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Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

Phenology in Switzerland: New developments

Barbara Pietragalla: Swiss Phenological Network

Regula Gehrig: New phenological analysis tools



Swiss Phenological Network

Online data input since 2013

www.phaeno.ethz.ch/meteo/

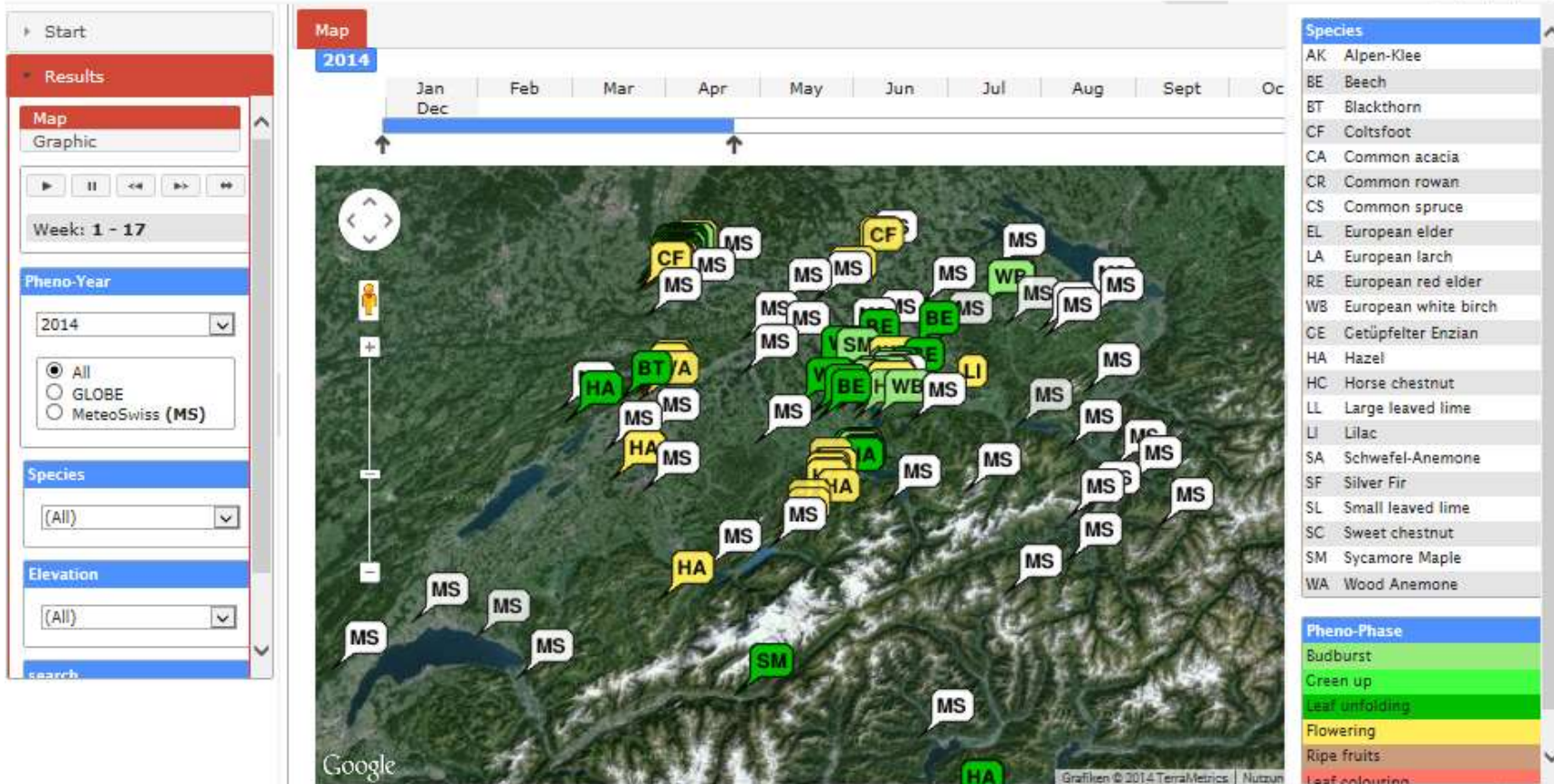
- Now 30% of the observer use it
- Enhancement of data quality
- «Real-time» data → phenological applications and tools



