|  |
| --- |
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**Fig. S1** Whisker-plots for plants functional traits variation across the altitudinal groups

\*Different letters shows significant at p < 0.05 by Tukey HSD

**Table S2** General linear Model details for different phenotypic plasticity relation across the elevation gradient as predictor variable

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| R(V) | Estimate | SE | t-value | *p*-value | DF | F-value | PC (r) |
| RL/P | 0.005 | 0.002 | -2.52 | ≤ 0.01 | 1, 28 | 6.3\*\* | -0.43\*\* |
| AGPH/P | -0.029 | 0.007 | -3.78 | <0.01 | 1, 28 | 14.3\*\* | -0.58\*\* |
| CC/P | -0.05 | 0.02 | -2.51 | ≤ 0.01 | 1, 28 | 6.3\*\* | -0.42\*\* |
| NL/P | -0.068 | 0.008 | -7.80 | < 0.001 | 1, 28 | 60.9\*\* | -0.82\*\* |
| LL/L | -0.0008 | 0.0006 | -1.36 | >0.05 | 1, 28 | 1.58 | -0.24 |
| LW/L | -0.0013 | 0.0007 | -1.99 | = 0.05 | 1, 28 | 3.97\* | -0.35\* |
| LA/L | -0.024 | 0.012 | -2.04 | <0.05 | 1, 28 | 4.17\* | -0.36\* |
| LDBM/P | -0.020 | 0.004 | -4.51 | <0.01 | 1, 28 | 20.42\*\* | -0.64\*\* |
| ADBM/P | -0.072 | 0.01 | -4.01 | <0.01 | 1, 28 | 16.10\*\* | -0.60\*\* |
| BDBM/P | -0.01 | 0.004 | -2.64 | < 0.01 | 1, 28 | 7.0\*\* | -0.44\*\* |
| TDBM/P | -0.08 | 0.02 | -3.87 | <0.01 | 1, 28 | 15.04\*\* | -0.59\*\* |
| FDBM/P | -0.01 | 0.006 | -1.72 | >0.05 | 1, 28 | 2.96 | -0.30 |
| IDBM/P | -0.003 | 0.0009 | -4.07 | >0.001 | 1, 28 | 16.0\*\* | -0.61\*\* |
| NC/P | -0.094 | 0.011 | -8.23 | >0.001 | 1, 28 | 67.8\*\* | -0.84\*\* |
| NF/P | -0.21 | 0.021 | -10.34 | >0.001 | 1, 28 | 107.1\*\* | -0.89\*\* |
| NC/NF | 3.6E-005 | 3.06E-005 | 1.19 | > 0.05 | 1, 28 | 1.43 | 0.22 |
| IDBM/FDBM | -8.6E-005 | 5.9E-005 | -1.45 | >0.05 | 1, 28 | 2.10 | -0.26 |

