Global Change and Abiotic Risk Trends in the EU

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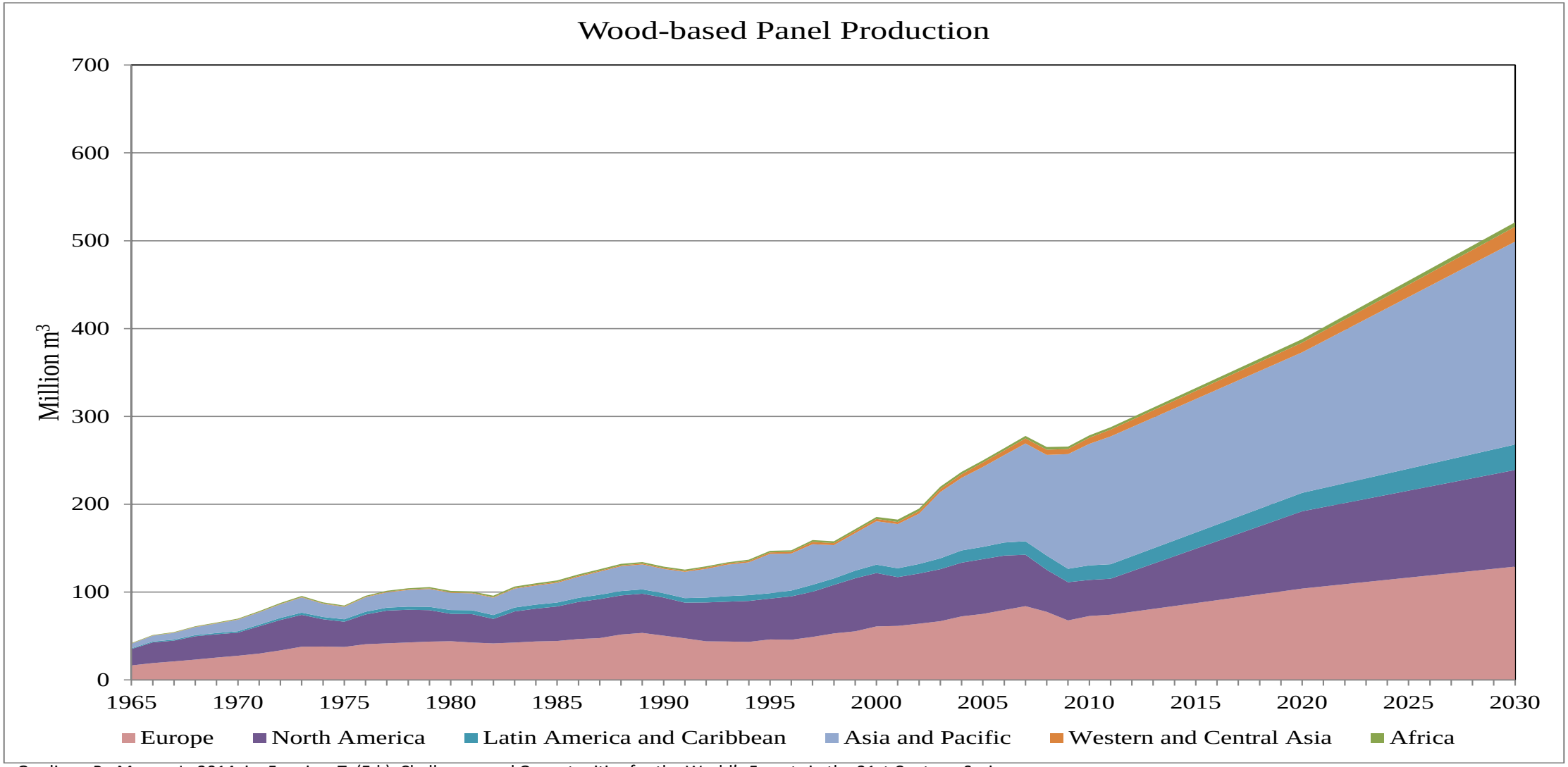
EFI Planted Forests Facility

