

Supplementary Material 1

This document gives a brief description of the 20 largest fire events in terms of a map of the burnt area and some essential data (e.g., coordinates, causes, involved forest types, meteorological conditions, fire behaviour), which occurred in Switzerland between 1990 and 2022.

Each of the following pages provides a description of a single event. Fires are presented according to their increasing longitude from West to East.

To more readily display individual pages and maps on the screen, we recommend switching to the “Full screen mode” in the PDF viewer so as to hide all toolbars, menus, and panes (e.g., press Ctrl+L in *Adobe Acrobat Reader*).

Figure SM1.1

Biogeographic region: Western Central Alps
Pyroregion: WCA1
Municipality: Leuk
Start date: 21/04/1996 **time:** 15:00
Duration: 15 days

Starting point coordinates:

X=7.58495°, Y=46.29466°, Z=611.0 m s.l.m.

Elevation gradient: 932 (542-1290 m s.l.m.)

Mean slope: 36.1°

General aspect: North-West

Burned area:

forest	127.0 ha
pasture	0.0 ha
improductive	0.0 ha
total	127.0 ha

Cause: negligence

Main concerned forest types:

Deciduous forests in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Extreme drought, extreme strong wind, no snow cover.

Short fire behaviour description:

Strongly wind-driven laterally spreading upslope fire, which also propagated through spotting.

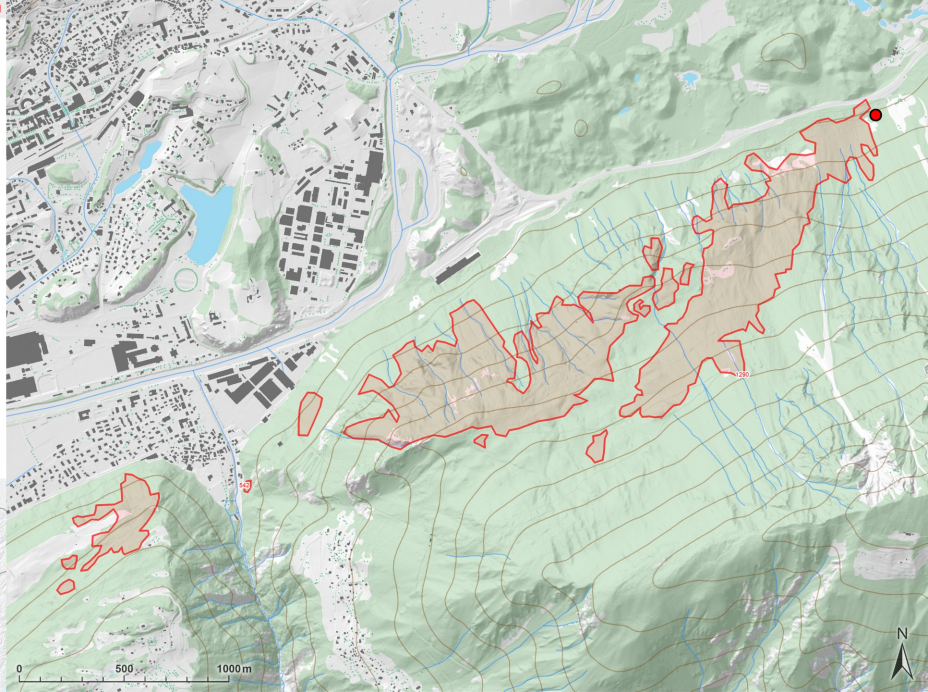


Figure SM1.2

Biogeographic region: Western Central Alps
Pyroregion: WCA1
Municipality: Leuk
Start date: 13/08/2003 time: 19:50
Duration: 24 days

Starting point coordinates:
X=7.63956°, Y=46.32067°, Z=893.3 m s.l.m.
Elevation gradient: 1411 (773-2134 m s.l.m.)
Mean slope: 26.7°
General aspect: South-West

Burned area:

forest	300.0 ha
pasture	10.0 ha
improductive	0.0 ha
total	310.0 ha

Cause: arson

Main concerned forest types:

Deciduous forests in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Extreme hot summer drought, strong wind, no snow cover.

Short fire behaviour description:

Very fast spreading up-slope fire, which turned to underground and crown fire once reached the coniferous forests.

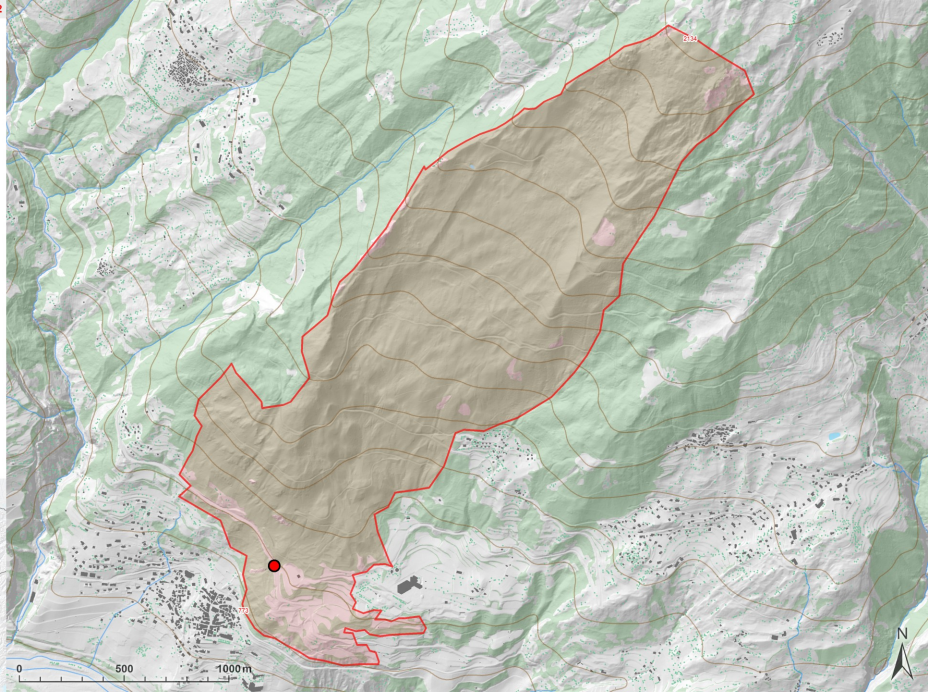


Figure SM1.3

Biogeographic region: Western Central Alps

Pyroregion: WCA1

Municipality: Visp

Start date: 26/04/2011 **time:** 15:30

Duration: 22 days

Starting point coordinates:

X=7.89872°, Y=46.29450°, Z=651.4 m s.l.m.

