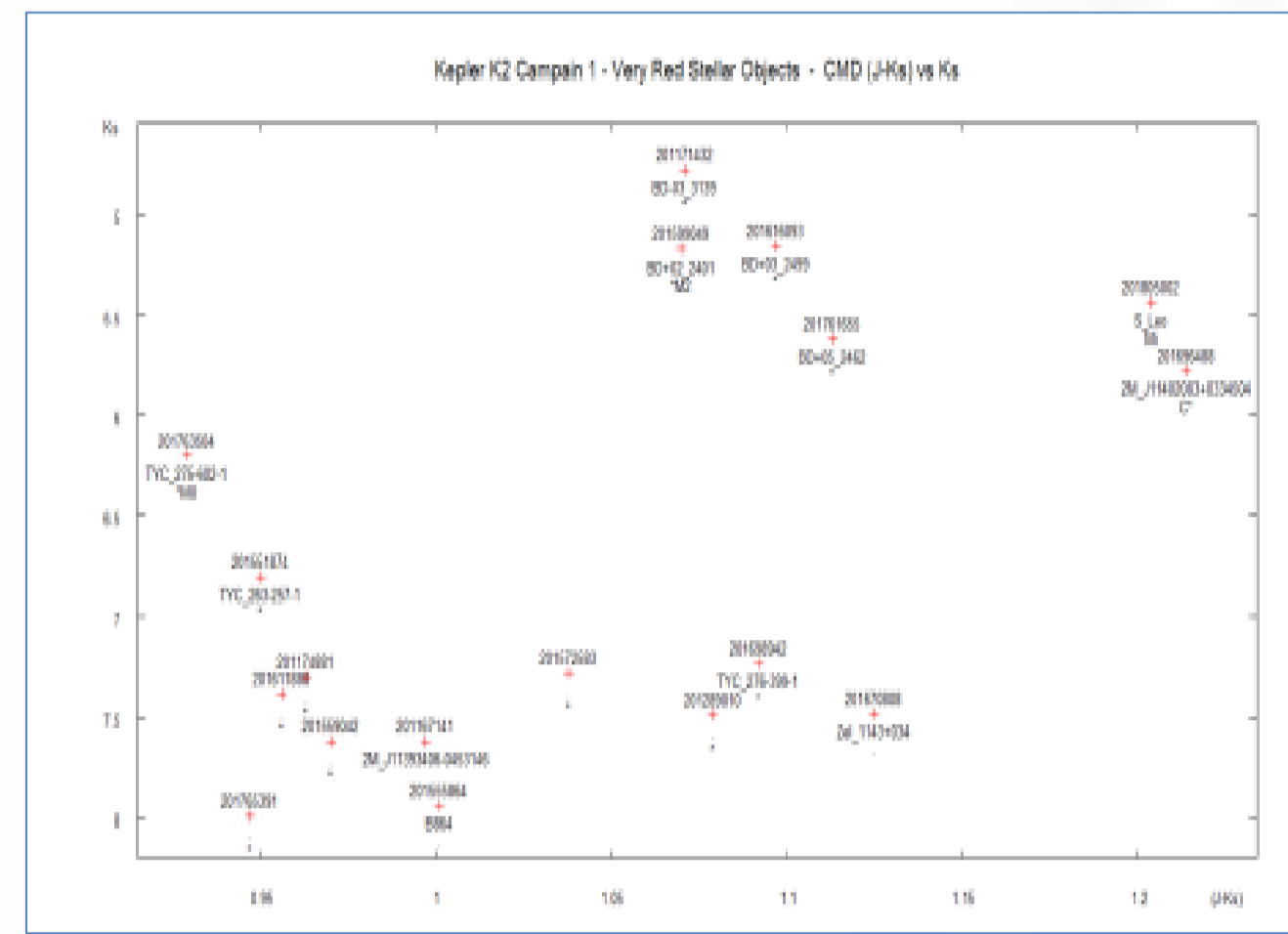


We present first results on our study of very red objects in the K2 campaigns.

