

SUPPLEMENTARY DATA

Table S1: Data availability for the thunderstorm days at Agartala (AG), Barapani (BG), Cherrapunjee (CP), Dhubri (DH), Guwahati (GW), Imphal (IM), Jorhat (JO), Lakhimpur (LA), Lengpuri (LE), Mohanbari (MO), Passighat (PA), Shillong (SH), Silchar (SI) and Tezpur (TE). Values indicates the monthly mean of thunderstorm days during pre-monsoon.

Year	AG	BA	CH	DH	GU	IM	JO	LE	MO	PA	SH	SI	TE
1980	16	15.8			15.7	15.4	16		17.7		15.3		15.9
1981	16.5	18			16.3	13.9	14		15.4		19.7		15.6
1982	14.3	18	19.1		17.8	15.2	13.2		17		17		17.2
1983	16.6	18.6	16.5		14.5	15.3	14.3		13.3	15.3	21		15.3
1984	10.7	19	16.8		17.9	12.8	16.2		15		16.7		15.4
1985	15	15.1			20.4	18	18.6		13.4		18.7		17
1986	14.7	15.7	16.6		15.9	13.6			14.7	14.5			13.8
1987	17	15.8	14.9		16.4	16.4			15	13.3			17.3
1988	17.8	13.8	16.9		15.7	15.5			13.9				14.8
1989	20	20.8	16.3		17.8	19.8			16.9	13.3			19.5
1990	19	17	15.1		16.6	16.9			15.9			22.3	17.9
1991	15.7	15	14.4			15					12.3	13.3	
1992	17.4	18.2	17.3		15.5	17.9			16.8	14.7	16.4	14.3	16.2
1993		17.3	24		16.9	17.3			16.7			16	16.5
1994		21.6			18.3	19.4			15.9		15.3	17.8	17.8
1995		19.9			18.5	17.6			14		14.2	16.9	17.3
1996		17.1	17.5		15.8	17.3			14.5		18.3	16.6	17.7
1997	17.4	25.6	16.6		16.1	18.2			12.3		17.8		16.2
1998	16.9	15.7	19.3		16.4	17.4			18.9				15.8
1999			10.6		16	15			16.7				17.4
2000	18.3		15.4		19.2				12.7		16		15.5
2001	16.9				18.5	16.6							18.3
2002	16.5			23.5		19.7			18				18.6
2003	18.3			17.1					16.5				18.5
2004	17	15.2			16.4	16			17.6				
2005	17.3				19.1	19			15				16.2
2006	15.7												
2007	18.3	14.7	15.9		17.4	15.4		18.3	16.6	14.6	16.3	18.4	17.7
2008		15.8	17.6	17.1	16.5	18		14.3	19.5		15	18	17.7
2009		17.1	15	13.4	15.2	11.4		22.6	14	10.7	15.5	15.5	14
2010		24.9	16.5	18.9	17.9	19.6	17.3	17.6	14.4	16.3	17.7	15.2	16.5
2011		20.7	16.8	15.8	15.9	18	16.6	18.9	16.2	18	17.4	16.9	15.8
2012	15.9	14.2	16	14.8	16.5	16.5	20	16.2	14	16	13.9	16.6	14.9
2013	13.5	18.8	15.5	17.3	16.8	14.5	17	14.3	14.7	16.9	16.6	15.4	15.8
2014	17.5	17.6	15.7	15.2	15.4	14.3	16.9	16	17.3	16	16.2	15.4	15.4
2015	17	19.9	17.9	22.7	17.2	16.8	14.4	16.6	14.6	17.7	18	15.4	16.3
2016	13.4	15	15.6		17.9	15.6		16.6	15.3	16.2	15	16.6	17.2
2017	17		15.8		17	16.3	13.4		12	12.9	16.2	16.7	16.8
2018	18.4		14.7	13.6	16.6	14.7	16.6	15.5	15.2	15.5	14.3	16.4	16.8
2019	15.2	15.4	14.6	18.0	17		16.9	16.7	16.4	12.6		16.7	15.4
2020	14.8	15.8	16.2	18.3	16.6	19.4	14.9	17.9	13	13.8		16	15.7

