Supplementary material S5

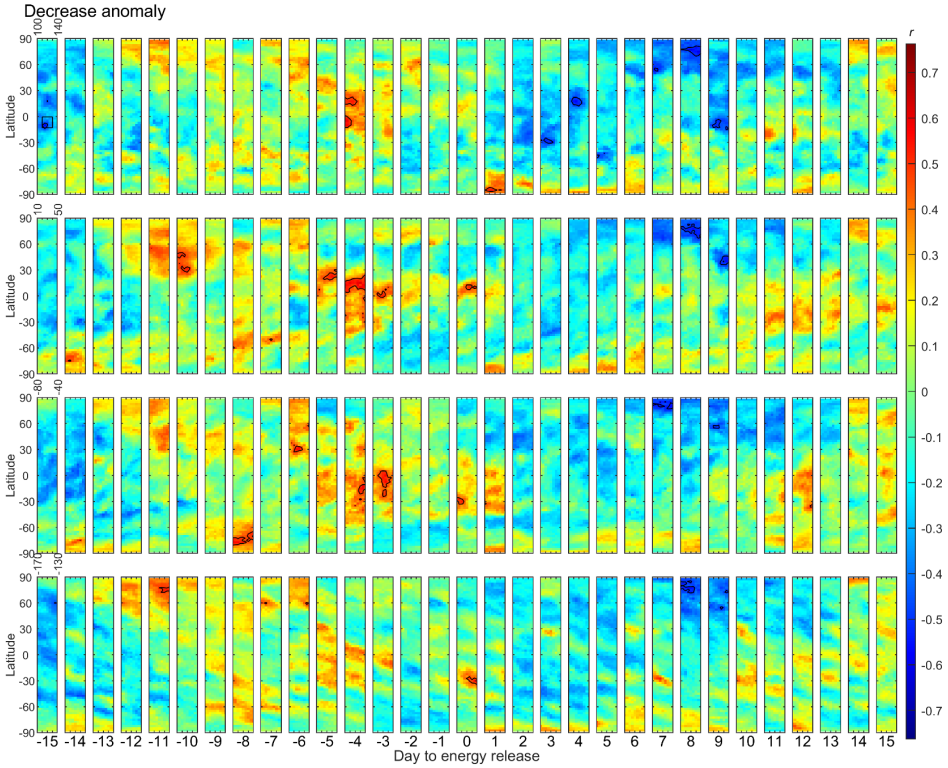

Figure S1. Distributions of the correlation coefficient of the TEC decrease anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 1 of energy releases within Region A. Data are removed using the Dst index.

