



ADAPTATION OF FORESTS AND PEOPLE TO CLIMATE CHANGE

Main results of the global assessment

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BACKGROUND

- Collaborative Partnership on Forests (CPF): 14 leading international organizations with substantive forest programmes
- CPF Global Forest Expert Panels (GFEP): new mechanism to provide policy makers with state of scientific information on key issues
- Led and coordinated by IUFRO
- Thematic assessments by leading scientists from all around the world; no new research ²

EXPERT PANEL ON ADAPTATION OF FORESTS TO CLIMATE CHANGE

- Chair Risto Seppälä, 6 Coordinating Lead Authors, in total almost 100 participating scientists
- Broad range of scientific backgrounds and expertise; several IPCC scientists



PRODUCTS

- Peer reviewed scientific report "Adaptation of Forests and People to Climate Change – A Global Assessment"



- Policy brief "Making Forests Fit for Climate Change" (available in all official UN languages)



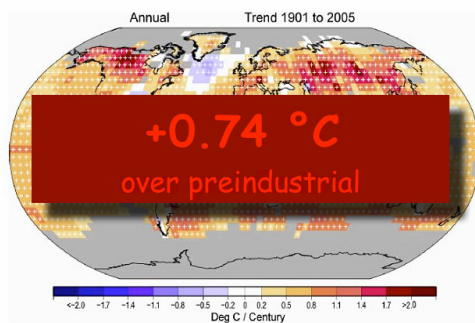
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KEY FINDINGS

- Climate change has already affected forest ecosystems
- It will have increasing effects on them in the future.
- The warmer, the more forests will not be able to adapt
- A few services will be enhanced, many will be lost
- Sink service may turn into a disservice

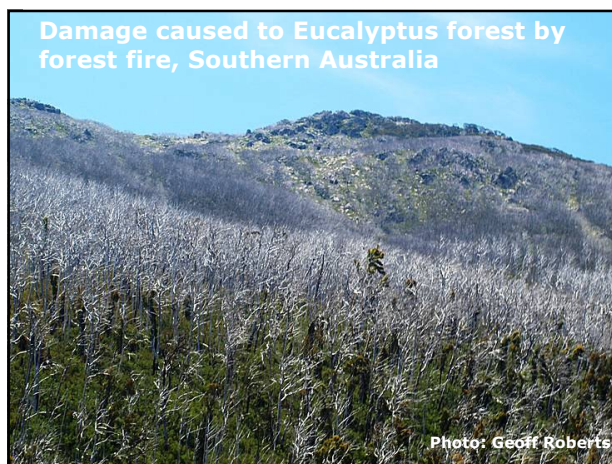
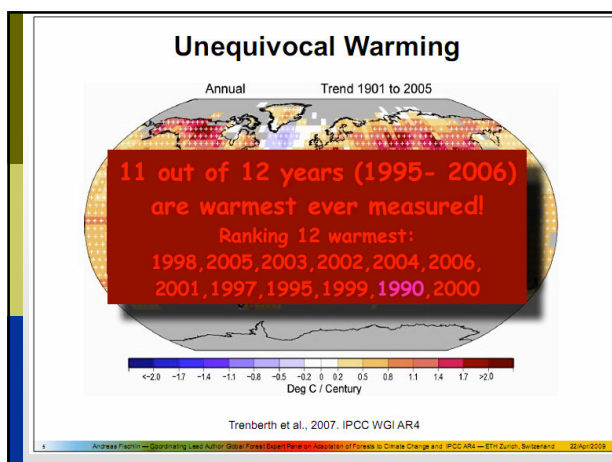
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Unequivocal Warming



Trenberth et al., 2007, IPCC WGI AR4

Andreas Paolini – Coordinating Lead Author, Global Forest Outlook, Adaptation of Forests to Climate Change and IPCC AR4 – ETH Zurich, Switzerland – 20 April 2008



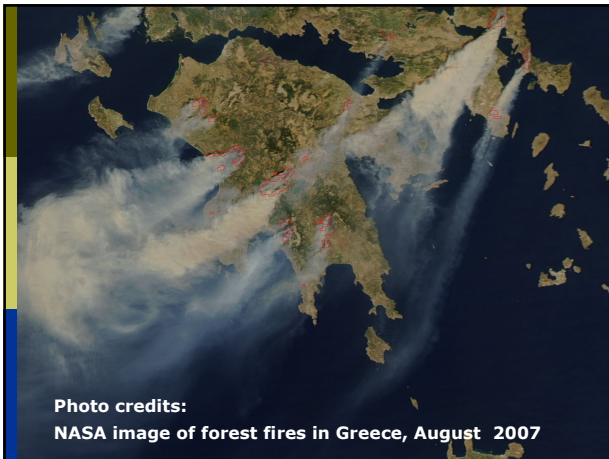


Photo credits:
NASA image of forest fires in Greece, August 2007

IMPACTS ON MAJOR FOREST TYPES

- **Boreal forests:** particularly affected; increased tree growth in most areas; more fires and pests
- **Temperate forests:** less affected than other forests; both increased and decreased tree growth; more storms
- **Subtropical forests:** decreased productivity in most parts; risk of severe biodiversity losses

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TROPICAL FORESTS

TROPICAL FORESTS - VULNERABILITIES

- Harbour highest biodiversity of all land ecosystems (15 out of 25 biodiversity hotspots worldwide)
- Phenological events (flowering, fruiting) highly tuned to current climatic conditions
- Highly specialized interactions between plant and animal species (seed dispersal,...)
- Many species have narrow niches because of very high diversity per unit area

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TROPICAL FORESTS – IMPACTS

- Climate change could be biggest cause of increased extinction rates
- Considerable risk of biodiversity losses even with moderate climate change (unavoidable, stable)
- Adds to other pressures (forest conversion fragmentation; alien invasive species,...)



