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Supplement of

The monthly evolution of precipitation and warm conveyor belts during the central southwest Asia wet season

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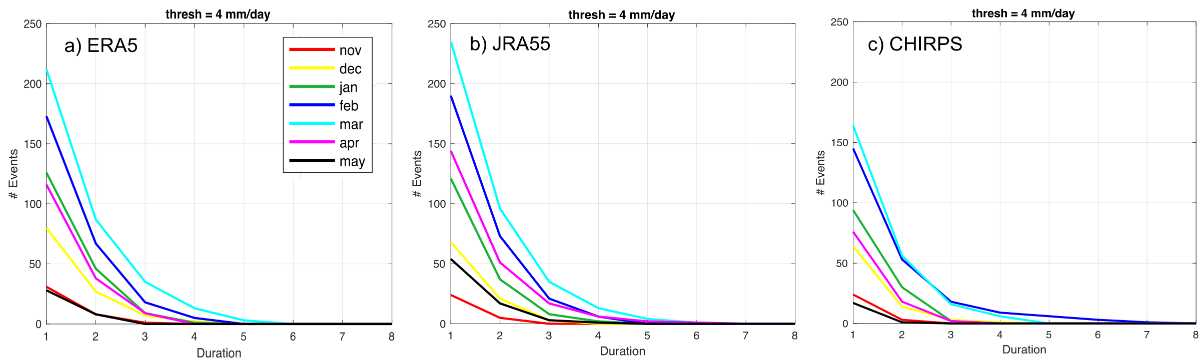

Figure S1: Count of events with precipitation > 4 mm for a minimum selected duration, as a function of month for a) ERA5, b) JRA55 and c) CHIRPS precipitation, 1981-2020.

