

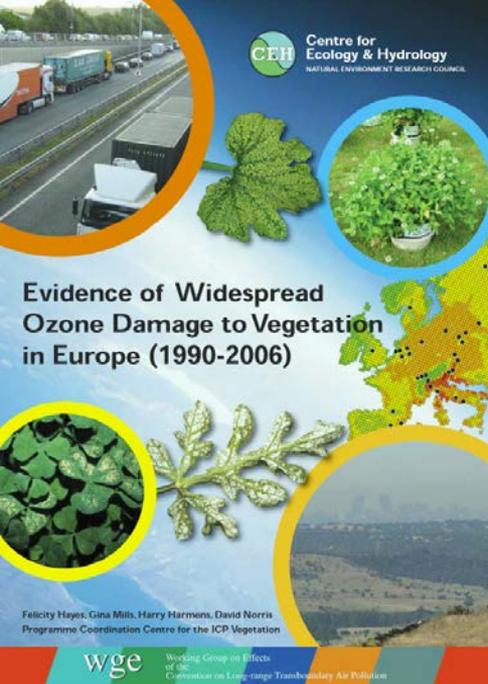


# New ICP Vegetation smart-phone App for recording incidences of ozone injury on vegetation

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With financial support from Department for Environment, Food and Rural Affairs (Defra), Natural Environment Research Council (NERC), Trust Fund (UNECE)



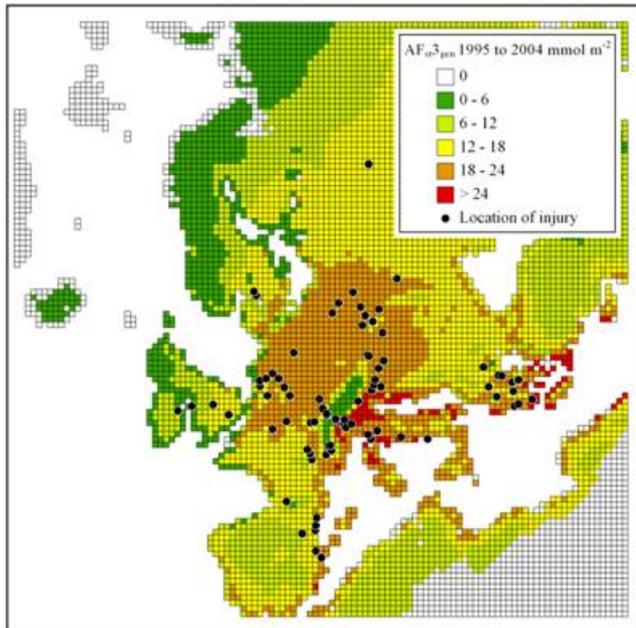
# ICP Vegetation 'Evidence Report'

Hayes et al., 2007; Mills et al., 2011: *Global Change Biology*

**Over 500 records of ozone-induced damage in ambient air in 16 European countries:**

- There is widespread occurrence of ozone damage to crops and (semi-)natural vegetation across Europe
- Flux-based risk assessment better predictor of effects

## Flux-based ozone risk map



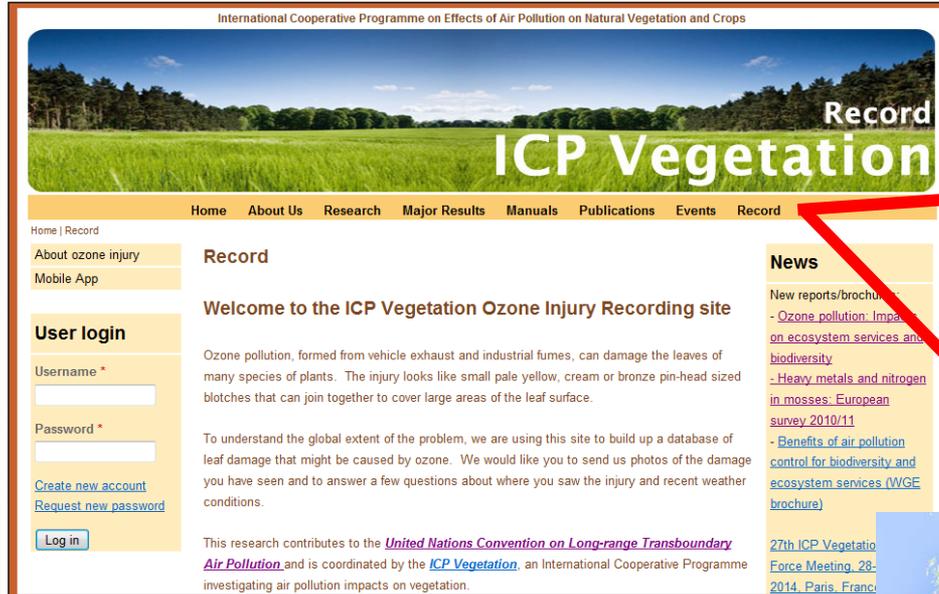
**Impact on LRTAP Convention policy (ECE/EB.AIR/96, paragraph 23d):**