The selection criteria were 2MASS colours $J-Ks$ greater than 0.8 and $Ks < 8.0$ mag plus the availability of basic information from Simbad, GSC 2.3, 2MASS, and AAVSO data bases to ensure we select stellar objects only. In particular, we were interested in **detecting highly reddened long period variables (LPVs)**. For the data preparation we adjusted our pipeline software (Hartig et al. 2014) to the K2 requirements.

Number of candidates

- C0 62 stars (9 observed)
- C1 68 stars (34 observed)
- C2 48 stars (41 observed)
- C3 35 stars (12 observed)

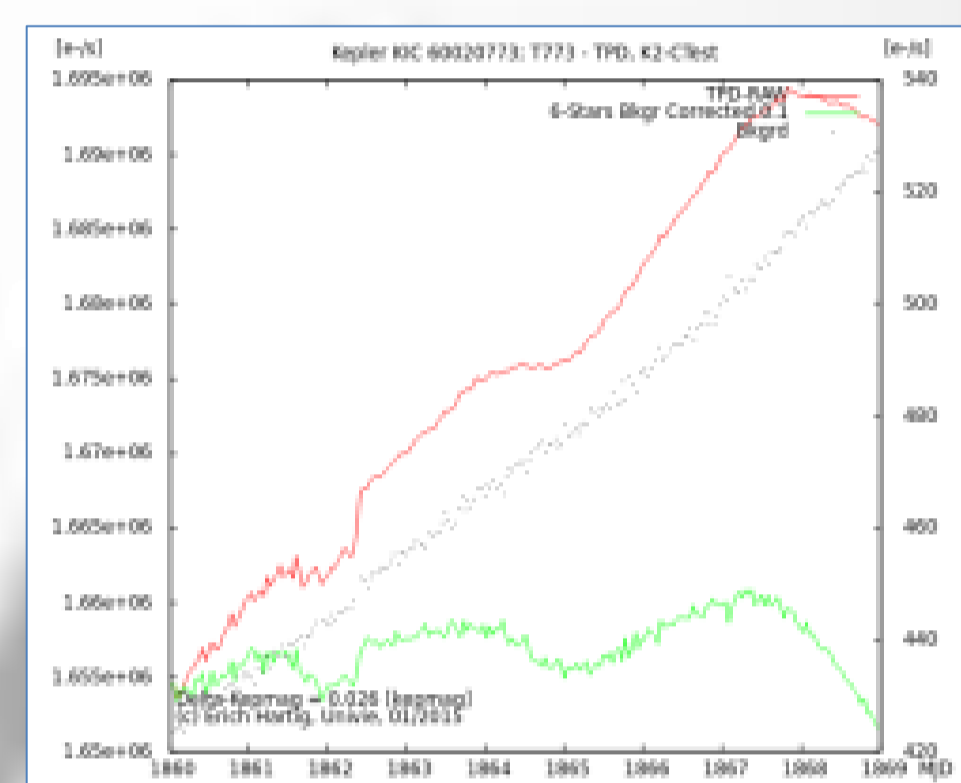


Background trend

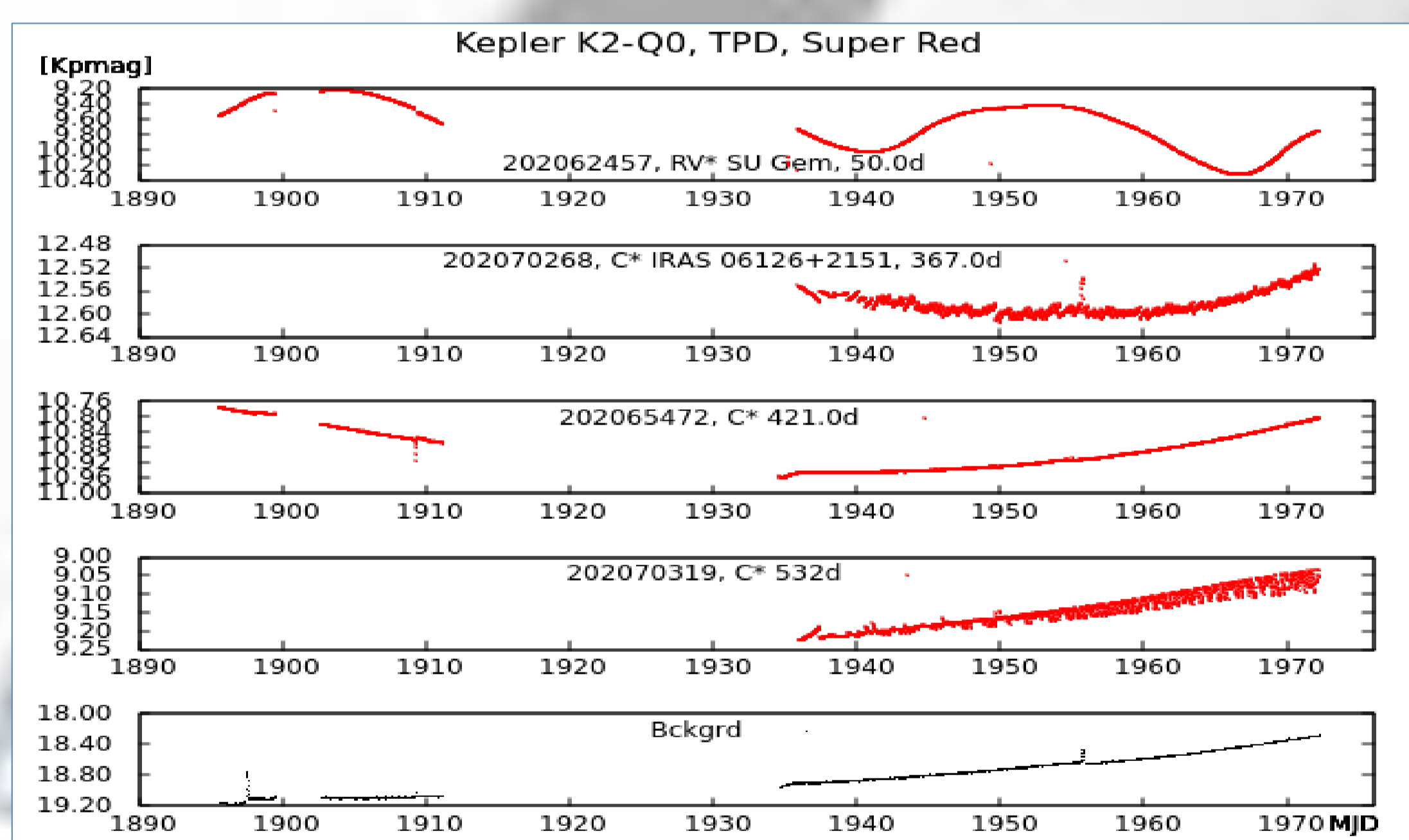
We observed an increase of the flux of a target over time, which follows approximately the background, calculated from pixels around the mask.

Strategies to remove this TPD trend:

1. by using the median of the background or
2. by using the average of 6 stars with small amplitude variations but showing the long time increasing trend (see the figure above).

