Supplement of Atmos. Chem. Phys., 21, 5615–5633, 2021
https://doi.org/10.5194/acp-21-5615-2021-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

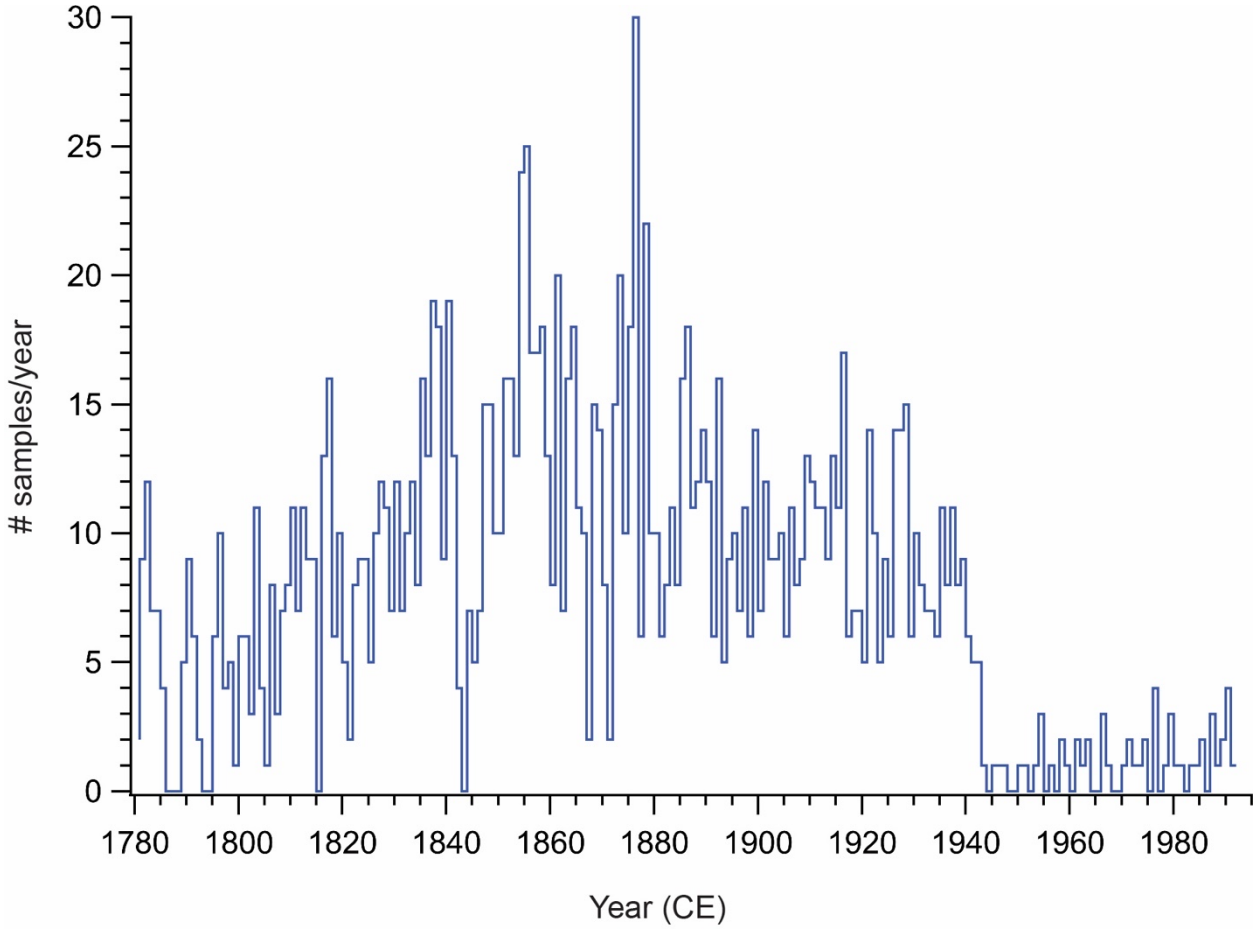
Supplement of

Drought-induced biomass burning as a source of black carbon to the central Himalaya since 1781 CE as reconstructed from the Dasuopu ice core

Joel D. Barker et al.

