

## Supplementary Material

### **Aerosol variability and glacial chemistry over the western Himalayas**

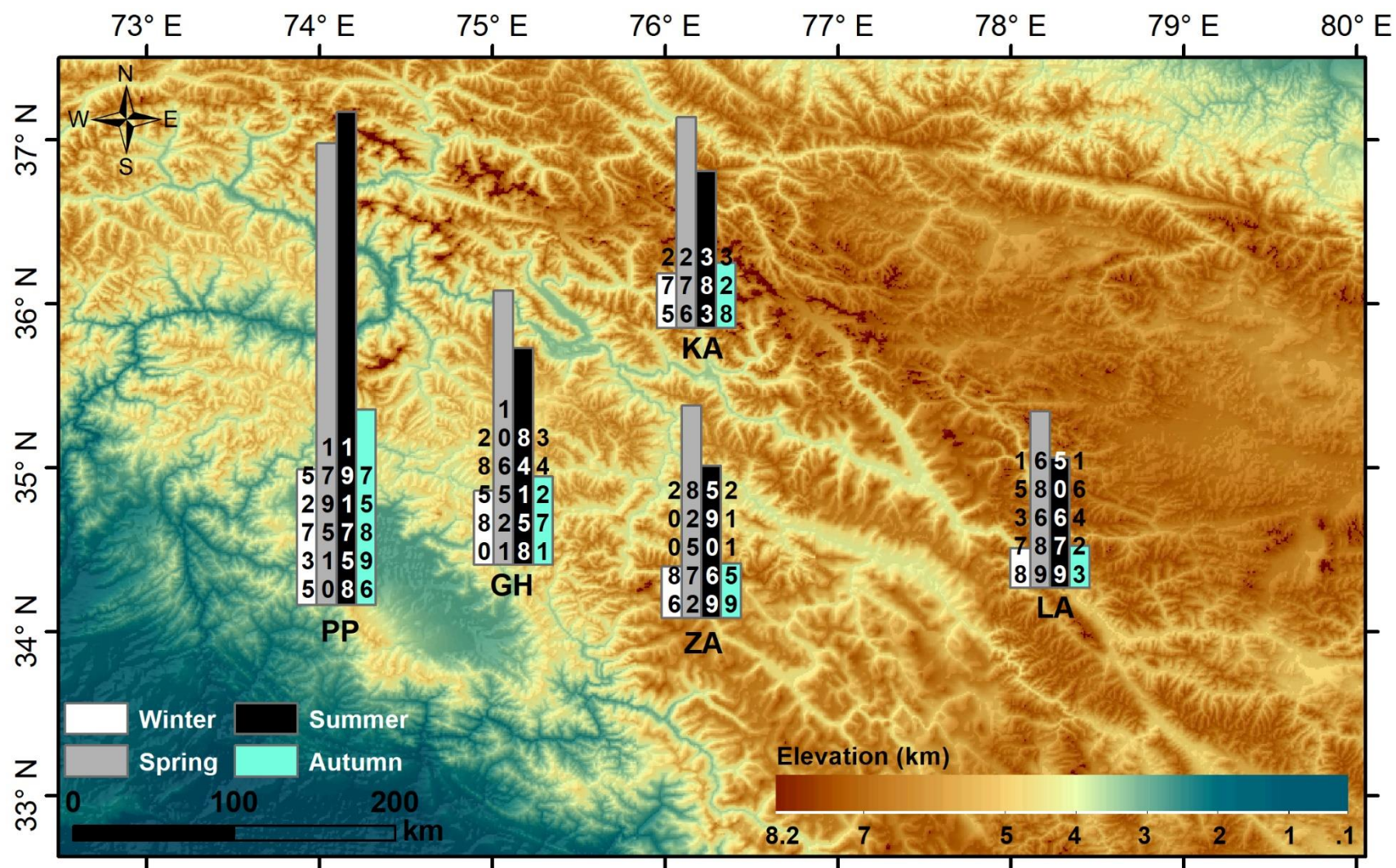
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