

Table S1. Summary table with all species specific germination phenology traits calculated for each microclimatic condition (F = Fellfield, S = Snowbed)

Study system	Species	Family	Phenology period with highest germination		Autumn germination		Winter germination		Spring germination		Summer germination		Time to reach 50% germination		Environmental Heat Sum		Delay time to 50% germ (days)	Germination shift (area between curves)
			F	S	F	S	F	S	F	S	F	S	F	S	F	S		
Temperate	Androsace villosa	Primulaceae		Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	NA	NA	NA	NA	NA	-0.6
Temperate	Anthyllis vulneraria	Fabaceae	Autumn	Autumn	5.9	2.9	0.0	0.0	0.0	0.0	2.1	0.0	NA	NA	NA	NA	NA	12.2
Temperate	Arenaria erinacea	Caryophyllaceae	Autumn	Autumn	22.7	2.1	0.0	0.0	0.0	0.0	0.0	1.0	NA	NA	NA	NA	NA	69.1
Temperate	Arenaria moehringioides	Caryophyllaceae	Spring	Summer	3.9	0.0	0.0	18.2	38.5	0.0	3.9	18.2	272.0	294.0	1082.5	792.0	22.0	30.8
Temperate	Armeria cantabrica	Plumbaginaceae	Spring	Summer	0.7	0.0	0.0	7.7	65.7	0.6	30.1	89.1	238.2	278.0	654.2	596.8	39.8	30.8
Temperate	Carex sempervirens	Cyperaceae	Spring	Summer	0.0	0.0	0.0	0.0	96.6	0.0	2.6	99.3	244.9	282.9	694.0	548.3	38.0	38.2
Temperate	Dethawia splendens	Apiaceae	Spring	Winter	0.0	0.0	0.0	91.8	94.9	6.1	0.0	2.0	212.9	230.4	457.6	251.9	17.5	11.9
Temperate	Erigeron alpinus	Asteraceae	Spring	Spring	0.0	0.0	0.0	3.0	100.0	83.8	0.0	13.1	219.8	261.6	463.9	325.1	41.9	43.8
Temperate	Euphrasia salisburgensis	Orobanchaceae	Summer	Winter	0.0	0.0	0.0	0.5	0.5	0.0	1.0	0.0	NA	NA	NA	NA	NA	0.1
Temperate	Festuca hystrix	Poaceae	Autumn	Autumn	97.1	71.1	0.0	7.9	2.9	0.0	0.0	7.9	15.1	122.8	144.8	178.0	107.7	83.2
Temperate	Festuca rubra	Poaceae	Spring		0.0		0.0		100.0		0.0		239.5		648.0		-239.5	NA
Temperate	Gentiana verna	Gentianaceae	Spring	Winter	0.0	0.0	0.0	7.3	8.7	0.7	0.0	0.7	NA	NA	NA	NA	NA	1.2
Temperate	Gentianella campestris				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA	0.0
Temperate	Gypsophila repens	Caryophyllaceae	Spring	Summer	17.4	1.1	0.0	2.1	70.5	7.9	8.1	87.4	230.3	281.8	566.0	523.1	51.6	75.4
Temperate	Helianthemum canum	Cistaceae	Autumn	Autumn	19.0	10.2	0.0	1.8	5.8	4.5	4.3	5.2	279.0	NA	1245.0	NA	NA	29.8
Temperate	Helianthemum urriellense	Cistaceae	Autumn	Autumn	65.6	75.0	0.0	0.0	0.0	0.0	3.1	0.0	13.3	14.8	135.3	91.0	1.4	-32.5
Temperate	Helictotrichon sedenense	Poaceae	Spring	Winter	7.1	0.0	0.0	85.0	92.9	0.0	0.0	15.0	229.6	231.6	568.3	277.0	2.0	23.0
Temperate	Iberis carnosa	Brassicaceae	Autumn	Summer	76.6	16.5	0.0	0.0	2.1	0.0	12.8	82.4	9.6	311.7	97.8	1005.9	302.1	183.4