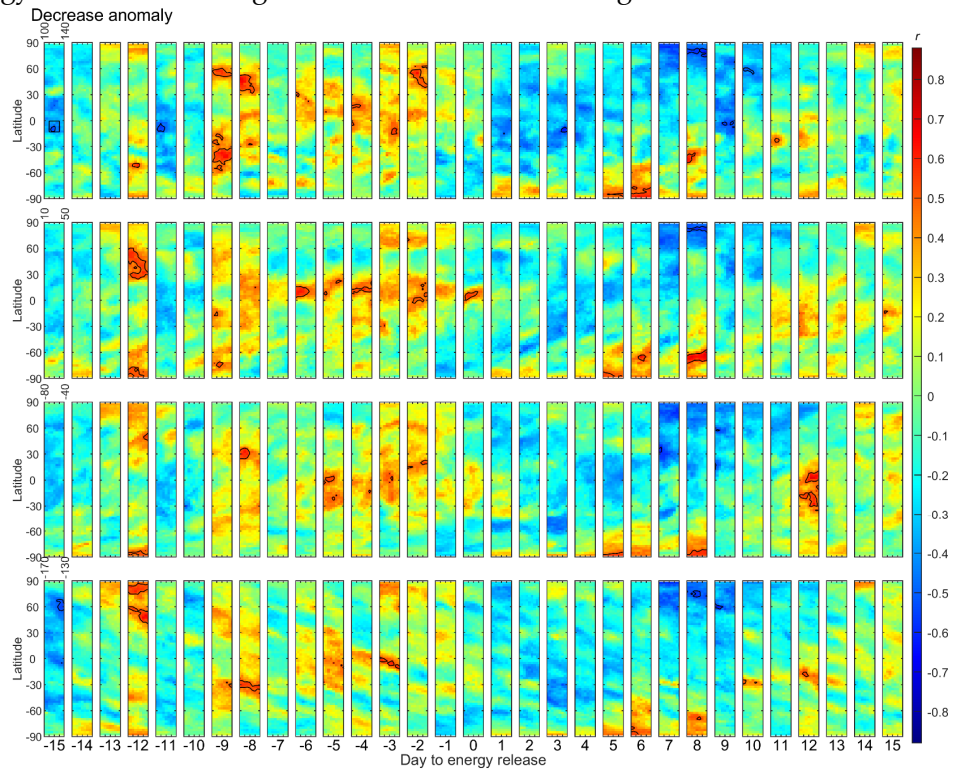

Figure S2. Same as Figure S1, but data are removed using Kp and F10.7.

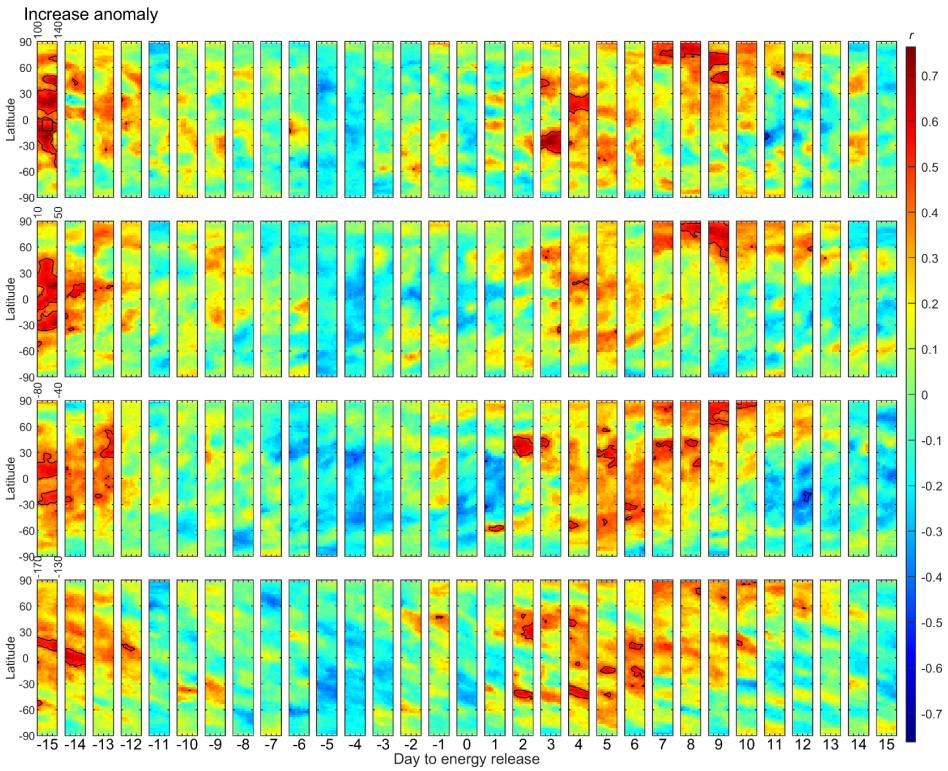

Figure S3. Distributions of the correlation coefficient of the TEC increase anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 1 of energy releases within Region A. Data are removed using the Dst index.