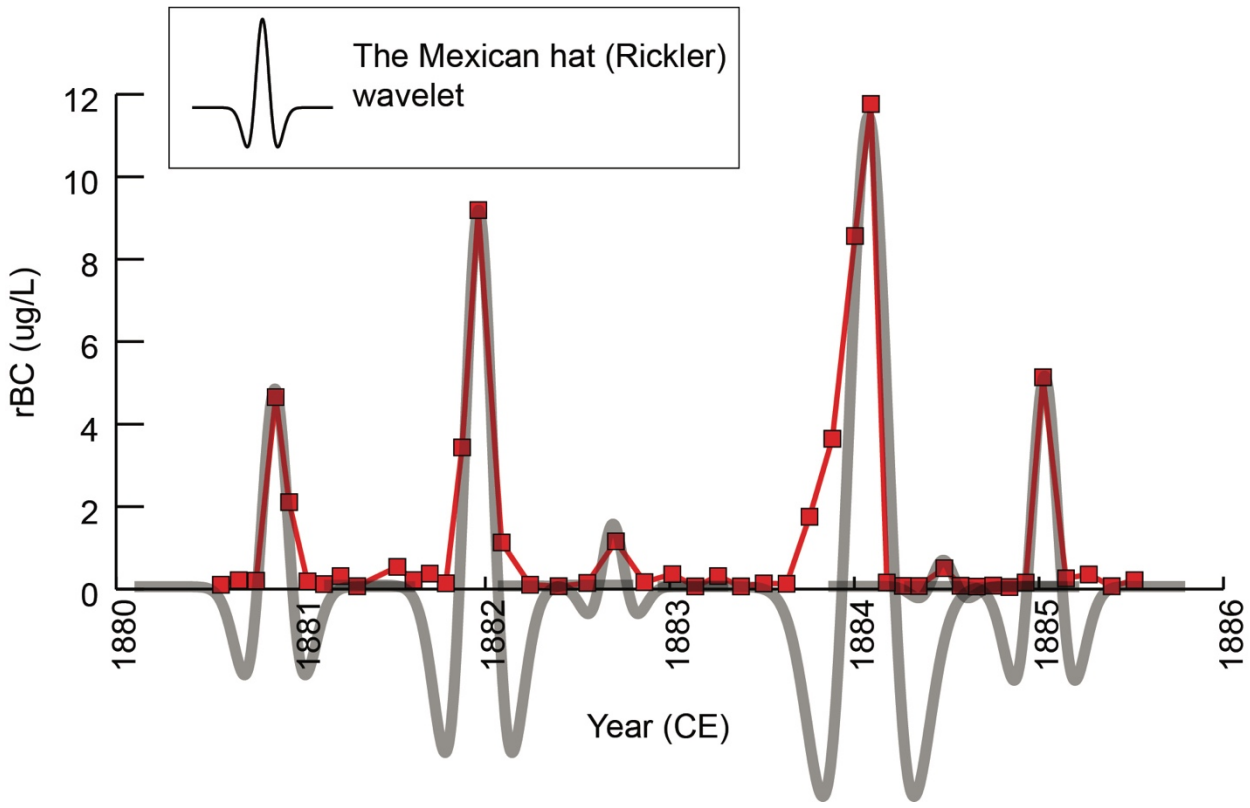
Correspondence to: Joel D. Barker (barke269@umn.edu) and Paolo Gabrielli (gabrielli.1@osu.edu)

Supplemental Figure 1:



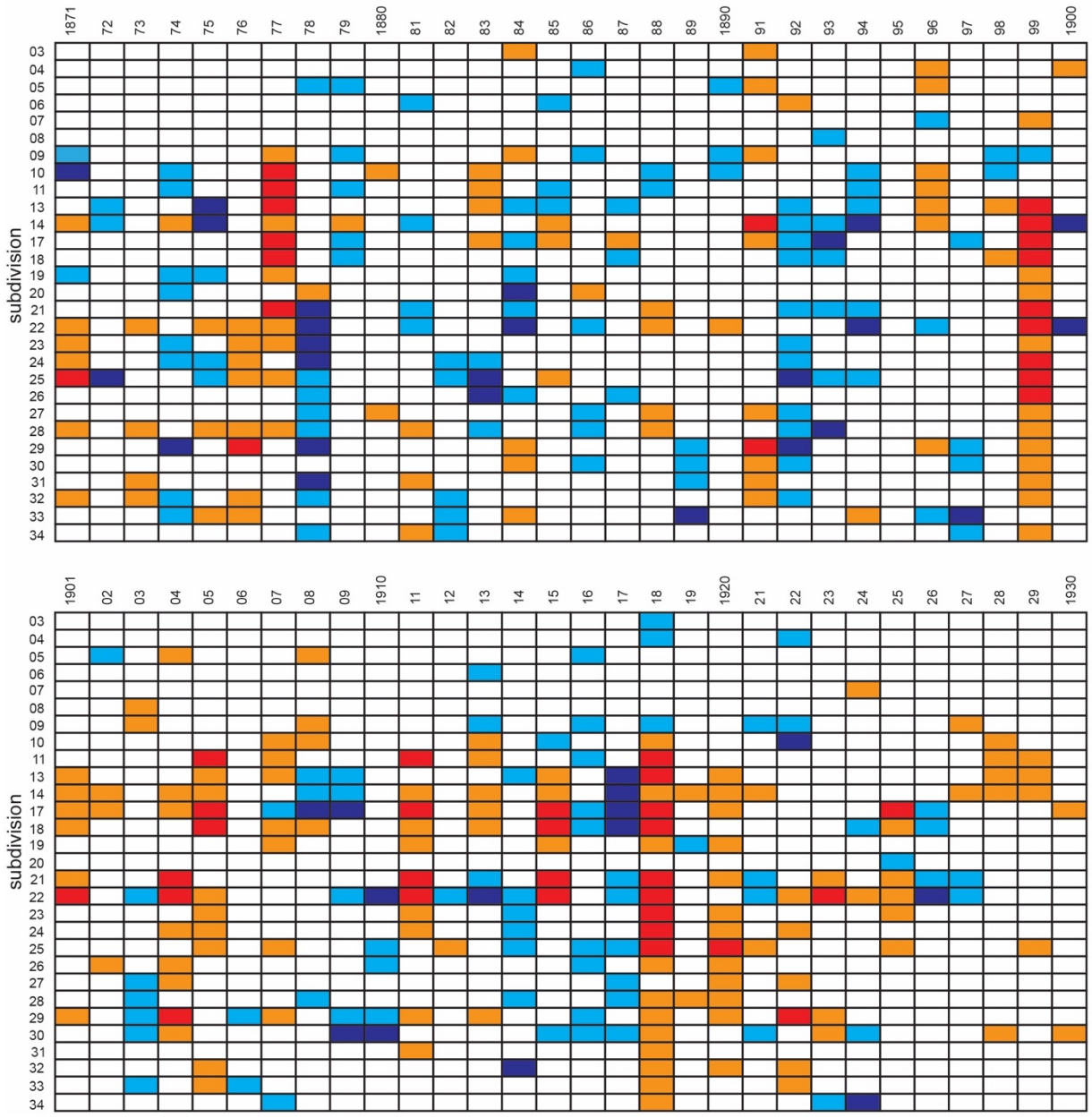
Suppl. Fig. 1: The number of samples per year in the Dasuopu ice core. The firn-ice transition occurs in 1943.