Elevation gradient: 1096 (651-1591 m s.l.m.)

Mean slope: 42.4°

General aspect: North

Burned area:

forest	130.0 ha
pasture	0.0 ha
improductive	0.0 ha
total	130.0 ha

Cause: negligence

Main concerned forest types:

Deciduous forest in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Strong wind, no snow cover.

Short fire behaviour description:

Very fast laterally (wind-driven) and up-slope spreading fire which turned to underground and crown fire when reaching the coniferous forest.

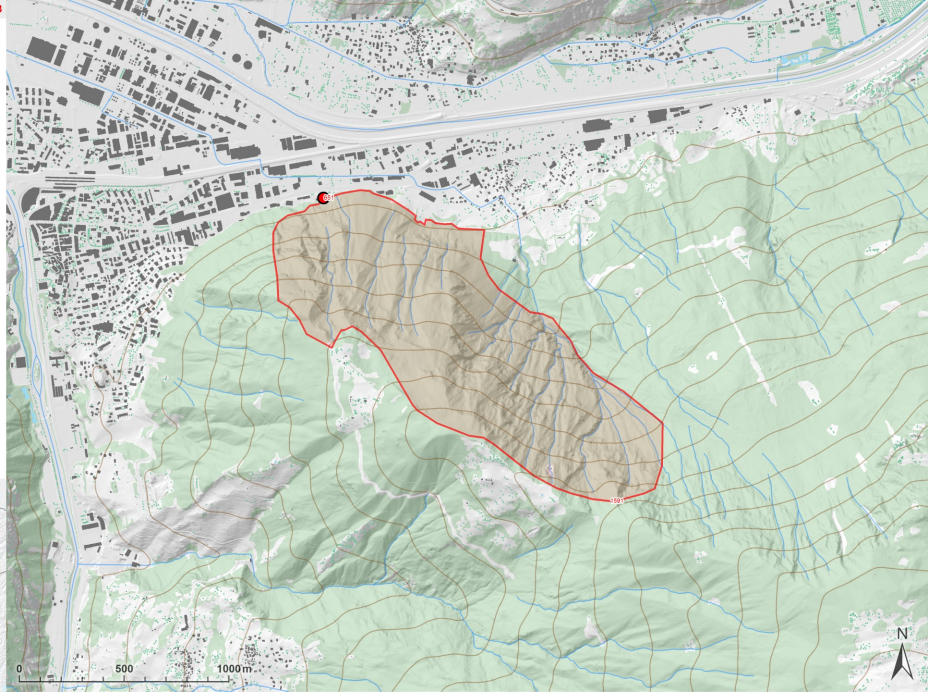


Figure SM1.4

Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Cavignol

Start date: 13/08/1990 **time:** 09:00

Duration: 20 days

Starting point coordinates:

X=8.56294°, Y=46.37519°, Z=982.5 m s.l.m.

Elevation gradient: 1556 (977-2008 m s.l.m.)

Mean slope: 47.5°

General aspect: South

Burned area:

forest	40.0 ha
pasture	40.0 ha
improductive	20.0 ha
total	100.0 ha

Cause: lightning

Main concerned forest types:

Mixed deciduous forests and bushes.

Meteorological conditions:

Summer drought, no snow cover.

Short fire behaviour description:

Dry lightning-induced fire spreading upslope along a very steep, rocky, and inaccessible terrain.

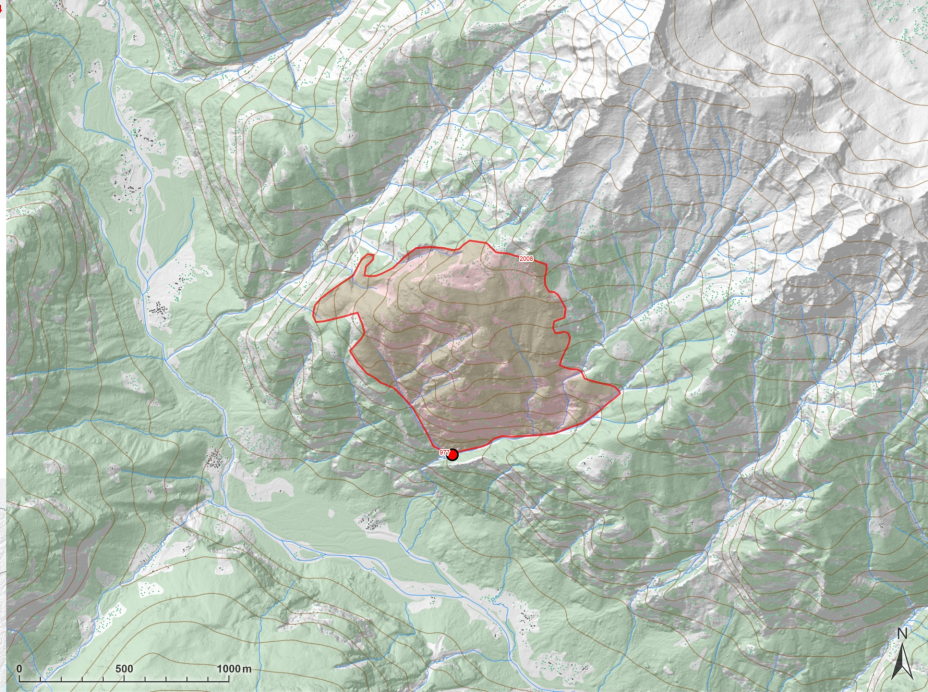


Figure SM1.5

Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Someo

Start date: 06/08/2003 **time:** 18:40

Duration: 21 days

Starting point coordinates:

X=8.66676°, Y=46.29818°, Z=1115.9 m s.l.m.

Elevation gradient: 1497 (1008-1996 m s.l.m.)

Mean slope: 43.7°

General aspect: South-West

Burned area:

forest	58.8 ha
pasture	0.0 ha
improductive	71.3 ha
total	130.0 ha

Cause: lightning

Main concerned forest types:

Afforestations of deciduous and coniferous species, pioneer bush forest.

Meteorological conditions:

Extreme hot summer drought, strong wind, no snow cover.

Short fire behaviour description:

Dry lightning-induced fire spreading upslope along a very steep, rocky, and inaccessible terrain.



