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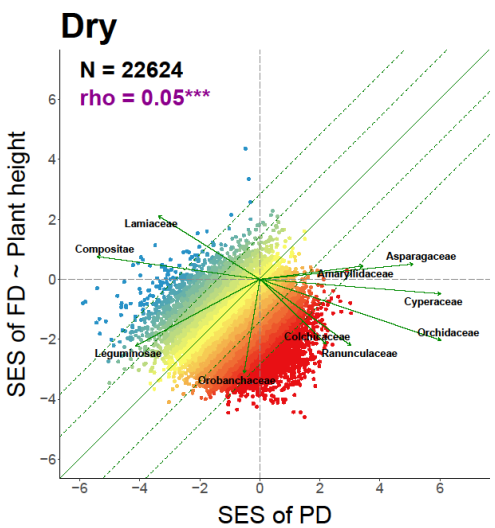
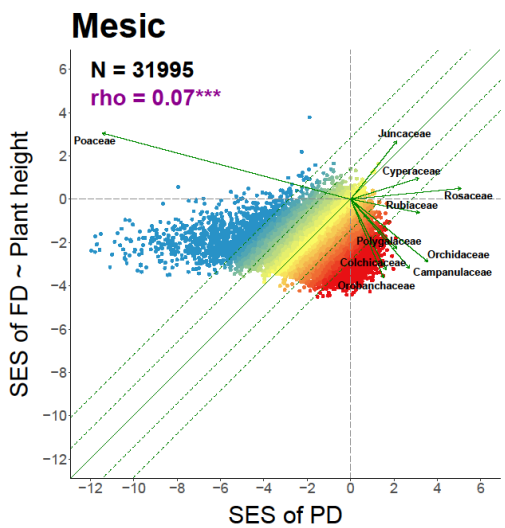
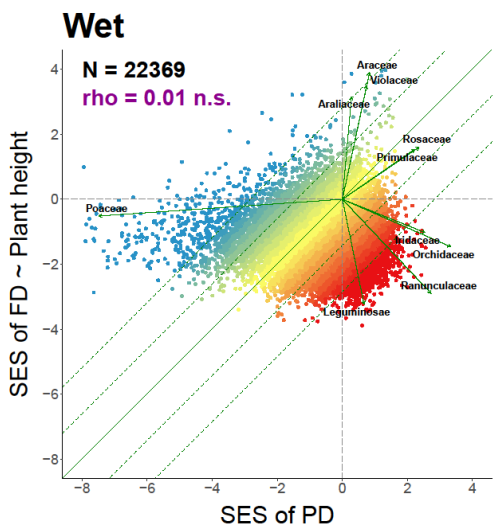
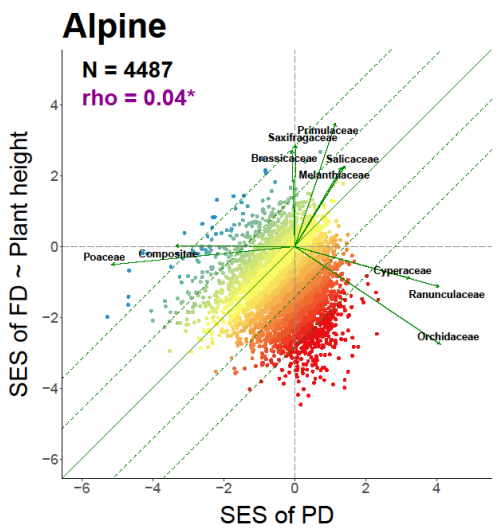
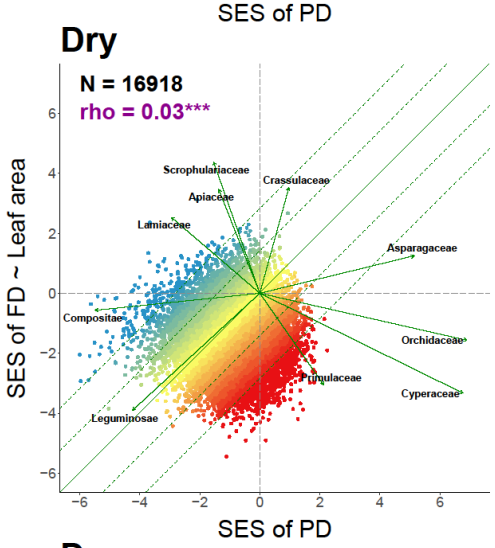
Supplementary Fig. S3. The relationship of standardized effect size (SES) of phylogenetic diversity (PD) and functional diversity (FD) of individual traits (plant height, leaf area, specific leaf area, leaf nitrogen content, seed mass and lateral spread) in dry, mesic, wet and alpine grasslands across Europe. Lateral spread was analysed for mesic and wet grasslands only as the trait values were not available for enough species present in the other grassland types. *Vectors* – relative species richness of vascular plant families in grassland plots (only ten families with the best fit are shown). *N* – number of vegetation plots. *Rho* – Spearman's correlation coefficient and its significance (*p*-value * ≥ 0.01 and < 0.05; ** ≥ 0.001 and < 0.01; *** < 0.001) are shown. *Solid green line* – the theoretical trend of coupled PD and FD; dashed green lines define distance intervals from the theoretical trend line (see Figure 2 for details). In the red-blue colour scale with a symmetrical colour intensity along the theoretical trend, red colour indicates a higher tendency of plots towards decoupled PD, while the blue colour indicates a higher tendency of plots towards decoupled FD.