Temperate	Jasione cavanillesii	Campanulaceae	Spring	Summer	0.0	0.0	0.0	0.0	27.1	4.8	1.4	22.5	226.3	272.3	491.5	474.3	46.0	14.0
Temperate	Jurinea humilis	Asteraceae	Spring	Winter	42.9	0.0	0.0	100.0	57.1	0.0	0.0	0.0	119.6	230.5	376.3	268.5	110.9	94.1
Temperate	Kobresia myosuroides				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA	0.0
Temperate	Koeleria vallesiana	Poaceae	Autumn	Autumn	100.0	82.4	0.0	11.2	0.0	0.0	0.0	5.4	12.1	30.0	132.0	185.9	17.9	54.5
Temperate	Minuartia CF	Caryophyllaceae	Autumn	Summer	25.3	0.0	0.0	1.0	14.1	5.0	5.1	8.0	227.0	NA	534.0	NA	NA	97.2
Temperate	Minuartia verna	Caryophyllaceae	Autumn	Autumn	41.5	8.4	0.0	0.0	0.0	1.1	1.1	3.2	NA	NA	NA	NA	NA	112.4
Temperate	Pedicularis pyrenaica	Orobanchaceae	Spring	Winter	0.0	0.0	0.0	29.2	41.1	0.0	0.0	3.1	203.7	249.5	378.3	334.0	45.8	21.1
Temperate	Phyteuma orbiculare	Campanulaceae	Spring	Winter	0.0	0.0	0.0	17.9	20.0	10.7	0.0	7.1	NA	NA	NA	NA	NA	-11.4
Temperate	Plantago alpina	Plantaginaceae	Spring	Winter	25.9	1.1	0.0	65.9	73.5	29.2	0.6	2.7	176.0	234.5	334.4	225.3	58.5	83.0
Temperate	Ranunculus carinthiacus	Ranunculaceae	Spring		0.0	0.0	0.0	0.0	26.7	0.0	0.0	0.0	NA	NA	NA	NA	NA	24.7
Temperate	Salix breviserrata				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA		NA	0.0
Temperate	Saxifraga conifera	Saxifragaceae	Autumn	Summer	66.8	6.4	0.0	0.0	0.8	0.0	24.3	63.5	62.5	327.6	338.5	1284.7	265.1	195.2
Temperate	Saxifraga paniculata	Saxifragaceae	Spring	Summer	0.0	0.0	0.0	0.0	96.9	20.2	0.0	39.3	222.0	283.5	499.9	551.5	61.5	84.8
Temperate	Scilla verna	Asparagaceae	Summer	Summer	0.0	0.0	0.0	0.0	0.0	0.0	10.4	28.6	NA	NA	NA	NA	NA	-1.4
Temperate	Sedum album cf				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA	0.0
Temperate	Sesleria caerulea	Poaceae	Autumn	Autumn	93.3	36.2	0.0	15.9	5.3	1.5	1.3	43.5	25.1	195.4	267.8	304.6	170.4	146.8
Temperate	Silene acaulis	Caryophyllaceae	Autumn	Summer	6.1	2.9	0.0	2.2	6.6	0.6	35.6	28.1	303.9	288.0	1601.5	692.5	-15.9	17.5
Temperate	Silene ciliata	Caryophyllaceae	Spring	Spring	10.0	1.8	0.0	21.3	82.4	56.0	0.0	6.6	210.9	255.8	404.3	296.9	44.9	56.6
Temperate	Thymus praecox	Lamiaceae	Autumn	Spring	52.3	0.7	0.6	0.0	40.9	37.8	5.0	60.1	121.8	275.0	344.7	459.2	153.2	151.8
Mediterranean	Agrostis tileni	Poaceae	Spring	Spring	0.0	0.0	0.0	0.0	100.0	80.0	0.0	20.0	225.5	301.7	574.3	817.5	76.2	69.8
Mediterranean	Armeria duriaei	Plumbaginaceae	Autumn	Autumn	99.4	93.6	0.0	1.2	0.0	0.0	0.6	4.0	7.3	15.2	94.9	130.9	7.9	25.4

