreement with data from IFAC-CNR which showed detectable dusts only in two occasions in the above mentioned time range.