Figure SM1.6

Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Brissago

Start date: 28/03/1995 **time:** 02:15

Duration: 17 days

Starting point coordinates:

X=8.70503°, Y=46.11443°, Z=234.9 m s.l.m.

Elevation gradient: 1012 (225-1982 m s.l.m.)

Mean slope: 39.7°

General aspect: South-East

Burned area:

forest	290.0 ha
pasture	20.0 ha
improductive	11.0 ha
total	321.0 ha

Cause: powerline

Main concerned forest types:

Sweet chestnut coppices.

Meteorological conditions:

Extreme drought, extreme strong wind, no snow cover.

Short fire behaviour description:

Fast spreading and partially wind-driven upslope fire following the valley canyons and spreading upslope also above the forest limit.

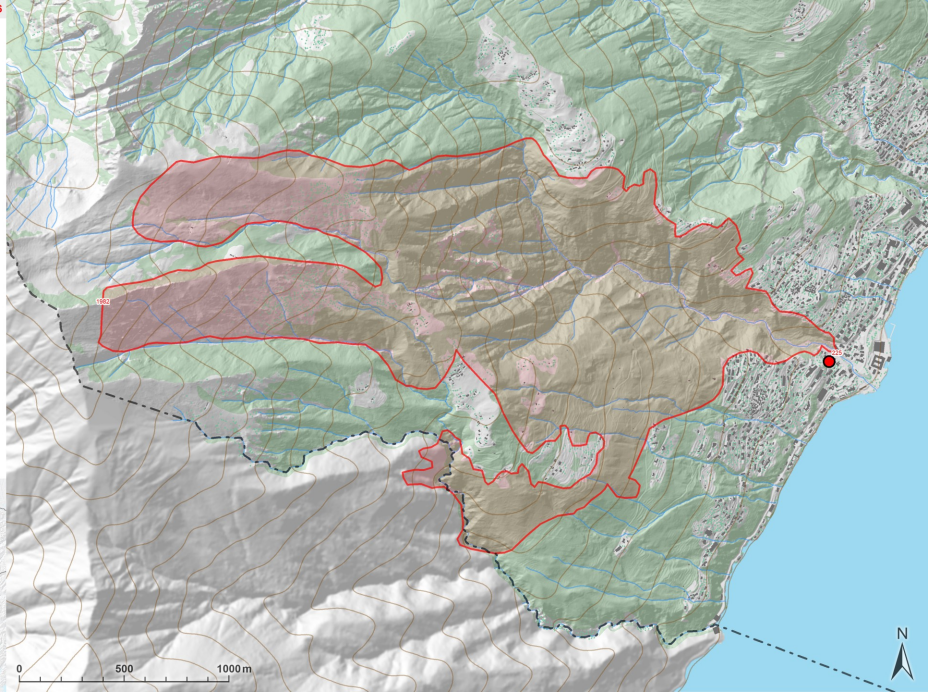


Figure SM1.7

Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Maggia

Start date: 12/03/2002 **time:** 11:05

Duration: 2 days

Starting point coordinates:

X=8.70205°, Y=46.25820°, Z=623.2 m s.l.m.

Elevation gradient: 914 (512-1415 m s.l.m.)

Mean slope: 35.0°

General aspect: South-West

Burned area:

forest	108.0 ha
pasture	16.0 ha
improductive	13.0 ha
total	137.0 ha

Cause: negligence

Main concerned forest types:

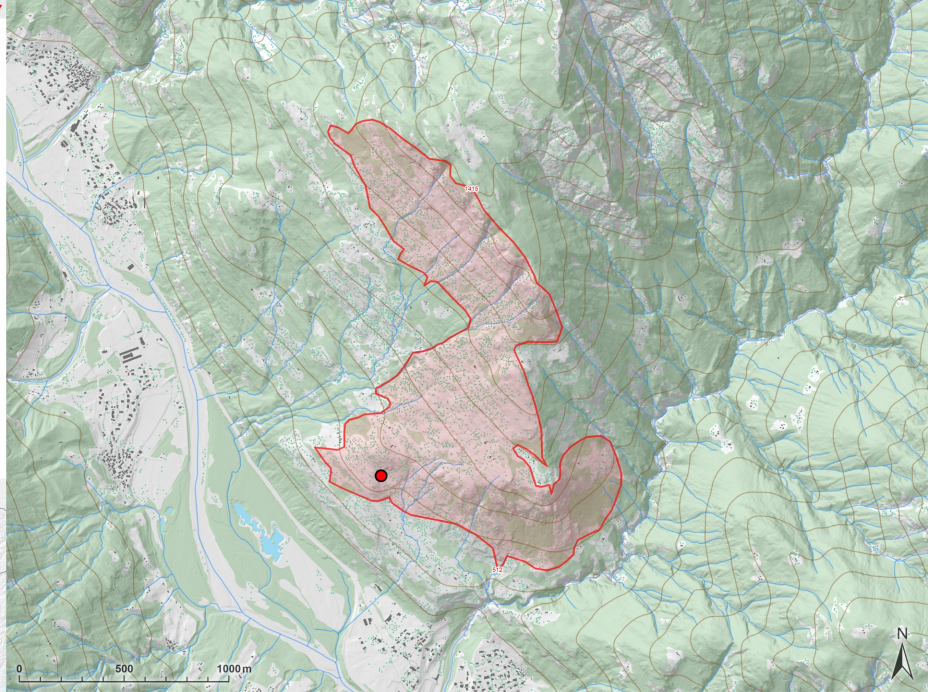
Deciduous forests (mainly sweet chestnut in the lower part and beech in the upper part).

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Fast spreading upslope fire along very steep, rocky, and inaccessible terrain. In the upper part the fire spread also laterally until reaching the mountain ridge.



Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Maggia

Start date: 24/03/1994 **time:** 14:55

Duration: 4 days

Starting point coordinates:

X=8.69733°, Y=46.25609°, Z=336.6 m s.l.m.

Elevation gradient: 843 (332-1381 m s.l.m.)

Mean slope: 33.9°

General aspect: South

Burned area:

forest	32.0 ha
pasture	86.0 ha
improductive	13.0 ha
total	131.0 ha

Cause: arson

Main concerned forest types:

Sweet chestnut coppices.

Meteorological conditions:

Dry and windy conditions.

Short fire behaviour description:

Up-slope rapidly spreading fire along a very steep, rocky, and partially inaccessible terrain.