- Flux-based method recommended for Protocol Revision and now included in integrated assessment modelling
- Impacts of ozone on vegetation to be considered in addition to health impacts

# New Smart phone App (<http://icpvegetation.ceh.ac.uk>)

## Recording incidences of leaf ozone injury

Smart-phone App  
linked to ICP  
Vegetation web site



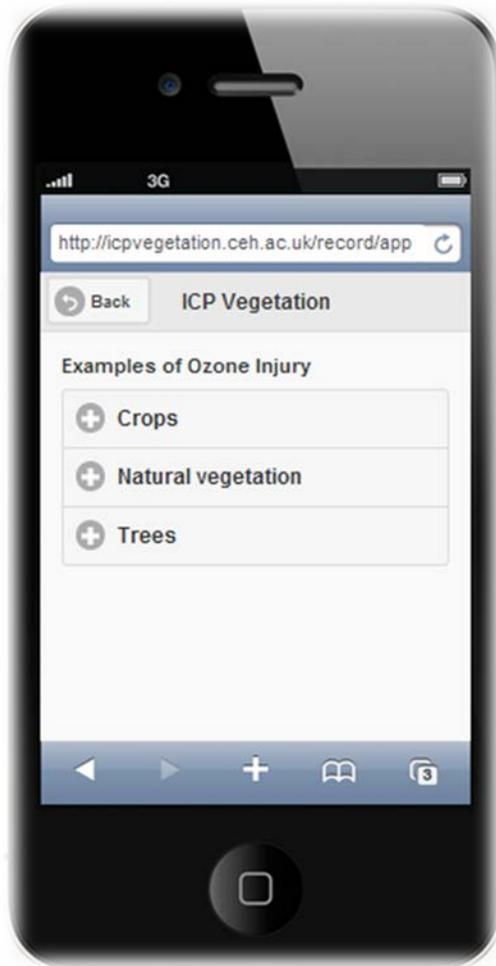
Location on interactive map



## Purpose:

- (1) Quantify extent of damage in changing profile
- (2) Validate risk maps
- (3) Possibility of quantifying aesthetic effects of ozone

# Examples of ozone injury



Soybean



Ash

# Ozone injury brochure\*

\* Available in English and Russian

## Trees

## Crops



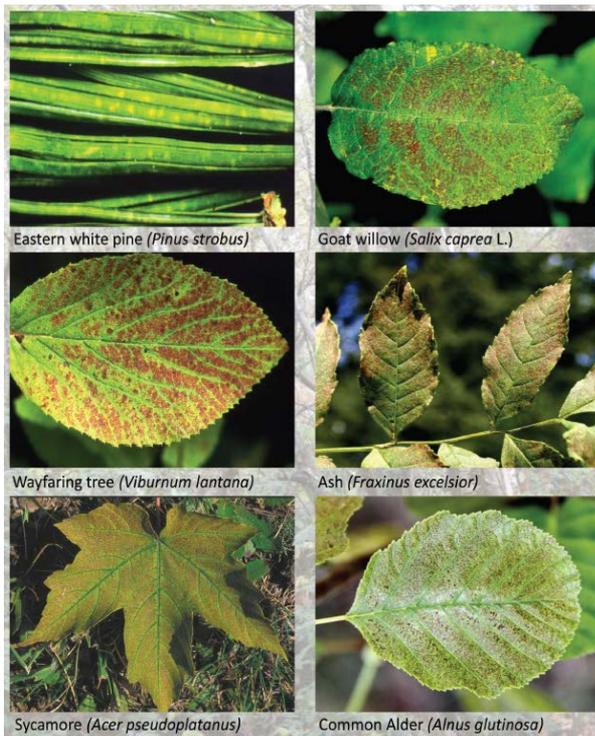
CEH Centre for Ecology & Hydrology  
NATURAL ENVIRONMENT RESEARCH COUNCIL

LRTAP Long Range Transboundary Air Pollution

Have you seen these ozone injury symptoms?

