Thunderstorm accompanied with squalls over Agartala for consecutive two days on 30 April and 1 May, 2012

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ABSTRACT. Thunderstorm is an important severe weather phenomena and is observed all over the world. Its impact is being felt by all the sectors of society including aviation services. In India, the hazard due to the thunderstorm is primarily concentrated over northeastern states and east India. In present study two cases of severe thunderstorms accompanied with squalls occurred at Agartala on consecutive days of 30 April and 1 May, 2012 have been discussed in detail. In both squall events, maximum wind speed 40 kts have been observed with duration of about 2 minutes. Wind maxima at 150 hPa and trough in mid-tropospheric level westeries play an important role in formation and development of severe thunderstorms over parts of northeastern states and Bangladesh. Convective cells on 29 & 30 April, 2012 developed over east Bangladesh in the afternoon and moved eastwards, caused thunderstorms and squalls in the morning hours of 30 April and 1 May over Agartala. Convective cell formed over central Bangladesh on 29 April, has been seen in satellite imageries as well as in radar imageries of Agartala till squall happens on 30 April. The cloud top temperature (CTT) of convective cells over northwest Tripura; another over north Myanmar & adjoining Tripura were observed -55 °C and -60 °C respectively in the morning of 30 April, 2012. Another cell developed in the evening of 30 April over eastern parts of Bangladesh and continued to move over Agartala till squall occurred in the morning of 1 May. The CTT over Tripura and neighbourhood was observed -60 °C on 1 May. Maximum reflectivity of 42-46 and 50-54 dBZ were reported in the morning hours of 30 April and 1 May by Doppler Weather Radar Agartala. The pre-thunderstorm environment has also been studied with the help of stability indices calculated from Agartala T-φ gram. Out of 12 indices 8 (about 60%) were favourable at 1200 UTC of 29 April and 7 (about 53.7%) at 0000 UTC of 30 April and 0000 UTC on 1 May. Synoptic conditions and stability indices values have suggested the occurrence of severe thunderstorms over Agartala region.

Key words – Synoptic conditions, Thunderstorms, Squall and convective cells, Stability indices.