Supplemental Material

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Searching for the Most Extreme Temperature Events
in Recent History
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Supplemental Material for "Searching for the most extreme temperature events in recent history"

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ABSTRACT: Compilation of graphics that are not essential for understanding the article.

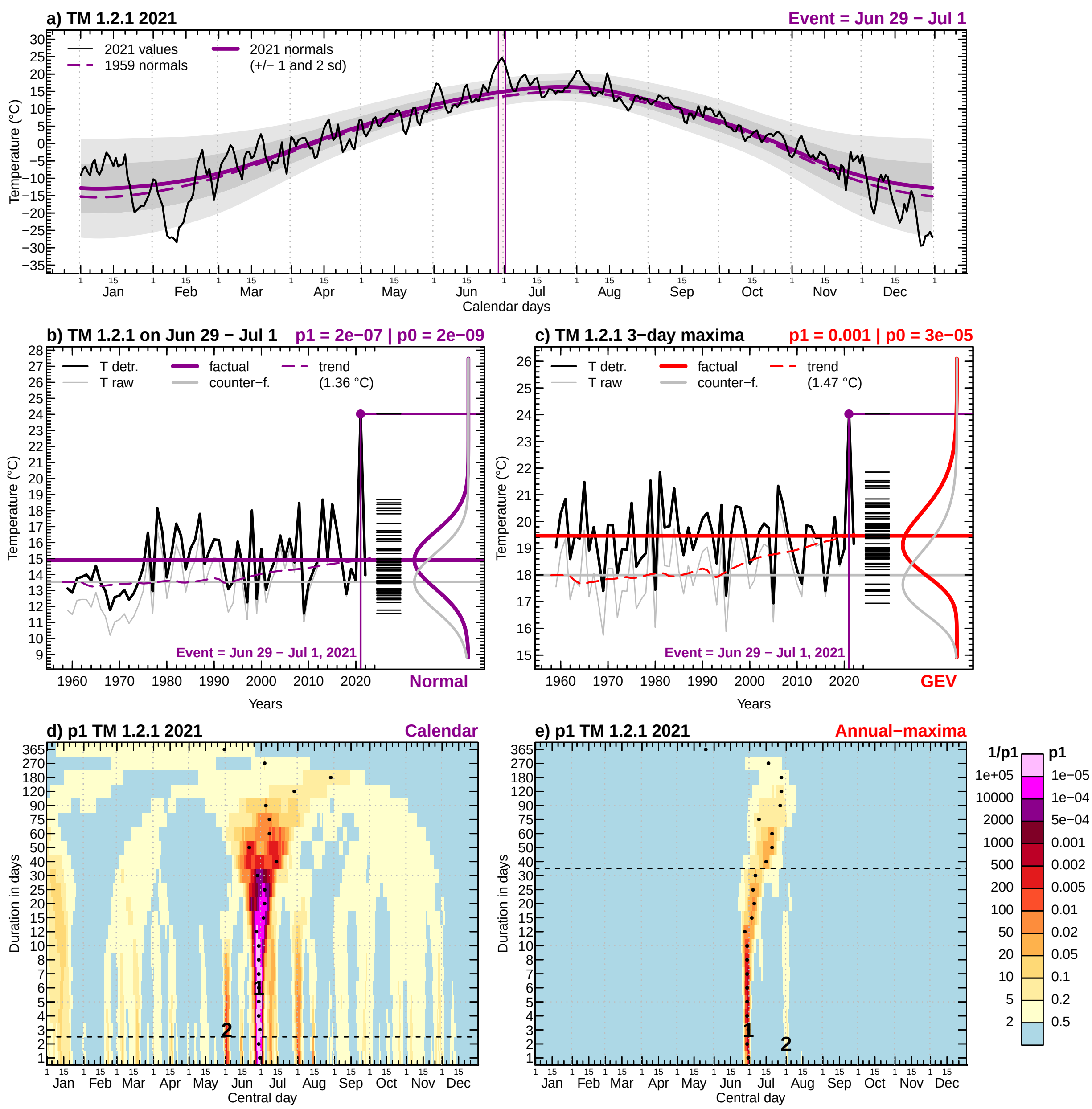

FIG. S1. Same as Figure 1, but for the Canadian heatwave of June 29 – July 1, 2021.

