

Equal Contrast Technique (ECT)

August 23, 2023 • vajiramandravi.com



Key points:

- It is known that there are large numbers of regions of **weak magnetic field on the sun** which vary with time.
- These can be studied using **magnetograms and Ca-K line images** of the sun as there is strong correlation between the magnetic field and the Ca-K line intensity of the region on the sun.
- The magneto-grams are available for a short period and the characteristics of the instrument are changing with time.
- Ca-K line images are available for a long period at Kodaikanal observatory (KO), for more than 100 years with no change in the optics of the instrument.
- Similarly, other observatories in the world, such as **Mount Wilson Observatory (MWO)** have had this type of data for about 70 years.
- Using the data obtained at Kodaikanal observatory the scientists have shown that correlation between derived plage area (bright region in the sun's chromosphere) from the Ca-K images and sunspot number is excellent, even on a daily basis, over a period of about 100 years for the first time.

- **Significance:**

- This type of accurate analysis of the historic time series of Ca-K images can be useful for **reliable and accurate investigation of variations on the sun** and the effect of **this on the climatic condition** of the earth.
- It helps in understanding the **dynamics of the sun, solar cycle variations, dynamo processes** in the convection zone and resulting long term climatic variations on the earth.

What is Magnetogram?

- It is an image taken by an instrument which can detect the **strength and location of the magnetic fields on the Sun.**
- In a magnetogram, gray areas indicate that there is no magnetic field, while black and white areas indicate regions where there is a strong magnetic field.

Q1) What is sunspot?

A sunspot is a temporary, relatively dark area on the Sun's surface caused by intense magnetic activity. These spots are cooler and less luminous than the surrounding solar surface due to the strong magnetic fields inhibiting the convective flow of hot gases from below. Sunspots are a common feature of the Sun's photosphere.

Source: [New methodology developed can give accurate analysis of the historic time series of images of Sun](#)

Source: <https://vajiramandravi.com/current-affairs/equal-contrast-technique-ect/>

© Vajiram & Ravi. For personal use only.