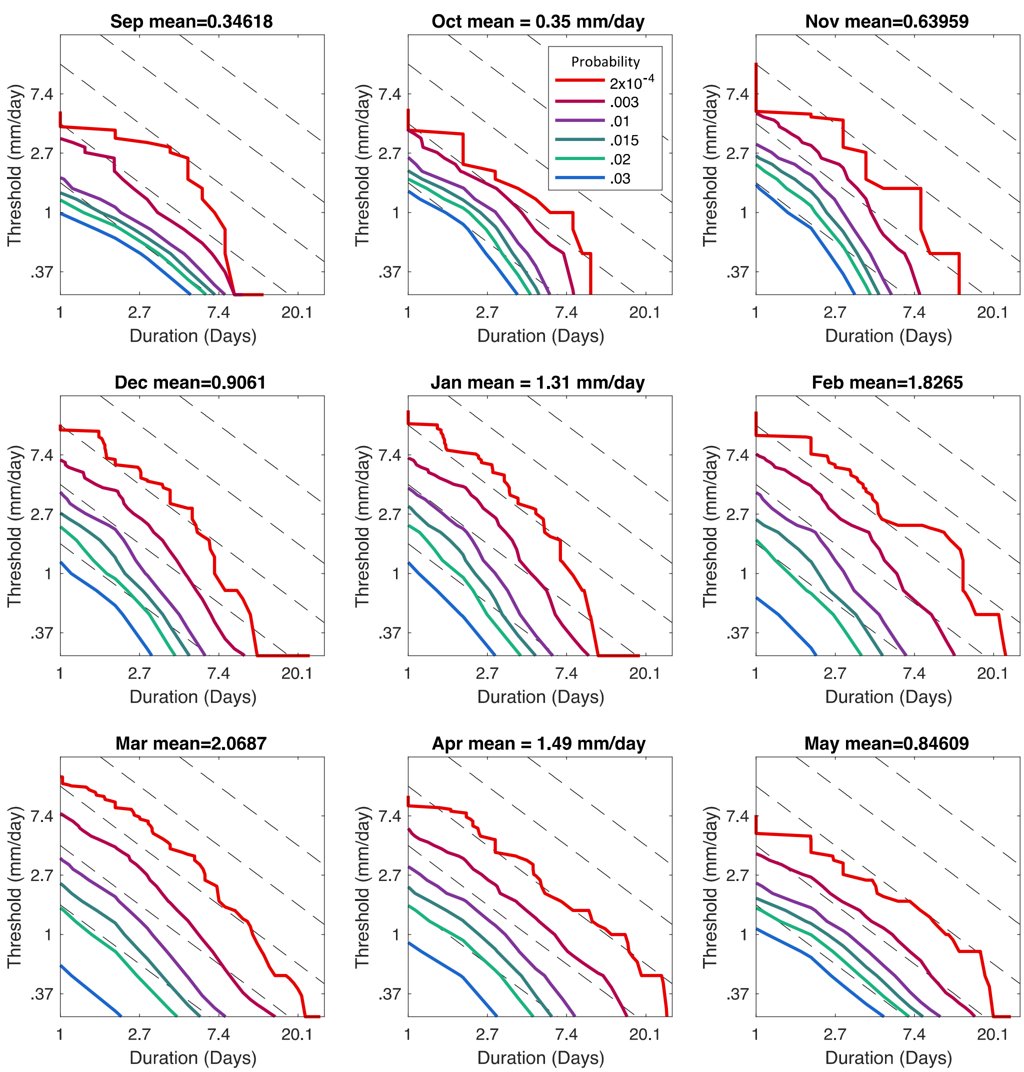

Figure S2: As in Figure 4 but expanded to all months, September – May 1981-2020. The thick solid contours show the joint probability of daily ERA5 precipitation intensity and duration for each month as labelled. The black dashed contours indicate lines of constant liquid equivalent for the values: 1.65, 4.48, 12.2, 33.1, and 90 mm (starting in the lower-left corner to upper-right).

Month	La Niña	El Niño
Oct	12	12
Nov	14	12
Dec	15	12
Jan	14	12
Feb	14	11
Mar	11	9
Apr	7	8
May	8	9
Jun	7	9

Table S1: Number of La Niña (LN) and El Niño (EN) months considered from 1981-2017.

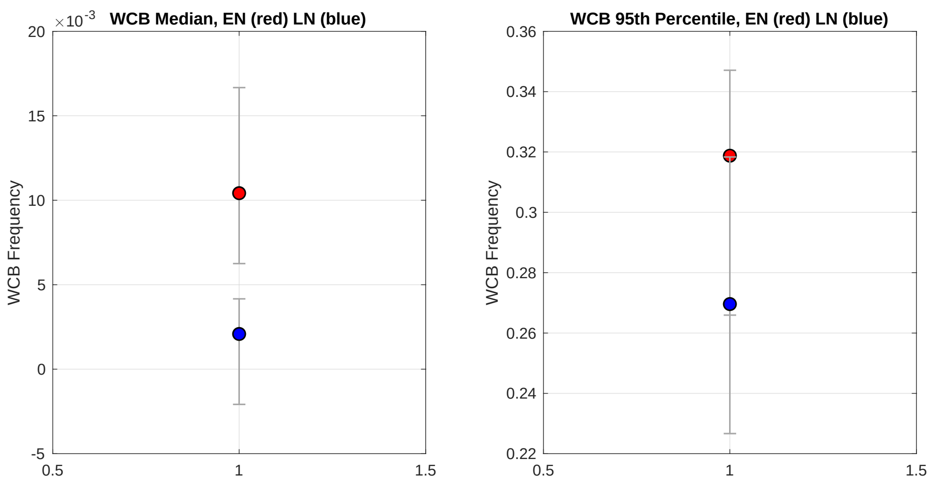

Figure S3: Bootstrapped median (left) and 95th percentile (right) values of WCB frequency averaged over Afghanistan (Fig. 1) during EN (red) and LN (blue) conditions during the months February-March-April.