MeteoSwiss PhaenoNet



(de | fr | it | en)





MeteoSwiss PhaenoNet



(de | fr | it | en)

Start

Results

Map

Graphic

Week: 2 - 17

Pheno-Year

2014

All
GLOBE
MeteoSwiss (MS)

Species

(All)

Elevation

(All)

search

Map

2014

MeteoSwiss

Jan Feb Mar Apr May Jun Jul Aug Sept Oct

Jan Dec

Species

Species
BE Beech
CA Common acacia
CR Common rowan
CS Common spruce
EL European elder
LA European larch
RE European red elder
WB European white birch
HA Hazel
HC Horse chestnut
LL Large leaved lime
SL Small leaved lime
SC Sweet chestnut
SM Sycamore Maple

Pheno-Phase

Budburst
Green up
Leaf unfolding
Flowering
Ripe fruits
Leaf colouring
Leaf fall

Google

Grafiken © 2014 TerraMetrics | Nutzen



MeteoSwiss PhaenoNet



(de | fr | it | en)

Map Domat / Ems (Elevation: 586 m) x

2014 MeteoSwiss

Jan Feb Mar Apr May Jun Jul Aug Sept C

Dec

Week: 2 - 17

Pheno-Year

2014

All
GLOBE
MeteoSwiss (MS)

Species

(All)

Elevation

(All)

Species

BE	Beech
CA	Common acacia
CR	Common rowan
CS	Common spruce
EL	European elder
LA	European larch
RE	European red elder
WB	European white birch
HA	Hazel
HC	Horse chestnut
LL	Large leaved lime
SL	Small leaved lime
SC	Sweet chestnut
SM	Sycamore Maple

Pheno-Phase

- Budburst
- Green up
- Leaf unfolding
- Flowering
- Ripe fruits
- Leaf colouring
- Leaf fall

Site: Domat / Ems x

Date: 14.04.2014

Measurement: full flowering

Data Sheet: [icon]

Google

Grafiken © 2014 TerraMetrics | Nutz



MeteoSwiss PhaenoNet



Start

Results

Map
Graphic

▶ || ◀▶ ▶▶

Week: 13 - 17

Pheno-Year
2014

All
 GLOBE
 MeteoSwiss (MS)

Species
Common rowan

Elevation
(All)

search

Map Domat / Ems (Elevation: 586 m)

Trees

	leaf unfolding	beginning of flowering	full flowering	fruit maturity	leaf discoloration	leaf drop
Horse chestnut	01.04.2014	11.04.2014	14.04.2014			
European beech	12.04.2014					
Sycamore maple						
Common rowan	10.04.2014					
Hazel	03.04.2014	23.01.2014	08.02.2014			
Large leaved lime	11.04.2014					
European red elder		29.03.2014	03.04.2014			
European elder						
Small leaved lime	14.04.2014					
European larch	03.04.2014					
Common spruce						
Common acacia						
European white birch	29.03.2014	26.03.2014	31.03.2014			
Sweet chestnut	13.04.2014					

	beginning of flowering	full flowering	Vintage	Start
Cherry tree	29.03.2014	01.04.2014		
Pear tree	02.04.2014	03.04.2014		

Herbes	Full flowering
Coltsfoot	04.03.2014
Wood anemone	



MeteoSwiss PhaenoNet



(de | fr | it | en)

Start

Results

Map

Graphic

Week: 13 - 17

Pheno-Year

2014

All
GLOBE
MeteoSwiss (MS)

Species

Common rowan

Elevation

(All)

Map

2014 MeteoSwiss Common rowan

Jan Feb Mar Apr May Jun Jul Aug Sept Oc

Dec

Site: Locarno-Monti
Date: 11.04.2014
Measurement: full flowering
Data Sheet: □

Species

- BE Beech
- CA Common acacia
- CR Common rowan
- CS Common spruce
- EL European elder
- LA European larch
- RE European red elder
- WB European white birch
- HA Hazel
- HC Horse chestnut
- LL Large leaved lime
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Pheno-Phase

- Budburst
- Green up
- Leaf unfolding
- Flowering
- Ripe fruits
- Leaf colouring
- Leaf fall



Phenological analysis tools

Tools for the actual overview of phenological situation

Used for

- Writing monthly, seasonal and yearly vegetation bulletins
- Answering questions of journalists



