

# THE COORDINATION OF GROUND-BASED AND SPACE OBSERVATIONS: SUMMARY

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We briefly summarize the main contents of the papers presented by the contributors to the present Joint Discussion. Partly the remarks refer to the spacecraft payload, partly they aim at improving the ground observing facilities.

## 1. Space Observations

Both for the quiet Sun and for the active region it is clear that space observations are limited in their angular resolution. Facilities like those presented by the Apollo Telescope Mount should be used for observations of solar fine structures both in the visible and in the ultraviolet spectral regions: the observation of granules, their origin and evolution; the observations of flares and the correlation with ground-made magnetograms; the observations of the various structures visible in H $\alpha$  filtergrams..., all these structures should eventually be observed with the highest possible resolution from space observatories (Kiepenheuer, Sevrny).

The need for simultaneous observations of X-ray heliograms during the occurrence of solar flares, surges and sprays has been stressed by various observers. These X-ray heliograms should be obtained with the highest resolution possible. Because of the limited photon flux this resolution can perhaps in no case be comparable to that obtainable in the visible and near ultraviolet region (Öhman, Fazio, De Jager).

Our understanding of solar flares could be greatly improved when flare spectra could be obtained in the Lyman series and in the Lyman continuum (Sevrny).

Also the study of detailed line profiles in the region between 1 and 10 Å may shed light on the question: what is the state of the high-energy flare plasma, is the observed broadening of the lines near 1–3 Å due to non-thermal effects and to an important amount of turbulent motions? (Neupert).

The necessity of obtaining complete spectral observations of flare-associated emissions in the whole spectral region between 0.1 and 1000 keV is also manifest for a detailed study of the mechanisms of electron acceleration in connection with flares, and the subsequent decay of the high-energy flare plasma (De Jager).

*Perek (ed.), Highlights of Astronomy, 547–548. © I.A.U.*

## 2. Ground-Based Observations

Ground-based observatories should look for the various high-energy phenomena like those called moustaches, points or Ellerman bombs in their relation to solar X-ray bursts. Is the source for the X-rays to be found in the fine structure of the active region, or is it the same area that is responsible for the emission of the optical flare? (Severny).

Plans were described for extensive ground-based observations coordinated with OSO observations: spectroheliograms should be obtained in  $H\alpha$ , the K line of  $Ca II$ , and in other spectral lines; means should be found to communicate between the participating observatories and the satellite (Reeves).

The relation between loop prominences and solar proton events was stressed (Jefferies, Fazio).

Most contributors stressed the importance of high-resolution magnetic-field observations and their variation with time.

Others also mentioned the need for high-resolution microwave spectroheliograms, as well as for detailed radiospectra of flares in the microwave region (De Jager).