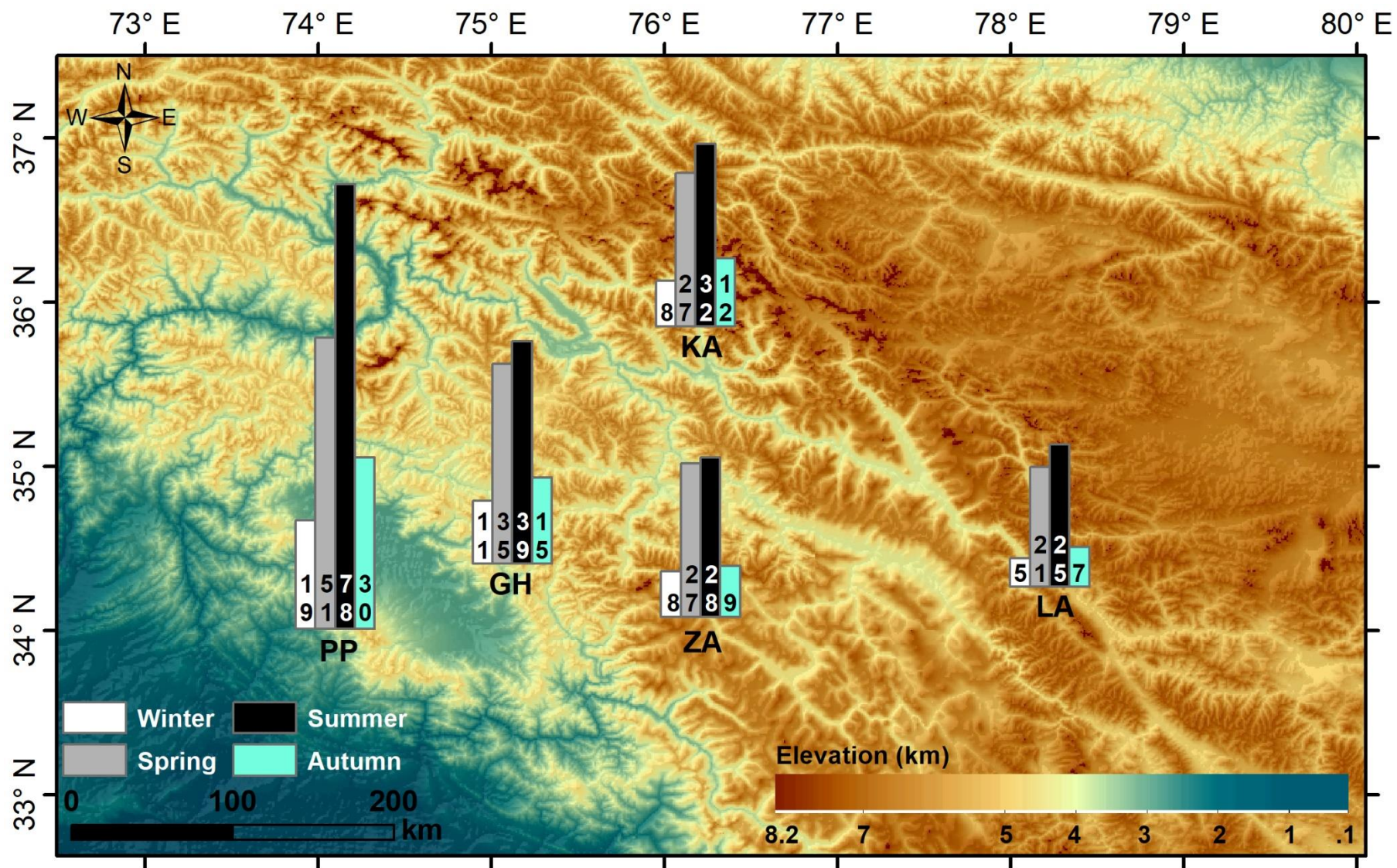
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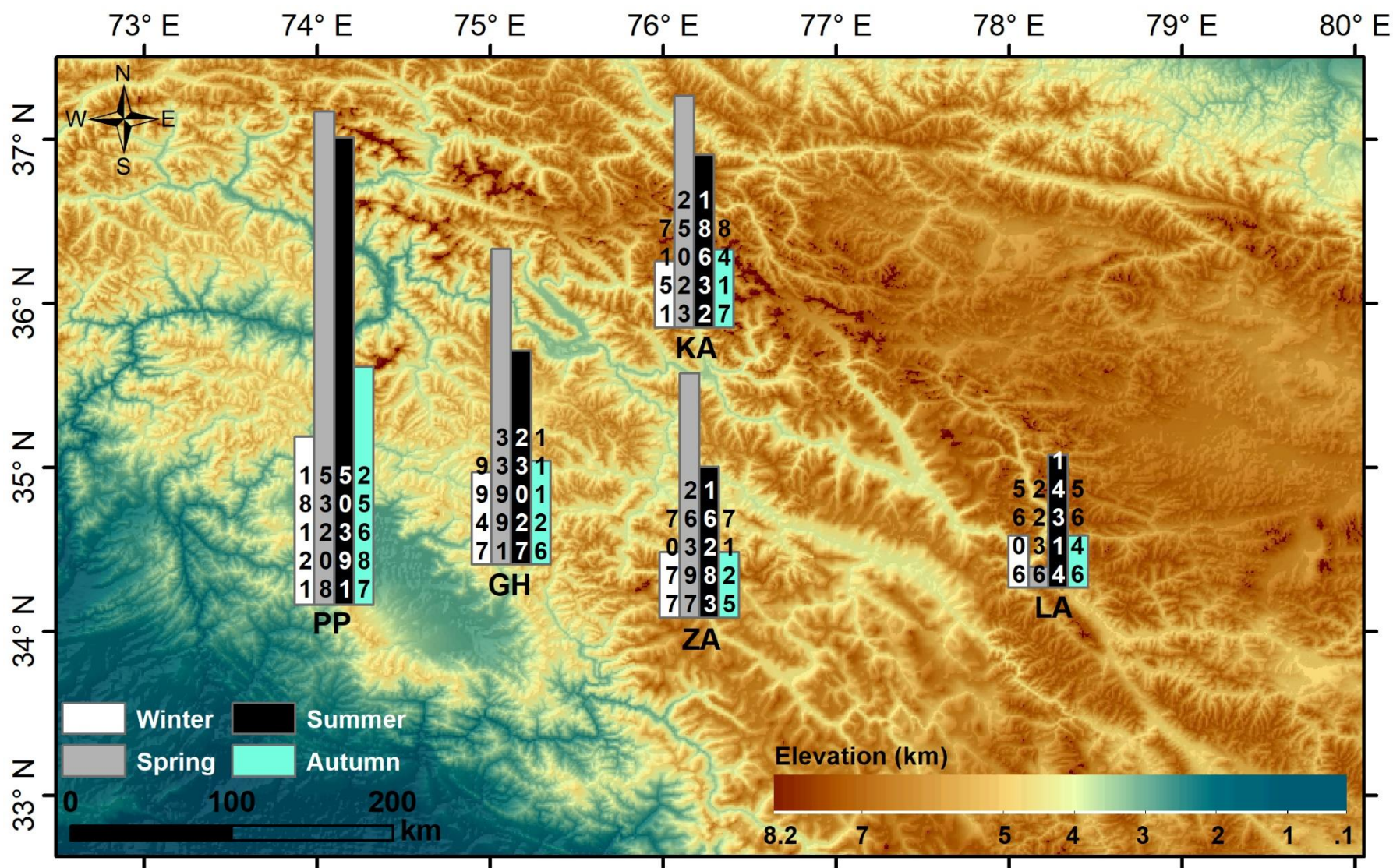
**Figure S1.** Average seasonal values ( $\mu\text{g m}^{-2}$ ) of columnar dust (DUCMASS) over the western Himalayas. PP; Pir Panjal Range, GH; Greater Himalaya Range, ZA; Zanaskar Range, LA; Ladakh Range, KA; Karakoram Range.