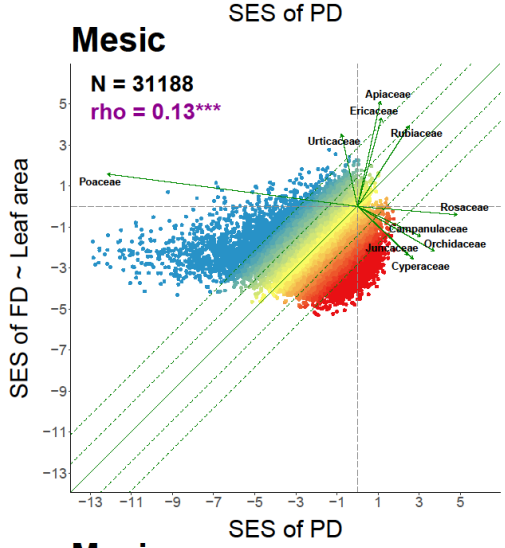

Dry
N = 22624
rho = 0.05***
SES of FD ~ Plant height
SES of PD
Lamiaceae
Compositae
Asparagaceae
Amaryllidaceae
Cyperaceae
Orchidaceae
Colchicaceae
Ranunculaceae
Leguminosae
Orobanchaceae

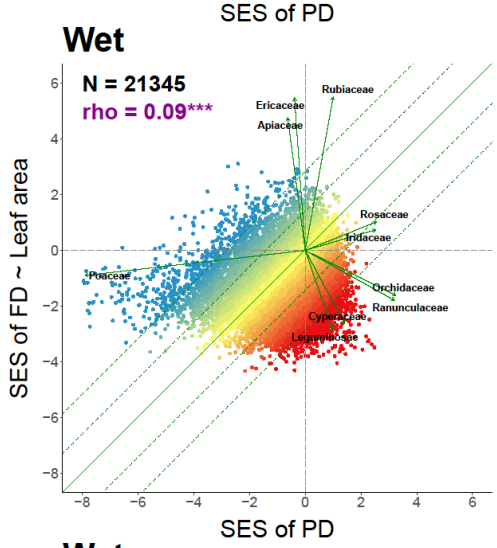

Mesic
N = 31995
rho = 0.07***
SES of FD ~ Plant height
SES of PD
Poaceae
Juncaceae
Cyperaceae
Rosaceae
Rubiaceae
Polygalaceae
Orchidaceae
Colchicaceae
Campanulaceae
Orobanchaceae

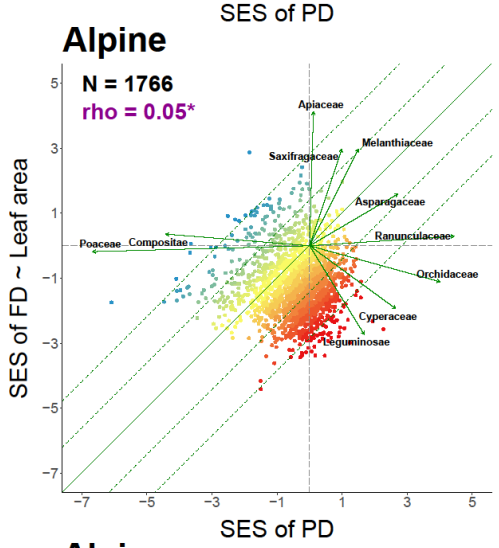

Wet
N = 22369
rho = 0.01 n.s.
SES of FD ~ Plant height
SES of PD
Araceae
Violaceae
Araliaceae
Rosaceae
Primulaceae
Poaceae
Iridaceae
Orchidaceae
Ranunculaceae
Leguminosae

