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Short Communication

Fog and dew analysis over Hisar

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As the available water resources taken from streams, rivers and ground water will not be sufficient in most dry areas of the world to cover the needs of agriculture and urban areas, we have to reassess the value of certain methods of water harvesting from fog and dew, to find out their value to ease future water scarcity (Prinz and Singh 2000). Small and simple installations for the condensation of fog or dew can yield several litres of water per day (Acosta Baladon, 1995). Dew formation and evaporation has been a relatively neglected topic in both desert meteorology and in arid ecosystem research (Berkowicz *et al.*, 2001). Recent findings on dew deposition on plant water relations and diurnal variations of photosynthesis in plants found that the leaves were able to absorb dew and thus restore plants water status (Munne-Bosch and Alegre, 1999). An attempt has been made here to study the dew and fog climatology in Hisar, a semi-arid region of India.

The Hisar region, representing the western agroclimatic zone of Haryana, India is situated in sub-tropics with semi-arid climate (Latitude 29°10' N, Longitude 75°46'E, Altitude 215.2 m amsl). It is generally very hot in summers and remarkably cold in winters. High temperatures of 45°C magnitude are recorded during the month of May in most parts of the region, whereas, in winters the temperature goes down to –2 to –3°C for a few days. Most of the rainfall (75 to 80 %) is received in the SW monsoon season from June to September. Systematic weather records during the winter seasons (October to March) for the period 1980 to 2005 for Hisar have been considered for this study. The dew and fog data were recorded at the Agrometeorological Observatory at CCS Haryana Agricultural University, Hisar, India. The dew observations at 50 cm height were considered for study as more dew events were recorded at this height.

The highest foggy events (44) were recorded during 2002-03 and the lowest (2) during 1983-84 (Fig. 1). Interestingly, an increasing trend (1.3 day/season) in occurrence of fog events was seen. About 67 percent variation in fog events was explained during the time under investigation.

