



*SILVA Network Annual Conference 2019
Tharandt, 19-21 June*

Dealing with extreme events and forest management: can universities have a role? The case of Vaia storm in Italy

Mauro Masiero, Davide Pettenella, Laura Secco
TESAF department - University of Padova (Italy)



Contents

- Introduction: extreme events and forests
- The case of Vaia Storm in Italy
- Reaction and initiatives (with a focus on forestry and PD University)
- Conclusions

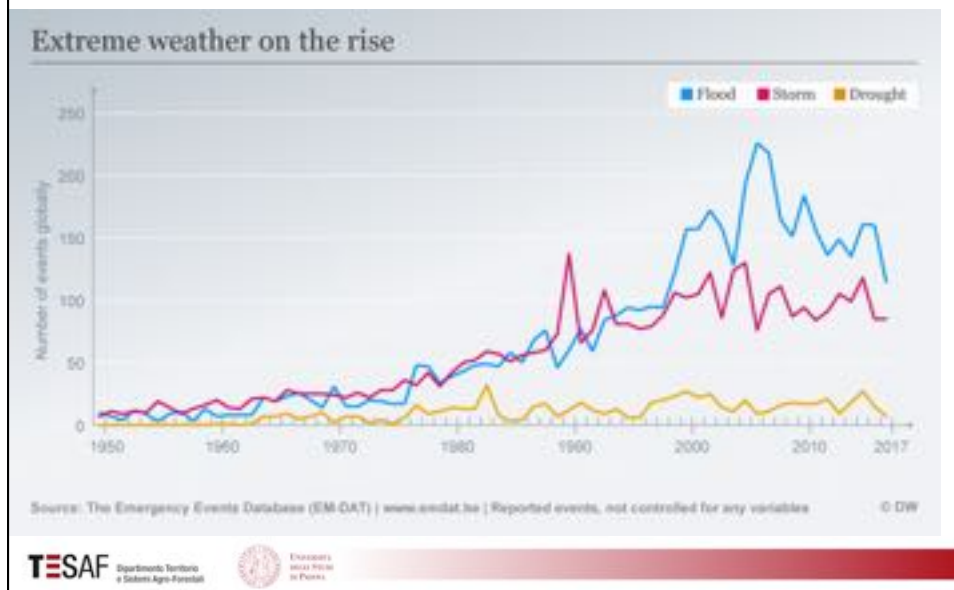


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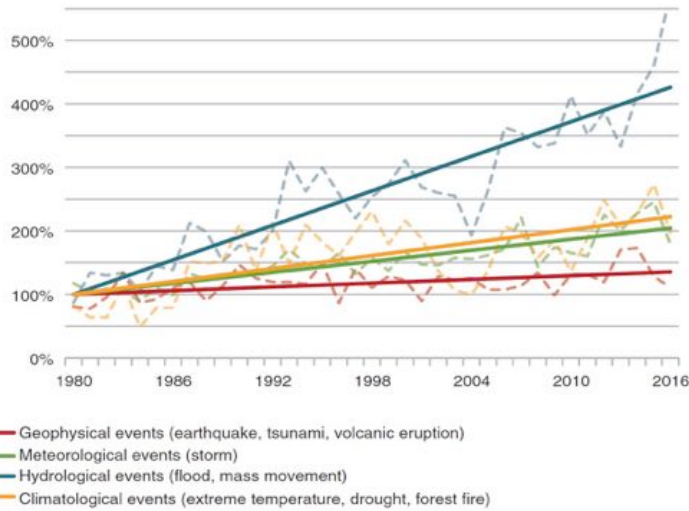
Global trend of extreme (weather) events

Source: EM-DAT, 2018



Extreme events in Europe (baseline: 1980)