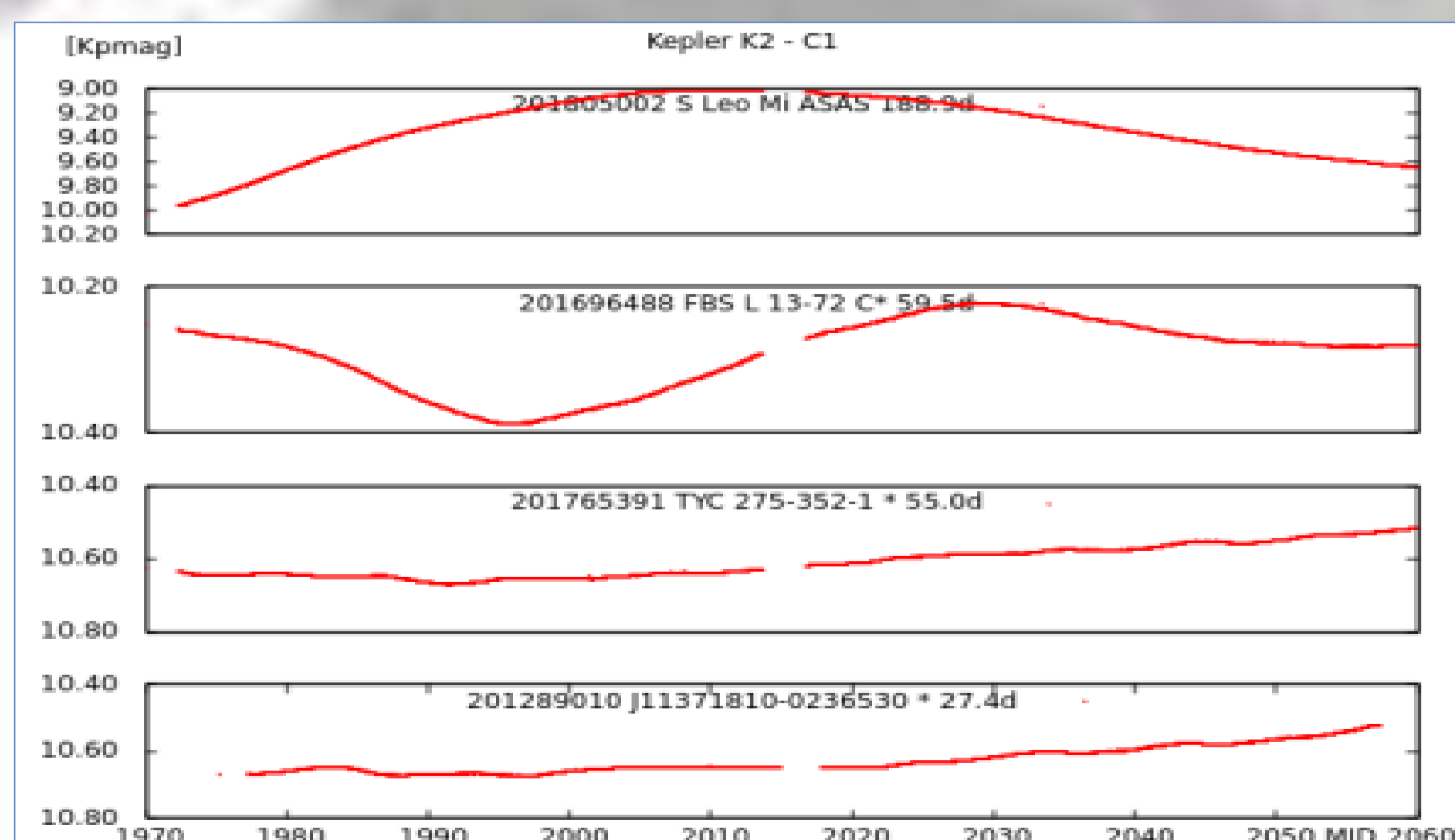


In the **K2 Campaign 0 (C0)** data we find a number of stars which again show an increase of brightness by about 0.5 Kepmag, following approximately the increase of the background. The light curve of C-star 202070319 and the background are shown for comparison reasons.