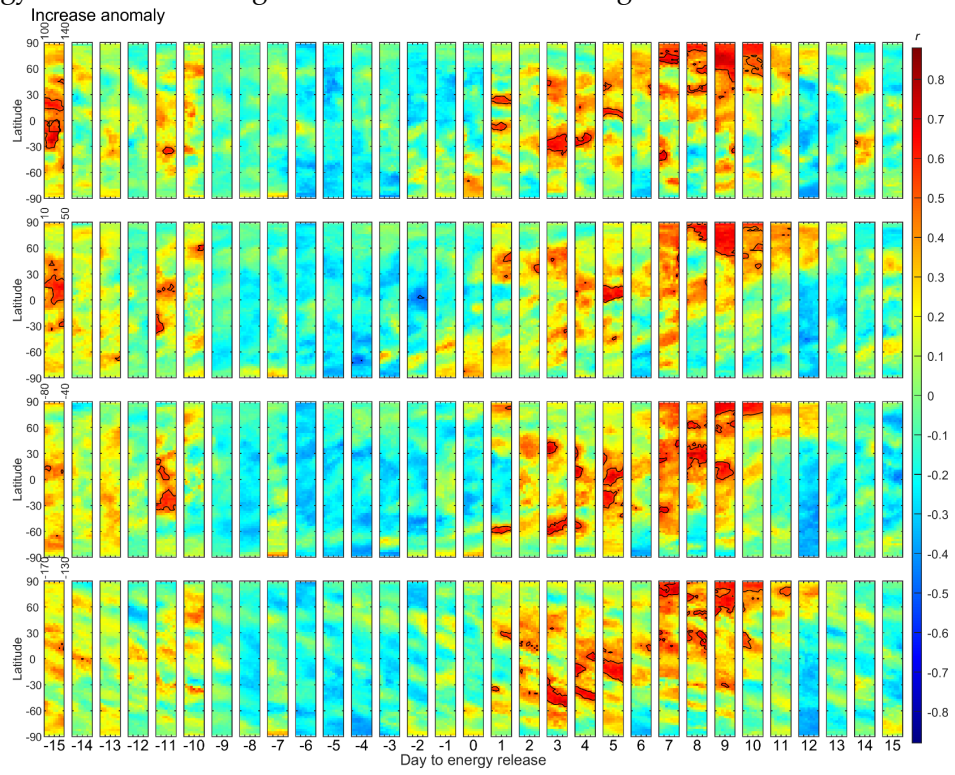

Figure S4. Same as Figure S3, but data are removed using Kp and F10.7.

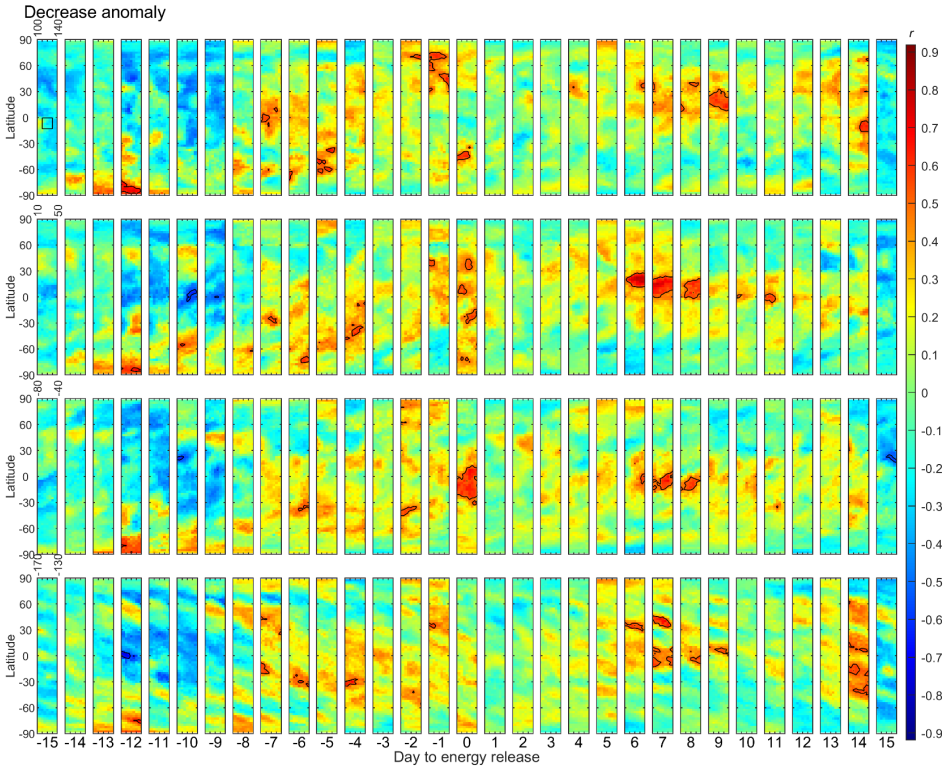

Figure S5. Distributions of the correlation coefficient of the TEC decrease anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 2 of energy releases within Region A. Data are removed using the Dst index.

