

Spatiotemporal distributions of the thunderstorm and lightning structures over the Qinghai–Tibet Plateau

Table S1 to S2

Table S1. The corresponding standard deviations of Figure 4 (a), Figure 6 (a) and Figure 8 (a).

| | Sep | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---|------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|
| RH_{20dBZ} (km) | | 1.3 | 1.5 | 1.6 | 2.1 | 2.1 | 2.2 | 2.1 | 1.6 | |
| RH_{30dBZ} (km) | | 1.5 | 1.4 | 1.5 | 1.8 | 1.8 | 1.9 | 1.9 | 1.5 | |
| H_{20dBZ} (km) | | 1.7 | 1.4 | 1.4 | 2.0 | 2.1 | 2.1 | 2.0 | 1.5 | |
| H_{30dBZ} (km) | | 1.6 | 1.4 | 1.4 | 1.7 | 1.7 | 1.8 | 1.8 | 1.5 | |
| $A_{>20dBZ}$ (km ²) | | 2.9×10 ³ | 3.3×10 ³ | 2.2×10 ³ | 2.9×10 ³ | 2.7×10 ³ | 2.3×10 ³ | 2.5×10 ³ | 1.9×10 ³ | |
| $A_{>30dBZ}$ (km ²) | | 232 | 214 | 217 | 710 | 793 | 780 | 598 | 206 | |
| flash rate of thunderstorms (fl min ⁻¹) | | 1.3 | 3.6 | 3.2 | 3.4 | 2.2 | 2.5 | 2.7 | 2.0 | |
| flash density relative to $A_{>20dBZ}$ (fl km ⁻² min ⁻¹) | | 1.7×10 ⁻³ | 6.7×10 ⁻³ | 5.0×10 ⁻³ | 4.9×10 ⁻³ | 5.3×10 ⁻³ | 4.5×10 ⁻³ | 4.3×10 ⁻³ | 5.2×10 ⁻³ | |
| flash density relative to $A_{>30dBZ}$ (fl km ⁻² min ⁻¹) | | 1.1×10 ⁻² | 1.3×10 ⁻² | 1.5×10 ⁻² | 1.4×10 ⁻² | 1.4×10 ⁻² | 1.3×10 ⁻² | 1.1×10 ⁻² | 1.2×10 ⁻² | |
| flash duration (s) | 0.17 | 0.24 | 0.19 | 0.17 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 | 0.22 |
| flash footprint (km ²) | 148 | 187 | 179 | 145 | 175 | 179 | 200 | 203 | 177 | 198 |
| flash length (km) | 5.8 | 7.6 | 6.9 | 6.1 | 6.5 | 6.8 | 7.2 | 7.4 | 7.2 | 7.8 |
| flash radiance (J m ⁻² sr ⁻¹ μm ⁻¹) | 0.7 | 2.6 | 1.8 | 1.4 | 1.1 | 0.9 | 0.8 | 1.2 | 1.3 | 1.9 |

Table S2. The corresponding standard deviations of Figure 4 (b), Figure 6 (b) and Figure 8 (b).

| Time (LT) | 00:00- 02:00 | 02:00- 04:00 | 04:00- 06:00 | 06:00- 08:00 | 08:00- 10:00 | 10:00- 12:00 | 12:00- 14:00 | 14:00- 16:00 | 16:00- 18:00 | 18:00- 20:00 | 20:00- 22:00 | 22:00- 24:00 |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| RH_{20dBZ} (km) | 2.1 | 2.0 | 1.7 | 2.4 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.3 | 2.2 | 2.2 |
| RH_{30dBZ} (km) | 1.7 | 1.7 | 1.2 | 1.9 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.0 | 1.9 | 1.9 |
| H_{20dBZ} (km) | 1.9 | 1.7 | 1.6 | 2.1 | 1.1 | 1.5 | 1.8 | 2.0 | 2.2 | 2.2 | 2.1 | 2.0 |
| H_{30dBZ} (km) | 1.6 | 1.5 | 1.3 | 1.6 | 0.9 | 1.2 | 1.5 | 1.7 | 1.9 | 1.9 | 1.8 | 1.7 |
| $A_{>20dBZ}$ (km ²) | 5.5×10^3 | 6.5×10^3 | 1.7×10^3 | 900 | 739 | 845 | 964 | 1.3×10^3 | 2.2×10^3 | 3.6×10^3 | 4.8×10^3 | 4.7×10^3 |
| $A_{>30dBZ}$ (km ²) | 2.4×10^3 | 1.2×10^3 | 130 | 239 | 89 | 112 | 188 | 228 | 498 | 1.0×10^3 | 1.3×10^3 | 1.6×10^3 |
| flash rate of thunderstorms (fl min ⁻¹) | 2.4 | 5.3 | 2.6 | 1.0 | 1.3 | 1.4 | 1.6 | 2.0 | 2.5 | 4.6 | 4.9 | 3.5 |
| flash density relative to $A_{>20dBZ}$ (fl km ⁻² min ⁻¹) | 5.6×10^{-3} | 3.6×10^{-3} | 3.4×10^{-3} | 4.0×10^{-3} | 5.9×10^{-3} | 5.6×10^{-3} | 5.1×10^{-3} | 4.7×10^{-3} | 4.6×10^{-3} | 5.2×10^{-3} | 5.3×10^{-3} | 3.4×10^{-3} |
| flash density relative to $A_{>30dBZ}$ (fl km ⁻² min ⁻¹) | 1.8×10^{-2} | 1.5×10^{-2} | 1.7×10^{-2} | 1.8×10^{-2} | 2.0×10^{-2} | 1.5×10^{-2} | 1.3×10^{-2} | 1.2×10^{-2} | 1.1×10^{-2} | 1.4×10^{-2} | 1.5×10^{-2} | 1.2×10^{-2} |
| flash duration (s) | 0.21 | 0.20 | 0.19 | 0.21 | 0.16 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.19 | 0.20 |

| Time (LT) | 00:00-02:00 | 02:00-04:00 | 04:00-06:00 | 06:00-08:00 | 08:00-10:00 | 10:00-12:00 | 12:00-14:00 | 14:00-16:00 | 16:00-18:00 | 18:00-20:00 | 20:00-22:00 | 22:00-24:00 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| flash footprint (km ²) | 276 | 302 | 205 | 202 | 138 | 118 | 131 | 151 | 166 | 208 | 234 | 278 |
| flash length (km) | 8.9 | 9.8 | 7.4 | 7.2 | 9.6 | 5.1 | 5.5 | 6.0 | 6.4 | 7.4 | 8.1 | 9.0 |
| flash radiance (J m ⁻² sr ⁻¹ μm ⁻¹) | 1.7 | 2.1 | 1.0 | 2.9 | 1.2 | 1.2 | 0.8 | 0.9 | 0.9 | 1.1 | 1.2 | 2.1 |