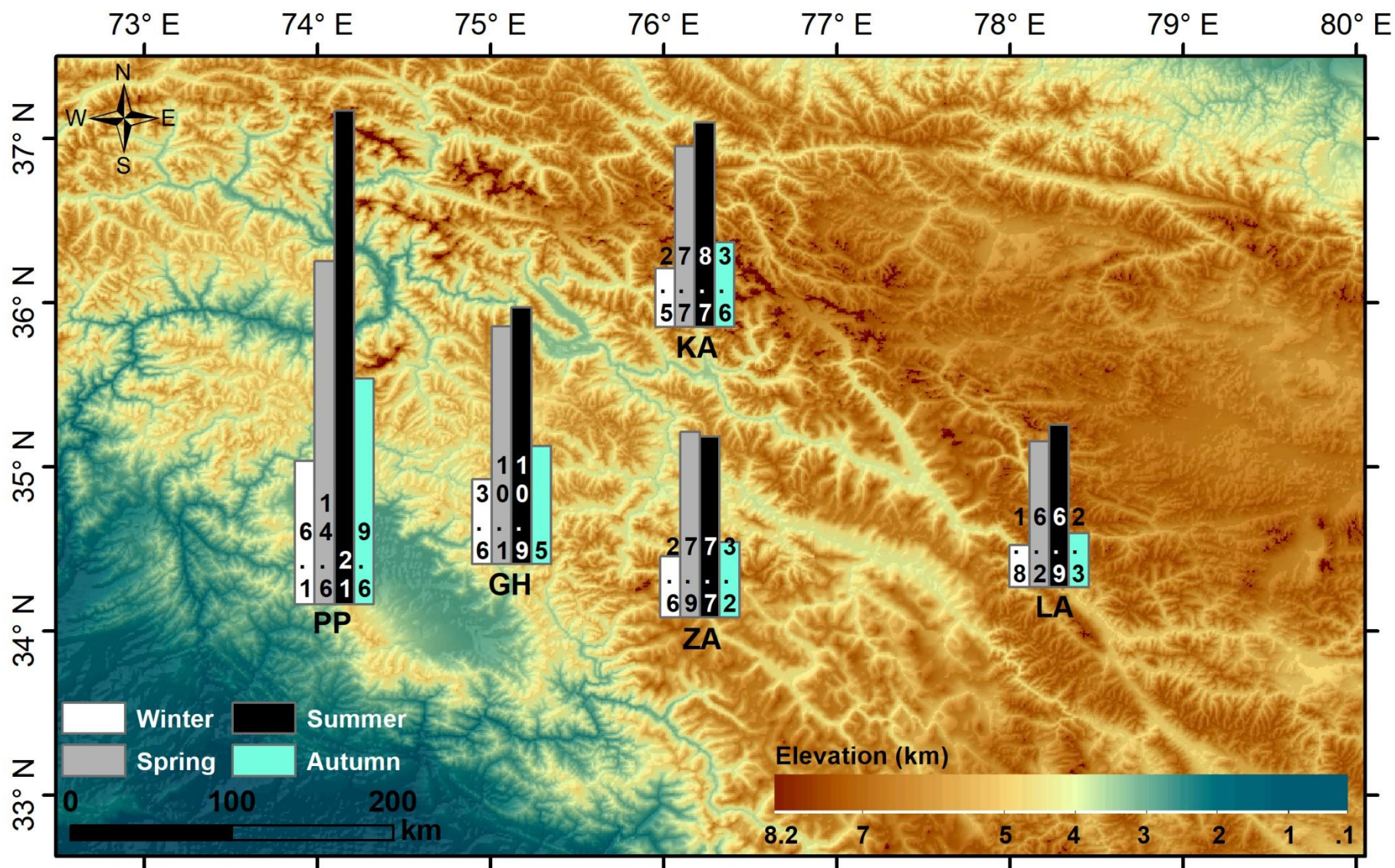
**Figure S2.** Average seasonal values ( $\mu\text{g m}^{-3}$ ) of surface dust (DUSMASS) over the western Himalayas





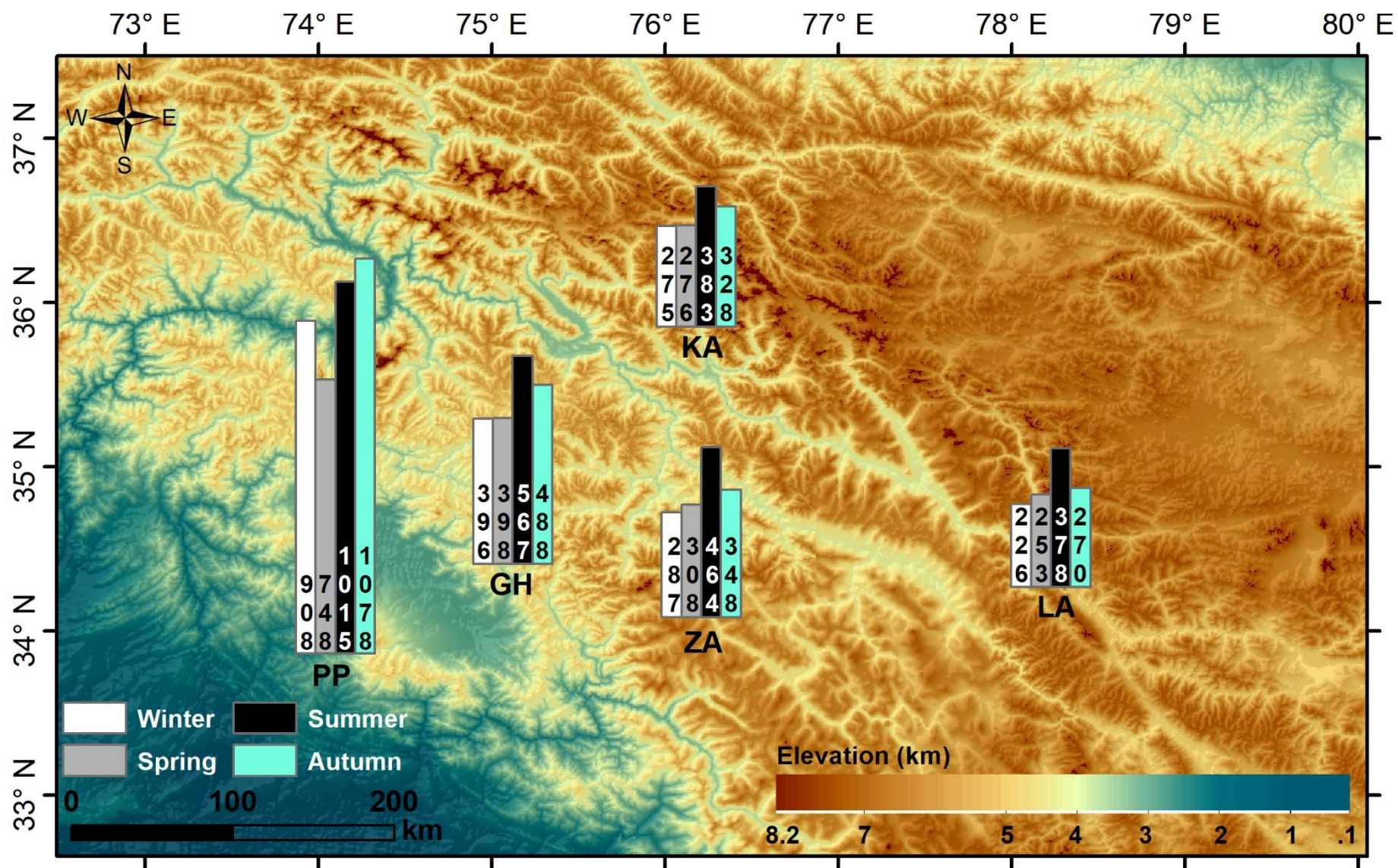
**Figure S3.** Average seasonal values ( $\mu\text{g m}^{-2}$ ) of