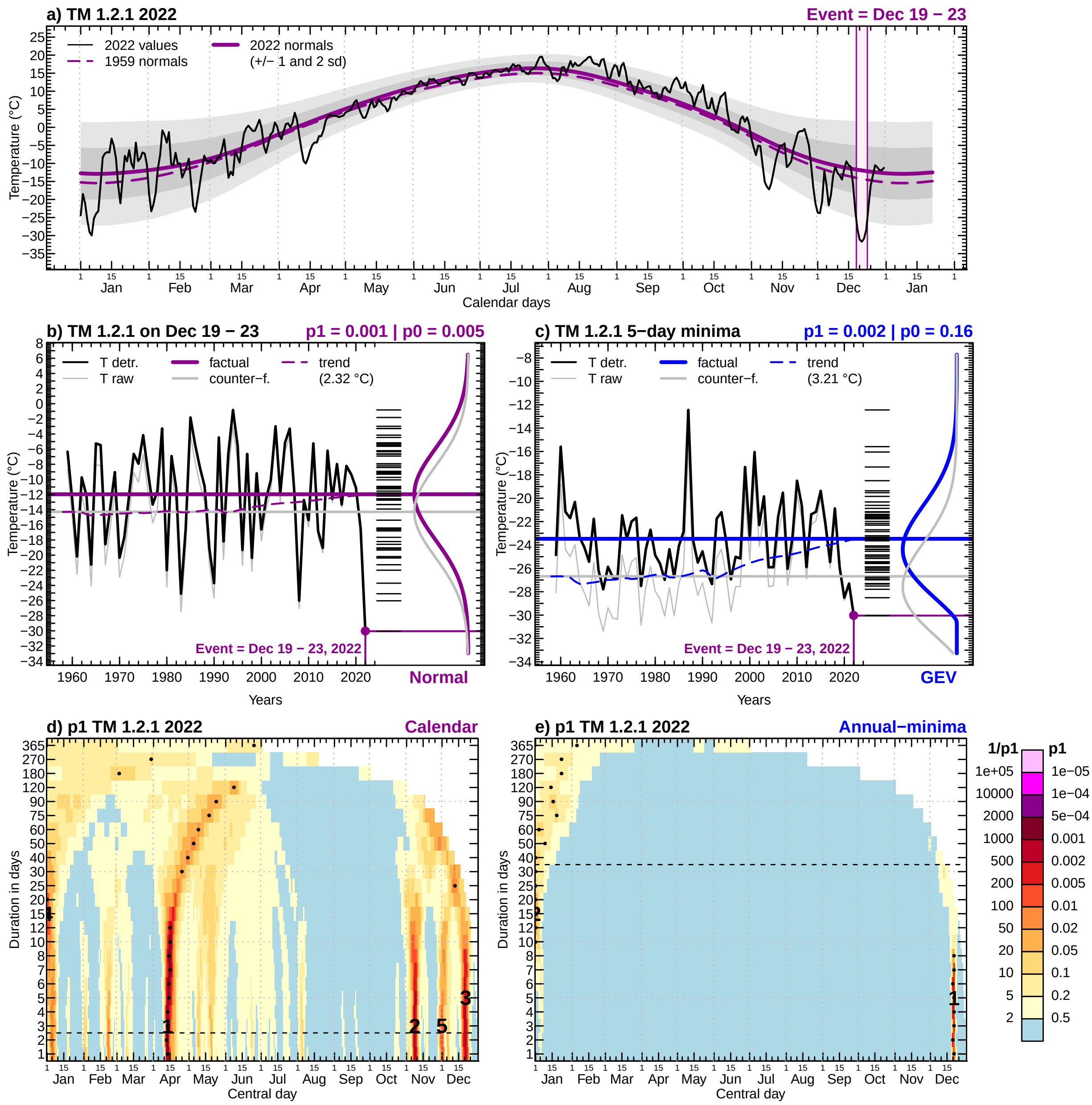

FIG. S2. Same as Figure 1, but for the Canadian cold spell of December 19–23, 2022.