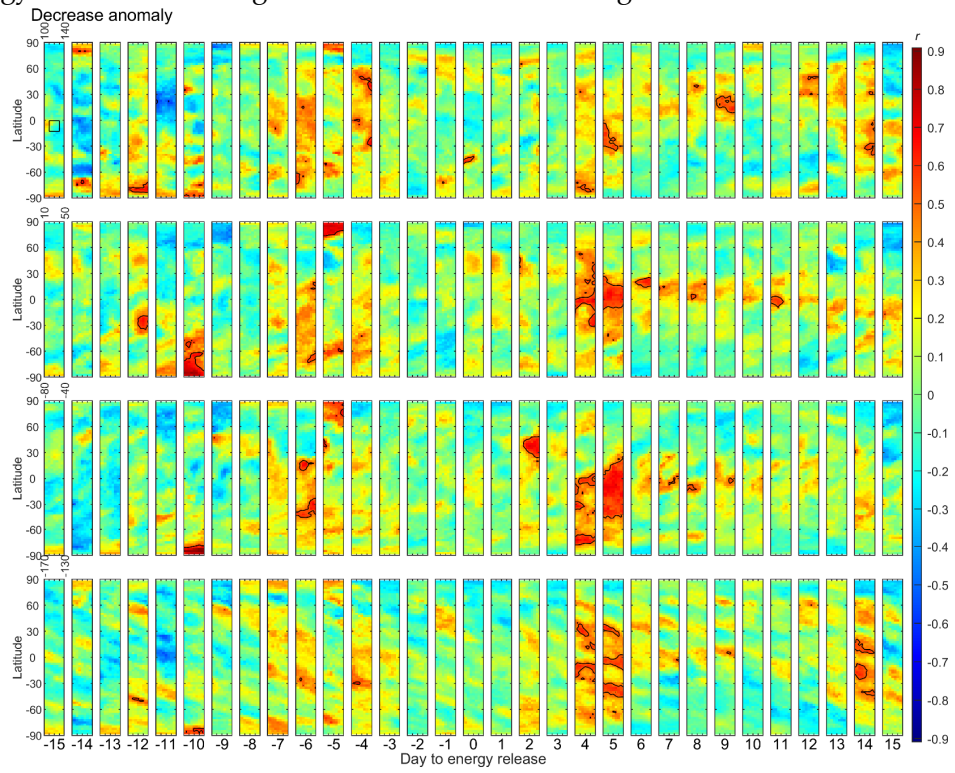

Figure S6. Same as Figure S5, but data are removed using Kp and F10.7.