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First Evidence: Recent Climate Change => Extinctions

Golden toad and 74 other endemic amphibian species
extinct in montane cloud forests
(Pounds *et al.*, 2006; Parmesan, 2006)



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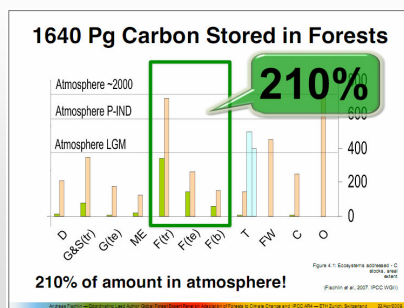
Andreas Flörke – Coordinating Lead Author Forests Expert Panel on Adaptation of Forests to Climate Change and IPCC AR6 – ETH Zurich, Switzerland 22 Apr 2023

TROPICAL FORESTS – IMPACTS (ctd.)

- Tropical mountain forest biodiversity particularly at risk due to limited migration capacity
- Tropical mangrove forests threatened by sea-level rise
- Tropical dry forests: least dryland types in Asia may become semi-arid
- Climate feedbacks from local to global carbon cycle may have major implications for global climate

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GLOBAL SINK SERVICE AT RISK

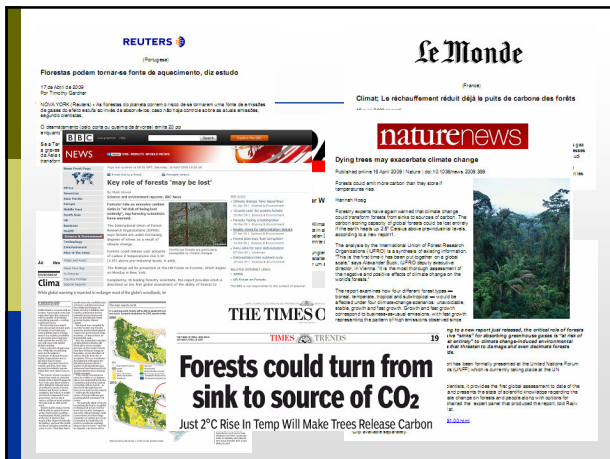


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GLOBAL SINK SERVICE AT RISK

- The carbon-regulating services of forests are at risk of being lost entirely beyond global warming of 2.5°C relative to pre-industrial levels
- This loss of carbon-regulating services of forests would seriously accelerate climate change
- Risk not yet considered in current model generation

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ALSO POSITIVE IMPACTS EXPECTED

- Climate change can also have positive effects on forest ecosystem services
- Climate change can increase the supply of timber in some regions and even globally due to increased tree growth

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SOCIO-ECONOMIC CONSIDERATIONS (1)

Projected increases in frequency and severity of extreme weather events and forest disturbances will have far-reaching social and economic consequences particularly for forest-dependent poor



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SOCIO-ECONOMIC CONSIDERATIONS (2)

- ❑ Reduce the capacity of forests to provide timber, fuelwood and essential non-wood forest products.
- ❑ Impacts also on availability of clean water and other services required to meet basic nutritional, health, and cultural needs.
- ❑ Changes in temperature and rainfall many change distribution of disease vectors (malaria, dengue, diarrhoea)

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MANAGEMENT OPTIONS FOR ADAPTATION

- ❑ Practices associated with Sustainable forest management (SFM) work well in reducing the vulnerability of forests to climate change.
- ❑ Important to reduce non-climatic pressures (forest conversion, fragmentation, degradation)
- ❑ Monitoring required for 'adaptive co-management'
- ❑ Many tropical countries report restricted ability to adapt to climate change, but also several successful examples of adaptations

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POLICY OPTIONS FOR ADAPTATION

- ❑ Commitment to achieving the goals of SFM must be strengthened at both the international and national levels.
- ❑ New modes of governance are required to enable stakeholder participation, and provide secure land tenure and user rights and sufficient financial incentives.

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KNOWLEDGE GAPS

- More information and knowledge is needed on
 - regional and local impacts on climate change, especially in tropical forests
 - socio-economic impacts
 - the effectiveness of management and policy measures for adaptation

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IMMEDIATE ACTION IS NEEDED

Despite the limitations of current knowledge, climate change is progressing too quickly to allow postponing adaptation actions

Large reductions in emissions from fossil fuels and deforestation are needed to preserve the adaptive and mitigative capacity of forests

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FURTHER INFORMATION

Electronic versions of full report and policy brief available for download at

<http://www.iufro.org/auth/science/gfep/>

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Thank you for your attention !
