**Abstract**

The Sun is the prime source of energy in our solar system and sustains life on the Earth. Hence, it is important to study about the solar activities and their effects on the Geo-space weather conditions (satellite damages, radiation hazards for astronauts and polar flight passengers, outages of the power grids and electronics in the onboard instrument etc). In this presentation some basic concepts of solar activities (such as soft X-ray solar flares, Coronal Mass Ejections (CMEs), Prominences or filaments, solar Wind, Coronal holes etc) and their effects (Geomagnetic storms, solar energetic particles events (SEPs)) on the space weather conditions will be introduced in order to predict and forecast these events. Furthermore few important questions will be discussed: i) the generation of very high magnetic field (up to 3000 Gauss) in the sunspots; ii) how the charged particles are accelerated from few MeV to GeV; and iii) coronal heating problems up to $10^6$ K. But, we mainly focus on soft X-ray solar flares and CMEs and their associated activities, how these events are observed by various ground based and onboard instruments, how can be diagnose the potentially radiation hazards before it reaches Earth atmosphere and finally few important results will be discussed in this presentation.

_All are welcome_

Seminar Coordinators                              Head of the Department