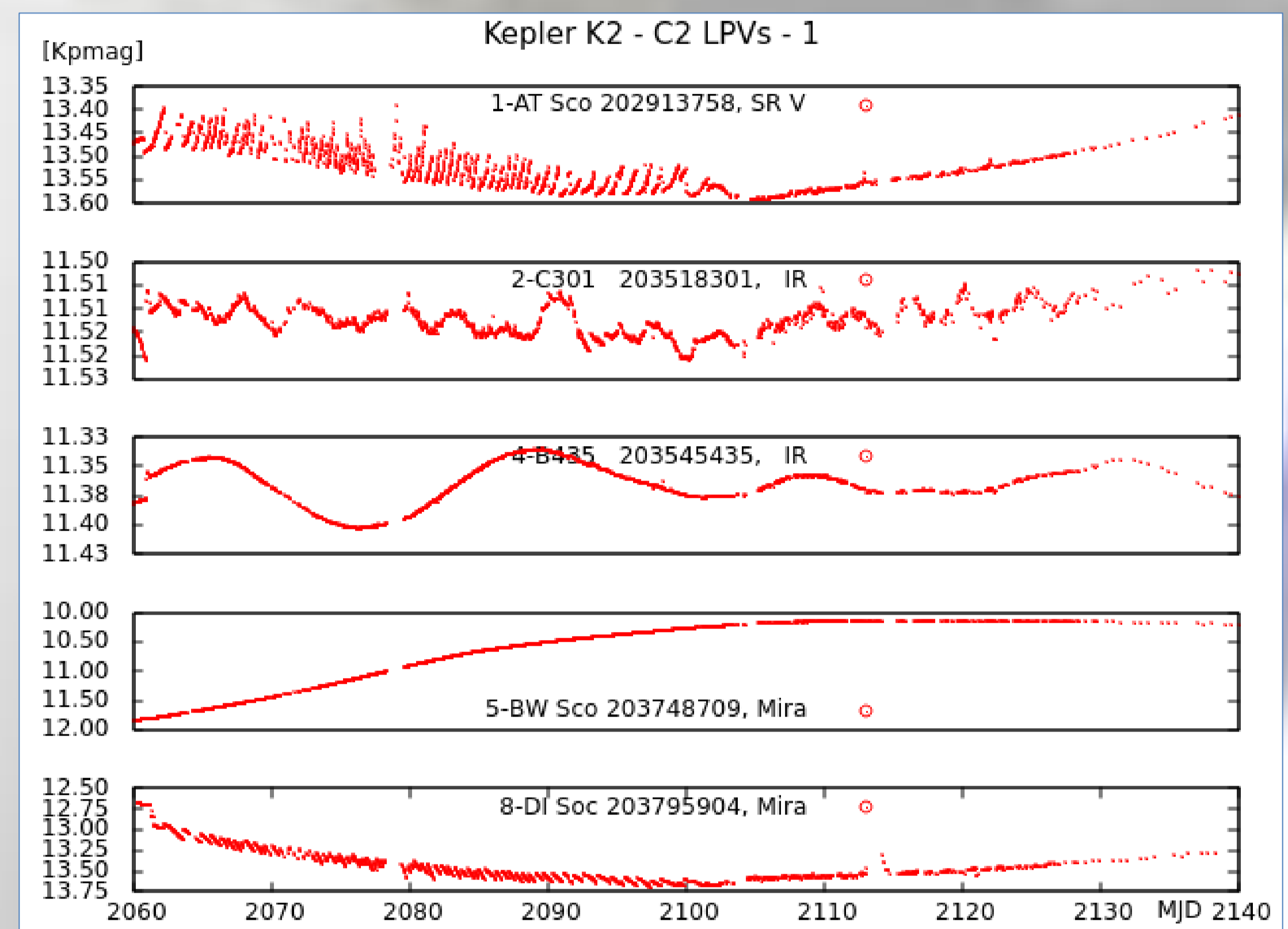


Application to our data

Applying a correction to the **K2-C1** data removing this trend using the average of six similar stars we could find two LPVs.