In future: publication of selected graphs on the internet



Climate Analysis Tools (CATs)

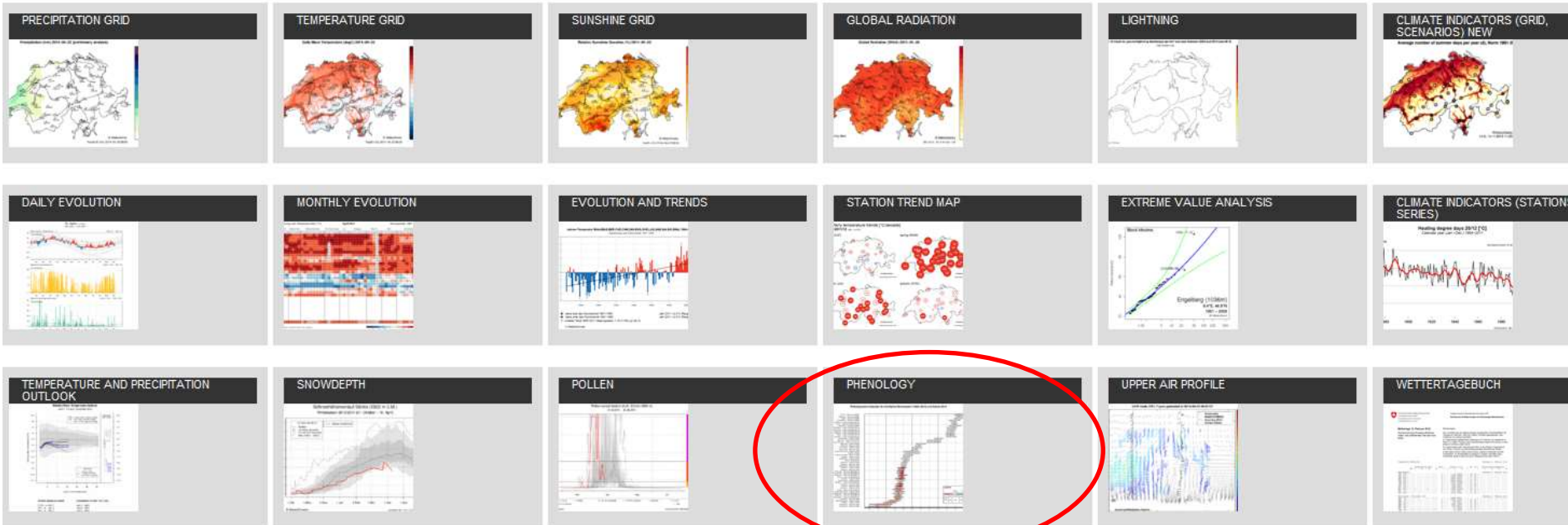
An operational environment for climate products
Written in the statistical programming language R

Climate Browser

[Home](#) [Single View](#) [DoubleView](#) [Quad View](#) [Shortcuts](#) [Search](#) [Comment](#) [Help](#)