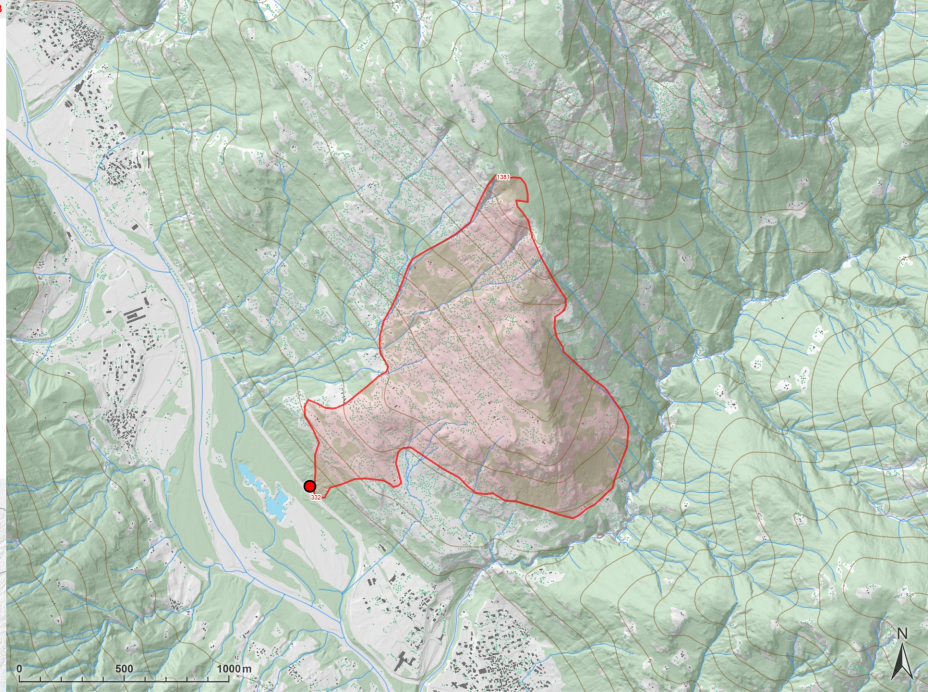


Figure SM1.3

Biogeographic region: Southern Alps
Pyroregion: SOA2
Municipality: Ronco sopra Ascona
Start date: 15/03/1997 **time:** 13:00
Duration: 10 days

Starting point coordinates:
X=8.71887°, Y=46.14050°, Z=498.3 m s.l.m.
Elevation gradient: 984 (496-1378 m s.l.m.)
Mean slope: 34.0°
General aspect: South-East

Burned area:

forest	118.0 ha
pasture	14.5 ha
improductive	0.0 ha
total	132.5 ha

Cause: arson

Main concerned forest types:

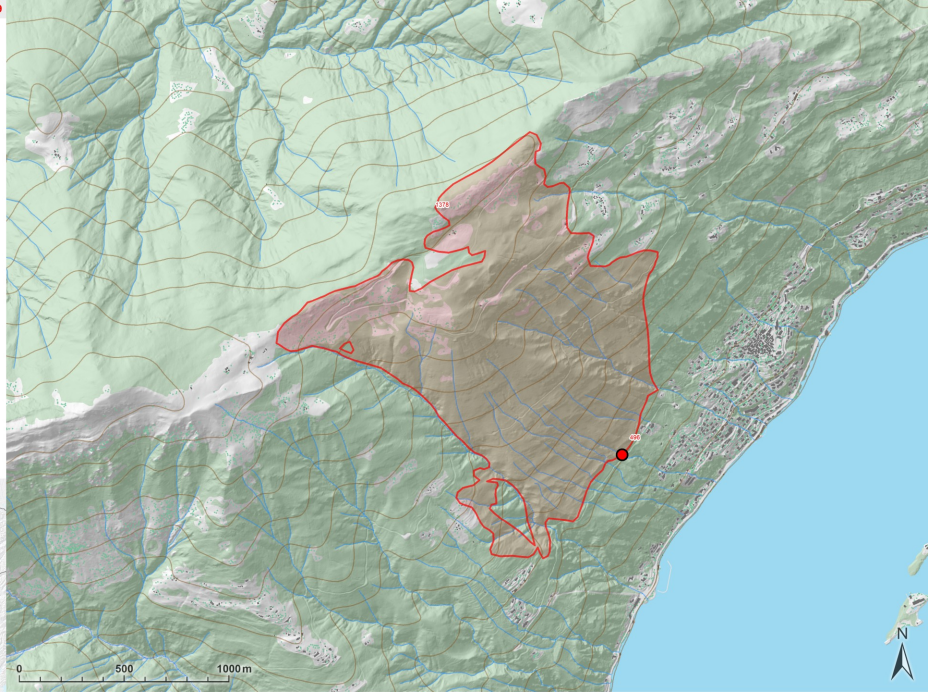
Deciduous forests in the lower part, coniferous forest issued from plantations in the upper part.

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Up-slope and rapidly spreading fire, which turned to underground and crown fire once reached the coniferous forests.



Biogeographic region: Southern Alps
 Pyroregion: SOA2
 Municipality: Ronco sopra Ascona
 Start date: 23/04/2007 time: 11:45
 Duration: 4 days

Starting point coordinates:

X=8.71472°, Y=46.13730°, Z=525.7 m s.l.m.

Elevation gradient: 1021 (532-1380 m s.l.m.)

Mean slope: 33.6°

General aspect: South-East

Burned area:

forest	150.0 ha
pasture	25.0 ha
improductive	0.0 ha
total	175.0 ha

Cause: unknown

Main concerned forest types:

