

ASSOCIATION OF X-RAY FLARES WITH SOLAR CORONAL ACTIVE REGIONS

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Summary. It is known that the flare component of solar X-ray emission is sensitive to the level of solar activity. The location of the X-ray flaring region is not directly known but can be inferred from the location of the associated H α flare. A detailed study of more than 4000 solar X-ray flares recorded by UI and the NRL detectors during past eight years has shown that 85% of these flares definitely occurred in the active regions. For the rest 15% no definite conclusion was possible because either H α flare data was not available or no H α flare was reported within ± 15 min of these X-ray flares.

An analysis of soft X-ray flares associated with three active regions, viz. McMath Regions 10607, 10618 and 11128, which occurred in February–March, 1970 and January, 1971, has led to the following conclusions:

- (i) X-ray flares generally occur in the active regions.
- (ii) The frequency of occurrence, intensity and the spectral hardness of the soft X-ray flare emission are related to solar activity level and are consistent with the index of activity derived by Sengupta (1971, 1974).
- (iii) Flare X-ray emission increases with the activity level and is maximum during the final phase of the growth. Flare emission declines markedly during the decay phase of the activity.
- (iv) Eruptive flares and hard X-ray bursts generally occur during the final phase of the growth.

References

- Sengupta, P. R.: 1971, 'A Study of Solar X-ray Emission and its Effect on the Earth's Ionosphere', D.Sc. Thesis, Department of Electronics, I.I.T., Kharagpur, India.
Sengupta, P. R.: 1974, *Space Res.* **14**, 461.