

Effects on water chemistry of applying ash to a forest on a drained peatland

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Why wood ash to forest land?

- **Increase tree growth (on drained peatlands)**
- **Nutrient compensation at increased harvest intensity**



Adverse effects on water quality?

- Nutrients
- TOC
- Trace elements

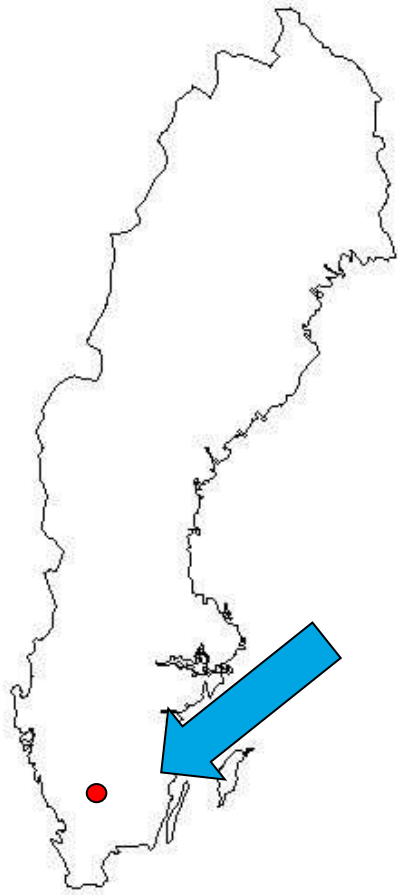
Ditch water



Groundwater



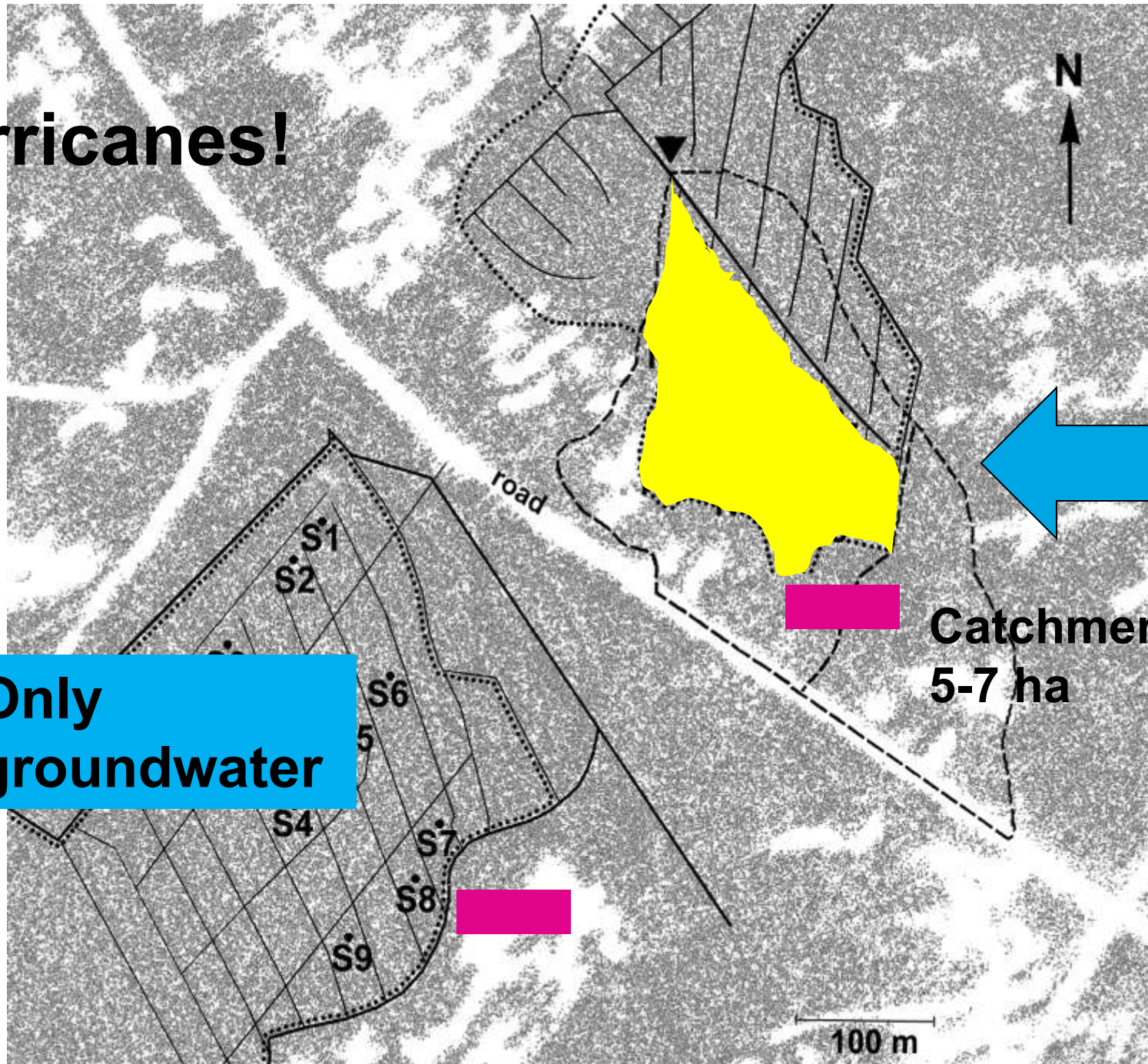
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- Catchment study
- Drained peatlands
- Scots pine forest
- 3.1×10^3 kg wood ash per ha

Hurricanes!

Only
groundwater



Catchment size:
5-7 ha

100 m

Self-hardened and crushed wood ash

Mixture of ashes from two thermal power stations

- 75% bark, 20% wood chips, 5% saw dust
60% bottom ash and 40% fly ash
- Fly ash from burning wood pellets

Chemical composition

[mg/g (d.w.)]

- Ca 200
- Mg 24
- P 13
- K 58
- Na 12
- Mn 9.2
- S 14
- Si 112
- Al 25

[µg/g (d.w.)]

- As 33
- Cd 14
- Co <9
- Cr 75
- Cu 120
- Ni 36
- Pb 135
- V 31
- Zn 2380

Over 30 chemical variables

DITCH WATER (1-2 weeks)

- Before application: 1 yr
- After application: 3 yrs

GROUNDWATER

- Once a year

DITCH WATER:

Yrs 2-3 compared with before treatment

INCREASE

- pH
- B
- K
- Li
- Mg
- Mn
- Si
- Total P

DECREASE

- Fe
- Sulphate

Conclusions

- No effects
- Short-term effects (months)
- Long-term effects (a few years)
- Consistent results: ditch water – groundwater
with other studies
- In practice: Consider local conditions

The results will be published in Forestry Studies.