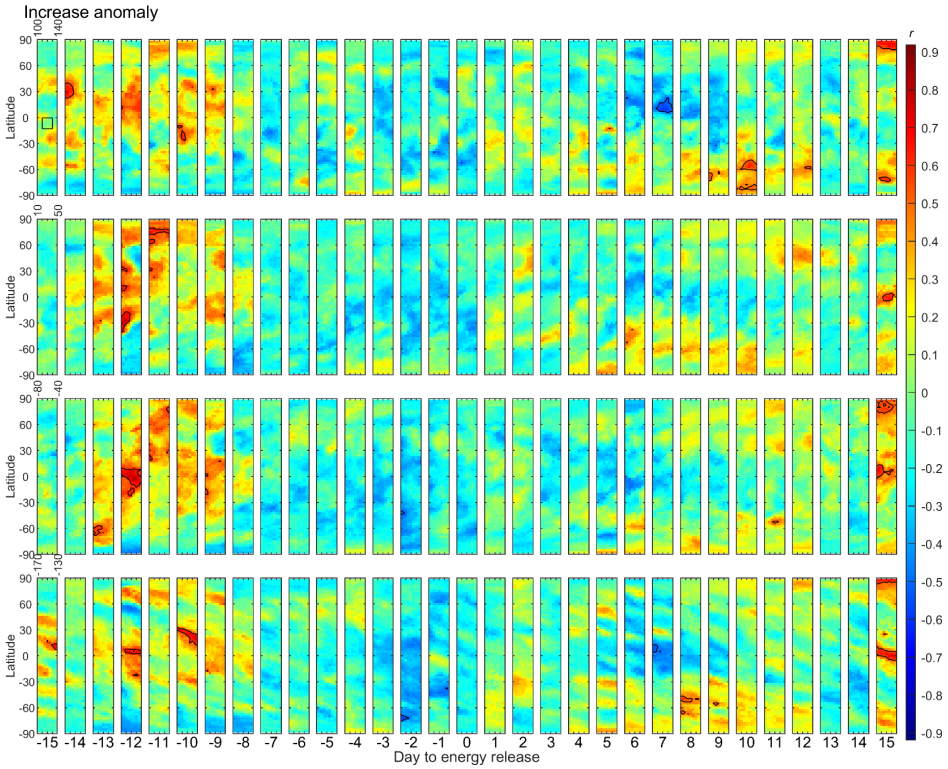

Figure S7. Distributions of the correlation coefficient of the TEC increase anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 2 of energy releases within Region A. Data are removed using the Dst index.

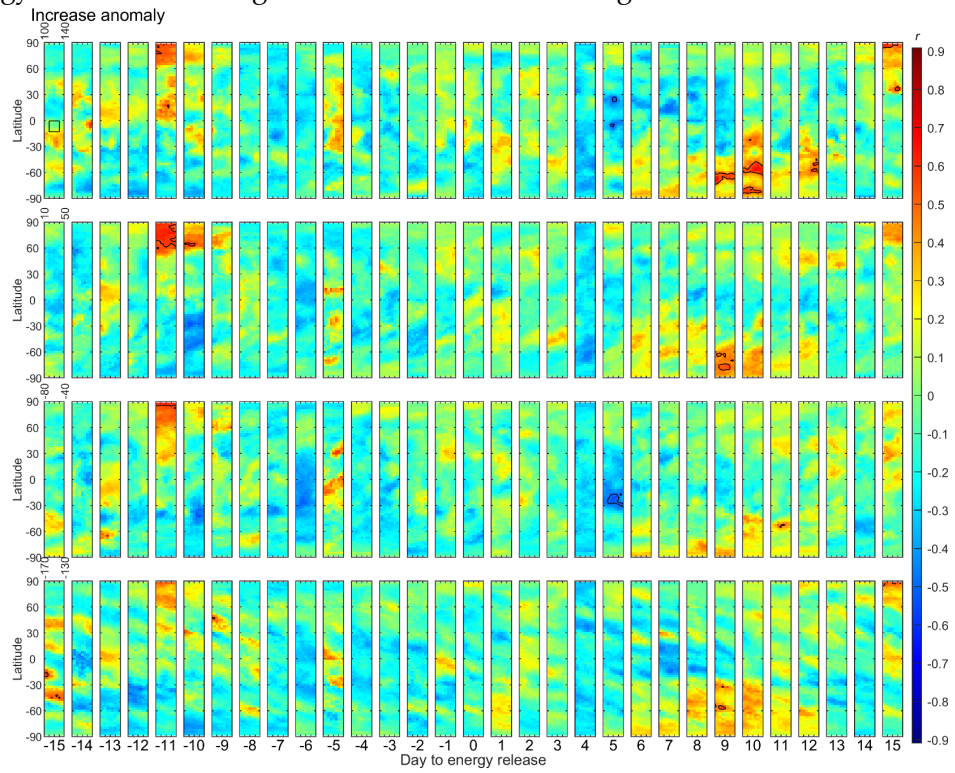

Figure S8. Same as Figure S7, but data are removed using Kp and F10.7.