CLIMATE BROWSER STATUS

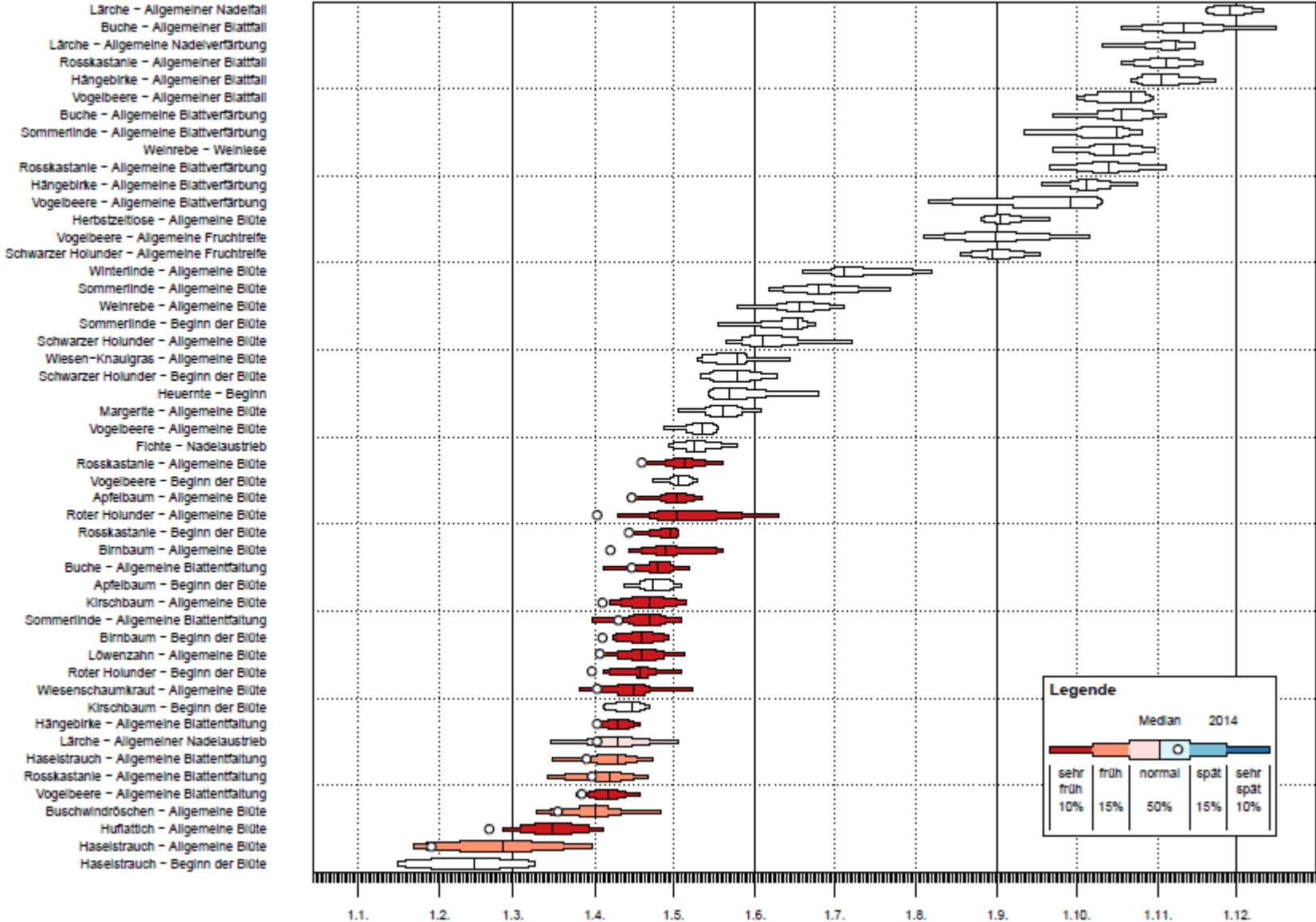
Products: 26 Files: 356616
Last Update: Wed Apr 23 09:46:02 CEST 2014
Last Reload: Wed Apr 23 10:51:23 CEST 2014
Cache Size: 233 MB