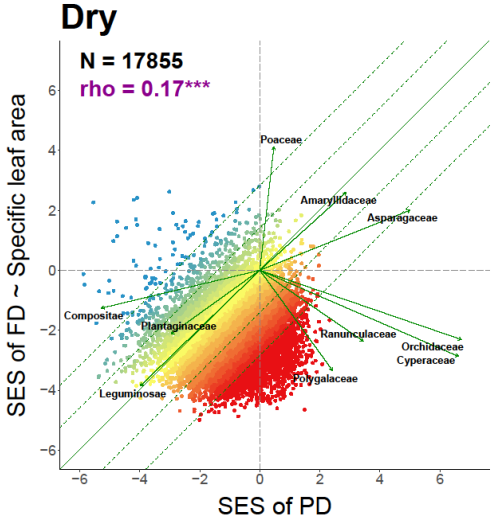

Alpine
N = 4487
rho = 0.04*
SES of FD ~ Plant height
SES of PD
Primulaceae
Saxifragaceae
Brassicaceae
Salicaceae
Melanthiaceae
Poaceae
Compositae
Cyperaceae
Ranunculaceae
Orchidaceae

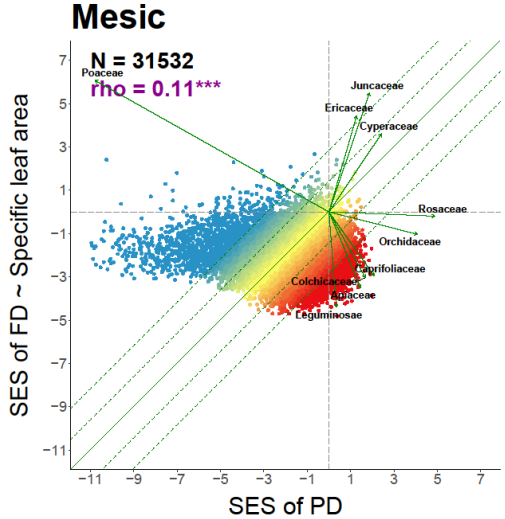

Dry
N = 16918
rho = 0.03***
SES of FD ~ Leaf area
SES of PD
Scrophulariaceae
Crassulaceae
Apiaceae
Lamiaceae
Asparagaceae
Compositae
Orchidaceae
Primulaceae
Cyperaceae
Leguminosae

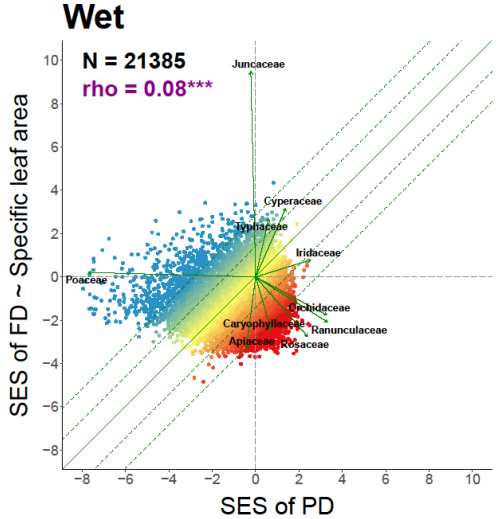

Mesic
N = 31188
rho = 0.13***
SES of FD ~ Leaf area
SES of PD
Apiaceae
Ericaceae
Urticaceae
Rubiaceae
Poaceae
Rosaceae
Campanulaceae
Juncaceae
Orchidaceae
Cyperaceae

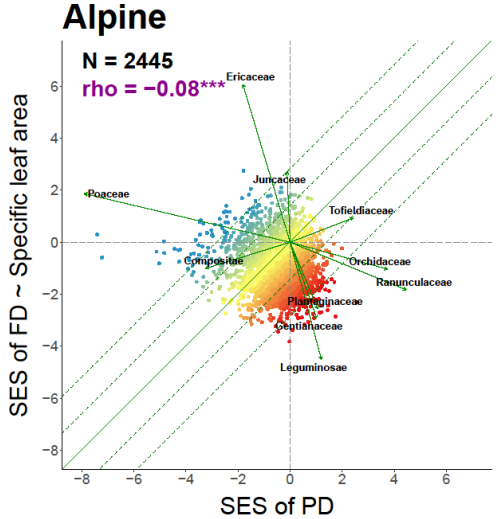

Wet
N = 21345
rho = 0.09***
SES of FD ~ Leaf area
SES of PD
Rubiaceae
Ericaceae
Apiaceae
Rosaceae
Iridaceae
Poaceae
Orchidaceae
Ranunculaceae
Cyperaceae
Leguminosae


