Micro-climatic study and trend analysis of fog characteristics at IGI airport New Delhi using hourly data (1981-2005)

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ABSTRACT. Indira Gandhi International (IGI) airport, New Delhi where near about 675 flights on an average depart and arrive daily, is highly susceptible to dense fog occurrences during the winter season. In the present paper, an attempt has been made for development of an intensity based fog climatological information system for December and January based on hourly visibility data of 25-years (1981-2005) recorded at IGI airport. Variations and trends if any were also analyzed along with their extreme years and dates of occurrences. Data since 1964 were also used to find climatic jumps in the trend which includes various higher visibilities of no fog conditions. Besides various vital fog climatological information generated through the present study for use in aviation, the most important finding is the alarming increasing trend of the dense fog (< 200m) occurrences in both the months up to as high as 10-20 times from 1960s in contrast to unusual drastic reduction of higher visibility hours to as low as one thirtieth to one fiftieth of hours which were observed in 1960s. Thus, finally making IGI airport, a unique airport in the world which hardly experiences good visibility conditions (>
5000m) in both the months. By considering the unexpected huge annual growth of 30% in both air traffic and passengers that India including IGI has presently been experiencing against the global average of 6%, such visibility trend also confirms that present flight disruptions and passengers sufferings in winter will be aggravated more severely in days to come unless CAT-III ILS implemented fully. Finally, we have computed further number of consecutive hours, spell periodicity, most favorable climatological timing of fog onset and fog dispersal based on various intensities for use in aviation and fog forecasting.

Key words – Fog, Intensity, Extremes, Trends, Consecutive hours, Onset, Dispersals.