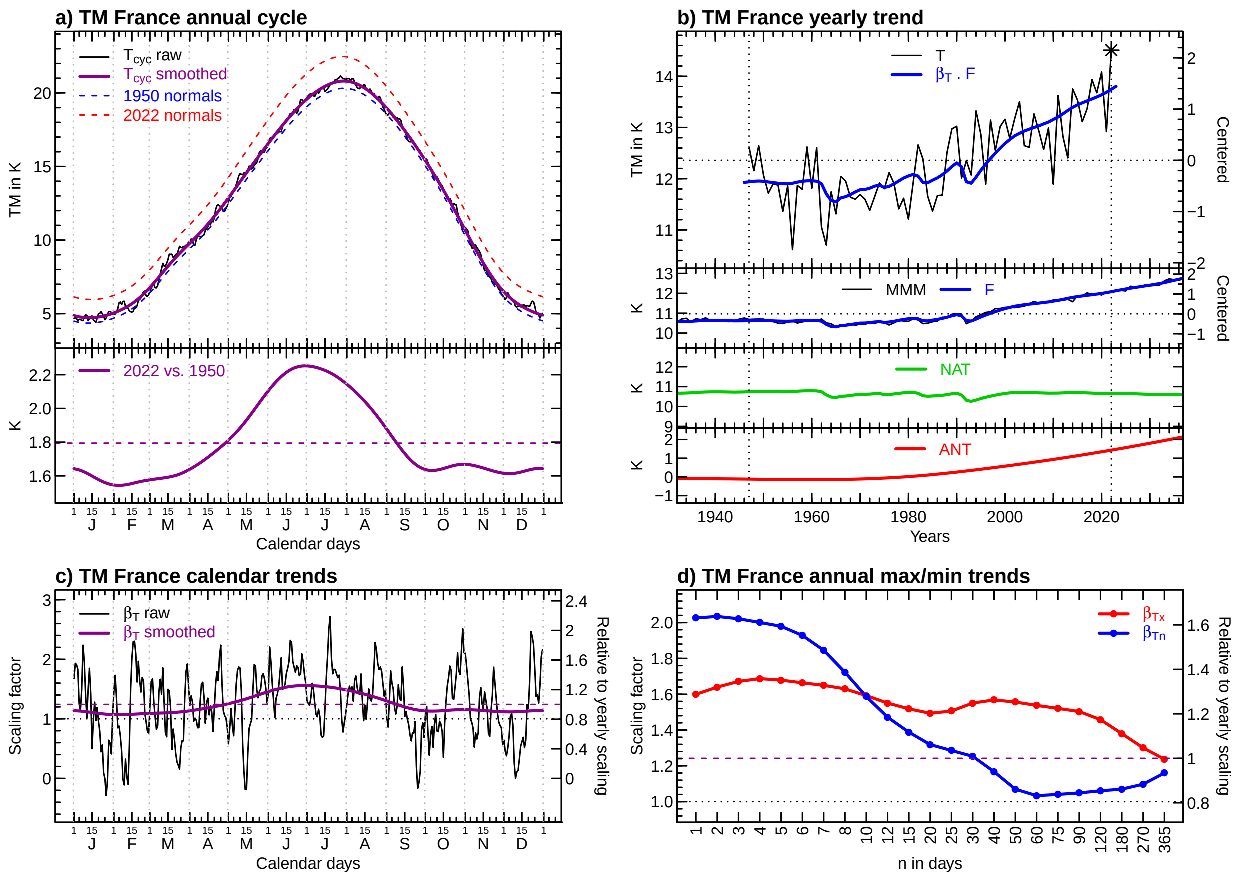

FIG. S3. Detrending procedure. **(a)** Raw (black) and smoothed (12-df splines) mean annual cycle of daily-mean temperatures (TM) in France, calculated over 1947–2022. Dashed lines are our estimates of 1950 (blue) and 2022 (red) normals. The difference between 2022 and 1950 normals is shown in violet below. **(b)** Yearly averages of TM France over 1947–2022 (black) and our estimate of the yearly long-term trend (blue). Lower panels: raw (multi-model mean, black) and smoothed (GAM fit, blue) estimates of the forced response, together with natural-only (green) and anthropogenic-only (red) contributions. **(c)** Raw (black) and smoothed (6-df splines, solid violet) calendar scaling factors of the forced response, as a function of the day of the year. **(d)** Tx*n*day (red) and Tn*n*day (blue) scaling factors of the forced response, as a function of the time duration n. On (c-d), the yearly mean scaling factor is indicated by the dashed violet line.