In a particular season, highest dew events (168) were observed during the

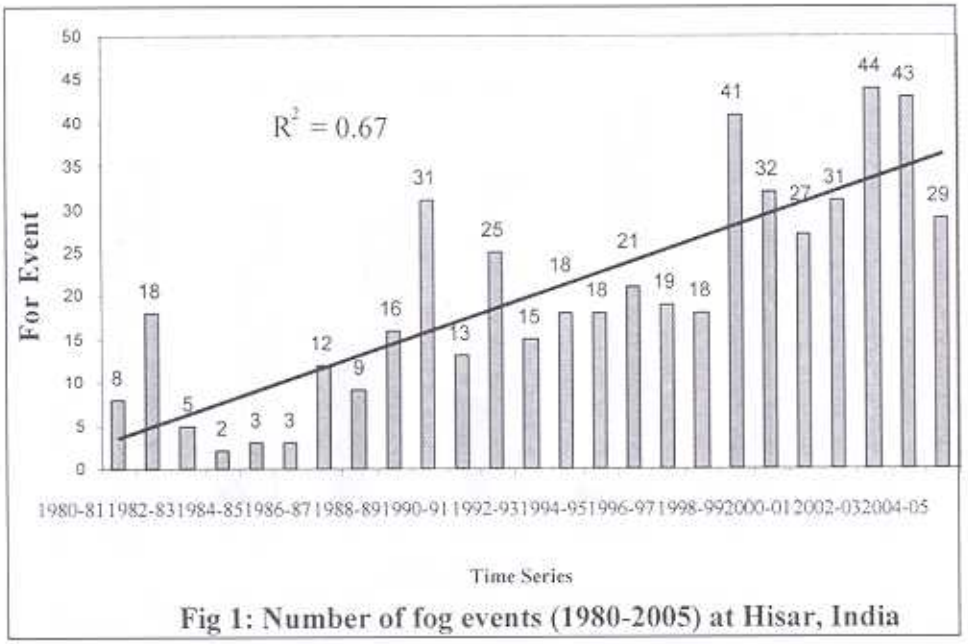

Fig 1: Number of fog events (1980-2005) at Hisar, India

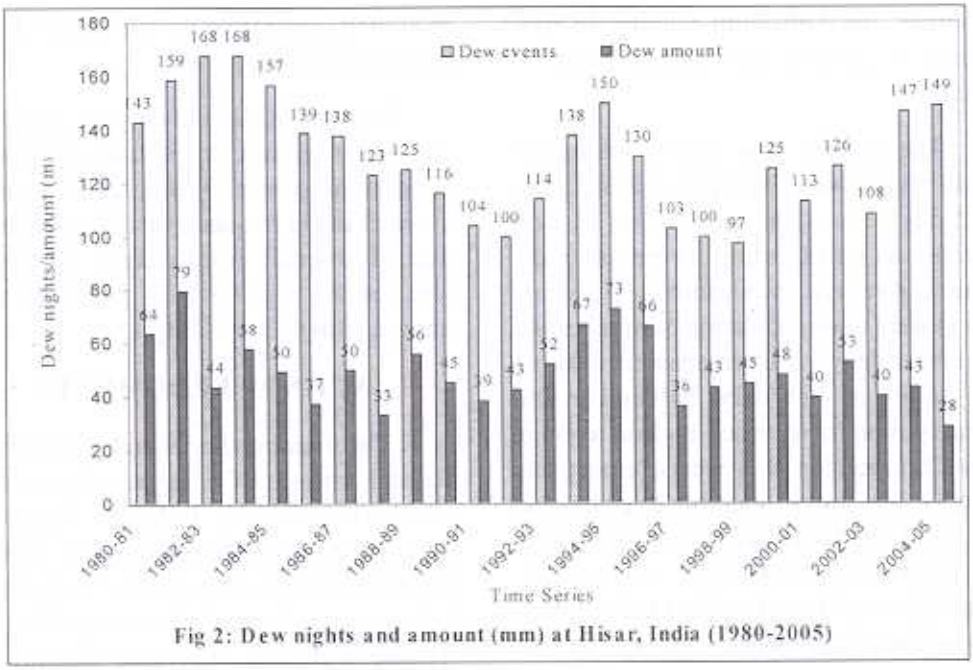

Fig 2: Dew nights and amount (mm) at Hisar, India (1980-2005)

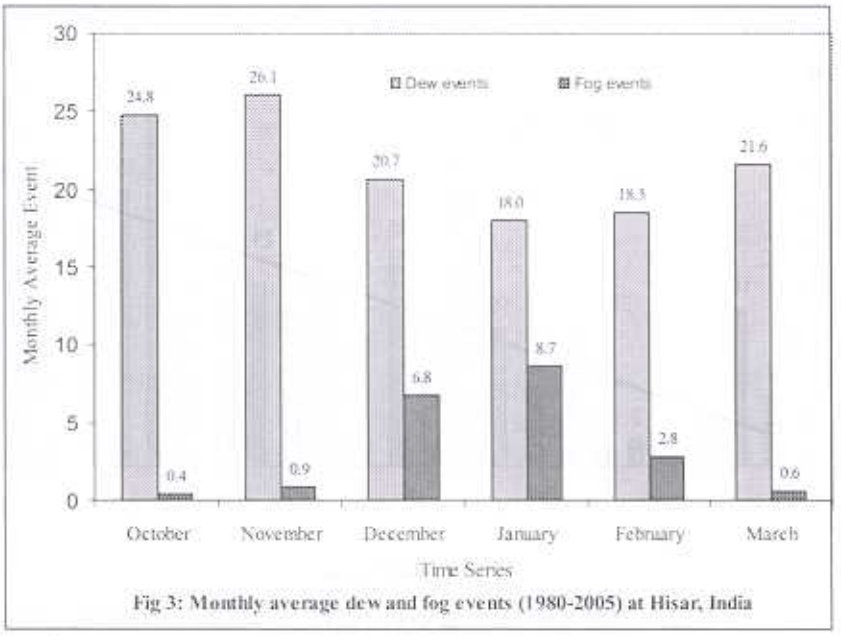

Fig 3: Monthly average dew and fog events (1980-2005) at Hisar, India

winter seasons in 1982-83 and 1983-84. Whereas, the minimum number of dew events (97) were reported in 1998-99 (Fig. 2).

The average dew events/season for study period was 130. A decreasing trend (2.2 day/season) in occurrence of dew events was noted during the period under report. Average maximum dew events (26.1) were observed during November and the lowest dew events were recorded during the month of February. November and January months recorded highest average dew (26.1) and fog (8.7) events, respectively (Fig.3). The lowest monthly average dew (18) and fog (0.4) events were recorded during January and October, respectively. The highest (79 mm) and lowest (33 mm) dew amount was received during 1981-82 and 1987-88, respectively. Also, the dew exhibited a linear decreasing trend 1.4 mm/season during the period.

Fog analysis based on satellite remote sensing using time series data is important because long term knowledge of regional changes in fog frequency and fog properties are of overall importance for GCM simulations dealing with global climate change (Singh *et al.*, 2001).

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