Source: EASAC, 2018

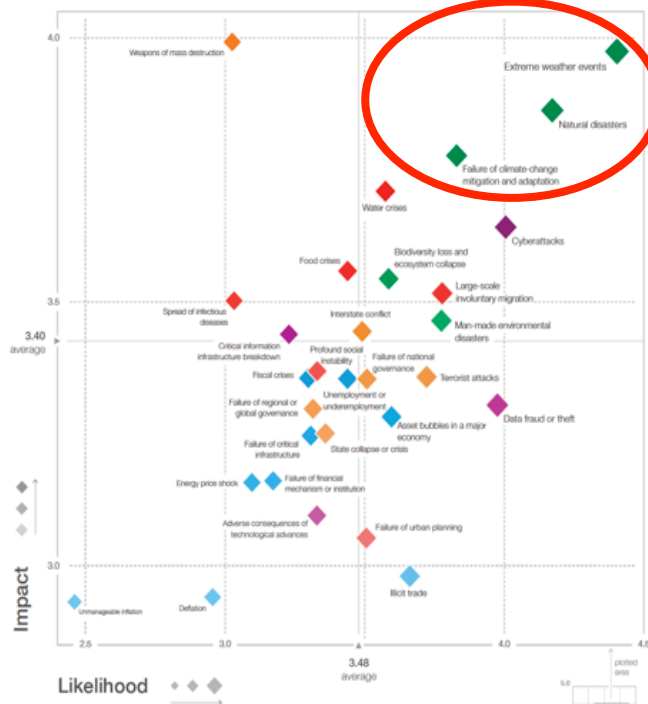


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Università di Palermo

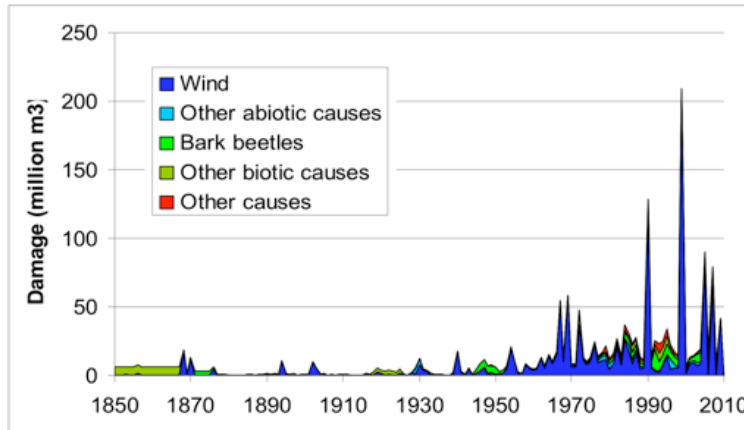
Likelihood and impacts of global risks



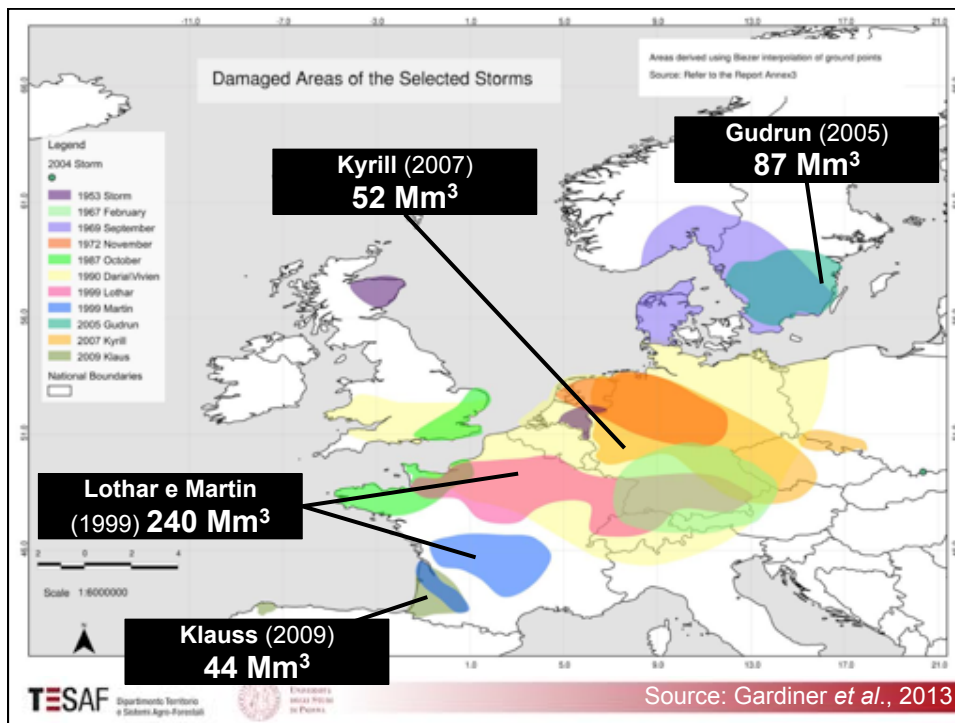
Range:
1= very unlikely/low;
5= very likely/catastrophic