Outline

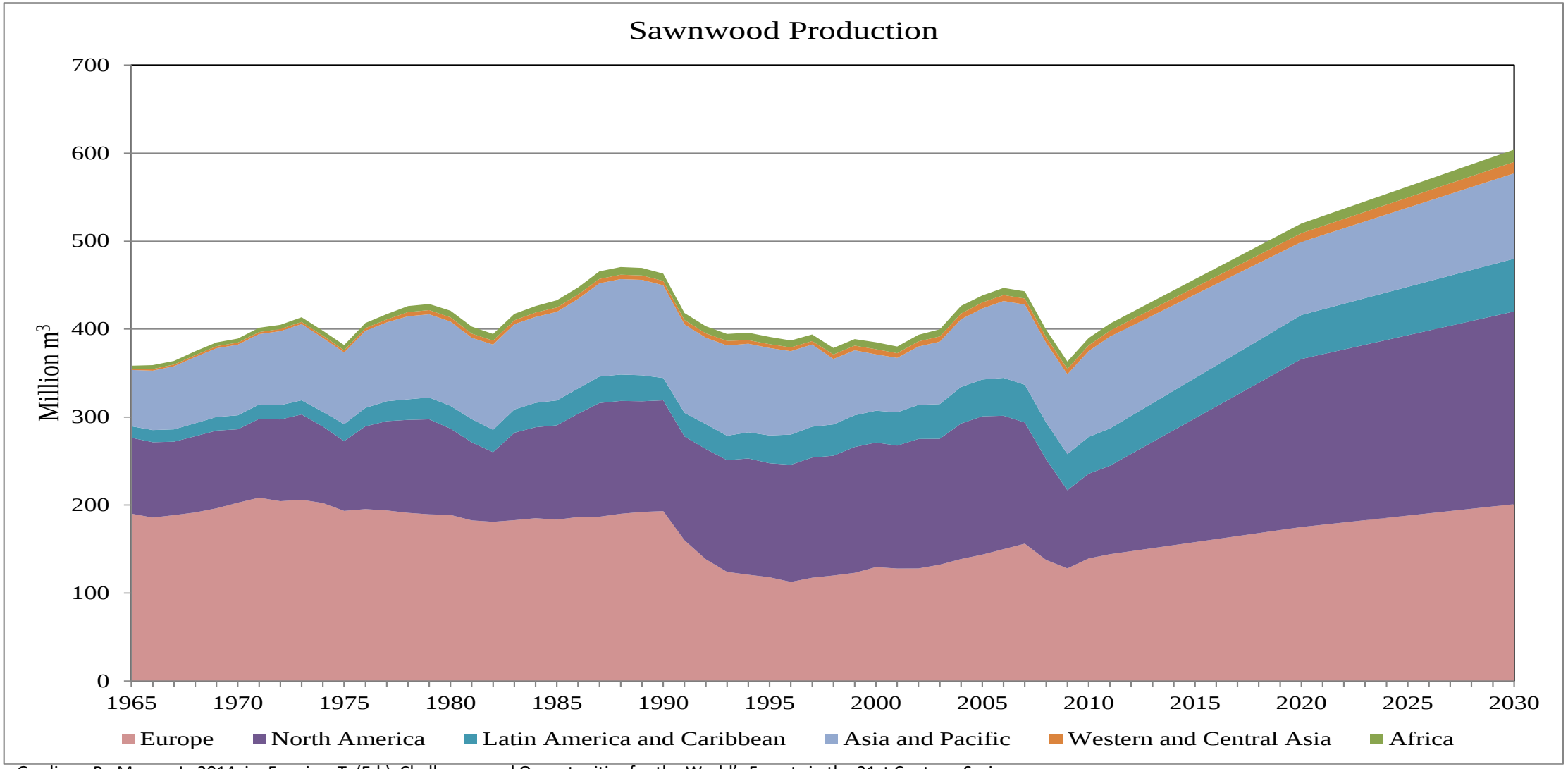
- Some drivers of forestry development in Europe
- Impacts of abiotic hazards to European forests
- Changes in abiotic hazards in European forests
- Some recent events affecting European forests