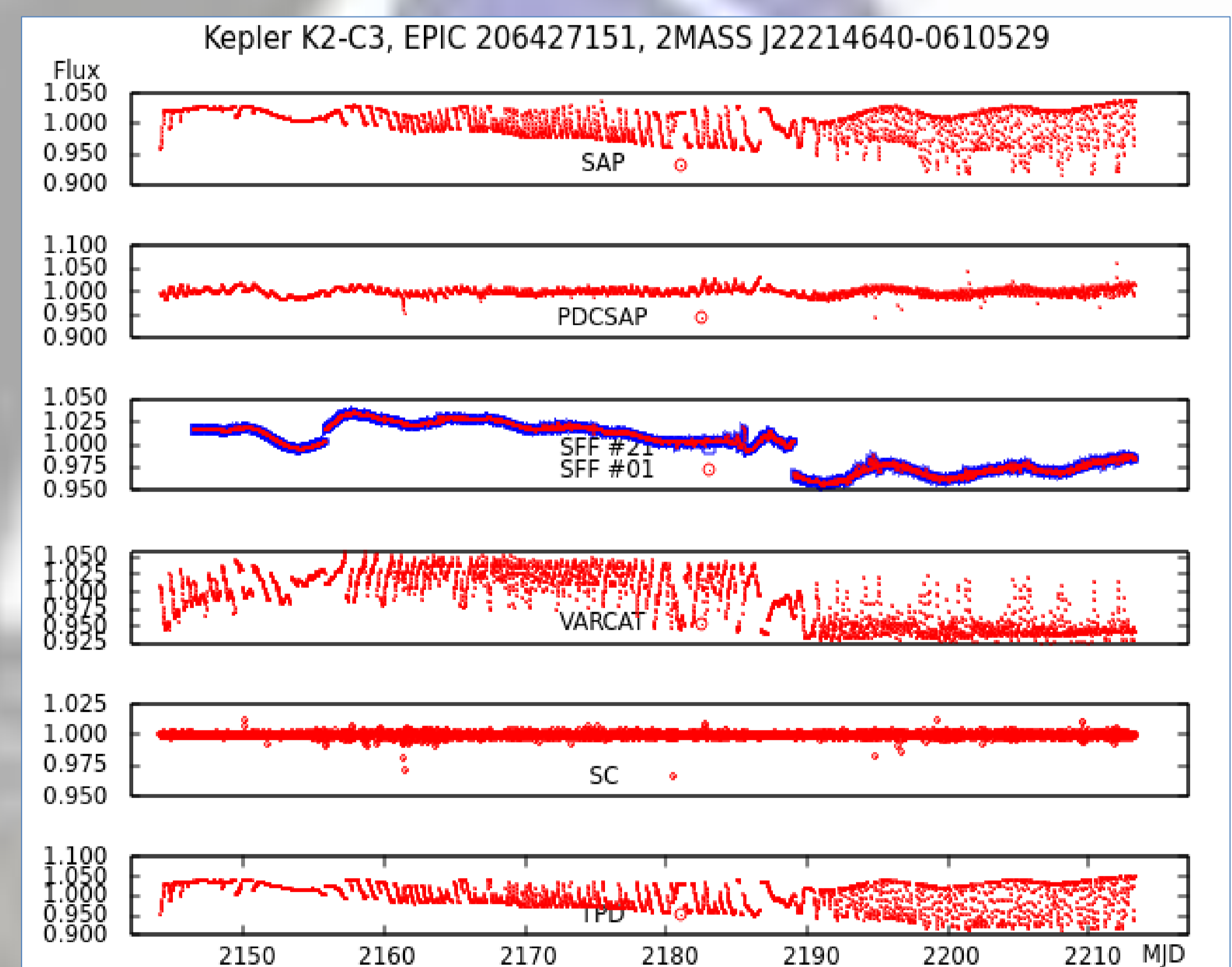


In **K2-C2** the long-time disturbance of LPV objects still exists and had been corrected like in K2-C1. Same LCs using the own TPD analyses are shown here



K2SFF - A new hope?

For **K2-C3** we compare the new 'High Level Science Products' and found that **K2SFF** reproduces LPVs usually best. Only in few cases we observe an amplitude jump at MJD 2189.052, see e.g. EPIC 206427151, below. The long-time trend of increasing brightness is not visible here.



We noticed that stars with magnitudes < 8.5 Kepmag typically show elongated pixel formats. Our software allows the specific selection of pixel masks, which gives good results but fails in the sample above. We will therefore continue all further analysis with **K2SFF** and our own software package.

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