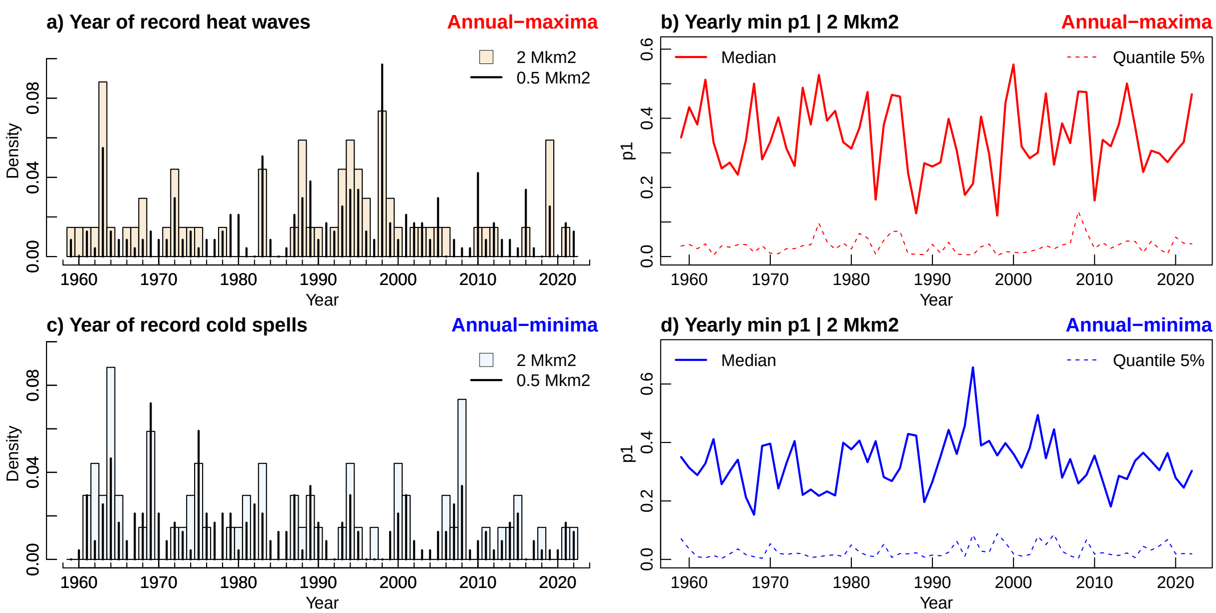

FIG. S4. Selection of events across years. **(a)** Distribution of years of the record heatwave for all 2 (colored histogram) and 0.5 (black bars) Mkm^2 regions. **(b)** Median (solid) and 0.05 quantile (dashed) of yearly minimum p_1 found in the annual-maxima approach for 2 Mkm^2 regions. **(c–d)** Same as a–b for cold spells / annual-minima.