- Is there any good news?

World Demand for Panel Products



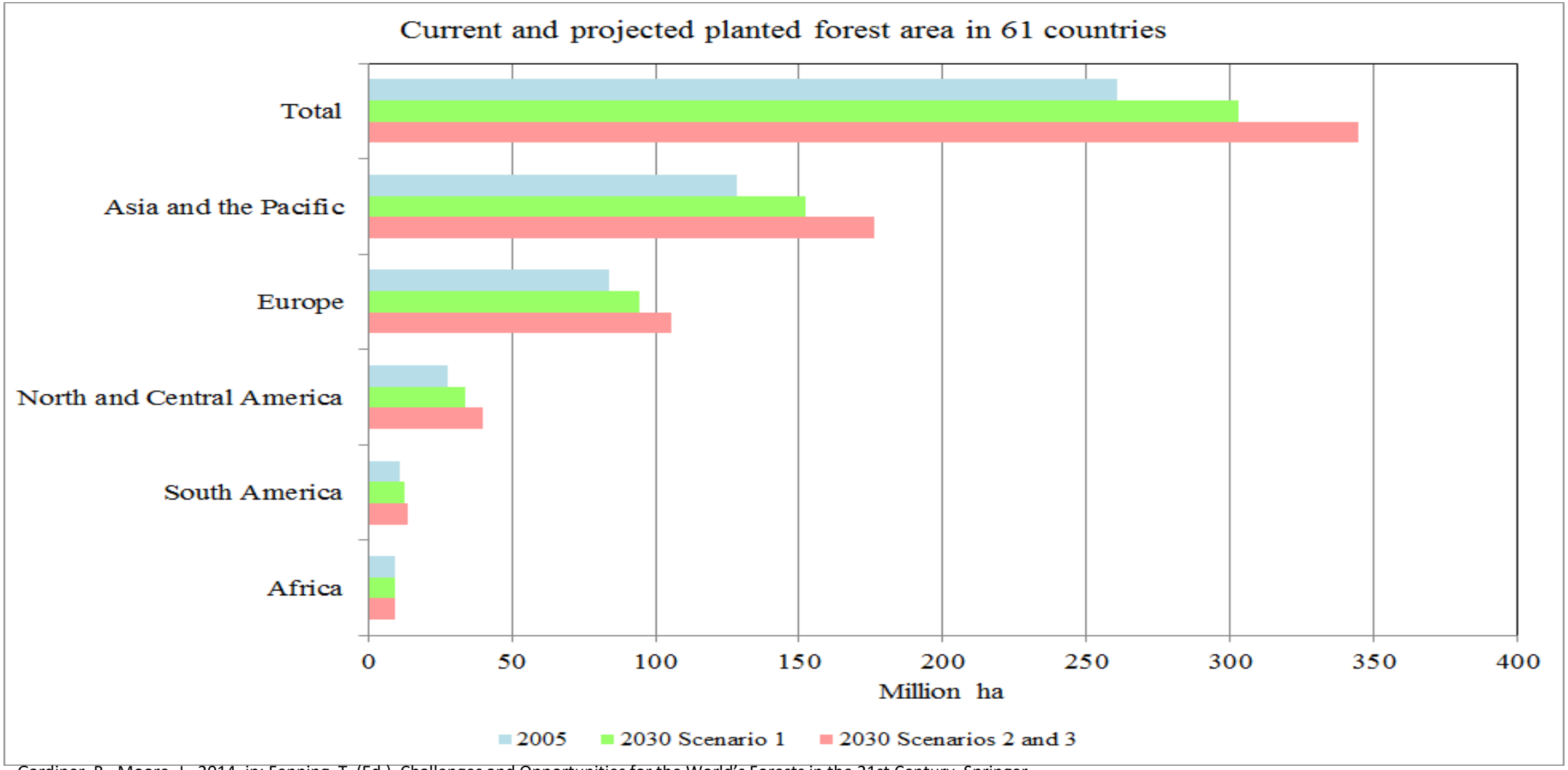
Gardiner, B., Moore, J., 2014. in: Fenning, T. (Ed.), Challenges and Opportunities for the World's Forests in the 21st Century. Springer