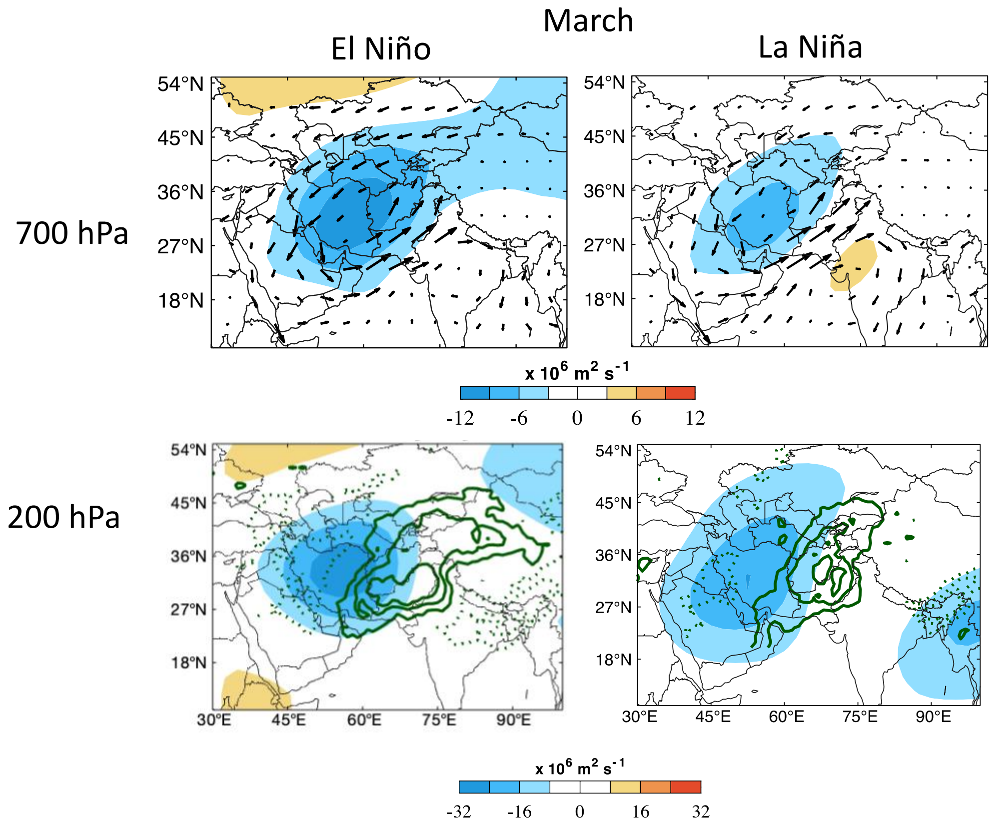

Figure S4: Composite difference between 'wet' days – meaning >4 mm accumulation days - subtracted from 'dry' days, when precipitation < 0.05 mm during El Niño (left) and La Niña (right) months. 700-hPa streamfunction and IVT (top) and 200-hPa streamfunction and WCB's (bottom) on days when accumulation > 4 mm during El Niño conditions (left) and La Niña conditions (right). Plotting convenctions are as in Figure 7.

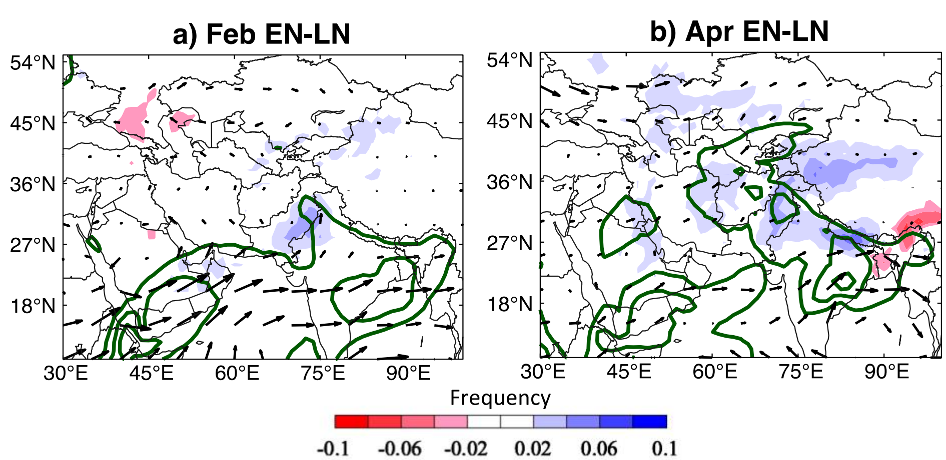

Figure S5: Panel a) is as in Fig. 10c but for February EN – LN months, and panel b) is as in Fig. 10c but for April EN – LN months. Plotting conventions are as in Fig. 10c,f.

Text S1: The Eady growth rate from the ETH Lagrangian Climatologies database (http://www.eraiclim.ethz.ch/prot/eady_growth.html) is used to examine difference in baroclinic instability during El Niño and La Niña months. The equation for the Eady growth rate is repeated from the database website below:

:

$$\lambda_E = 0.31 \frac{f}{N}\left[\left(\frac{u_{500}-u_{850}}{Z_{500}-Z_{850}}\right)^2 + \left(\frac{v_{500}-v_{850}}{Z_{500}-Z_{850}}\right)^2\right]^{.5} \qquad \text{Eqn S1,}$$

where f is the Coriolis parameter (s^{-1}), N is the Brunt-Vaisala frequency (s^{-1}), u is the zonal wind and v is the meridional wind at 500 and 850 hPa ($m\ s^{-1}$), and Z is geopotential height (m) at 500 and 850 hPa, as indicated by the subscripts.