

# Norwegian Monitoring: The Forest Officers' Plots

## Vitality Surveys 1988-2005

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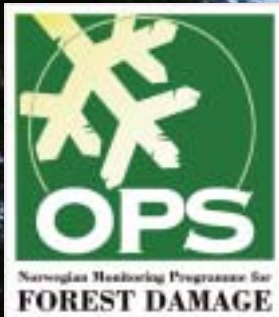
### Main objectives:

1. Clarify the degree of damage in Norwegian forests, show development trends over time.
2. Analyse to which extent long-range transboundary air pollution contributes to forest damage in Norway.
3. Teach and train local forest officers in recognising, identifying and reporting forest damage.



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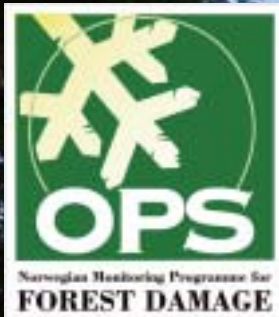
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The Forest officers' monitoring plots: Location of the plot clusters in 2005, and definition of regions.

- Monitoring on the forest officers' plots since 1988.
- Four plots at different development stages in each district.
- Mainly Norway spruce dominated stands in productive and managed forests.
- Mean plot area: 0.07 ha
- Mean sample tree number: 60
- Mean stand age: 77 years.
- Annual crown condition assessments by local forest officers.
- Assessment of biotic and abiotic damage causes since 1998.
- Increment measurements every five years.
- 2005: 30277 trees on 557 plots in 176 forest districts were assessed.



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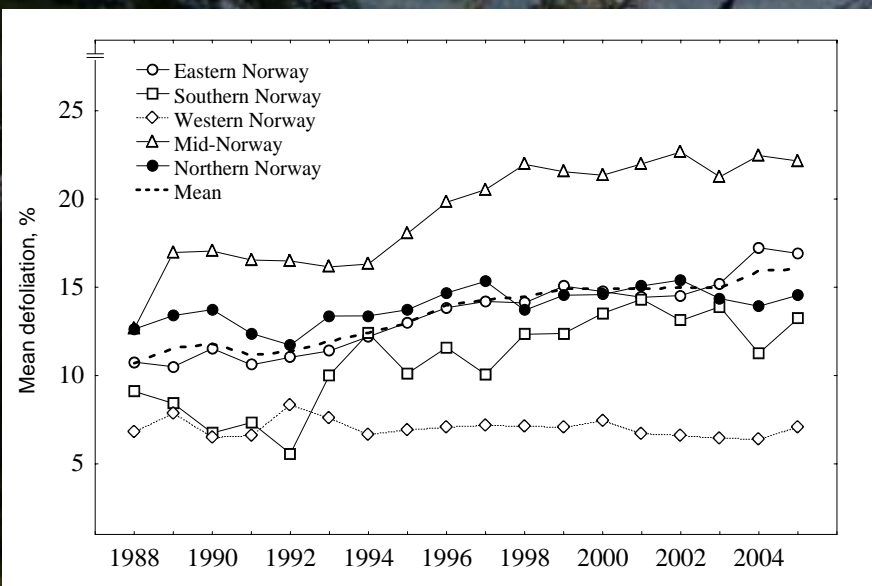
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## Results 2005:

Mean defoliation of Norway spruce increased to 16.4%.

Strongest increase in S-Norway and in some districts in E-Norway.

Increasing discolouration in the south and east.



Mean defoliation of Norway spruce on the Forest officers' plots 1988-2005, stratified by regions

## Regional trends 1988-2005:

High defoliation in Mid-Norway (>20%).

Low defoliation in Western Norway (<10%).

Mean defoliation stable in the mid- and late 1990's.

Increasing after 2003 mostly due to extreme weather conditions.