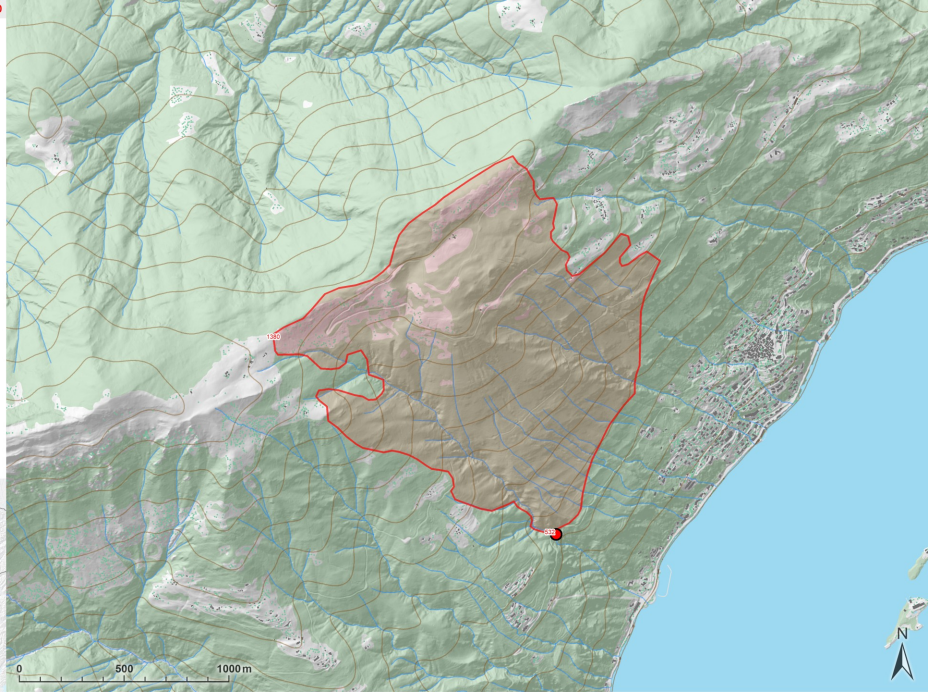
Mixed deciduous forests (mostly sweet chestnut coppices).

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Very fast spreading up-slope fire, which burned almost the same area as the 1997 fire.



Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Gordevio

Start date: 24/04/2002 **time:** 15:31

Duration: 3 days

Starting point coordinates:

X=8.75599°, Y=46.22501°, Z=464.6 m s.l.m.

Elevation gradient: 1200 (368-2196 m s.l.m.)

Mean slope: 37.4°

General aspect: South-West

Burned area:

forest	212.0 ha
pasture	94.0 ha
improductive	19.0 ha
total	325.0 ha

Cause: negligence

Main concerned forest types:

Deciduous forests (mainly sweet chestnut in the lower part and beech in the upper part).

Meteorological conditions:

Strong wind, no snow cover.

Short fire behaviour description:

Fast spreading upslope fire with eruptive behaviour in the valley canyons and final spreading in the upper fallow lands until the mountain ridge.

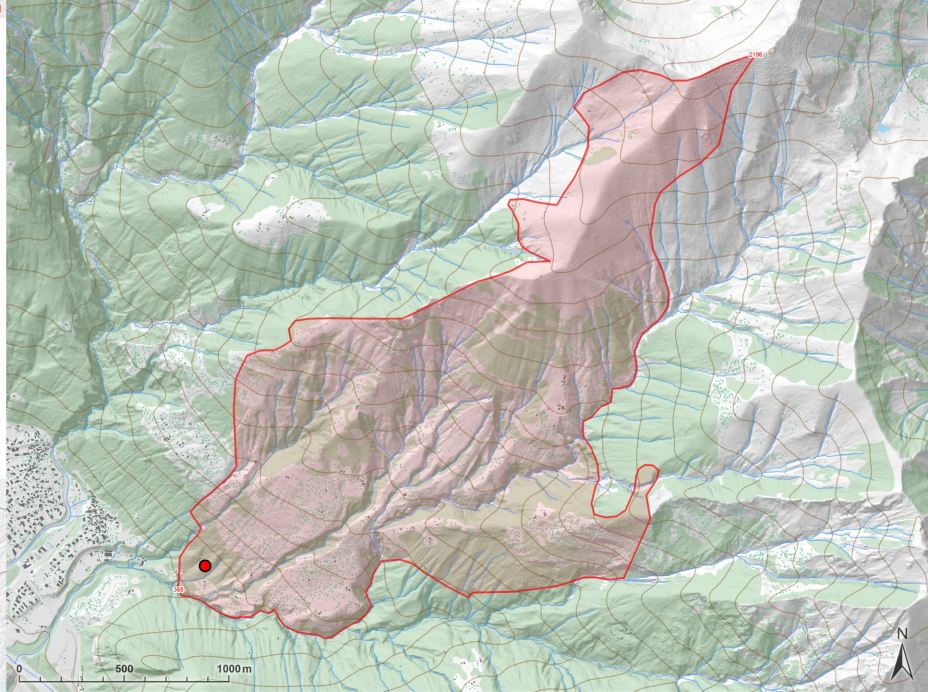


Figure SM1.12

Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Faido

Start date: 27/12/2016 **time:** 14:40

Duration: 9 days

Starting point coordinates:

X=8.82651°, Y=46.42683°, Z=1554.8 m s.l.m.

Elevation gradient: 1297 (828-1659 m s.l.m.)

Mean slope: 41.3°

General aspect: South-East

Burned area:

forest	96.0 ha
pasture	15.8 ha
improductive	2.0 ha
total	113.8 ha

Cause: negligence

Main concerned forest types:

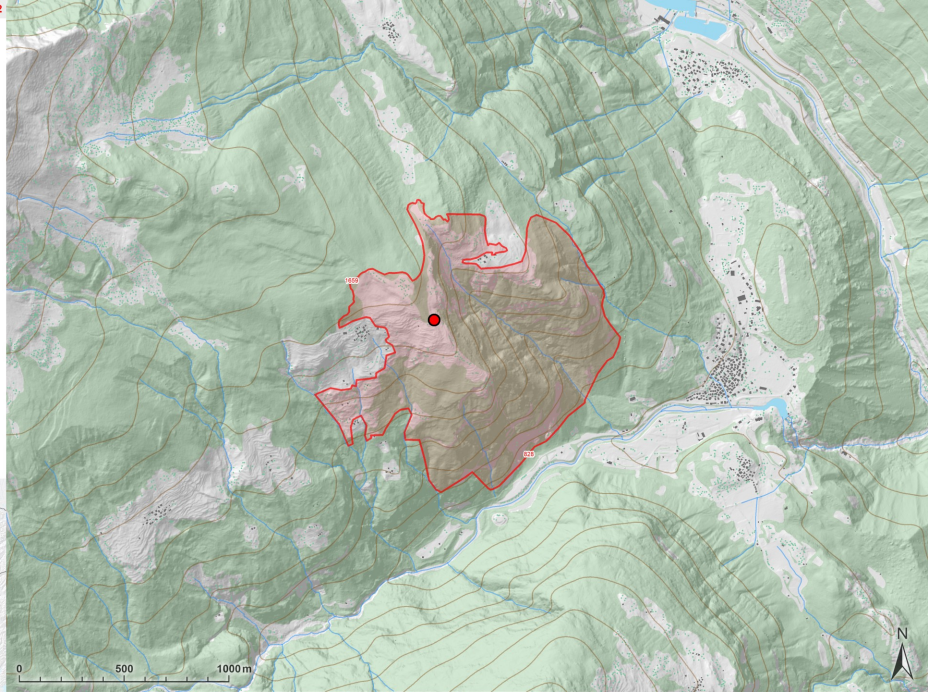
Deciduous forests in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Fire spread rapidly and uncontrolled during the evening and the first night. It first burnt the pasture land, spreading then downhill. It then moved laterally and spread up-slope.