Source: World Economic Forum, 2018 - The Global Risks Report 2018

Forest damages due to disturbances in Europe (Schehaas 2008)

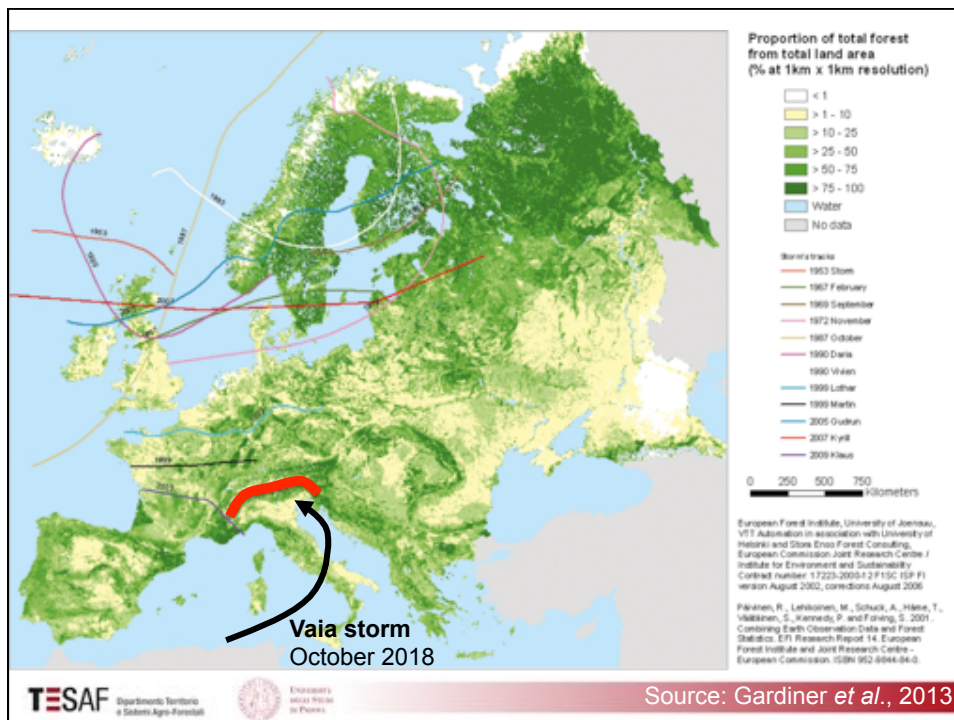


* "Other causes" includes anthropogenic damage, unidentified causes and mixed causes.

