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F Region Oscillations Observed during October 24, 1995 Solai Eclipse at Waltair

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Abstract

Measurement of changes in phase path/Doppler of HF signals on 5 5 MHz from F iegion of the ionosphere is carried out using coherent pulsed Doppler radar Preliminary analysis of the data show large deviations in phase path centered around the time of maximum phase of the eclipse on the eclipse day when compared to the control days These deviations in phase path exhibit a long period oscillatory pattern comparable to the duration of the eclipse with the maximum amplitude during the eclipse interval The same is severely damped during post eclipse intervals Enveloped with this long period damped oscillation a systematic short period oscillatory pattern is observed in phase path after the last contact The periodicities of these short period components are of the order of atmospheric gravity waves with pronounced periods of about 12 minutes followed by 17 and 30 minutes, immediately after the last contact

The temporal behaviour of this oscillatory pattern shows a dispersive decay in amplitude The nature of occurrence of these oscillations alongwith their enhanced amplitude when compared to the same during those of the control days can suggest to be eclipse induced phenomenon The details of the observed features of these oscillations are discussed in the light of the eclipse induced atmospheiic gravity wave effects in the F-iegion of the ionosphere