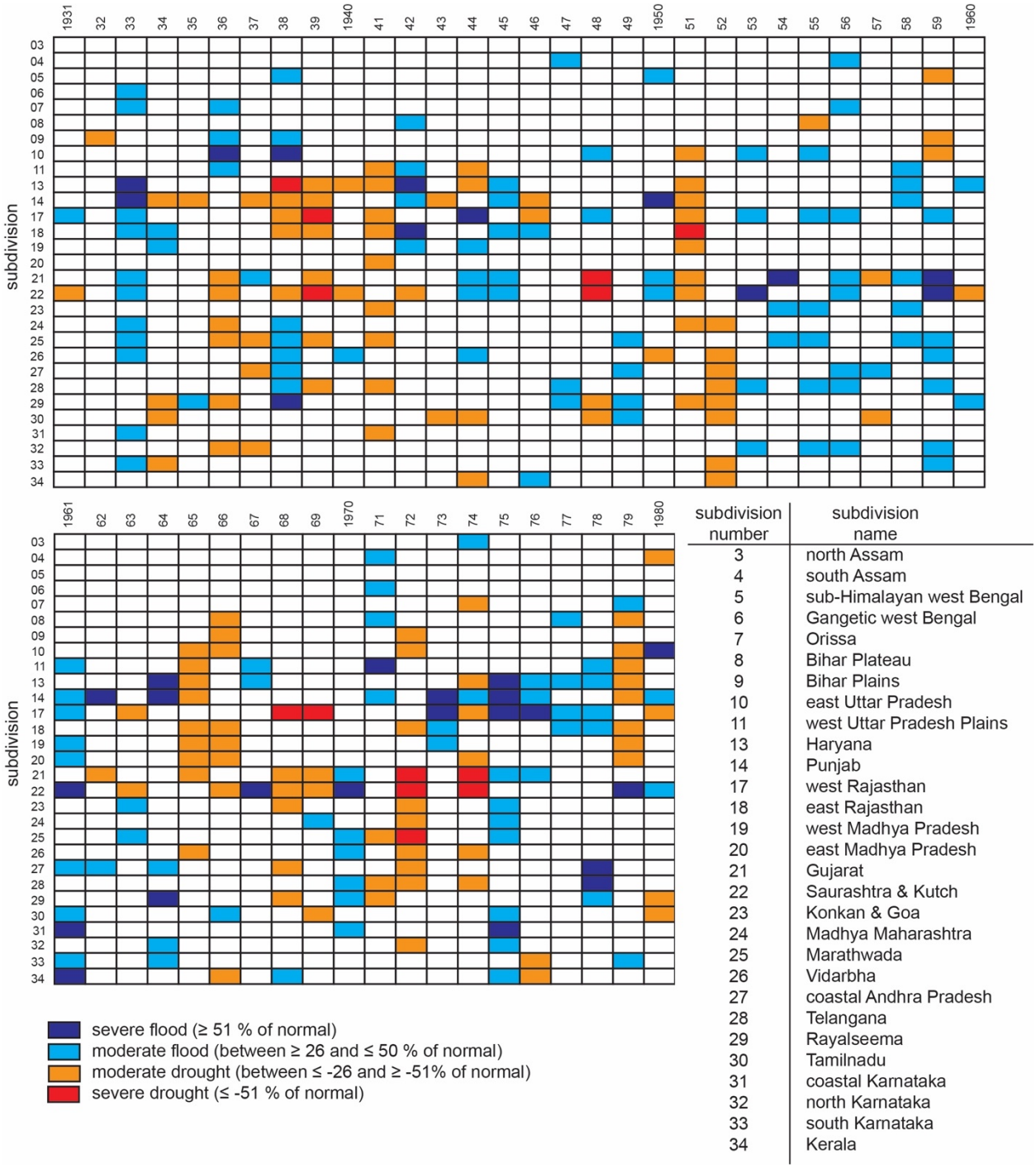
Supplemental Figure 2:



Suppl. Fig. 2: The shape of the Mexican hat (Rickler) wavelet (inset) and an example of how its shape fits the rBC peaks (red) at various scales (grey) in the Dasuopu record.