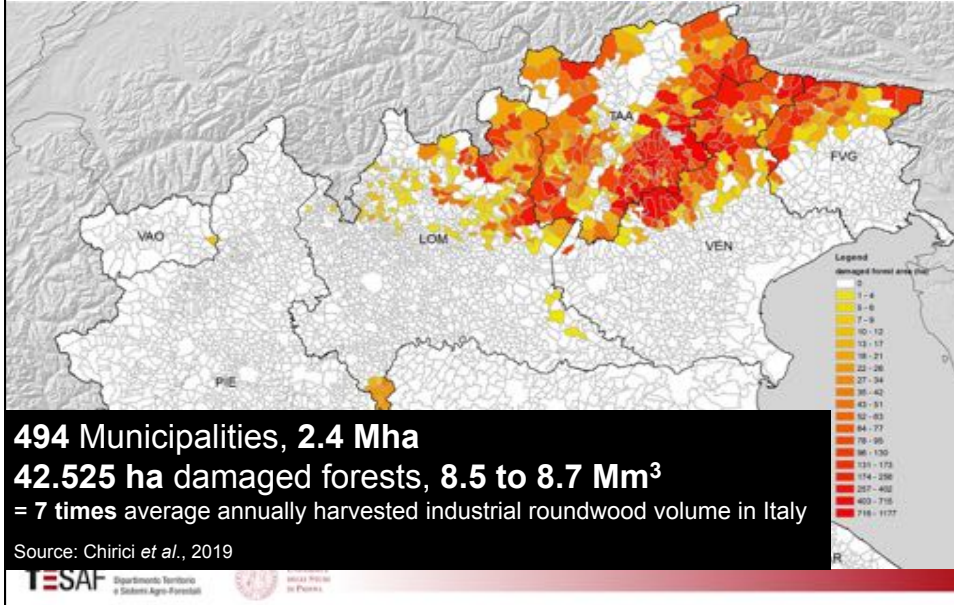


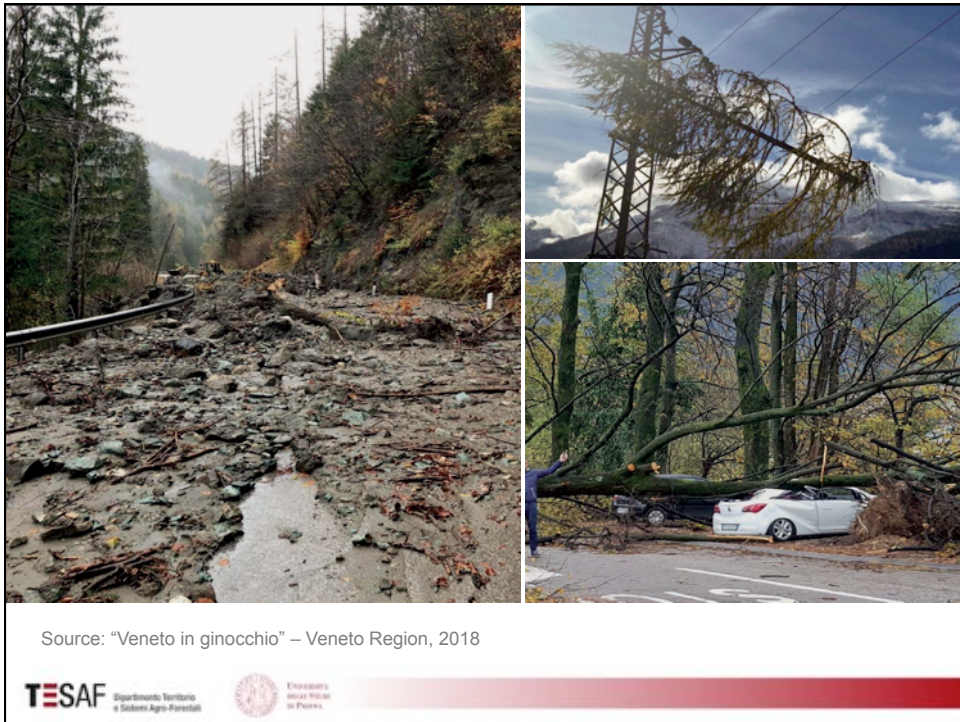
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Vaia storm (28-30th October 2018) Forest areas (ha) damaged per municipality



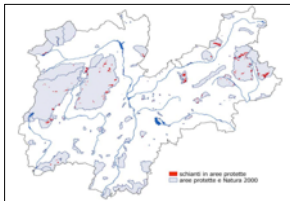
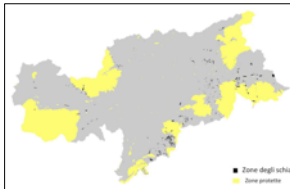


A multifaceted event: some impacts and risks (among others)

- Natural capital and biodiversity
- Infrastructures and hydrogeological risks
- Economic impacts
- Social aspects

Damaged forests in protected areas

About **809 ha** in natural and national parks
(incl. Natura 2000 sites) (Aut. Prov. BZ, 2019)

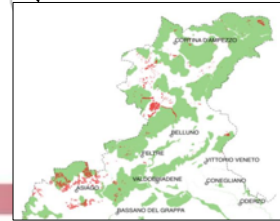


About **10.200 ha** in natural and national parks
(incl. Natura 2000 sites) (Aut. Prov. TN, 2019)

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Ente Parco delle Dolomiti di Pezza

About **5.000 ha** in 27
Natura 2000 sites
(Sitzia, 2019)



Changed landscapes Ecological, social and economic implications

Credits: G. Corradini



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Ente Parco delle Dolomiti di Pezza

Impacted infrastructures



Adventure park
Roana (VI)
Credits: S. Cesca

- **Power/mobile lines**
- **Water facilities**
- **Roads**
- **Forest roads**
- **Hiking and bike paths**
- **Defensive infrastructures**
- River banks
- Urban green areas/parks and facilities
- ...

