

Table S1. Location and lake size of the small lakes close to the sampled large lakes on the Tibetan Plateau (the samples are coded as the same number of the corresponding large lakes, e.g. SS-14 corresponds to LS-14).

No.	Latitude (°N)	Longitude (°E)	Elevation (m a.s.l.)	$R_{\text{Lake}}$ (m)	Pollen data source
SS-14	37.08	97.31	2848	175	<a href="#">Herzschuh et al., 2010</a>
SS-15	36.97	96.26	2734	10	<a href="#">Herzschuh et al., 2010</a>
SS-19	36.87	101.03	2965	190	<a href="#">Herzschuh et al., 2010</a>
SS-27	34.99	98.08	4256	20	<a href="#">Herzschuh et al., 2010</a>
SS-28	34.87	97.51	4290	30	<a href="#">Herzschuh et al., 2010</a>
SS-30	35.02	97.35	4310	20	<a href="#">Herzschuh et al., 2010</a>
SS-32	34.88	98.16	4244	95	<a href="#">Herzschuh et al., 2010</a>
SS-34	34.74	98.11	4241	100	<a href="#">Herzschuh et al., 2010</a>
SS-36	34.01	102.28	3430	30	<a href="#">Herzschuh et al., 2010</a>

Figure S1. Pollen spectra of modern surface sediment samples of 9 small lakes (A, see details in Table S1) and Lake Donggi Cona (B).

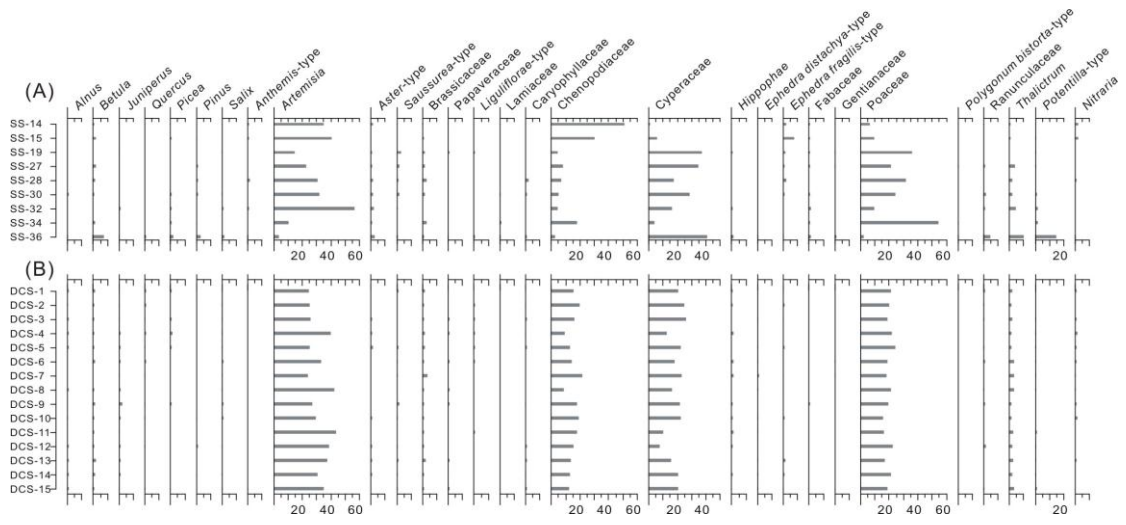


Figure S2. PROTEST residuals for pollen species after Procrustes analysis of surface pollen data from nine pairs of neighboring large and small lakes. Higher residuals (e.g. Poaceae, Brassicaceae) indicate stronger dissimilarities between the large and small lake pairs.