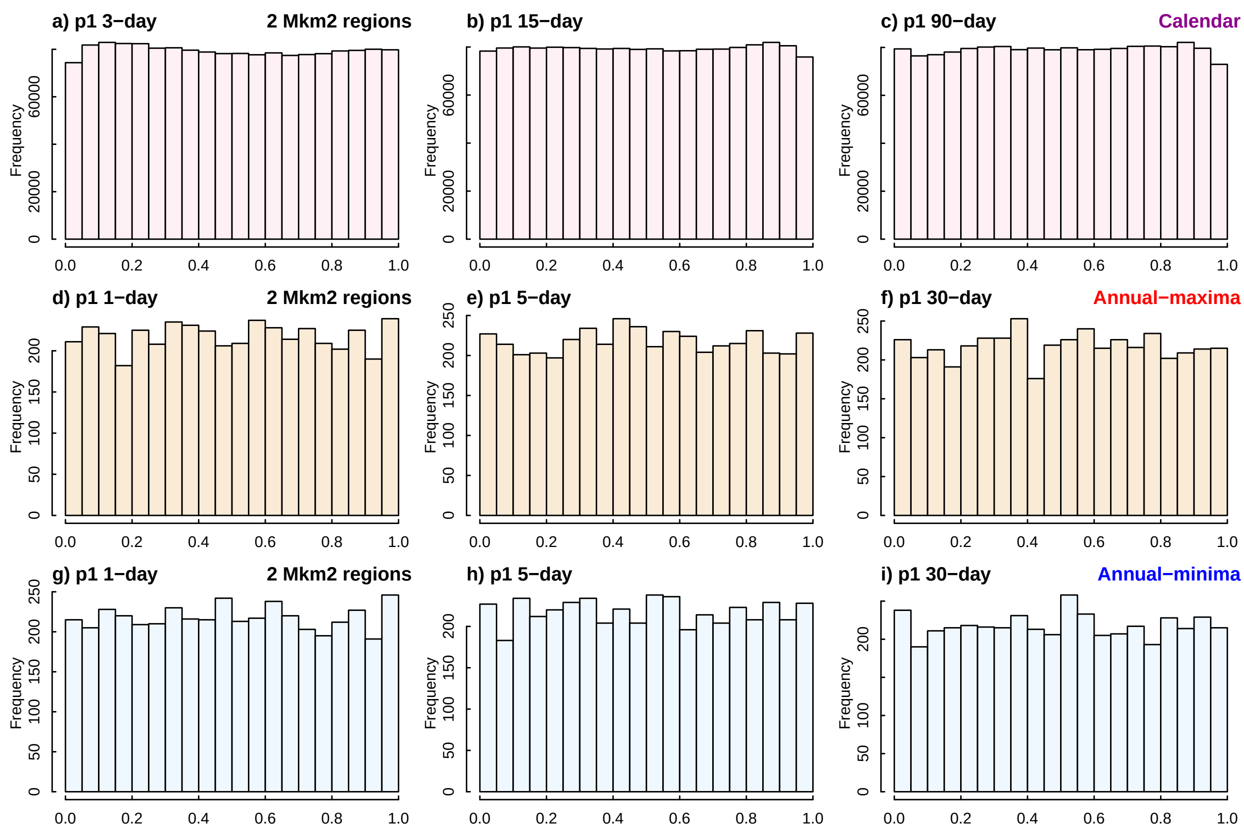

FIG. S5. Histograms of p_1 for all events of all 2 Mkm^2 regions. **(a–c)** Calendar approach, for events of duration 3 (a), 15 (b) and 90 (c) days. The sample of plotted values is of size 365 (calendar temperatures per year) × 64 (years) × 68 (regions). **(d–f)** Annual-maxima approach, for events of duration 1 (d), 5 (e) and 30 (f) days. The sample of plotted values is of size 1 (annual maximum per year) × 64 (years) × 68 (regions). **(h–i)** Same as d–f but for annual-minima.

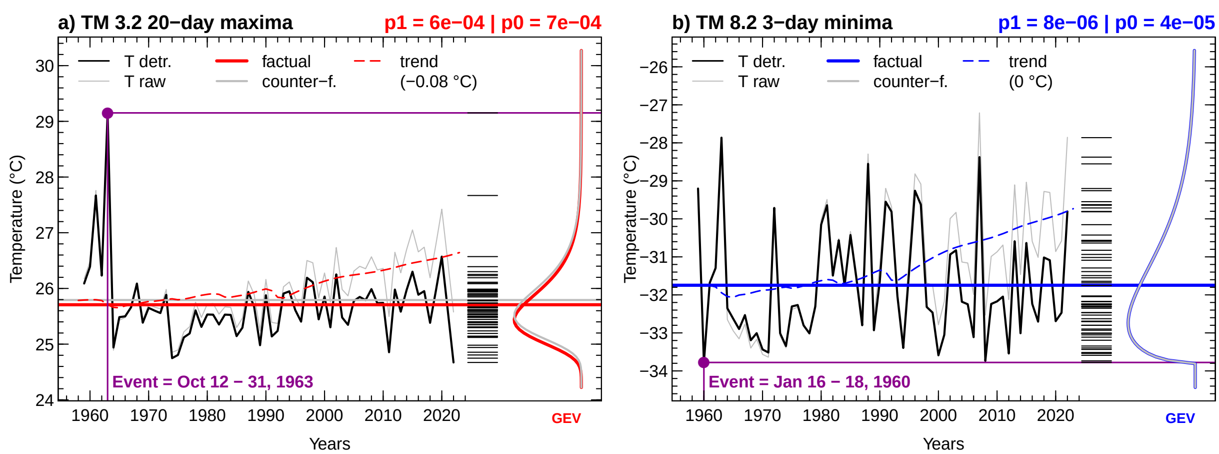

FIG. S6. Examples of data issues for the p_1 estimation. **(a)** Same as in Figure 1 for a "heatwave" selected with the annual-maxima approach, i.e. October 12–31, 1963, in region 3.2 (east and south Brazil). **(b)** Same as in Figure 1 for a "cold spell" selected with the annual-minima approach, i.e. January 16–18, 1960, in region 8.2 (Pacific Russia).