**Table S3.** Correlation function among the various environmental and plant functional traits parameters

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Elev | N° | E° | AA | Cl% | Si% | Sa% | pH1:5 | OM% | L % | N | P | K | EC | TDS | WP | FC | D | SP | AW |
| Elev | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N° | .345 | 1 | .328 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E° | .87\*\* | .328 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AA | -.137 | -.188 | -.13 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cl% | .113 | .156 | .197 | -.13 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Si% | -.140 | -.160 | -.26 | -.09 | -.343 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sa% | .035 | .019 | .082 | .198 | -.50\*\* | -.6\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| pH1:5 | -.055 | .041 | .065 | -.15 | .150 | -.05 | -.07 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| OM% | -.61\*\* | .008 | -.5\*\* | .033 | -.047 | .201 | -.14 | .178 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| L % | -.36\* | -.36\* | -.23 | .077 | .004 | .320 | -.29 | .200 | .237 | 1 |  |  |  |  |  |  |  |  |  |  |
| N | -.290 | -.102 | -.38\* | .028 | -.184 | .197 | -.03 | -.11 | .247 | .031 | 1 |  |  |  |  |  |  |  |  |  |
| P | .089 | .045 | .058 | .240 | -.064 | -.28 | .310 | -.18 | -.12 | -.27 | .049 | 1 |  |  |  |  |  |  |  |  |
| K | -.060 | .072 | .141 | -.14 | .152 | -.35 | .205 | .020 | -.02 | -.02 | -.36\* | .377\* | 1 |  |  |  |  |  |  |  |
| EC | .348 | .411\* | .327 | -.08 | .105 | -.09 | .005 | .068 | .000 | -.35 | -.167 | .309 | .215 | 1 |  |  |  |  |  |  |
| TDS | .348 | .411\* | .327 | -.08 | .105 | -.09 | .005 | .068 | .000 | -.35 | -.167 | .309 | .215 | 1.\*\* | 1 |  |  |  |  |  |
| WP | .120 | .148 | .213 | -.09 | .996\*\* | -.35 | -.4\*\* | .153 | -.06 | .005 | -.172 | -.061 | .153 | .092 | .092 | 1 |  |  |  |  |
| FC | .074 | .107 | .131 | -.14 | .945\*\* | -.02 | -.7\*\* | .141 | .012 | .118 | -.119 | -.163 | .038 | .062 | .062 | .94\*\* | 1 |  |  |  |
| D | -.079 | -.110 | -.11 | .228 | -.92\*\* | .018 | .74\*\* | -.15 | -.01 | -.10 | .130 | .159 | -.045 | -.118 | -.118 | -.90\*\* | -.9\*\* | 1 |  |  |
| SP | .078 | .108 | .110 | -.27 | .929\*\* | -.01 | -.7\*\* | .154 | .018 | .110 | -.130 | -.157 | .042 | .118 | .118 | .90\*\* | .96\*\* | -1.0\*\* | 1 |  |
| AW | -.160 | -.131 | -.24 | -.14 | .032 | .90\*\* | -.8\*\* | .029 | .197 | .40\* | .219 | -.394\* | -.362\* | -.122 | -.122 | .014 | .339 | -.351 | .352 | 1 |
| MYT | -.92\*\* | -.43\* | -.8\*\* | .122 | -.024 | .095 | -.06 | -.03 | .50\*\* | .40\* | .259 | -.026 | .010 | -.386\* | -.386\* | -.033 | .001 | -.004 | .007 | .143 |
| AYH | -.82\*\* | -.53\*\* | -.8\*\* | .152 | -.126 | .149 | -.03 | .016 | .57\*\* | .37\* | .239 | -.108 | -.028 | -.246 | -.246 | -.140 | -.09 | .068 | -.06 | .159 |
| DLH | -.79\*\* | -.55\*\* | -.8\*\* | .115 | -.109 | .167 | -.06 | .192 | .47\*\* | .188 | .180 | -.175 | -.047 | -.284 | -.284 | -.119 | -.06 | .038 | -.03 | .182 |
| RL/P | -.45\* | -.266 | -.4\* | -.10 | -.196 | .157 | .018 | -.30 | .273 | .023 | .091 | -.149 | .105 | -.234 | -.234 | -.172 | -.13 | .200 | -.20 | .081 |
| AGPH/P | -.55\*\* | -.144 | -.6\*\* | .204 | -.009 | .113 | -.09 | .018 | .331 | .135 | .347 | .007 | .075 | -.156 | -.156 | -.018 | .012 | -.042 | .042 | .114 |
| CC/P | -.44\* | -.42\* | -.5\*\* | .273 | -.267 | .60\*\* | -.33 | -.04 | .350 | .208 | .296 | -.102 | -.264 | -.160 | -.160 | -.245 | -.05 | .141 | -.14 | .48\*\* |
| NL/P | -.85\*\* | -.111 | -.7\*\* | .160 | -.166 | .156 | -.00 | .001 | .62\*\* | .288 | .332 | -.033 | -.031 | -.262 | -.262 | -.173 | -.12 | .137 | -.13 | .164 |
| LL/L | -.23 | -.40\* | -.17 | -.20 | -.178 | .218 | -.05 | .296 | .348 | .56\*\* | .016 | -.271 | .232 | -.172 | -.172 | -.165 | -.10 | .118 | -.12 | .176 |
| LW/L | -.37\* | -.210 | -.30 | -.02 | -.123 | .243 | -.12 | .056 | .59\*\* | .303 | .193 | -.094 | .069 | .022 | .022 | -.111 | -.03 | .076 | -.07 | .213 |
| LA/L | -.36\* | -.312 | -.29 | -.11 | -.165 | .267 | -.10 | .178 | .56\*\* | .45\* | .155 | -.183 | .155 | -.062 | -.062 | -.151 | -.06 | .106 | -.10 | .224 |
| LDBM/P | -.60\*\* | -.48\*\* | -.7\*\* | .079 | -.112 | .184 | -.07 | .010 | .277 | .266 | .083 | -.127 | -.200 | -.288 | -.288 | -.133 | -.07 | .023 | -.01 | .217 |