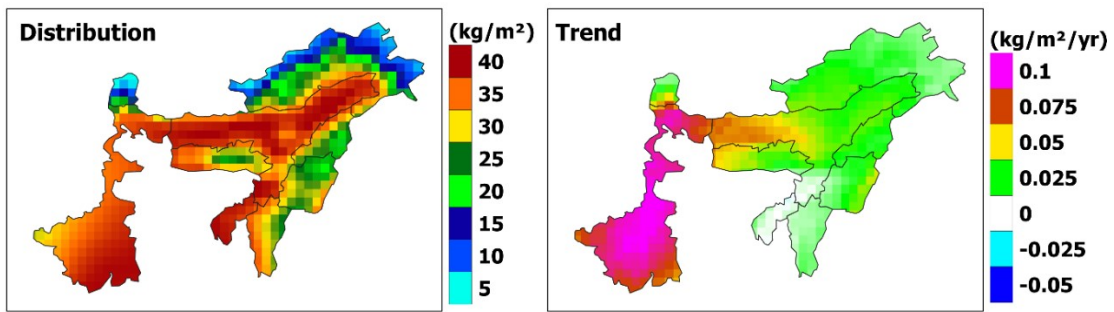


Figure S1: Distribution and trends in total column water vapour (TCWV) derived from ERA5 for the period 1980–2020.

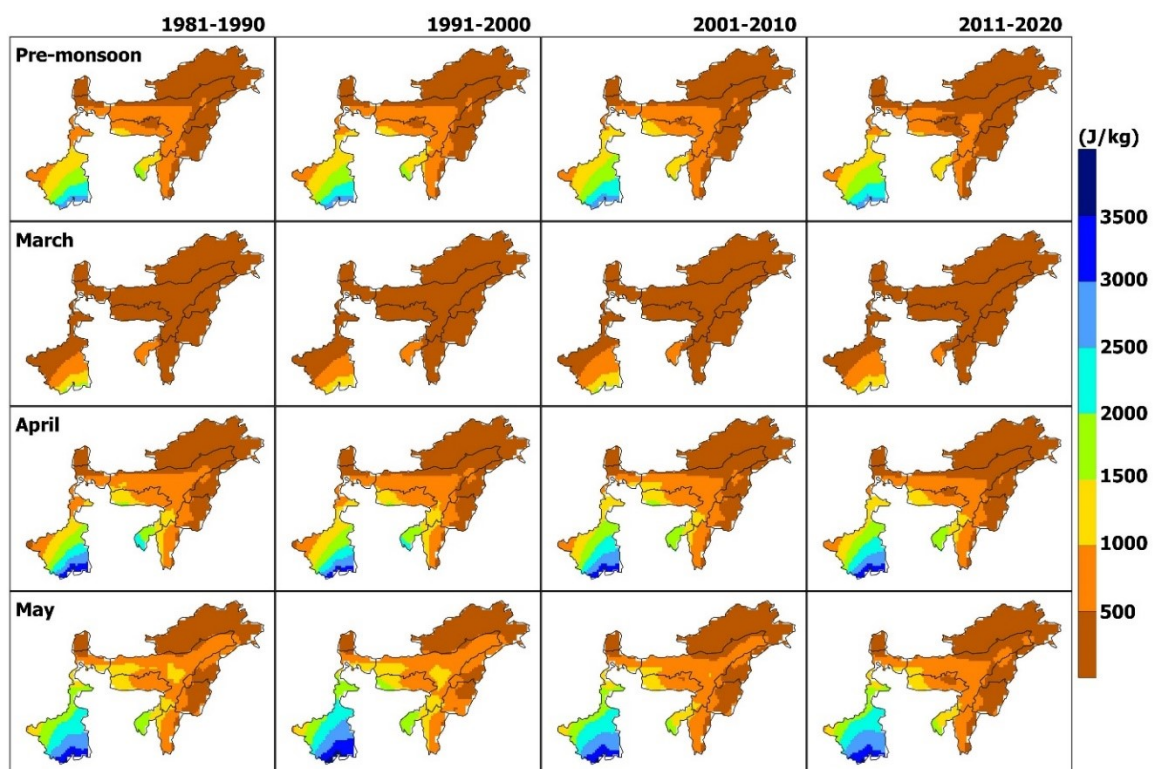


Figure S2: Decadal mean of convective available potential energy (CAPE) during pre-monsoon (March, April and May) derived from ERA5 for the period 1980–2020.