Phenological Calendar

Rafz, 2014 compared with norm period 1981-2010

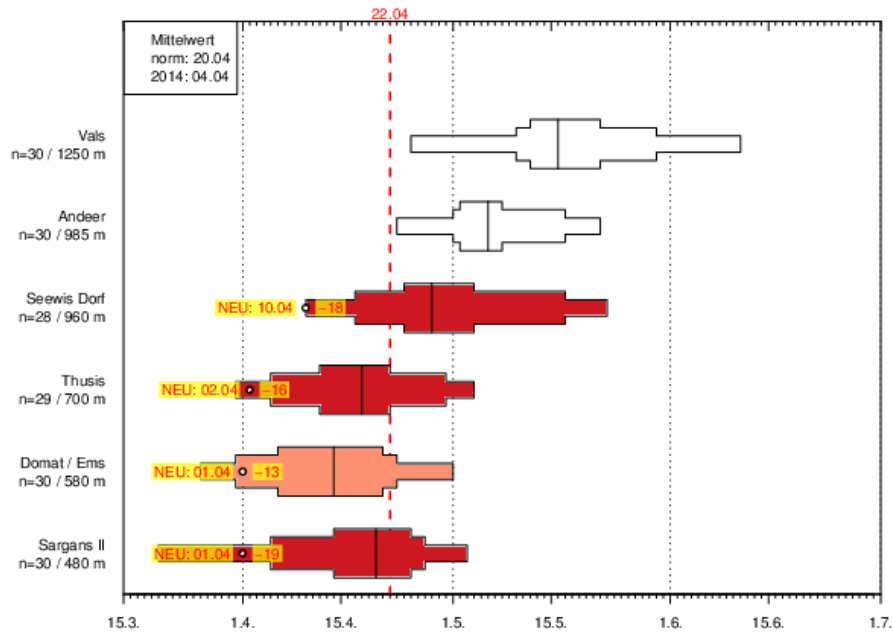




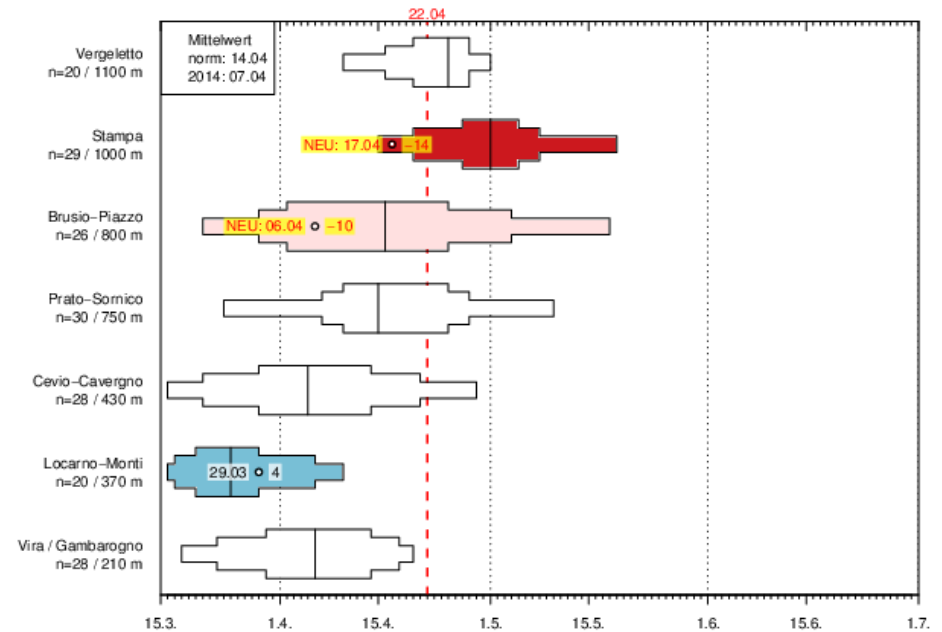
Actual and annual overview

Graphs per region

Kirschbaum – Allgemeine Blüte – Nord- und Mittelbünden – 2014 (1981–2010)



Kirschbaum – Allgemeine Blüte – Alpensüdseite – 2014 (1981–2010)





Actual and annual overview

Tables

Station	Region	alt. (m)	Median date 1981-2010	Date actual year	Deviation from mean	Class	Number of obs. years in norm period
Wattwil, SG	Nordöstliches Mittelland	625	30.04				30
Zürich-MeteoSchweiz	Nordöstliches Mittelland	555	12.04	02.04	-10	früh	30
Rafz	Nordöstliches Mittelland	515	22.04	04.04	-18	sehr früh	30
Birmensdorf	Nordöstliches Mittelland	500	18.04	08.04	-10	früh	27
Oberehrendingen	Nordöstliches Mittelland	490	16.04	06.04	-10	früh	30
Rorschach	Nordöstliches Mittelland	450	16.04	04.04	-12	sehr früh	30
Mean			17.04	05.04	-12		