| ADBM/P | -.54\*\* | -.53\*\* | -.6\*\* | .120 | -.169 | .211 | -.05 | .085 | .134 | .44\* | .312 | -.227 | -.197 | -.427\* | -.427\* | -.173 | -.11 | .070 | -.06 | .275 |
| BDBM/P | -.40\* | -.42\* | -.5\*\* | .011 | -.193 | .209 | -.03 | .041 | .010 | .327 | .035 | -.110 | -.082 | -.310 | -.310 | -.207 | -.14 | .096 | -.09 | .220 |
| TDBM/P | -.53\*\* | -.53\*\* | -.6\*\* | .103 | -.178 | .217 | -.05 | .079 | .115 | .43\* | .269 | -.211 | -.181 | -.417\* | -.417\* | -.184 | -.12 | .077 | -.07 | .272 |
| FDBM/P | -.262 | -.48\*\* | -.33 | .293 | -.169 | .257 | -.09 | .027 | .074 | .335 | .386\* | -.420\* | -.315 | -.381\* | -.381\* | -.154 | -.08 | .074 | -.07 | .340 |
| IDBM/P | -.61\*\* | -.208 | -.5\*\* | .119 | -.088 | -.11 | .181 | -.05 | .356 | .186 | .493\*\* | -.230 | -.125 | -.332 | -.332 | -.094 | -.14 | .106 | -.10 | -.009 |
| NC/P | -.83\*\* | -.114 | -.8\*\* | .119 | -.101 | .218 | -.11 | -.02 | .58\*\* | .332 | .227 | -.044 | .116 | -.232 | -.232 | -.094 | -.02 | .066 | -.06 | .206 |
| NF/P | -.89\*\* | -.169 | -.7\*\* | -.01 | -.127 | .184 | -.06 | .126 | .73\*\* | .341 | .384\* | -.209 | .084 | -.205 | -.205 | -.127 | -.06 | .085 | -.08 | .213 |
| NC/NF | .252 | -.024 | .202 | .108 | .243 | .001 | -.20 | -.34 | -.39\* | -.18 | -.083 | .266 | .200 | .017 | .017 | .267 | .28 | -.223 | .220 | .049 |
| IDBM/FDBM | -.314 | .353 | -.21 | -.18 | .027 | -.25 | .212 | -.07 | .333 | -.16 | .202 | .239 | .147 | .209 | .209 | .013 | -.06 | .057 | -.05 | -.271 |
|  | MYT | AYH | DLH | RL/P | AGPH/P | CC/P | NL/P | LL/L | LW/L | LA/L | LDBM/P | ADBM/P | BDBM/P | TDBM/P | FDBM/P | IDBM/P | NC/P | NF/P | NC/NF | IDBM/FDBM |
| MYT | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AYH | .81\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DLH | .77\*\* | .88\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| RL/P | .462\* | .44\* | .40\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AGPH/P | .56\*\* | .53\*\* | .50\*\* | .102 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CC/P | .426\* | .46\*\* | .47\*\* | .38\* | .495\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NL/P | .82\*\* | .75\*\* | .62\*\* | .44\* | .556\*\* | .37\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LL/L | .180 | .399\* | .327 | .241 | .087 | .248 | .100 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| LW/L | .301 | .389\* | .331 | .257 | .023 | .40\* | .219 | .60\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |
| LA/L | .289 | .446\* | .37\* | .291 | .085 | .39\* | .206 | .86\*\* | .92\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| LDBM/P | .65\*\* | .74\*\* | .72\*\* | .330 | .235 | .37\* | .54\*\* | .142 | .150 | .158 | 1 |  |  |  |  |  |  |  |  |  |
| ADBM/P | .61\*\* | .68\*\* | .69\*\* | .277 | .344 | .309 | .47\*\* | .269 | .126 | .204 | .812\*\* | 1 |  |  |  |  |  |  |  |  |
| BDBM/P | .402\* | .57\*\* | .55\*\* | .255 | .075 | .174 | .338 | .253 | .036 | .132 | .844\*\* | .825\*\* | 1 |  |  |  |  |  |  |  |
| TDBM/P | .59\*\* | .67\*\* | .69\*\* | .281 | .303 | .292 | .45\* | .273 | .112 | .196 | .841\*\* | .994\*\* | .881\*\* | 1 |  |  |  |  |  |  |
| FDBM/P | .314 | .411\* | .45\* | .198 | .235 | .310 | .243 | .186 | .123 | .162 | .438\* | .766\*\* | .417\* | .721\*\* | 1 |  |  |  |  |  |
| IDBM/P | .58\*\* | .58\*\* | .47\*\* | .203 | .349 | -.00 | .66\*\* | .007 | .069 | .051 | .475\*\* | .594\*\* | .310 | .556\*\* | .594\*\* | 1 |  |  |  |  |
| NC/P | .77\*\* | .72\*\* | .61\*\* | .59\*\* | .583\*\* | .52\*\* | .80\*\* | .304 | .338 | .38\* | .54\*\* | .488\*\* | .423\* | .489\*\* | .178 | .406\* | 1 |  |  |  |
| NF/P | .78\*\* | .75\*\* | .70\*\* | .45\* | .480\*\* | .38\* | .79\*\* | .40\* | .53\*\* | .55\*\* | .460\* | .466\*\* | .271 | .442\* | .293 | .62\*\* | .81\*\* | 1 |  |  |
| NC/NF | -.214 | -.250 | -.24 | .258 | -.082 | .067 | -.22 | -.18 | -.40\* | -.33 | -.019 | -.065 | .145 | -.027 | -.124 | -.338 | .019 | -.373\* | 1 |  |
| IDBM/FDBM | .185 | .092 | -.06 | -.06 | .154 | -.16 | .342 | -.13 | .066 | -.00 | -.054 | -.329 | -.248 | -.322 | -.55\*\* | .254 | .228 | .348 | -.20 | 1 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | | \*. Correlation is significant at the 0.05 level (2-tailed). | | | | | | | | | | | |  |