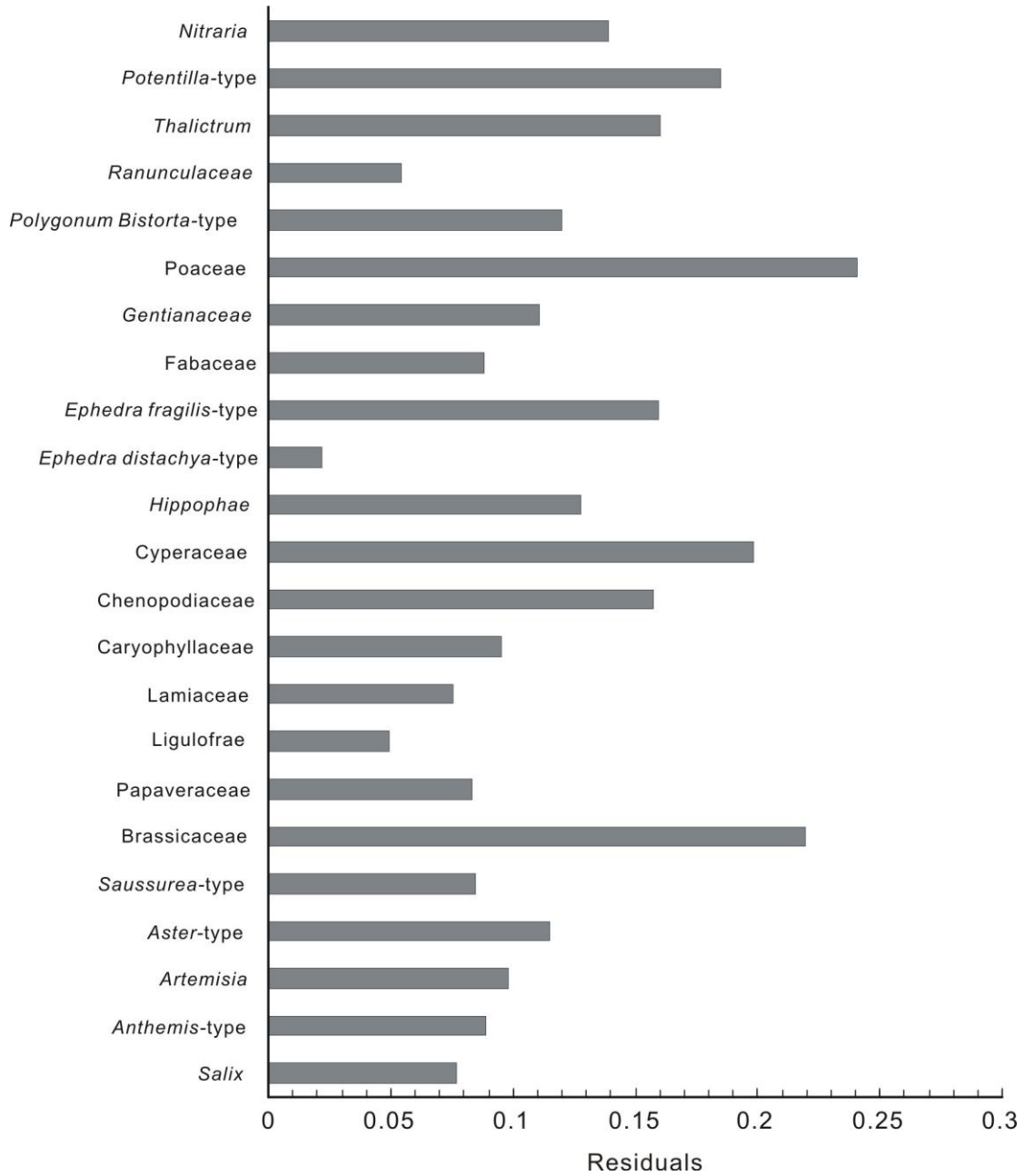


Figure S3. PCA bi-plot of surface sediment samples from Lake Donggi Cona, three groups (DCS-I, DCS-II and DCS-III) were identified according to the pollen assemblages.

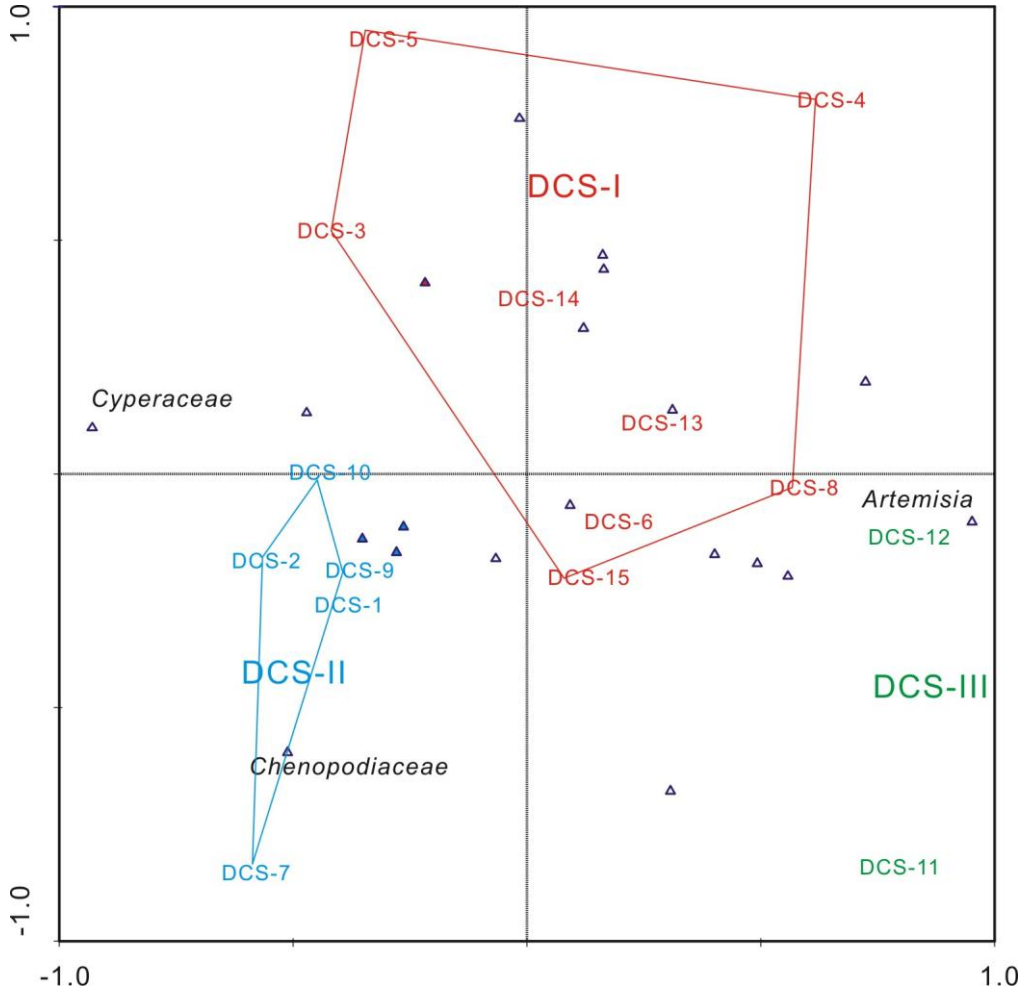


Figure S4. Within-lake variations in WA-PLS reconstructed mean annual precipitation (in millimeters, red numbers) for Lake Donggi Cona. Numbers in brackets indicate the sample numbers (see also in Figure S1 and Figure S3).