columnar dust (DUCMASS2.5 with diameter  $< 2.5 \mu\text{m}$ ) over the western Himalayas





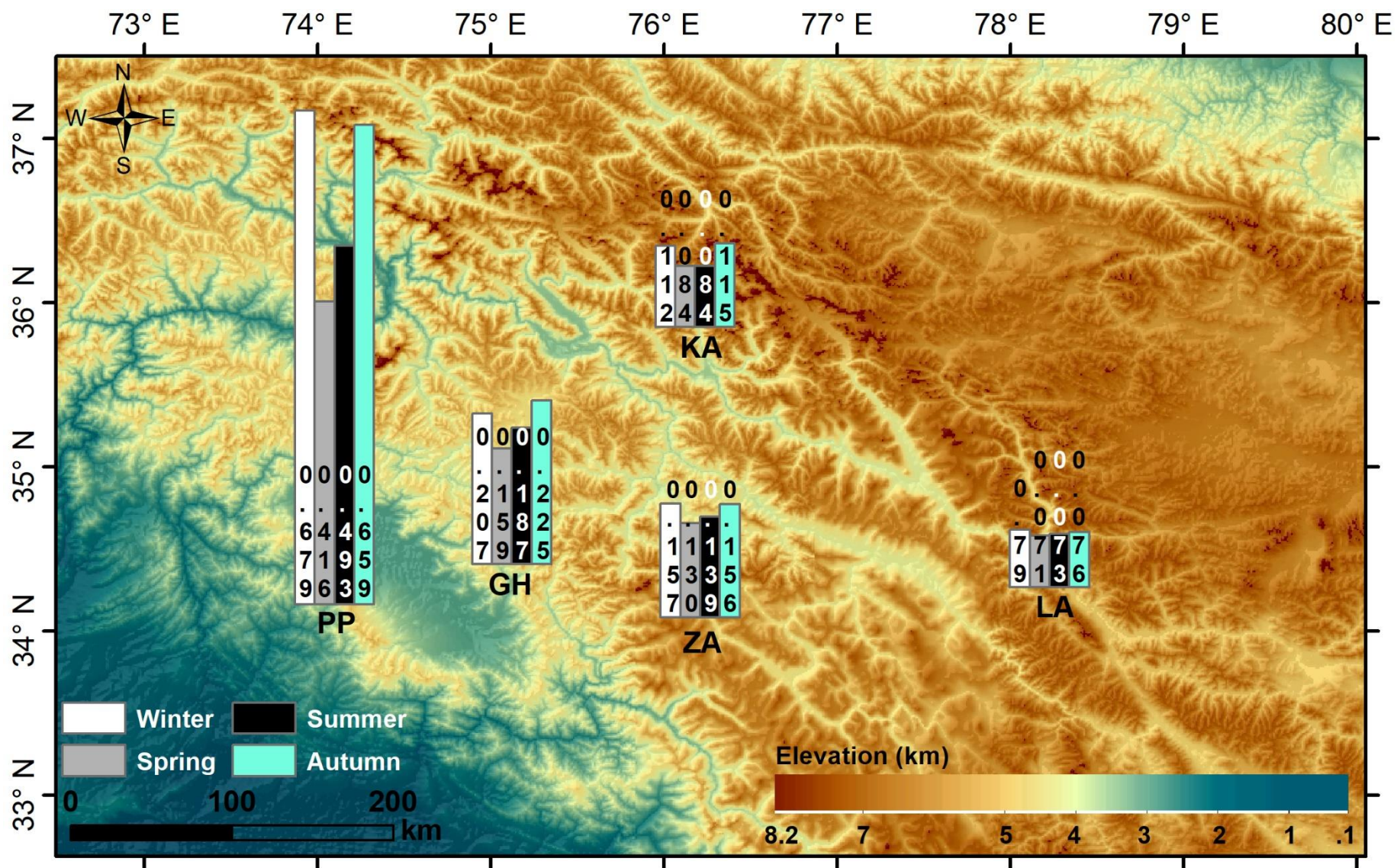
**Figure S4.** Average seasonal values ( $\mu\text{g m}^{-3}$ ) of surface dust (DUSMASS2.5 with diameter  $< 2.5 \mu\text{m}$ ) over the western Himalayas





**Figure S5.** Average seasonal values ( $\mu\text{g m}^{-2}$ ) of columnar black carbon (BCCMASS) over the western Himalayas





**Figure S6.** Average seasonal values ( $\mu\text{g m}^{-3}$ ) of surface black carbon (BCSMASS) over the western Himalayas