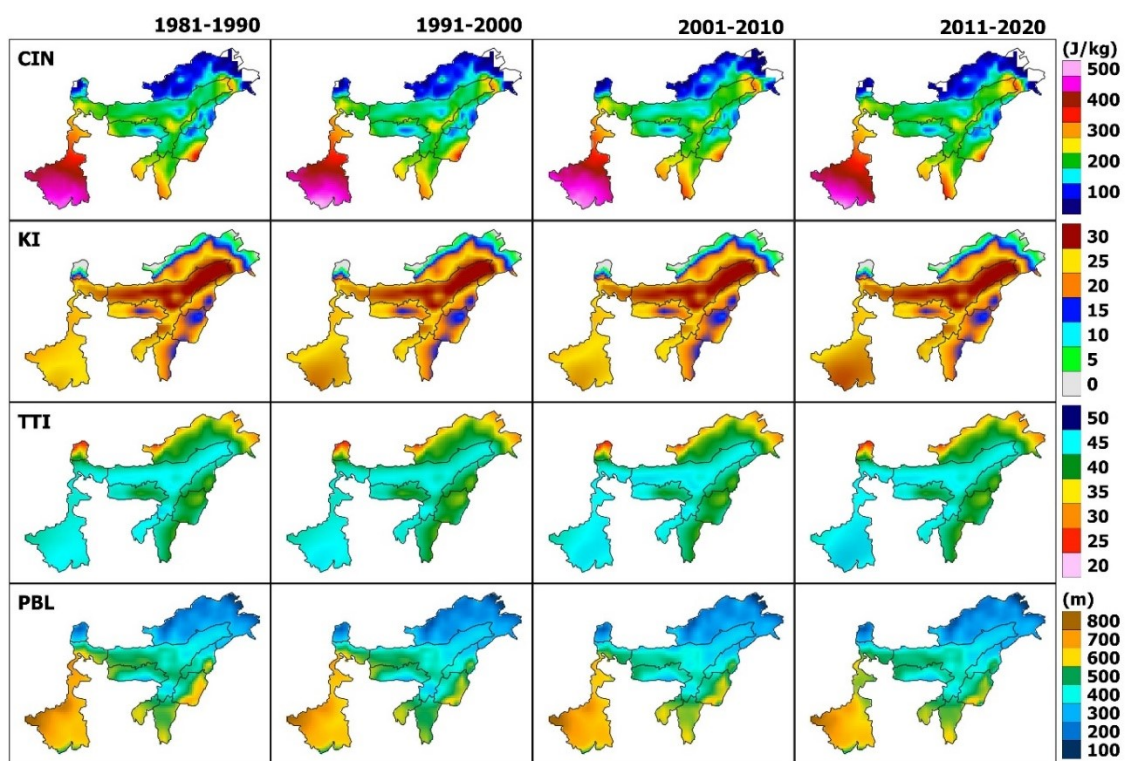


Figure S3: Decadal average of convective inhibition (CIN), K-index (KI), Total Totals index (TTI) and planetary boundary layer (PBL) derived from ERA5 for the period 1980–2020.