World Demand for Sawnwood Products



Gardiner, B., Moore, J., 2014. in: Fenning, T. (Ed.), Challenges and Opportunities for the World's Forests in the 21st Century. Springer

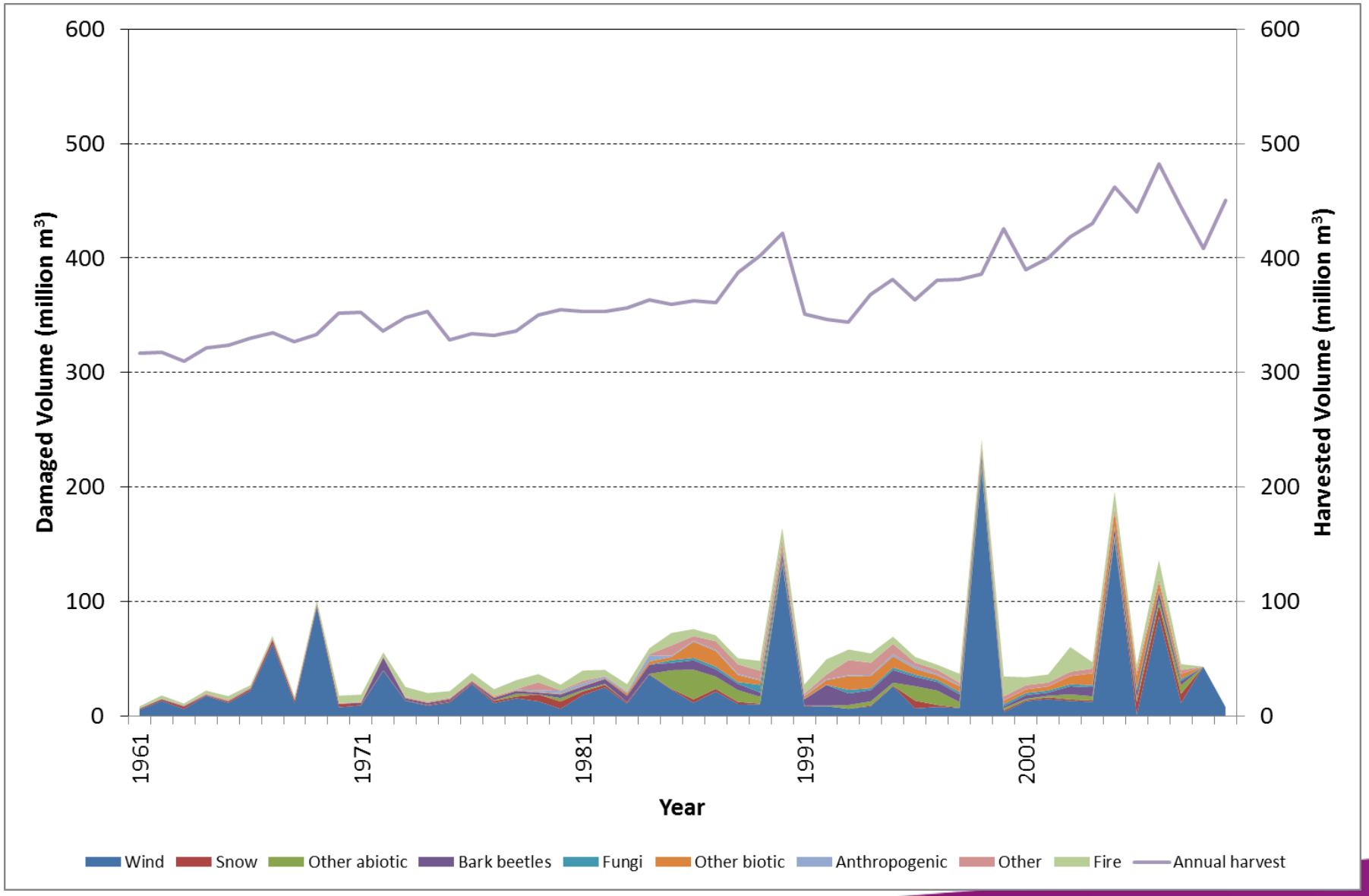
Current and Projected Planted Forests



Gardiner, B., Moore, J., 2014. in: Fenning, T. (Ed.), Challenges and Opportunities for the World's Forests in the 21st Century. Springer

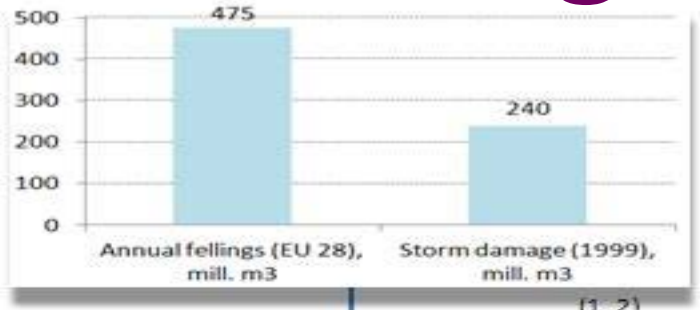
Planted Forests

Damage to European Forests



Thanks to Mart-Jan Schelhaas, ALTERRA

Examples of Damage to European Forests



(1, 2)

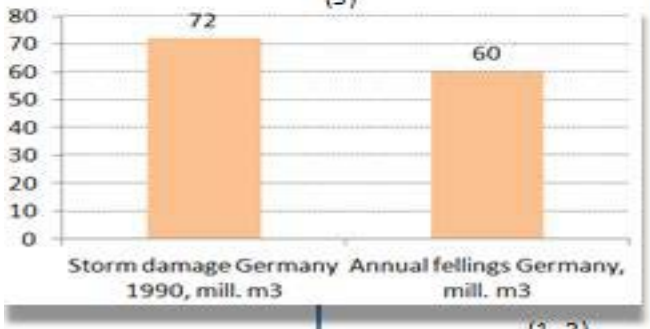
(6)

- >60 lives lost
- >5 bill. € damage
- Area burnt >Luxembourg
- >100 individual forest fires

(4)

(8)

(3)

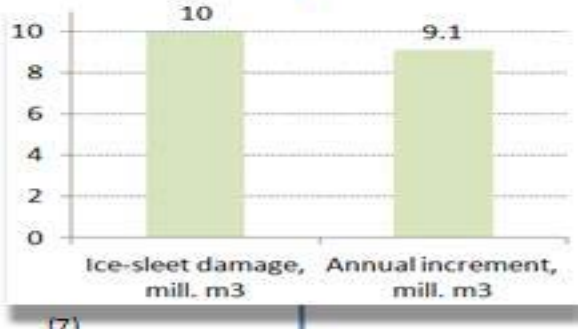


(1, 2)

(5)

- ~ 5000 km² /year
- ~ 2x land area Luxembourg

(4)



(7)

- ~215 mill. € forest damage
- ~430 mill. € total damage

(7)