Supplemental Figure 3:

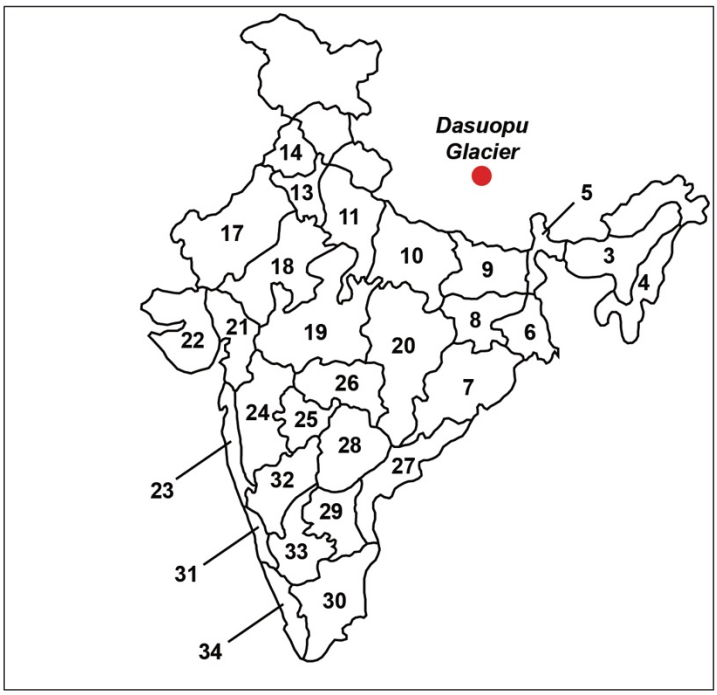




subdivision number	subdivision name
3	north Assam
4	south Assam
5	sub-Himalayan west Bengal
6	Gangetic west Bengal
7	Orissa
8	Bihar Plateau
9	Bihar Plains
10	east Uttar Pradesh
11	west Uttar Pradesh Plains
13	Haryana
14	Punjab
17	west Rajasthan
18	east Rajasthan
19	west Madhya Pradesh
20	east Madhya Pradesh
21	Gujarat
22	Saurashtra & Kutch
23	Konkan & Goa
24	Madhya Maharashtra
25	Marathwada
26	Vidarbha
27	coastal Andhra Pradesh
28	Telangana
29	Rayalseema
30	Tamilnadu
31	coastal Karnataka
32	north Karnataka
33	south Karnataka
34	Kerala

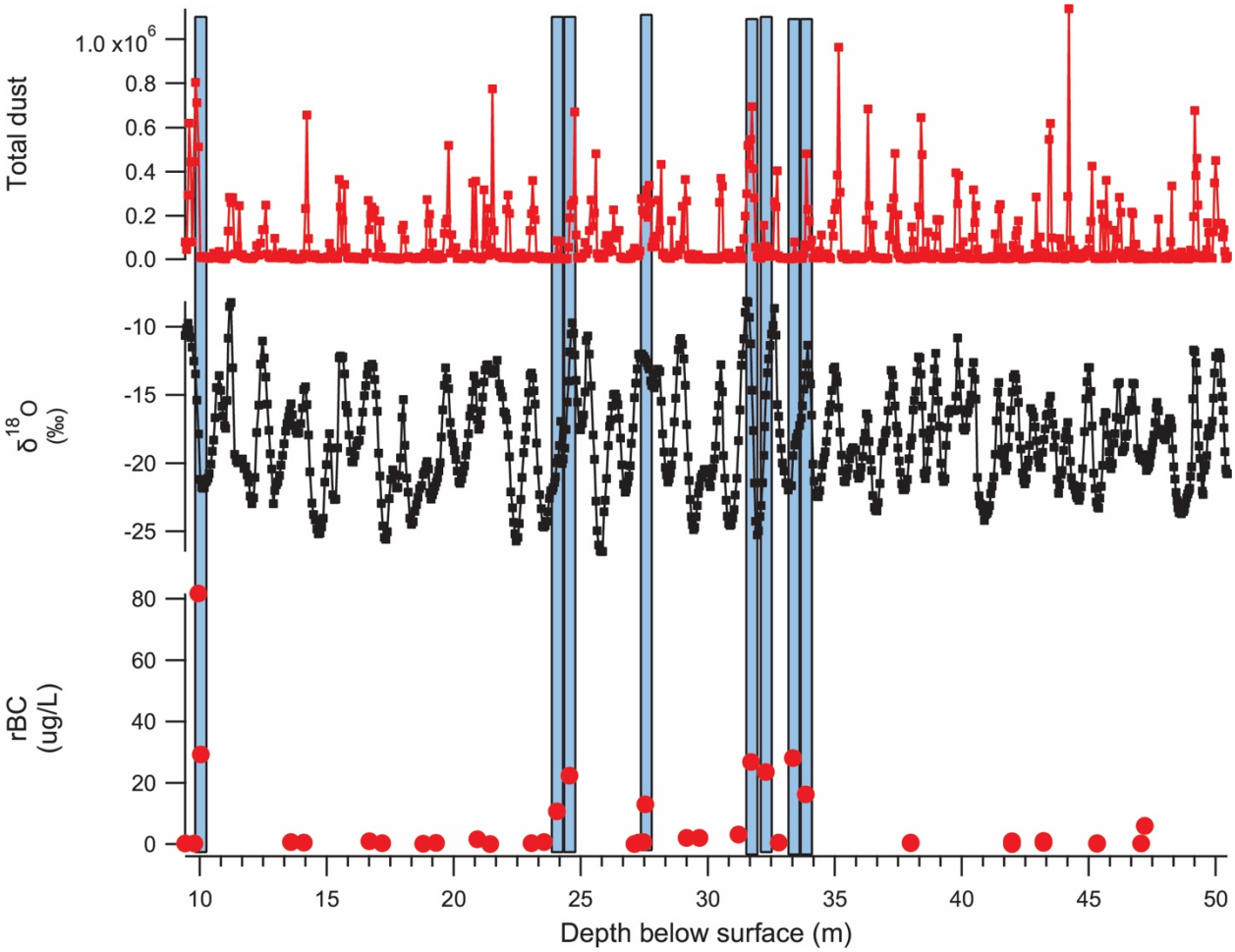
b)