If you have, let us know using our new smart-phone App and website  
<http://icpvegetation.ceh.ac.uk>

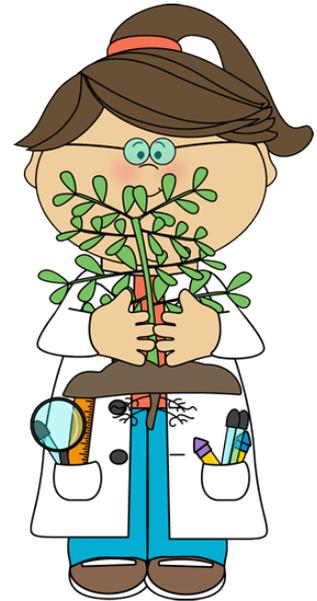
wge Working Group on Effects of the Convention on Long-range Transboundary Air Pollution



In collaboration with ICP Forests Expert Panel on Ambient Air Quality

# Smart phone App: Step by Step

- Go to website: <http://icpvegetation.ceh.ac.uk>
- Registration (or log in)
- Asking for level of experience
  - No previous knowledge
  - Experience of recognising plant diseases and insect damage
  - Ozone effects specialist with < 2 years experience
  - Ozone effects specialist with > 2 years experience





# Smart phone App: Step by Step

- Asking for permission to use data
  - Research purposes only, including exact location
  - Research purposes only, including location as grid square
  - Research purposed only, excluding exact location or grid square

After registering, you can:

- Download the App (link on Record home page)
- Or fill in online form
- Also use the App offline

# Vegetation type and species



- Crops
- Trees
- Grassland
- Heathland
- Wetland and coastal

# Leaf injury symptoms

- Upload photos of injury, then answer the following questions:



Colour?



In between veins?



Which leaf surface?



Older leaves more affected?

- Is there evidence of other damage, for example pests or diseases?

# Additional information

- Weather

- In the last week, max. temp has been on average:  
<20 °C, 20-30°C, >30°C?



- In the last week, has there been rain on:  
0 days, 1-3 days, >3 days?



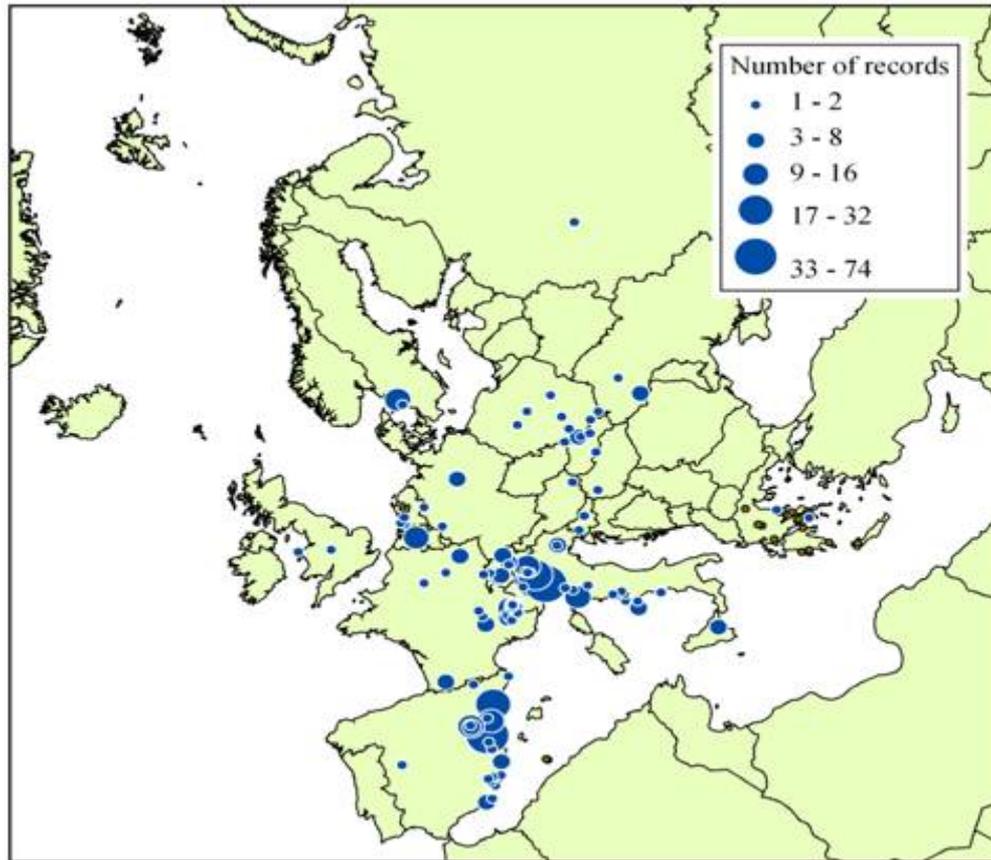
- Ozone pollution?

- What was the maximum O<sub>3</sub> concentration in the last week?  
(<50ppb, 50-80ppb, >80ppb)

- On how many days did the O<sub>3</sub> concentration exceed 50ppb?  
(0, 1-3, >3)



# Update 'Evidence report' in 2016



Locations of records of visible leaf injury attributed to ozone on crops, shrubs and (semi-) natural vegetation (Hayes et al., 2007)

- Add to field-based evidence of ozone impacts on vegetation globally and update 'Evidence report' in 2016
- 2014: experts, 2015: wider general public

**Thank you for your attention!**