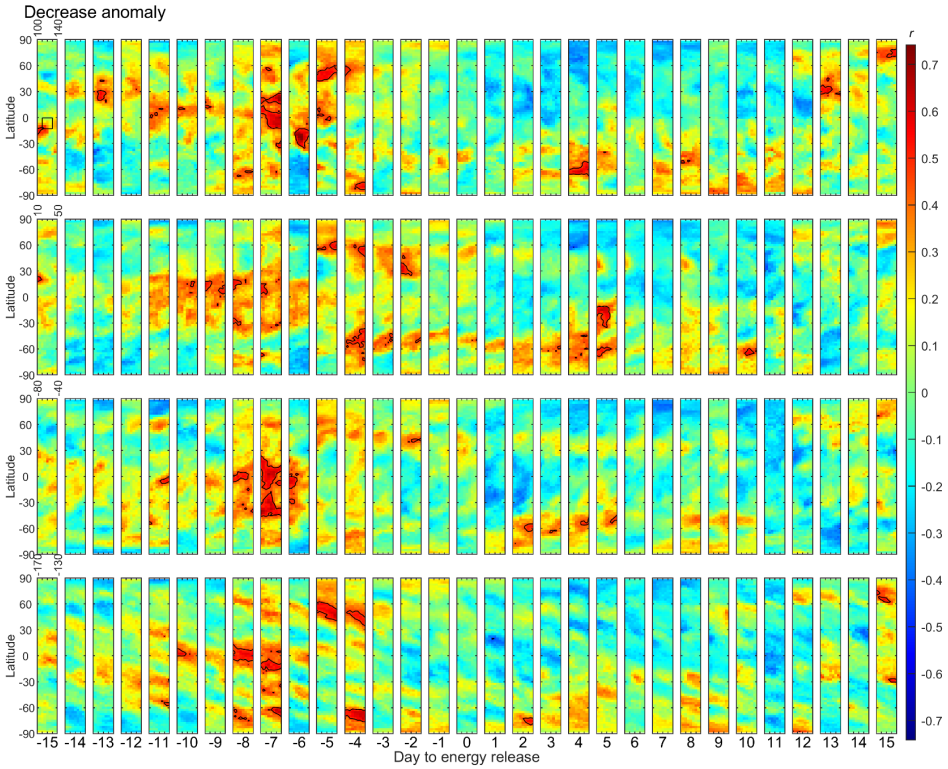

Figure S9. Distributions of the correlation coefficient of the TEC decrease anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 3 of energy releases within Region A. Data are removed using the Dst index.