Alpine
N = 1766
rho = 0.05*
SES of FD ~ Leaf area
SES of PD
Apiaceae
Melanthiaceae
Saxifragaceae
Asparagaceae
Poaceae
Compositae
Ranunculaceae
Orchidaceae
Cyperaceae
Leguminosae


Dry
N = 17855
rho = 0.17***
SES of FD ~ Specific leaf area
SES of PD
Poaceae
Amaryllidaceae
Asparagaceae
Compositae
Plantaginaceae
Ranunculaceae
Orchidaceae
Cyperaceae
Polygalaceae
Leguminosae


Mesic
N = 31532
rho = 0.11***
SES of FD ~ Specific leaf area
SES of PD
Poaceae
Juncaceae
Ericaceae
Cyperaceae
Rosaceae
Orchidaceae
Caprifoliaceae
Colchicaceae
Apiaceae
Leguminosae


Wet
N = 21385
rho = 0.08***
SES of FD ~ Specific leaf area
SES of PD
Juncaceae
Cyperaceae
Typhaceae
Iridaceae
Poaceae
Orchidaceae
Caryophyllaceae
Ranunculaceae
Apiaceae
Rosaceae


Alpine
N = 2445
rho = −0.08***
SES of FD ~ Specific leaf area
SES of PD
Ericaceae
Juncaceae
Poaceae
Tofieldiaceae
Compositae
Orchidaceae
Ranunculaceae
Plantaginaceae
Gentianaceae
Leguminosae

Dry

N = 9379
rho = 0.1***

SES of FD ~ Leaf nitrogen content

SES of PD

Leguminosae
Asparagaceae
Cyperaceae
Ranunculaceae
Orchidaceae
Plantaginaceae
Amaryllidaceae
Colchicaceae
Violaceae
Compositae

Mesic

N = 28656
rho = −0.06***

SES of FD ~ Leaf nitrogen content

SES of PD

Poaceae
Caryophyllaceae
Juncaceae
Apiaceae
Hypericaceae
Lamiaceae
Rosaceae
Caprifoliaceae
Rubiaceae
Campanulaceae

Wet

N = 12119
rho = 0.18***

SES of FD ~ Leaf nitrogen content

SES of PD

Juncaceae
Poaceae
Ranunculaceae
Rosaceae
Melanthiaceae
Plantaginaceae
Apiaceae
Asparagaceae
Lamiaceae
Geraniaceae

Alpine

N = 1205
rho = 0.22***

SES of FD ~ Leaf nitrogen content

SES of PD

Leguminosae
Polygalaceae
Tofieldiaceae
Cyperaceae
Orchidaceae
Ranunculaceae
Compositae
Geraniaceae
Poaceae
Melanthiaceae

Dry

N = 18946
rho = 0.14***

SES of FD ~ Seed mass

SES of PD

Crassulaceae
Orchidaceae
Asparagaceae
Amaryllidaceae
Compositae
Leguminosae
Plantaginaceae
Polygalaceae
Ranunculaceae
Cyperaceae

Mesic

N = 31475
rho = −0.02**

SES of FD ~ Seed mass

SES of PD

Orchidaceae
Poaceae
Campanulaceae
Hypericaceae
Rubiaceae
Rosaceae
Plantaginaceae
Polygalaceae
Lamiaceae
Cyperaceae

Wet

N = 21505
rho = 0.06***

SES of FD ~ Seed mass

SES of PD

Convolvulaceae
Juncaceae
Urticaceae
Iridaceae
Lythraceae
Poaceae
Cyperaceae
Rosaceae
Caprifoliaceae
Ranunculaceae

Alpine

N = 855
rho = 0.16***

SES of FD ~ Seed mass

SES of PD

Orchidaceae
Crassulaceae
Lentibulariaceae
Celastraceae
Saxifragaceae
Tofieldiaceae
Asparagaceae
Ranunculaceae
Compositae
Poaceae

Mesic

N = 1636
rho = −0.11***

SES of FD ~ Lateral spread

SES of PD

Urticaceae
Lamiaceae
Apiaceae
Poaceae
Compositae
Cyperaceae
Plantaginaceae
Caryophyllaceae
Juncaceae
Rosaceae

Wet

N = 4887
rho = −0.01 n.s.

SES of FD ~ Lateral spread

SES of PD

Urticaceae
Convolvulaceae
Apiaceae
Lamiaceae
Poaceae
Primulaceae
Juncaceae
Rosaceae
Caprifoliaceae
Cyperaceae