Winter storms 1990

Winter storms 1999

Wildfire average burnt area /year

Wildfire Greece 2007

Ice-sleet storm Slovenia 2014

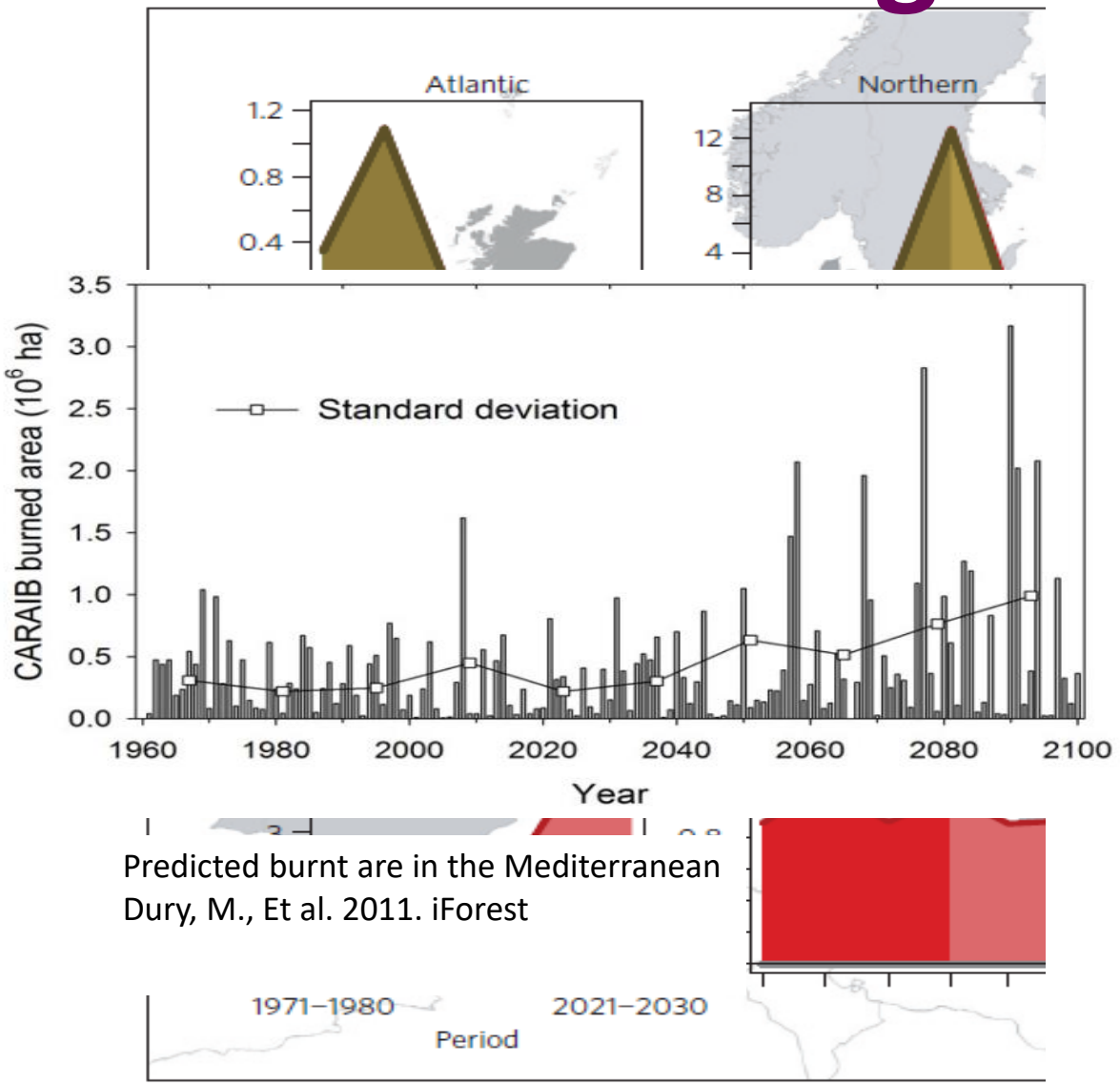
Impacts of Damage to European Forests

- **Forest fir**
  - In 200
  - In 200
- **Storms:**

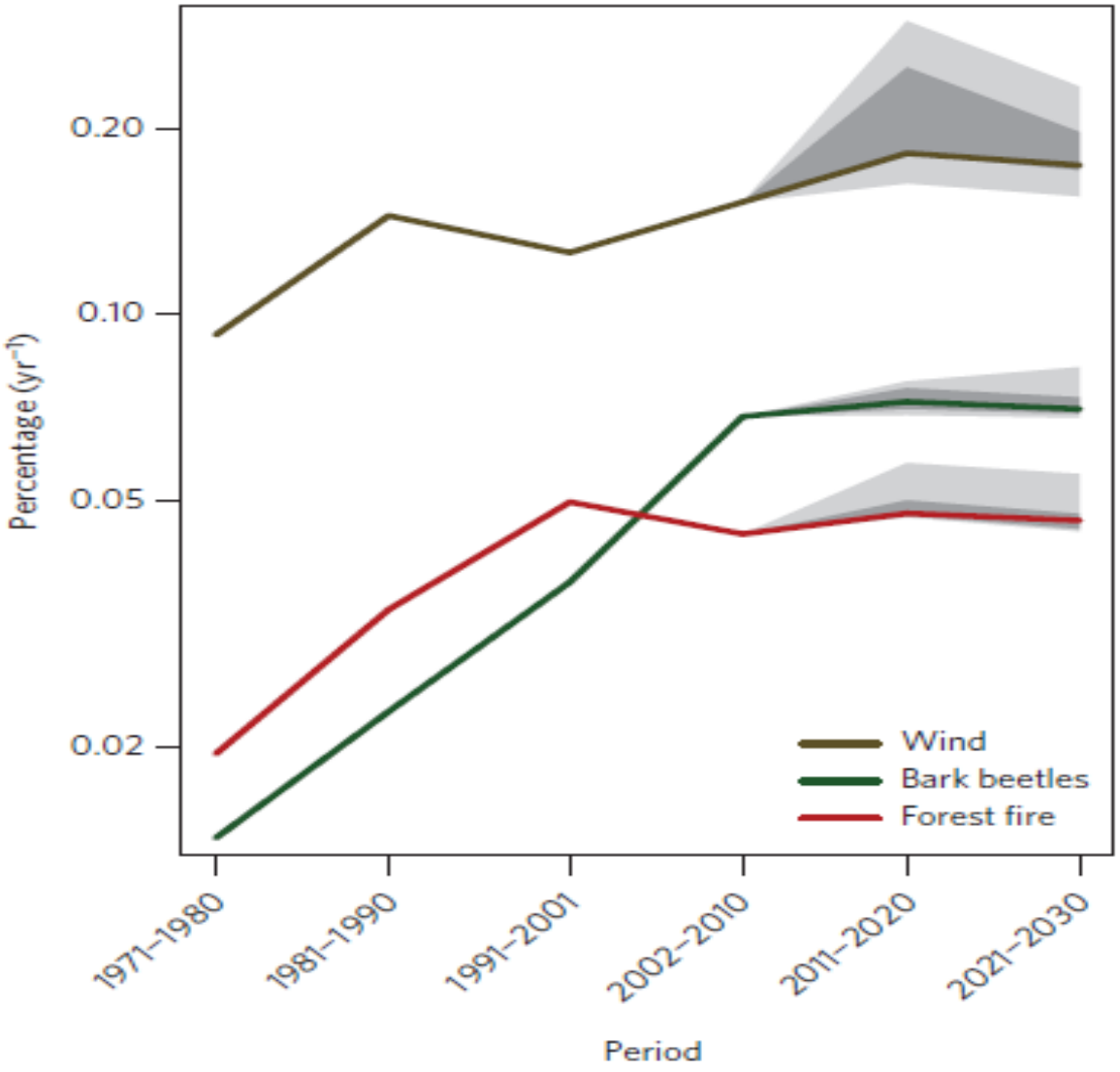
  Responsib
  - In 199
  - In 200
- **Pests and**