Dolomites bike path
Castellavazzo (BL)
Credits: A. Pra

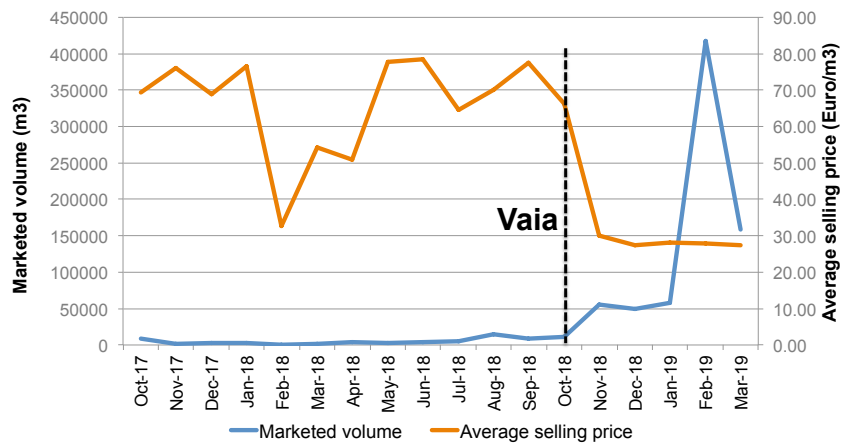
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Including green infrastructures and their protective functions



Timber market

Standing trees - Autonomous Province of Trento (online + offline auctions)



Source: own elaborations from Legno Trentino web portal & Autonomous Province of TN data



Domestic market got saturated: export towards traditional (Austria) and new (China) trade partners



Source: Il Corriere delle Alpi – 11th May 2019



A biased public perception of forests



Forest cover in Italy **doubled** in the last **50-60 years**
 About **40%** of the Country is covered by forests
 ...but **more than 60%** of the population has the opposite perception
 (Gari *et al.*, 2018)

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But also more visibility for the forestry sector

Undercut è su Dplay Plus in anteprima e senza pubblicità | Guarda Ora X

Programmi Serie TV Canali Generi Live Accedi Scopri Plus Cerca generi programmi...

Undercut: l'oro di legno

DMAX

Seguiamo quattro team di boscaioli impegnati nel difficile compito di recuperare più legna possibile nelle foreste del T...

A TV program on 4 highly-specialized forest-enterprises working in forest areas damaged by Vaia storm

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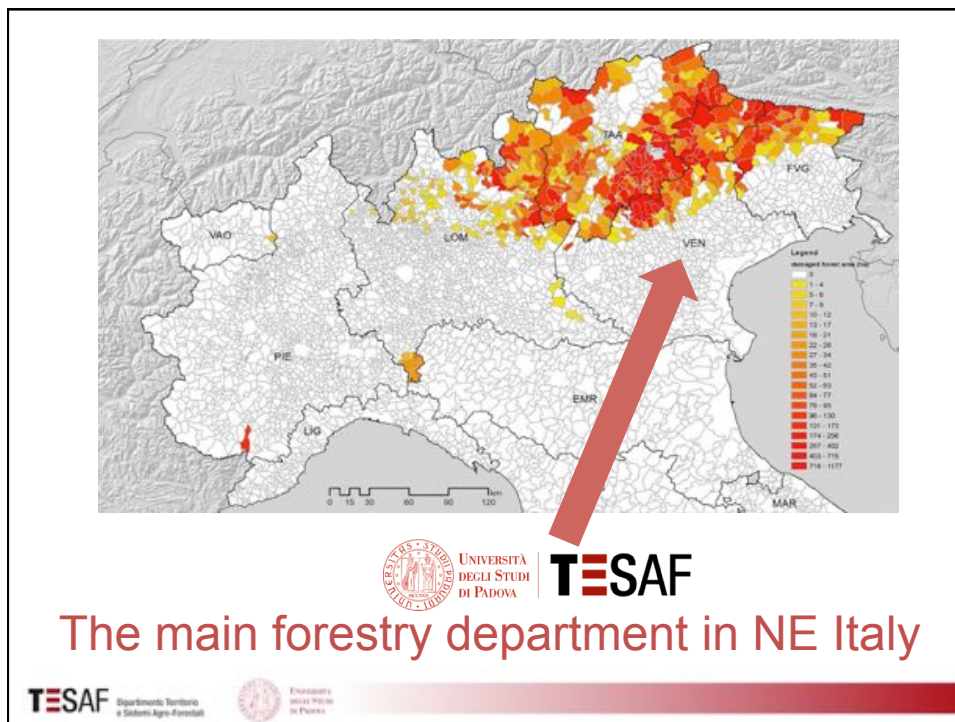
<https://it.dplay.com/dmax/undercut-loro-di-legno/>

