Successful recording of different types of whistlers as also the VLF hiss at a low latitude ground station at Srinagar (geomag. lat., 24°10'N) is presented. It is suggested that the possible mechanism for the generation of the observed VLF hiss may be the Cerenkov radiation process from low energy electrons. An analysis of the different types of whistlers recorded during Jan.-June 1980 shows that their rate of occurrence peaks during the period March-May have the maximum rate (1 whistler/min) in the post-midnight hours. The recording of an event in which the riser whistler is followed after 1.07 sec by a normal whistler of large dispersion is also reported.

The recording of whistlers by ground-based measurements at low latitudes was reported for the first time by two Japanese workers¹. A research group from Banaras Hindu University, Varanasi, succeeded in obtaining useful records of whistlers at Gulmarg² (geomag. lat., 24°10'N). The recording of whistler waves was later extended by the same group to another low latitude station, Nainital (geomag. lat., 19°1'N), where whistlers of lower dispersion were recorded³⁵. They also found that the frequency of occurrence at Nainital was markedly less than that at Gulmarg. Singh et al.⁶ have reported the recording of whistler energy at Varanasi (geomag. lat., 15°6'N) which previously was supposed to lie in what was then believed to be low latitude cut-off range for whistler waves. Gulmarg, being a high altitude station (2631.34 m), remains snow-bound during December-March so that the conditions for continuous recording of whistlers over a long period of time are not easy. We, therefore, attempted to record whistler energy at Srinagar (geomag. lat., 24°10'N; altitude 1584.96 m), where there are facilities for the continuous recording in all seasons so as to make an in-depth study of rare magnetospheric phenomenon using whistlers as diagnostic tool.

Whistlers were received with a T-type antenna and after suitably amplifying the input signals with a transistorized preamplifier and the main amplifier, were fed to a tape recorder where the signals were recorded on magnetic tape. The recorded audio frequency signals were converted into frequency-time graph (Fig. 1) on a sonograph machine.

Whistler recordings at Srinagar station during the period Jan.-June 1980 showed maximum rate of occurrence (1 whistler/min) during the months March-May and was found to peak in the post-midnight hours. Fig. 1(a) depicts a single trace of a short whistler with a dispersion of 18 sec² whereas Fig. 1(b) shows multiflash whistlers all having the same dispersion of 22 sec². We have not yet been able to record multipath whistler traces at this station. Fig. 1(c) shows a whistler trace with large dispersion of 53 sec². Fig. 1(d) shows an interesting event in which a riser whistler is followed by a normal whistler with a large dispersion of 54 sec². The time delay between the events is 1.07 sec. The possibility of error due to some fault in the recording equipment is eliminated because this particular event was preceded and followed by recording of short whistlers with a dispersion typical of our low latitude station. The riser whistler depicted in Fig. 1(d) is confined to the frequency range 5.5-8 kHz, whereas the risers reported earlier from observations taken from Gulmarg were confined to the frequency range 2-6 kHz. We strongly feel that the event in Fig. 1(d) could

![Fig. 1—Sonograms of whistlers recorded at Srinagar during: (a) 12 May 1980, 2245 hrs IST; (b) 12 May 1980, 2220 hrs IST; (c) 7 May 1980, 2215 hrs IST; and (d) 7 May 1980, 2210 hrs IST](image-url)
However, recording of chorus emissions has recently been reported by Singh\textsuperscript{10} from low latency ground-based station at Agra (geomag. lat., 17°12'N). The band-width of the recorded VLF hiss is in the range of 5-7 kHz, a narrow band indeed, and is the characteristic of the low latitude VLF hiss reported from other stations. This is in sharp contrast to the auroral hiss which is generally having a broad band extending from a few kHz to 0.5 MHz.

The VLF hiss reported here has been recorded during quiet time on 24 Mar. 1980 when the sum of $K_p$ indices was 9 only. The essential features of the VLF hiss recorded during the period 1805-1825 hrs IST and reproduced in four sonograms in Fig. 2 are the same. The possible source mechanism of the VLF hiss observed at the low latitude station, Srinagar, may be Cerenkov radiation process from low energy electrons as suggested by Ramprakash \textit{et al.}\textsuperscript{11}.

In all the sonograms presented here, the level of background noise is high which is being corrected for future recordings by effecting suitable changes in our recording equipments including the amplifiers.

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\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{Sonograms of VLF hiss recorded at Srinagar during 24 Mar. 1980 at: (a) 1805 hrs IST; (b) 1807 hrs IST; (c) 1808 hrs IST; and (d) 1825 hrs IST.}
\end{figure}

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