Biogeographic region: Southern Alps
Pyroregion: SOA2
Municipality: Gambarogno
Start date: 30/01/2022 **time:** 03:03
Duration: 18 days

Starting point coordinates:
 X=8.82853°, Y=46.10884°, Z=1641.4 m s.l.m.
Elevation gradient: 1341 (953-1734 m s.l.m.)
Mean slope: 36.3°
General aspect: South-East

Burned area:

forest	154.0 ha
pasture	42.0 ha
improductive	0.0 ha
total	196.0 ha

Cause: negligence

Main concerned forest types:

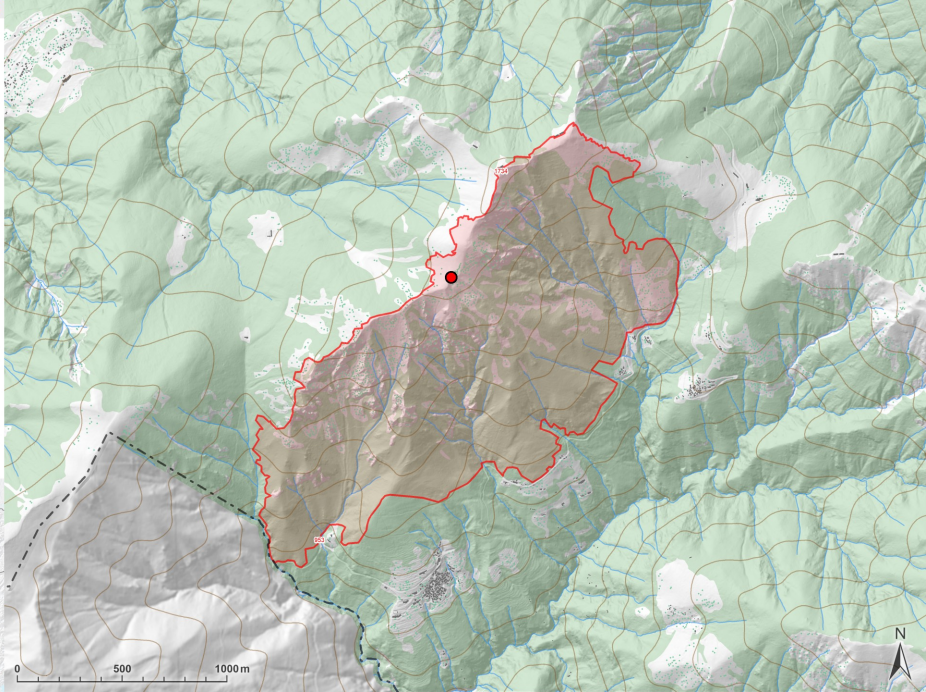
Deciduous forests in the lower part, coniferous forest issued from plantations in the upper part.

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Fire developed uncontrolled during the night, spreading first downhill. It then moved laterally and spread then up-slope.



Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Magadino

Start date: 15/04/1997 **time:** 16:00

Duration: 7 days

Starting point coordinates:

X=8.89569°, Y=46.14051°, Z=507.8 m s.l.m.

Elevation gradient: 945 (202-1616 m s.l.m.)

Mean slope: 41.3°

General aspect: North-West

Burned area:

forest	500.0 ha
pasture	50.0 ha
improductive	0.0 ha
total	550.0 ha

Cause: army

Main concerned forest types:

Deciduous forests in the lower part, coniferous forest issued from plantations in the upper part.

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Up-slope and rapidly spreading fire, which turned to underground and crown fire once reached the coniferous forests.

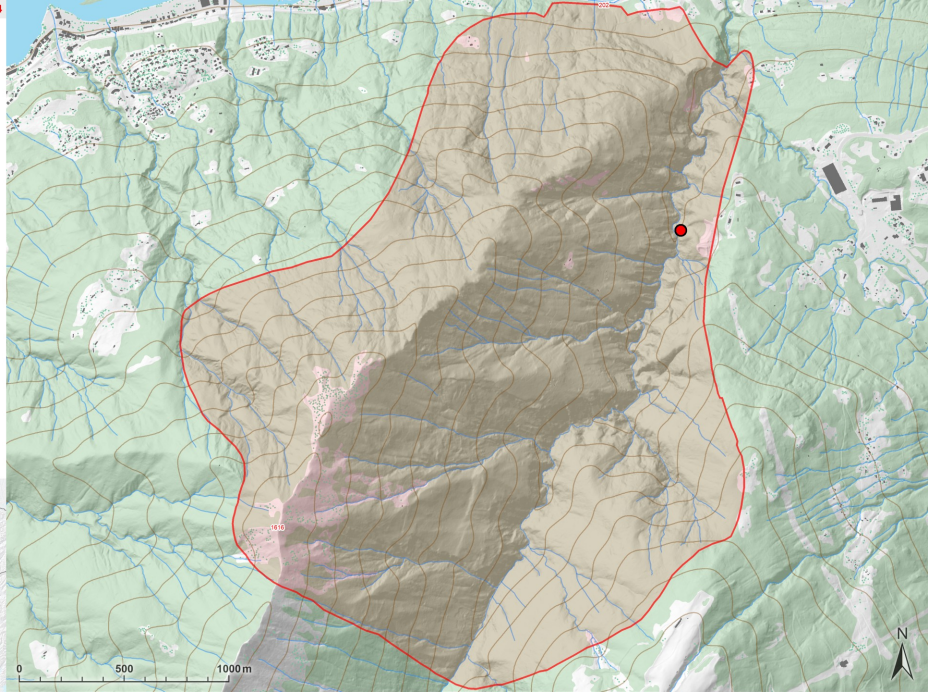


Figure SM1.15

Biogeographic region: Southern Alps
Pyroregion: SOA3
Municipality: Mezzovico-Vira
Start date: 23/03/1990 **time:** 22:30
Duration: 6 days

Starting point coordinates:
X=8.93155°, Y=46.10747°, Z=439.0 m s.l.m.
Elevation gradient: 1061 (423-1849 m s.l.m.)
Mean slope: 34.4°
General aspect: East

Burned area:

forest	278.0 ha
pasture	167.0 ha
improductive	67.0 ha
total	512.0 ha

Cause: arson

Main concerned forest types:

Mixed deciduous forests (mostly sweet chestnut coppices).