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A “black and white” picture

- **A quick reaction by institutional and voluntary bodies on emergency issues** (safety, basic services and infrastructures)
- **Post-emergency issues:**
 - **Uneven reaction** by regional/provincial Public Administration bodies on
 - **Quick and (quite) significant** reaction by:
 - Civil society organizations
 - **Education institutions (Schools and Universities)**
 - Private sector organizations
 - Mayors and institutions at municipal level



A broad set of (different) initiatives involving/promoted by TESAF-UNIPD

- *Formal involvement by the regional government in post-event initiatives*
- Conferences/Public events
- International networking
- Initiatives by Department staff
- PhD research activities
- Initiatives for/in cooperation with students
- Side initiatives promoted by partner organizations

Conferences and public events



La tempesta Vaia
Disastro o opportunità per le foreste del Nord-Est?



GIORNATA DI STUDIO
Recenti indirizzi nella gestione del rischio alluvioni e manifestazioni climatiche dell'ottobre 2018: la tempesta Vaia

Padova, Martedì 7 maggio 2019
Università degli Studi di Padova,
"Palazzo del Bo, Sala Ippolito Nievo"
Via 8 Febbraio, 2 - 35122 Padova



**ACCADEMIA GALILEIANA
DI SCIENZE LETTERE ED ARTI IN PADOVA**

**CAUSE ED EFFETTI DELLA
DEVASTAZIONE NELL'AREA
MONTANA TRIVENETA**

MERCOLEDÌ 30 GENNAIO 2019

SALA DEL GUARIENTO
ACCADEMIA GALILEIANA DI SCIENZE, LETTERE ED ARTI
VIA ACCADEMIA 7, PADOVA

International visibility and networking



Coping with the aftermath of storm Vaia in North-East Italy

by Silvia Abruscato — February 15, 2019 2 Comments

by Silvia Abruscato, [Gherardo Chirici](#), [Giorgio Matteucci](#), and [Davide Pettenella](#)

On October 27-30th 2018, the storm Vaia hit North-eastern Italy with peak winds of 200 km/h, which compares to a very strong hurricane, and very relevant rainfall. Vaia has not only been the largest single windstorm event in recorded history causing serious damages to the forests in Italy. The storm was also a singular event that has raised unprecedented public attention because it hit some of the most beautiful and most productive forests in Italy located in the Dolomites Mountains, where several UNESCO world heritage sites full of history, culture, and traditions are located. Finally, Vaia caused enormous economic losses: the spruce and fir dominated mountain forests in the

Welcome to Resilience Blog

The Resilience Blog is published by European Forest Institute's [Resilience Research Programme](#), which focuses on forest-related risks such as climate change and the role of forests and trees in urban areas.

We post both in English and German to address local and international readers.

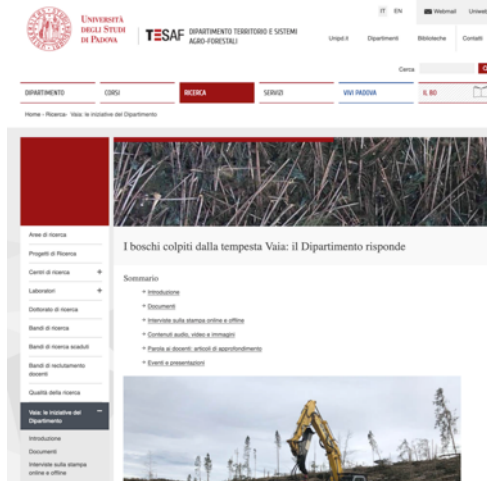
Our articles make no claim to completeness and do not necessarily represent the opinion of EFI.