  About 2.7 d diseases (new species e

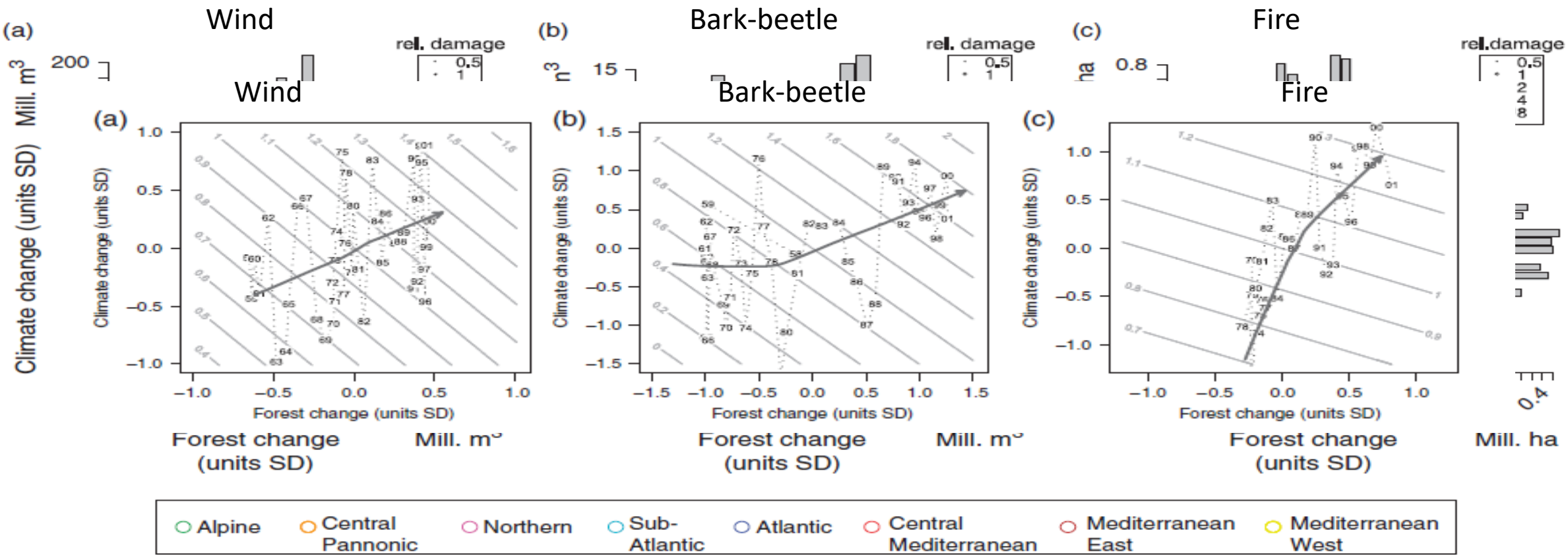
Trends in Damage to European Forests



Predicted burnt are in the Mediterranean
Dury, M., Et al. 2011. iForest



Trends in Damage to European Forests



Seidl, R., Schelhaas, M.-J., Lexer, M.J., 2011. Glob. Chang. Biol. 17, 2842–2852.

Ice/Snow Damage to European Forests

Drought Damage to European Forests

Fire Damage to European Forests

An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Fire Danger Notice 11 of 2018
Issue date: 26 June 2018 @ 1200hrs

Forest Fire Danger Rating

Condition RED – Extreme Fire Risk
Take Immediate Action

Warning Effective From 1200hrs 26/06/2018
Effective Period Expires 1200hrs 29/06/2018

Arising from current prolonged high pressure weather patterns, high temperatures and effective drought conditions, an extreme fire risk is deemed to exist in all areas where hazardous fuels exist. This meteorological risk is further compounded by high levels of public activity and related ignitions risks associated with the fine weather.