Meteorological conditions:

Extreme drought, extreme strong wind, no snow cover.

Short fire behaviour description:

Fast spreading and partially wind-driven upslope fire following the valley canyons and spreading upslope also above the forest limit.

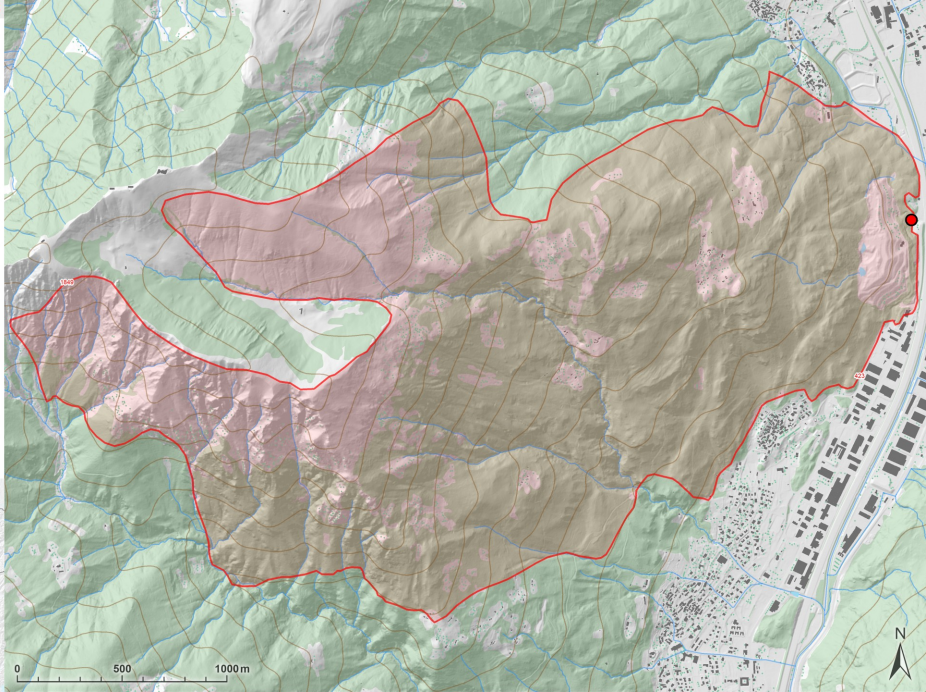


Figure SM1.16

Biogeographic region: Southern Alps
Pyroregion: SOA3
Municipality: Mezzovico-Vira
Start date: 04/04/1997 **time:** 17:00
Duration: 5 days

Starting point coordinates:
X=8.92309°, Y=46.10101°, Z=530.1 m s.l.m.
Elevation gradient: 1174 (483-1876 m s.l.m.)
Mean slope: 35.4°
General aspect: South-East

Burned area:

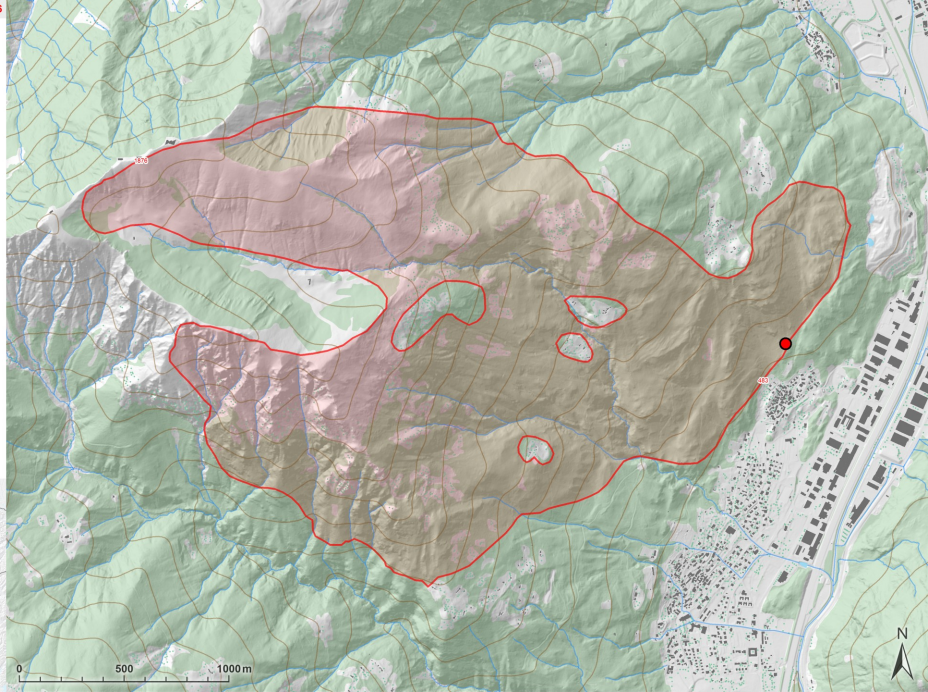
forest	180.8 ha
pasture	144.6 ha
improductive	36.2 ha
total	361.5 ha

Cause: arson

Main concerned forest types:
Mixed deciduous forests (mostly sweet chestnut coppices).

Meteorological conditions:
Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:
Very fast spreading up-slope fire, which burned almost the same area as the 1990 fire, including the upper former pasture land until the mountain ridge.



Biogeographic region: Southern Alps

Pyroregion: SOA3

Municipality: Arosio

Start date: 24/03/1990 **time:** 19:03

Duration: 4 days

Starting point coordinates:

X=8.90999°, Y=46.06114°, Z=763.8 m s.l.m.

Elevation gradient: 1118 (619-1384 m s.l.m.)