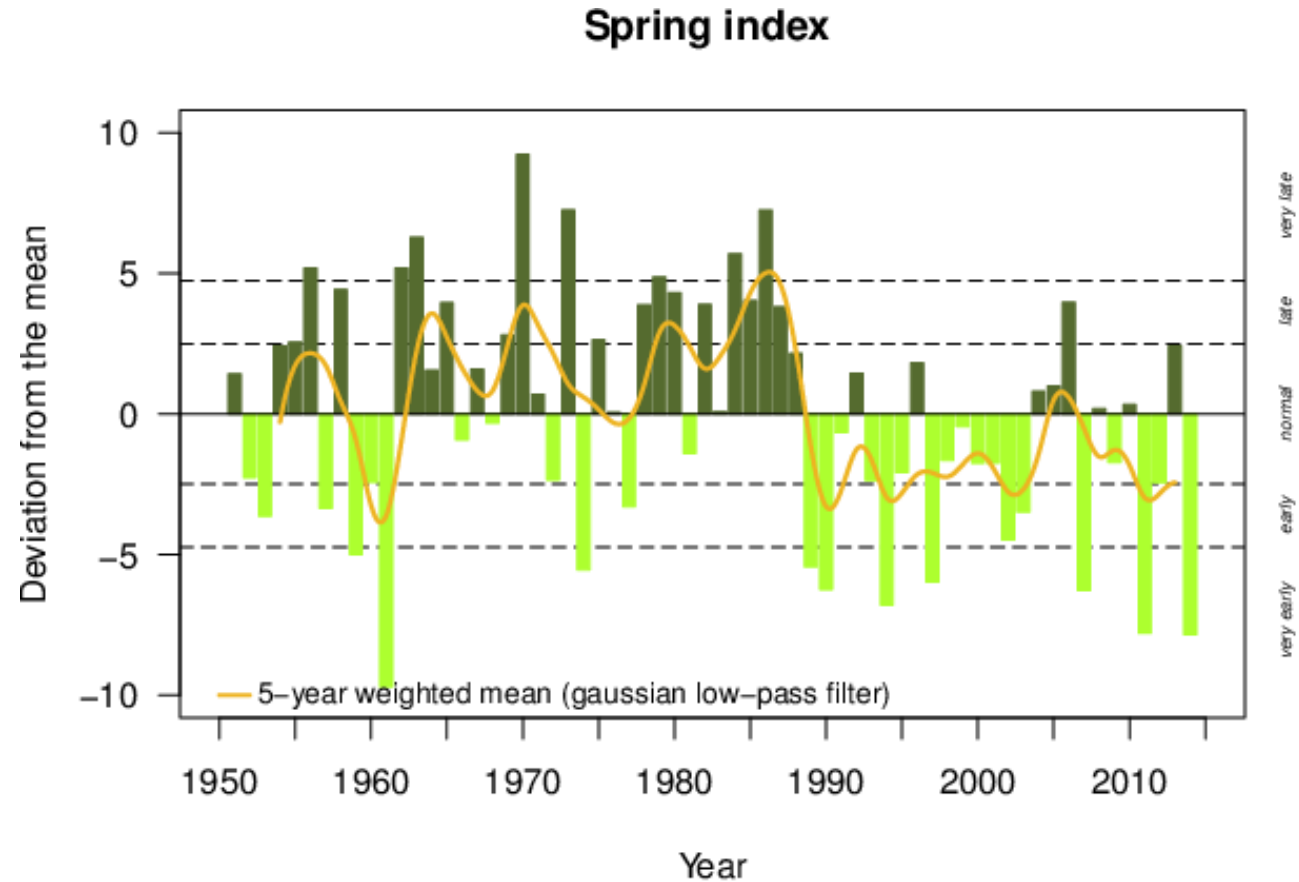
Vals	Nord- und Mittelbünden	1250	16.05				30
Andeer	Nord- und Mittelbünden	985	06.05				30
Seewis Dorf	Nord- und Mittelbünden	960	28.04	10.04	-18	sehr früh	28
Thusis	Nord- und Mittelbünden	700	18.04	02.04	-16	sehr früh	29
Domat / Ems	Nord- und Mittelbünden	580	14.04	01.04	-13	früh	30
Sargans II	Nord- und Mittelbünden	480	20.04	01.04	-19	sehr früh	30
Mean			20.04	04.04	-16.5		

Vergeletto	Alpensüdseite	1100	25.04				20
Stampa	Alpensüdseite	1000	01.05	17.04	-14	sehr früh	29
Brusio-Piazzo	Alpensüdseite	800	16.04	06.04	-10	normal	26
Prato-Sornico	Alpensüdseite	750	15.04				30
Cevio-Cavergno	Alpensüdseite	430	05.04				28
Locarno-Monti	Alpensüdseite	370	25.03	29.03		4 spät	20
Vira / Gambarogno	Alpensüdseite	210	06.04				28
Mean			14.04	07.04	-6.7		



Spring index – on the internet

PCA of 10 spring pheno phases for whole Switzerland
Year 2014 only provisional!



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pheno.springindex 0.09 / 23.04.2014, 03:17