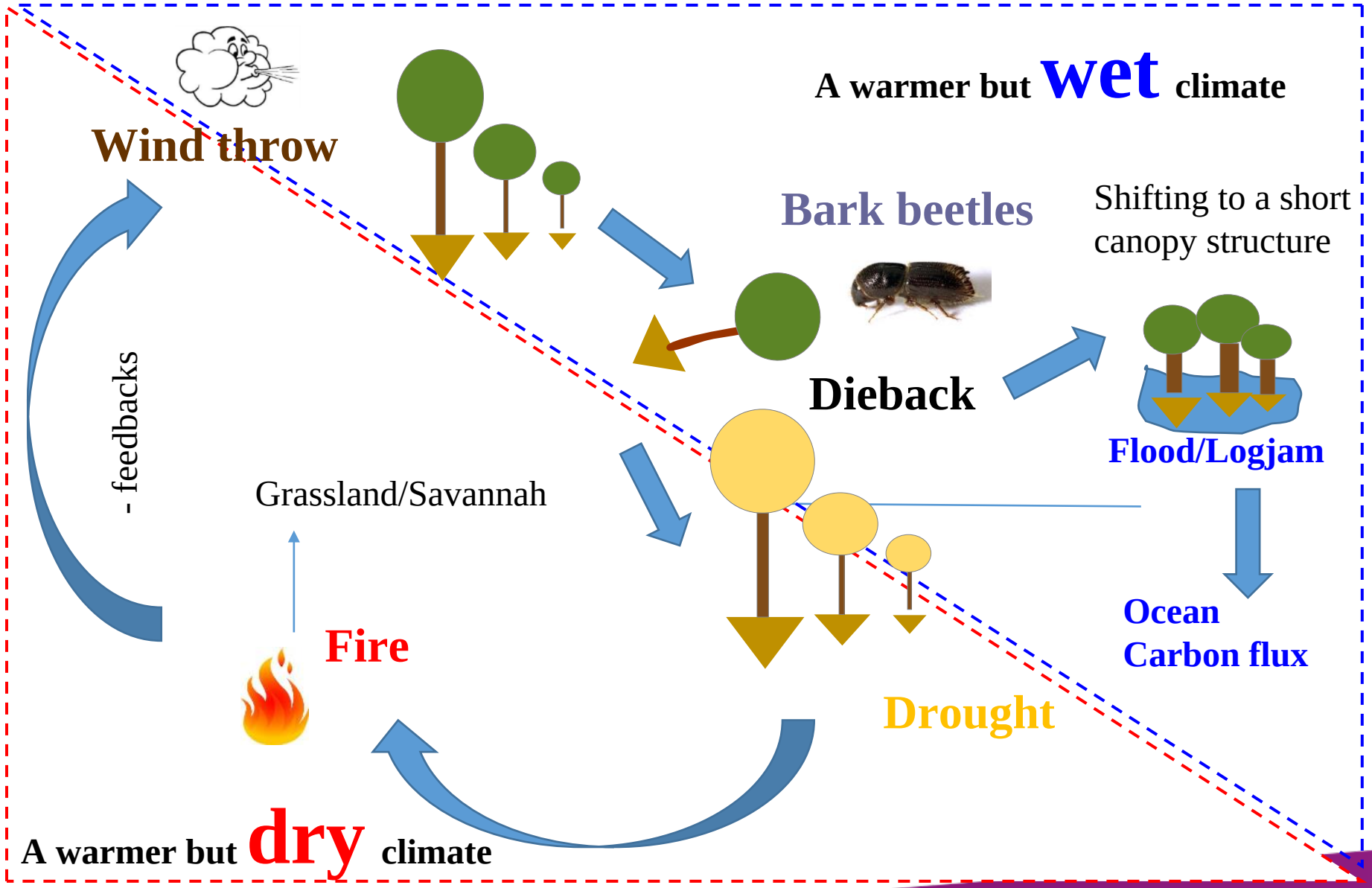
Fire Weather Data Courtesy of European Commission Copernicus System, European Centre for Medium Range Weather Forecasting and Met Eireann.

DAFM advise at this point that all outdoor use of fires, barbeques and other open ignition sources be avoided on forest lands and in other high risk areas until further notice. Extreme caution is also advised with respect to hay making and the use of machinery and other agricultural activity that may also present a risk of fire in dry vegetation on cultivated land types in current conditions.

Pending further review, this risk condition will remain in place until 1200hrs on Friday, June 29th, 2018 and will revert to Condition Orange at this point unless otherwise indicated.

BE PREPARED. BE VIGILANT. STAMP OUT FOREST FIRES.

Interaction of Forest Hazards



Seidl *et al*., 2014; Seidl *et al*., 2017; Lin *et al*., 2017; Li et al., 2018

Trends in European Forest Management

Clearfell/Restock

Even-aged
Regular structure

Continuous Cover

Uneven-aged
Irregular structure

Influence of Forest Management

Curr Forestry Rep
DOI 10.1007/s40725-017-0064-1

FOREST ENTOMOLOGY (E BROCKERHOFF, SECTION EDITOR)

Tree Diversity Drives Forest Stand Resistance to Natural Disturbances

Hervé Jactel[1] · Jürgen Bauhus[2] · Johanna Boberg[3] · Damien Bonal[4] · Bastien Castagneyrol[1] · Barry Gardiner[5] · Jose Ramon Gonzalez-Olabarria[6] · Julia Koricheva[7] · Nicolas Meurisse[8] · Eckehard G. Brockerhoff[9]