Mean slope: 33.2°

General aspect: South-East

Burned area:

forest	90.0 ha
pasture	50.0 ha
improductive	40.0 ha
total	180.0 ha

Cause: arson

Main concerned forest types:

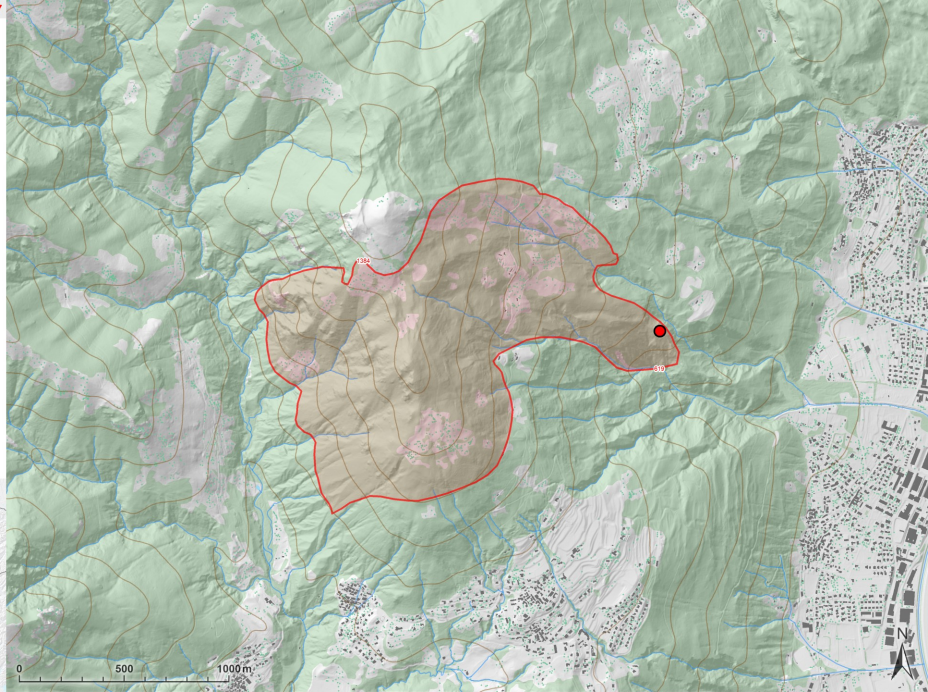
Afforestations of coniferous and deciduous species in the lower part, pioneer forest stands and fellow lands in the upper part.

Meteorological conditions:

Extreme drought, extreme strong wind, no snow cover.

Short fire behaviour description:

Fast spreading and partially wind-driven upslope fire.



Biogeographic region: Southern Alps

Pyroregion: SOA3

Municipality: Isone

Start date: 01/12/2016 **time:** 15:00

Duration: 3 days

Starting point coordinates:

X=9.04431°, Y=46.13219°, Z=1637.3 m s.l.m.

Elevation gradient: 1455 (1025-2027 m s.l.m.)

Mean slope: 33.9°

General aspect: West

Burned area:

forest	20.0 ha
pasture	158.0 ha
improductive	2.0 ha
total	180.0 ha

Cause: army

Main concerned forest types:

Fallow lands with some pioneer forest stands.

Meteorological conditions:

Strong wind (foehn), no snow cover.

Short fire behaviour description:

Very fast spreading fire moving first up and down hill, spreading then laterally and turning up-slope again.



Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Verdabbio

Start date: 16/04/1997 **time:** 14:30

Duration: 15 days

Starting point coordinates:

X=9.16716°, Y=46.27562°, Z=483.9 m s.l.m.

Elevation gradient: 974 (370-1814 m s.l.m.)

Mean slope: 39.8°

General aspect: East

Burned area:

forest	248.0 ha
pasture	5.0 ha
improductive	40.0 ha
total	293.0 ha

Cause: arson

Main concerned forest types:

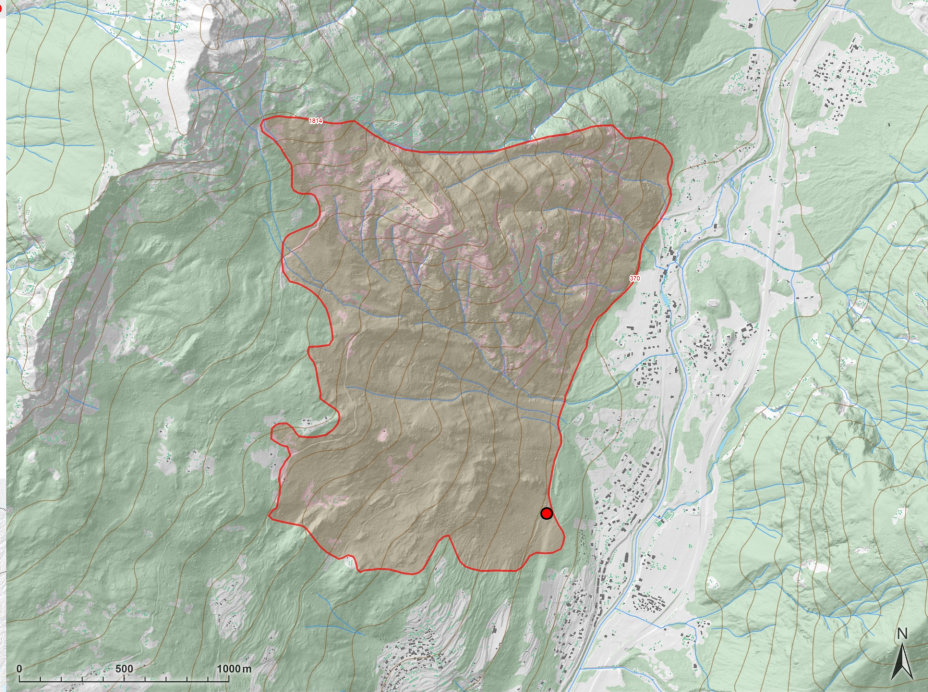
Deciduous forests in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Extreme drought, strong wind, no snow cover.

Short fire behaviour description:

Up-slope and rapidly spreading fire, which turned to underground and crown fire once reached the coniferous forests.



Biogeographic region: Southern Alps

Pyroregion: SOA2

Municipality: Mesocco

Start date: 27/12/2016 **time:** 17:45

Duration: 7 days

Starting point coordinates:

X=9.22647°, Y=46.37630°, Z=674.8 m s.l.m.

Elevation gradient: 1315 (652-2313 m s.l.m.)

Mean slope: 42.6°

General aspect: South-East

Burned area:

forest	105.0 ha
pasture	2.0 ha
improductive	12.0 ha
total	119.0 ha

Cause: arson

Main concerned forest types:

Deciduous forests in the lower part, coniferous forest in the upper part.

Meteorological conditions:

Extreme drought, strong wind (foehn), no snow cover.

Short fire behaviour description:

Up-slope and rapidly spreading fire, which turned to underground and crown fire once reached the coniferous forests.