subdivision number	subdivision name
3	north Assam
4	south Assam
5	sub-Himalayan west Bengal
6	Gangetic west Bengal
7	Orissa
8	Bihar Plateau
9	Bihar Plains
10	east Uttar Pradesh
11	west Uttar Pradesh Plains
13	Haryana
14	Punjab
17	west Rajasthan
18	east Rajasthan
19	west Madhya Pradesh
20	east Madhya Pradesh
21	Gujarat
22	Saurashtra & Kutch
23	Konkan & Goa
24	Madhya Maharashtra
25	Marathwada
26	Vidarbha
27	coastal Andhra Pradesh
28	Telangana
29	Rayalseema
30	Tamilnadu
31	coastal Karnataka
32	north Karnataka
33	south Karnataka
34	Kerala



Suppl. Fig. 3: a) The occurrence of droughts and floods reported from meteorological subdivisions in India from 1871 – 1980; b) The name and location of meteorological subdivisions in India (taken from Parthasarathy et al., 1987).

Supplemental Figure 4:



Suppl. Fig. 4: A comparison between rBC in the firn section of the Dasuopu ice core and total dust and $\delta^{18}O$ at equivalent depths. Note that higher rBC concentrations coincide with peaks in total dust and $\delta^{18}O$ values suggesting that, as observed loer in the ice core, higher rBC concentrations are associated with non-monsoonal deposition.

Supplemental Table 1.

Year (CE)	Depth in core (m from surface)
1938.35	60.48 - 60.52
1921.32	69.79 - 69.84
1909.32	76.02 - 76.06
1892.96	83.45 - 83.48
1890.94	84.24 - 84.26
1870.69	93.34 - 93.38
1867.83	94.53 - 94.56
1867.78	94.56 - 94.59
1863.00	96.64 - 96.66
1847.32 - 1846.84	103.58 - 103.80
1841.17	105.88 - 105.90
1838.81 - 183.76	106.82 - 106.88
1833.16 - 1833.07	108.92 - 108.98
1826.41	111.02 - 111.05
1819.82	113.03 - 113.05
1811.82	115.25 - 115.28
1806.42 - 1805.88	116.20 - 116.30
1790.15 - 1787.12	118.78 - 119.32

Suppl. Table 1: The sampling interval and corresponding dates of missing samples in the ice core section of the Dasuopu core.