Influence of Forest Management: Wind

REVIEW / SYNTHÈSE

Growth performa
meta-analyses of
performance of m

Table 3. Studies and species use

Source	Sp
Heupel and Block 1991	No
König 1996; König et al. 1996	No
Rau 1995	No
Schmid-Haas and Bachofen 1991	No
Wangler 1974	No
Winterhoff et al. 1995	No
Zindel 1991	No

*The first number represents the

Factors affecting the probability of windthrow at stand level as a result of Gudrun winter storm in southern Sweden

Erik Valinger [a,*], Jonas Fridman [b]

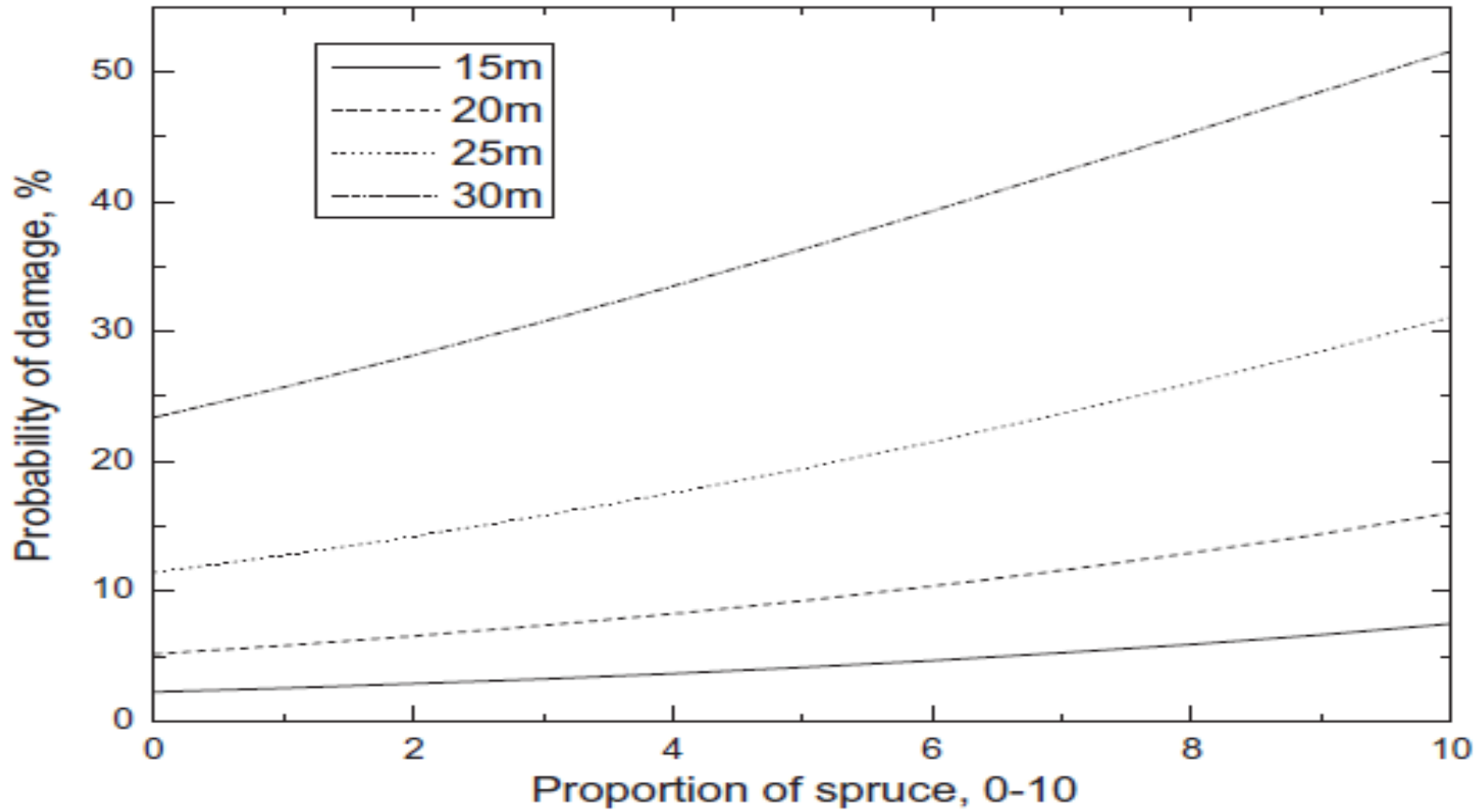


Fig. 3. The logistic relation between the probability of damage (%) as a function of proportion of Norway spruce (0–10), mean height (m), and proportion of Scots pine (0–10) (cf. Table 2c).

mixture n %)*	Effect
	+
10% beech)	+
0	+
s with a propor- niferous species 1–50, and 51–90 10% beech)	+
	+
0	+

NOVA with classes with 0.10. *1* Pure inant spruce/ mixture larch d (≥80%)

Summary

- Abiotic damage is increasing in Europe
- The increase in damage is due to a number of factors
  - Increase in growing volume
  - Changes in management practice
  - Changing climate
- Forest damage is occurring in different regions due to unexpected causes
  - Fire in Norway and Ireland
  - Wind damage in Poland and Belarus
  - Snow damage in Northern Spain
- Knowledge exists across Europe to help mitigate the impacts of abiotic damage but it needs to be shared and made easily available
- All hazards (abiotic and biotic) need to be considered together

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Thank you!