

Variability of the Sun

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The Sun is a variable star. In addition to the evolution of its internal structure and the rotational velocity as a main sequence star, its magnetic activity changes with time scales from seconds to millennia. Accordingly, the solar influence on the terrestrial environment also changes. The temporal variation of the solar magnetic activity results in the variation of the electromagnetic radiation, the solar wind and the energetic particles. The variation of the energetic particles consists of the variation of the solar energetic particles, which positively correlates with the solar magnetic activity, and the variation of the galactic cosmic rays, which negatively correlates with the solar magnetic activity. In this presentation I will summarize the current understandings of the mechanisms and the terrestrial consequences of the solar variability in various time scales. Then I will introduce selected recent topics, such as the UV/EUV radiation of the abnormally quiet minima in the last solar cycle, and the investigation of the past solar activities recorded in the historical documents.

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