<https://resilience-blog.com/2019/02/15/coping-with-the-aftermath-of-storm-vaia-in-north-east-italy/>




Initiatives by Department research staff



A “living” collection of docs/ materials made available via the Department website:

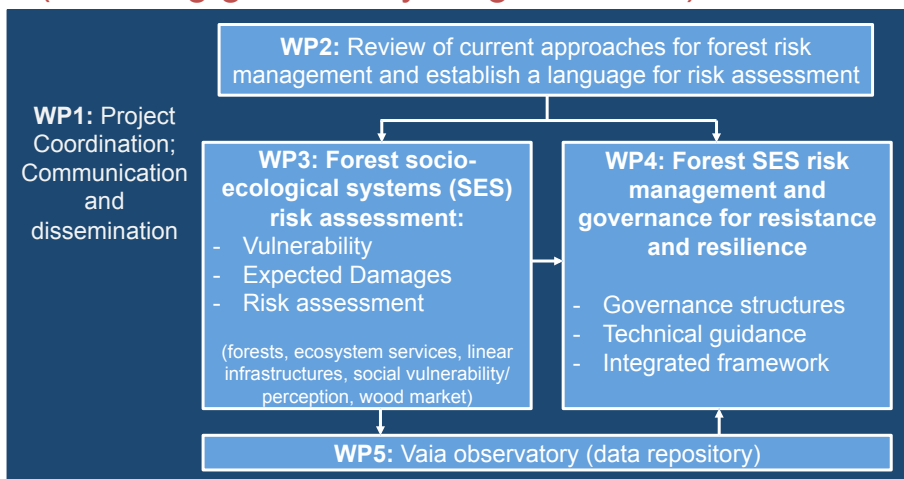
- 24 interviews
- 11 pod-casts (TV & radio)
- 6 papers on magazines
- 20+ presentations

www.tesaf.unipd.it/ricerca/i-boschi-colpiti-dalla-tempesta-vaia-il-dipartimento-risponde



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A multidisciplinary research project proposal covering key-aspects (draft) (including grants for young scientists)

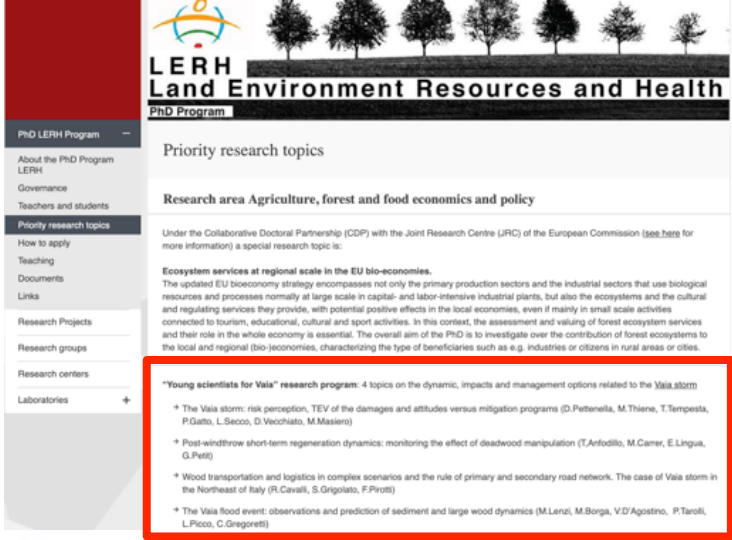


Early draft version for consultation only, please do not cite or circulate



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PhD research activities



Young scientists for Vaia" research program: 4 topics on the dynamic, impacts and management options related to the Vaia storm

- * The Vaia storm: risk perception, TEV of the damages and attitudes versus mitigation programs (D.Pettinella, M.Thiene, T.Tempesta, P.Gatto, L.Secco, D.Vecchiato, M.Masiero)
- * Post-windthrow short-term regeneration dynamics: monitoring the effect of deadwood manipulation (T.Antofillo, M.Camer, E.Lingua, G.Pell)
- * Wood transportation and logistics in complex scenarios and the role of primary and secondary road network. The case of Vaia storm in the Northeast of Italy (R.Cavali, S.Grigolato, F.Protti)
- * The Vaia flood event: observations and prediction of sediment and large wood dynamics (M.Lenzi, M.Borja, V.D'Agostino, P.Taroli, L.Picco, C.Gregeretti)

Young scientists for Vaia research program

4 thematic areas for PhD candidates applying in 2019

www.tesaf.unipd.it/en/research/doctoral-degrees-phd-lerh-program

Initiatives for/in cooperation with students



Vaia: an integrated approach for post-event management - 15th March 2019

Research and teaching staff:

Addressing "extreme events and forests" from different view points (from silviculture to forest governance)

(Informal) commitment to include "Extreme events" as a complementary topic within multiple courses of Forest Science MSc and BSc programs

Roundtable with experts from 5 regional Forestry Departments

Training courses for students and practitioners



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DIPARTIMENTO
TERRITORIO E
SISTEMI
AGRO-FORESTALI

**CENTRO
STUDI
AMBIENTE
ALPINO**
L. Susmel



INFORMAZIONI

ISCRIZIONE ONLINE
Partecipazione gratuita anche per singoli giorni
Modulo d'iscrizione [\[?\]](#)

PROGRAMMA
Elenco degli interventi e dei relatori [\[?\]](#)

DIRETTORE DEL CORSO
Tommaso Anfodillo

COMITATO SCIENTIFICO
Stefano Grigolato
Emanuele Lingua
Francesco Pirotti
Mario Pividori
Tommaso Sitzia

In Europa i danni da vento sono responsabili di più del 50% dei danni totali alle foreste in termini di perdita di biomassa.

In media si verificano 2 eventi di grandi proporzioni all'anno. Nel sud delle Alpi la frequenza degli eventi è sicuramente inferiore rispetto a ciò che avviene nel centro e nord Europa ma ad ottobre 2018 anche il triveneto è stato colpito da un fenomeno di grandi proporzioni.

Circa 8 milioni m³ sono stati abbattuti determinando situazioni di forte criticità che perdureranno per molti anni.



Dipartimento Territorio e Sistemi Agro-Forestali

Field-trips and on-site visits



Dipartimento Territorio e Sistemi Agro-Forestali

Initiatives promoted by partner organizations

The screenshot shows the WOWnature website interface. At the top, there is a navigation bar with the WOWnature logo and menu items: Perché WOWnature, Cresci il tuo albero, Racconti WOW, HOST, and Contattaci. Below the navigation is a large image of a forest with stylized, colorful characters. A text overlay on the image reads "WOWalps la rinascita delle foreste alpine". The footer contains a red-bordered box with the text "WOWNATURE is powered by" and logos for "ef", "ETI|FOR", "SPIN-OFF DELL'UNIVERSITÀ DI PADOVA", and "Università degli Studi di Pavia". To the right of this box are links for "Cresci il tuo albero", "Racconti WOW", "Vuoi diventare HOST?", and "Scopri gli altri host". Further right are links for "FAQ Come possiamo aiutarci?", "Registrati", "Contattaci", "Termini di utilizzo", and "Iscriviti alla newsletter". At the bottom right of the footer, there is contact information: "info@wownature.eu", "© 2018", "tutti i diritti sono riservati", and "credits". The bottom of the page features logos for "TESAF Dipartimento Territorio e Sistemi Agro-Forestali" and "Ente Parco della Val di Sella", along with the website URL "www.wownature.eu".





Fundraising and activities

3 companies:

- Barilla → improved habitats
 - Levico → carbon sequestration
 - Prodeco → tree planting
- Impacts to be verified via FSC® procedure for ecosystem services

+ About 300 single donors

Support to: planting, planning, management, FSC certification, communication & promotional activities

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Conclusions (1/2)

- Extreme events likely to become more intense and (maybe) frequent → impacts on forests
 - Effective prevention and management capacity goes **beyond pure technical aspects**
 - *“(...) a rapid response to such disorganizing, catastrophic, psychologically shocking events rarely produces good results **unless there is already a deep understanding of forest ecology [...] and governance firmly embedded in management rules and culture**”* (Vallauri, 2005; p. 342)
- Higher education/research shall be part of it

Conclusions (2/2)

Learning and innovating from crisis:

- Addressing “extreme events” within existing **teaching programs** (adapting existing courses, creating *ad hoc* modules, seminars, MOOCs/SPOCs...)
- **Research programs/activities** involving young researchers
- **Linking** different actors within areas at risk (higher education institutions as a “catalyst” and “glue”?)
- Rethinking how to **communicate** forests and forestry
- **Learning from each-other** and sharing across EU and globally (windstorms, wildfires...)

Facing an increasing intensity of extreme events...

...a new perspective is needed while approaching forestry education and forest management