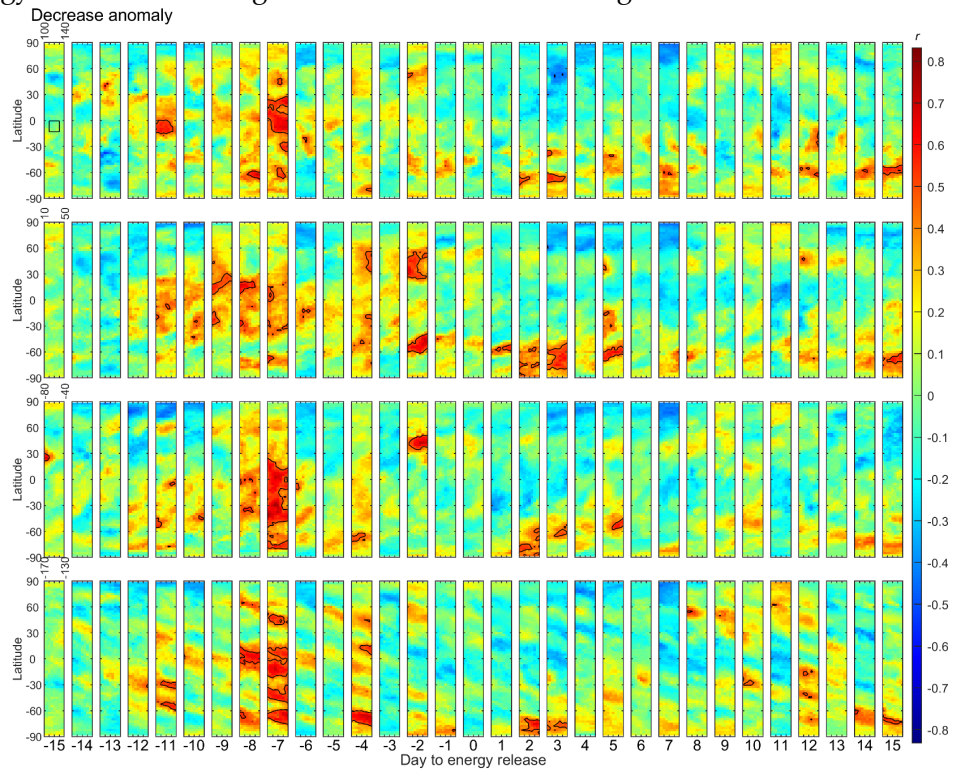

Figure S10. Same as Figure S9, but data are removed using Kp and F10.7.

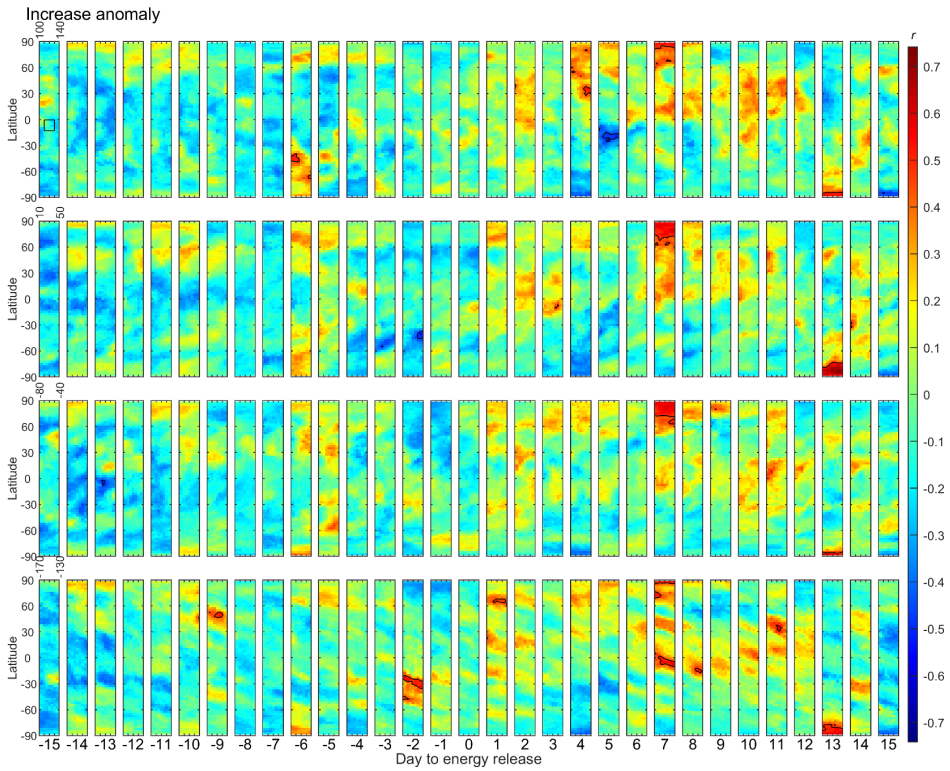

Figure S11. Distributions of the correlation coefficient of the TEC increase anomaly for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutation 3 of energy releases within Region A. Data are removed using the Dst index.

