

### JPVM 1949 letter to Appleton on Travelling Ionosphere Disturbances

Just before the War George Munro in collaboration with Arthur Higgs at Mt Stromlo noticed that some ionospheric disturbances occurred more frequently than solar flares and that there was an appreciable time lag between their appearance over Sydney & Canberra and this was the basis of Munro's post war work.

The title of Munro's published paper in the Roy Soc in 1950 was "Travelling Disturbances of the Ionosphere" which JPVM described as a new field of investigation of the ionosphere which needed examination on a world wide basis. The term TIDS being credited to Munro.

Over 9 years up to 1957 Munro used a single frequency (5.8 mc/s) on a daily basis at 3 stations (Sydney University Elec Eng, Camden & Blaxland) to identify the characteristics of the TIDS waves in the F-region of the ionosphere and found that they travelled at 5-10 km/min lasting from 10-60 minutes. Munro found that the average number of disturbances per day was 6, but there were abrupt seasonal changes and that the direction of the apparent horizontal movements in Europe were predominantly East to West which was the reverse of the direction in Australia. Munro found that the source of these TIDS is of terrestrial origin and not caused by solar disturbances.

TIDS signatures and models are of particular interest to JORN radar and an operating frequency of 8 MHz has been tried.