Mediterranean	<i>Cerastium ramosissimum</i>	Caryophyllaceae	Autumn	Autumn	52.0	53.8	0.0	0.0	0.0	0.0	0.6	0.0	48.8	48.0	800.3	755.6	-0.8	-8.0
Mediterranean	<i>Conopodium majus</i>	Apiaceae	Spring	Winter	0.0	0.0	0.0	98.3	98.2	0.9	0.0	0.0	207.6	239.0	534.7	354.3	31.4	29.2
Mediterranean	<i>Dianthus langedanus</i>	Caryophyllaceae	Autumn	Autumn	99.5	97.4	0.0	2.6	0.5	0.0	0.0	0.0	3.7	5.4	56.0	70.3	1.7	6.1
Mediterranean	<i>Festuca summilusitana</i>	Poaceae	Autumn	Autumn	100.0	95.0	0.0	1.9	0.0	1.0	0.0	2.1	18.4	23.1	219.6	182.3	4.7	17.0
Mediterranean	<i>Helictochloa marginata</i>	Poaceae	Spring	Summer	25.0	20.0	0.0	20.0	75.0	0.0	0.0	60.0	142.8	165.7	582.3	432.5	22.9	34.6
Mediterranean	<i>Jurinea humilis</i>	Asteraceae	Autumn	Winter	81.9	0.0	0.0	100.0	18.1	0.0	0.0	0.0	9.7	246.5	141.3	445.5	236.8	191.2
Mediterranean	<i>Luzula caespitosa</i>	Juncaceae	Autumn	Winter	54.2	0.0	3.1	94.9	26.7	0.0	6.4	1.1	102.4	245.5	514.6	432.5	143.2	107.0
Mediterranean	<i>Minuartia recurva</i>	Caryophyllaceae	Autumn	Autumn	99.5	79.9	0.0	2.2	0.5	17.9	0.0	0.0	6.0	14.0	87.5	159.8	8.0	54.2
Mediterranean	<i>Neoschischkinia truncatula</i>	Poaceae	Autumn	Autumn	93.7	89.5	0.0	0.0	0.0	0.0	0.6	0.6	6.8	8.8	83.4	75.8	2.0	17.6
Mediterranean	<i>Phalacrocarpum oppositifolium</i>	Asteraceae	Autumn	Autumn	82.8	77.4	7.1	22.6	2.2	0.0	0.0	0.0	40.3	82.1	451.7	278.6	41.8	2.7
Mediterranean	<i>Phyteuma hemisphaericum</i>	Campanulaceae	Spring	Spring	0.7	0.7	0.0	3.9	29.1	20.8	1.9	9.0	NA	284.5	NA	547.0	NA	10.1
Mediterranean	<i>Plantago holostium</i>	Plantaginaceae	Autumn	Autumn	96.5	93.5	0.0	0.5	3.0	3.5	0.0	1.5	8.1	8.4	100.1	71.4	0.3	8.9
Mediterranean	<i>Sedum anglicum</i>	Crassulaceae	Autumn	Autumn	57.0	43.7	4.6	0.0	7.6	4.9	5.5	6.1	83.7	166.2	293.3	515.2	82.4	62.9
Mediterranean	<i>Sedum brevifolium</i>	Crassulaceae	Autumn	Autumn	41.9	34.4	0.0	0.0	8.7	1.7	0.6	10.8	75.0	84.9	352.6	240.6	9.8	28.4
Mediterranean	<i>Sempervivum arachnoideum</i>	Crassulaceae	Spring	Summer	0.0	0.0	0.0	0.0	95.5	11.6	0.6	69.3	212.8	259.8	359.3	351.0	47.0	55.3
Mediterranean	<i>Silene ciliata</i>	Caryophyllaceae	Spring	Spring	1.1	0.5	0.0	9.1	86.9	79.9	2.1	5.5	198.9	240.8	268.4	184.4	41.9	30.5
Mediterranean	<i>Solidago virgaurea</i>	Asteraceae	Autumn	Winter	84.5	12.4	0.0	78.6	15.5	9.0	0.0	0.0	14.9	235.3	174.4	305.6	220.4	164.6
Mediterranean	<i>Spergula morisonii</i>	Caryophyllaceae	Autumn	Autumn	56.9	73.3	0.0	0.0	1.3	0.0	5.4	0.0	167.8	36.2	1604.9	559.1	-131.7	-62.1
Mediterranean	<i>Thymus praecox</i>	Lamiaceae	Autumn	Autumn	90.2	66.9	0.0	2.1	6.9	10.3	1.5	20.8	13.8	83.4	190.6	265.9	69.5	65.8