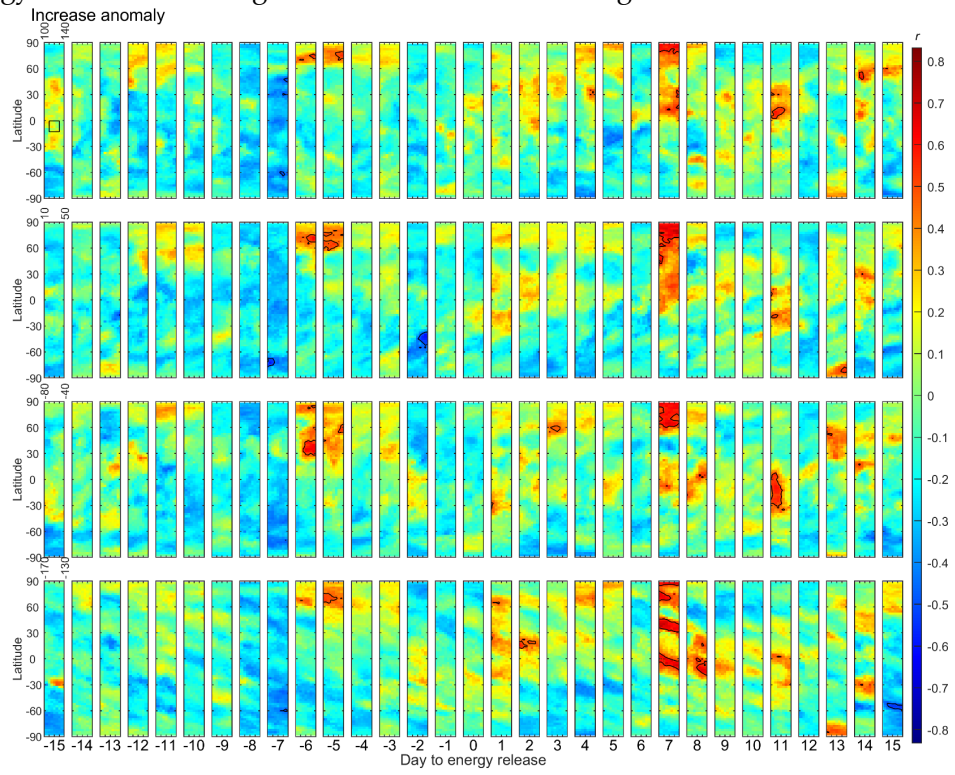

Figure S12. Same as Figure S11, but data are removed using Kp and F10.7.

	Using Dst			Using Kp, and F10.7		
	Sample size	$r_{\alpha=0.01}$	**Max. daily energy release in *M***	**Sample size**	$r_{\alpha=0.01}$	**Max. daily energy release in *M***
Random 1	22—32	0.449—0.537	6.425—6.512	17—31	0.456—0.606	6.302—6.512
Random 2	16—30	0.463—0.623	6.512—6.611	16—29	0.471—0.623	6.425—6.611
Random 3	24—34	0.436—0.515	6.480—6.512	21—32	0.449—0.549	6.480—6.512

Table S1. Parameters for the declustered samples with energy releases ≥ *M*5.5 without outliers from random permutations 1—3 (Random 1—3) of energy releases within Region A. The left portion uses the Dst index, and the right portion uses Kp and F10.7 to eliminate the space weather effects.

			Min. *p*	D	Lat.	Long.	*r*
Random 1	Using Dst index	Decrease anomaly	2.024E-05	-4	-2.5	75	0.686*
		Increase anomaly	**7.582E-07**	**-15**	**-17.5**	**125**	**0.763***
	Using Kp and F107	Decrease anomaly	**2.471E-05**	**-8**	**47.5**	**100**	**0.710***
		Increase anomaly	3.655E-08	8	20	-120	0.879*
Random 2	Using Dst index	Decrease anomaly	2.617E-07	7	7.5	0	0.810
		Increase anomaly	2.608E-07	-12	37.5	-15	0.918*
	Using Kp and F107	Decrease anomaly	3.848E-08	-10	-85	-80	0.908*
		Increase anomaly	1.387E-05	9	-70	100	0.715*
Random 3	Using Dst index	Decrease anomaly	**2.114E-06**	**-6**	**-22.5**	**125**	**0.741***
		Increase anomaly	8.657E-06	13	-85	45	0.727*
	Using Kp and F107	Decrease anomaly	1.132E-08	-7	-40	-85	0.832*
		Increase anomaly	2.385E-05	-5	60	-20	0.681

Table S2. The minimum *p*, associated D, locations, and *r* for the results shown in Figures S1—S12. Random 1—3 represent random permutations 1—3 of energy releases within Region A. The bold font denotes the minimum *p* appearing before energy release and in the 120 °E sector. The asterisk near *r* denotes that the associated *r* is the maximum *r* during D = -15 to 15 and over the 5,183 GIM grids.