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EQUATORIAL PLASMA BUBBLES STUDIES USING AIRGLOW AND GPS DATA

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Simultaneous observations of OI630 nm and TEC were carried out using a CCD based All-Sky Imaging system, Photometer and GPS system at low latitude station Kolhapur (16.8°N, 74.2°E) to study the day-to-day variability in the occurrence of Equatorial Spread F (ESF) or Equatorial Plasma Bubble (EPB). GPS data of Bangalore (13.020N, 77.570E) IGS stations were analyzed for the period 2002-2013 to investigate response of Total Electron Content (TEC) and occurrences rate of EPBs in quiet and disturbed conditions. In the present data analysis work we have also discussed the trends in the occurrences of EPBs with solar activity in descending phase of solar cycle 23 and ascending phase of solar cycle 24.

BANGALORE-GPS DATA

Year	Total days	Total EPBs	% EPBs	Disturbed days	EPBs days	% EPBs	Quiet days	Total EPBs	% EPBs
2002	316	142	44.9367089	52	14	26.92307692	113	60	53.09735
2003	364	129	35.4395604	60	10	16.66666667	120	58	48.33333
2004	365	98	26.8493151	59	12	20.33898305	120	40	33.33333
2005	362	72	19.8895028	60	12	20	120	34	28.33333
2006	361	50	13.8504155	59	5	8.474576271	116	21	18.10345
2007	365	57	15.6164384	60	8	13.33333333	120	23	19.16667
2008	337	40	11.8694362	56	3	5.357142857	109	16	14.6789
2009	358	24	6.70391062	59	5	8.474576271	120	13	10.83333
2010	356	88	24.7191011	60	11	18.33333333	115	36	31.30435
2011	363	163	44.9035813	60	13	21.66666667	119	63	52.94118
2012	365	173	47.3972603	60	15	25	120	64	53.33333
2013	317	139	43.8485804	49	16	32.65306122	108	56	51.85185
Total	4229	1175	27.7843462	694	124	17.86743516	1400	484	34.57143

•Total days (2002-2013) = 4383

•Available data = 4229 i.e 96.48%

•% EPBs= 27.78%

•% EPBs in disturbed days= 17.86%

•% EPBs in Quiet days= 34.57%

Table 1: Bangalore GPS data Analysis for the period 2002 to 2013 to study the occurrence rate of EPBs