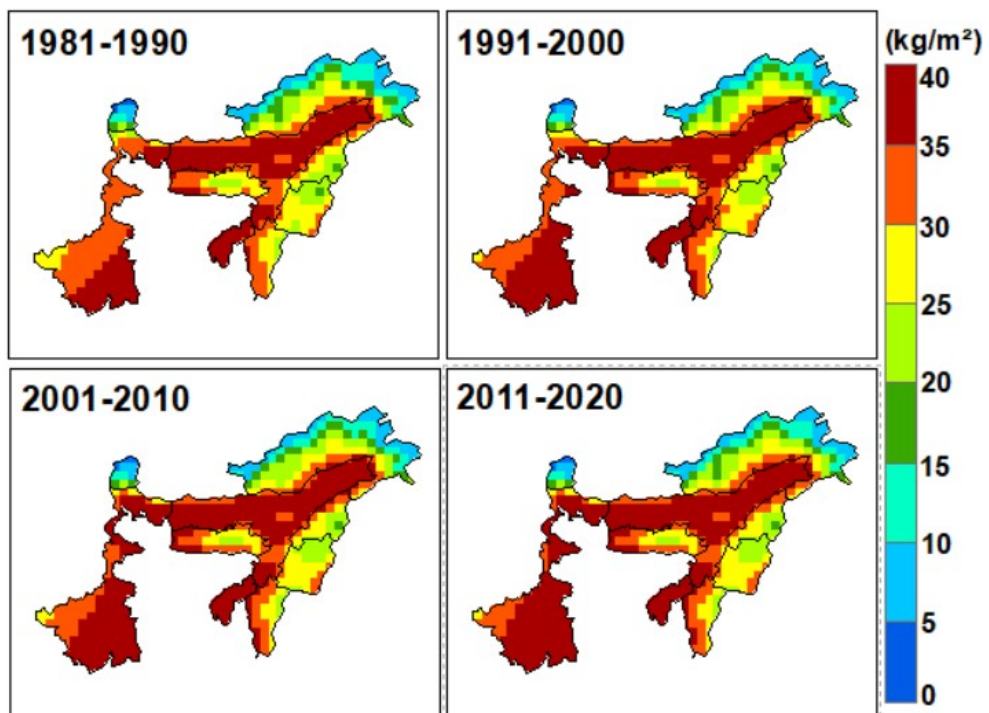


Figure S4: Decadal mean for total column water vapour (TCWV) derived from ERA5 for the period of 1980–2020.

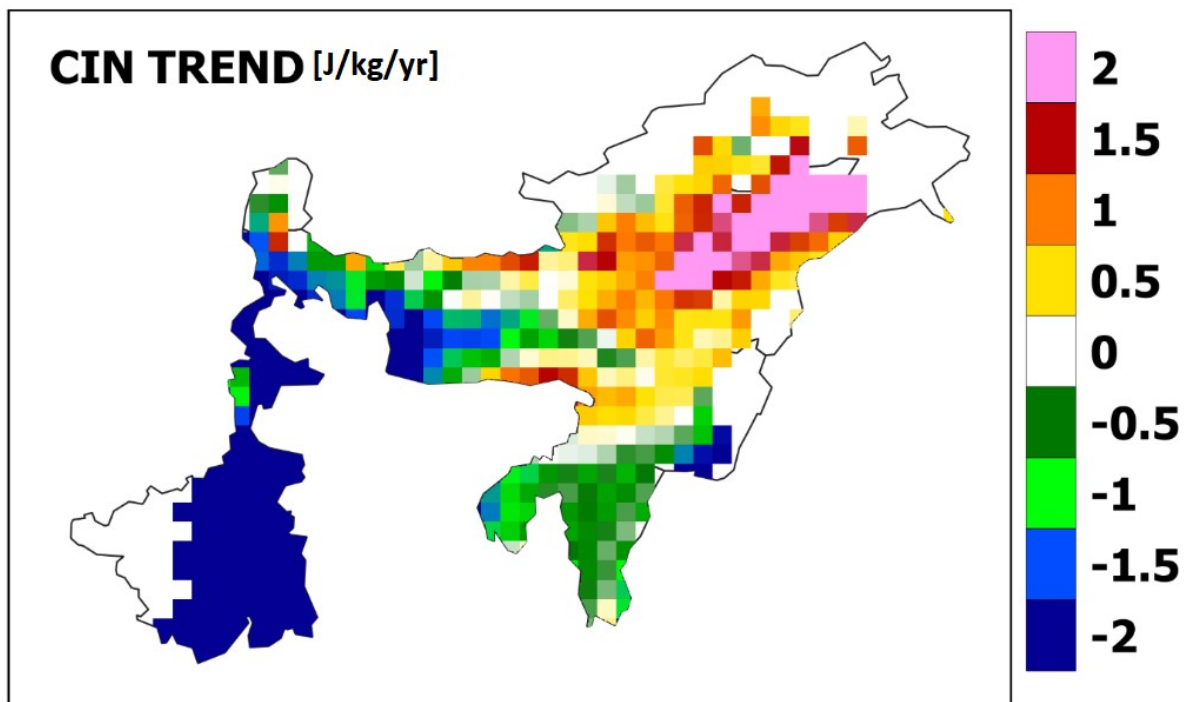


Figure S5: Trends in convective inhibition (CIN) derived from ERA5 for the period of 1980–2020.