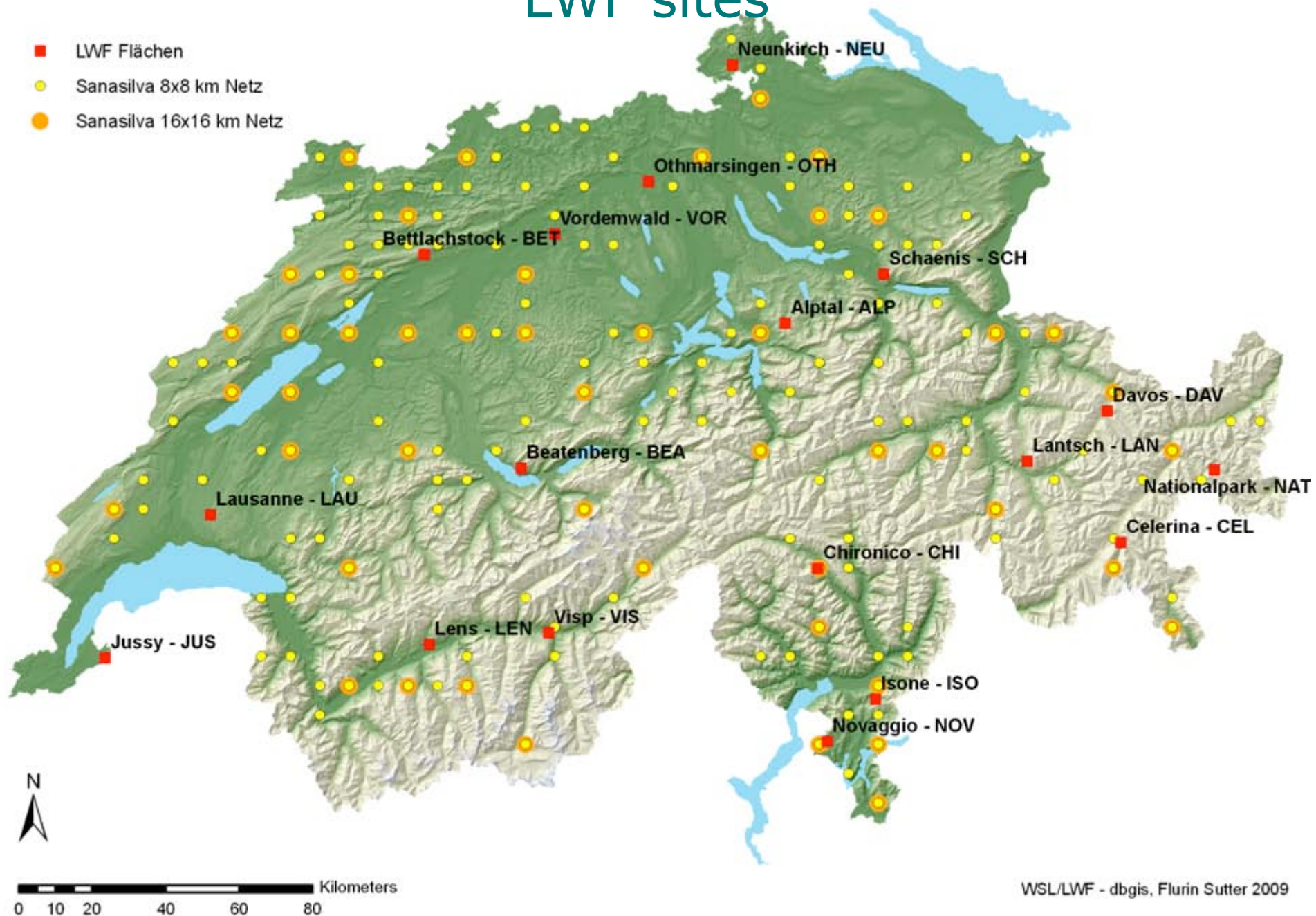


Above ground C allocation on Swiss ICP forests level II plots

Peter Waldner, Matthias Dobbertin, Gustav Schneider, Elisabeth Graf Pannatier, Anne Thimonier, Maria Schmitt, Patrick Schleppi, Lorenz Walthert



LWF sites



Measurements Methods

- Stem diameter
 - Circumference measurement (5 years)
 - Manual circumference band (annual)
 - Stem **wood** volume calculation
- Litterfall
 - Traps: 10 x 0.25 m² (bi-weekly)
 - Sorting into **foliage**, **fruits** etc. of main tree species.
- Met.-Stations inside/outside forest
 - Radiation measurements, e.g. photosynthetic active radiation (PAR)
- Crown condition assessment
 - Crown transparency



Par - Par LAI estimation

PAR = photosynthetic active radiation

$$I = I_0 e^{-k \text{ LAI}}$$

I PAR below canopy

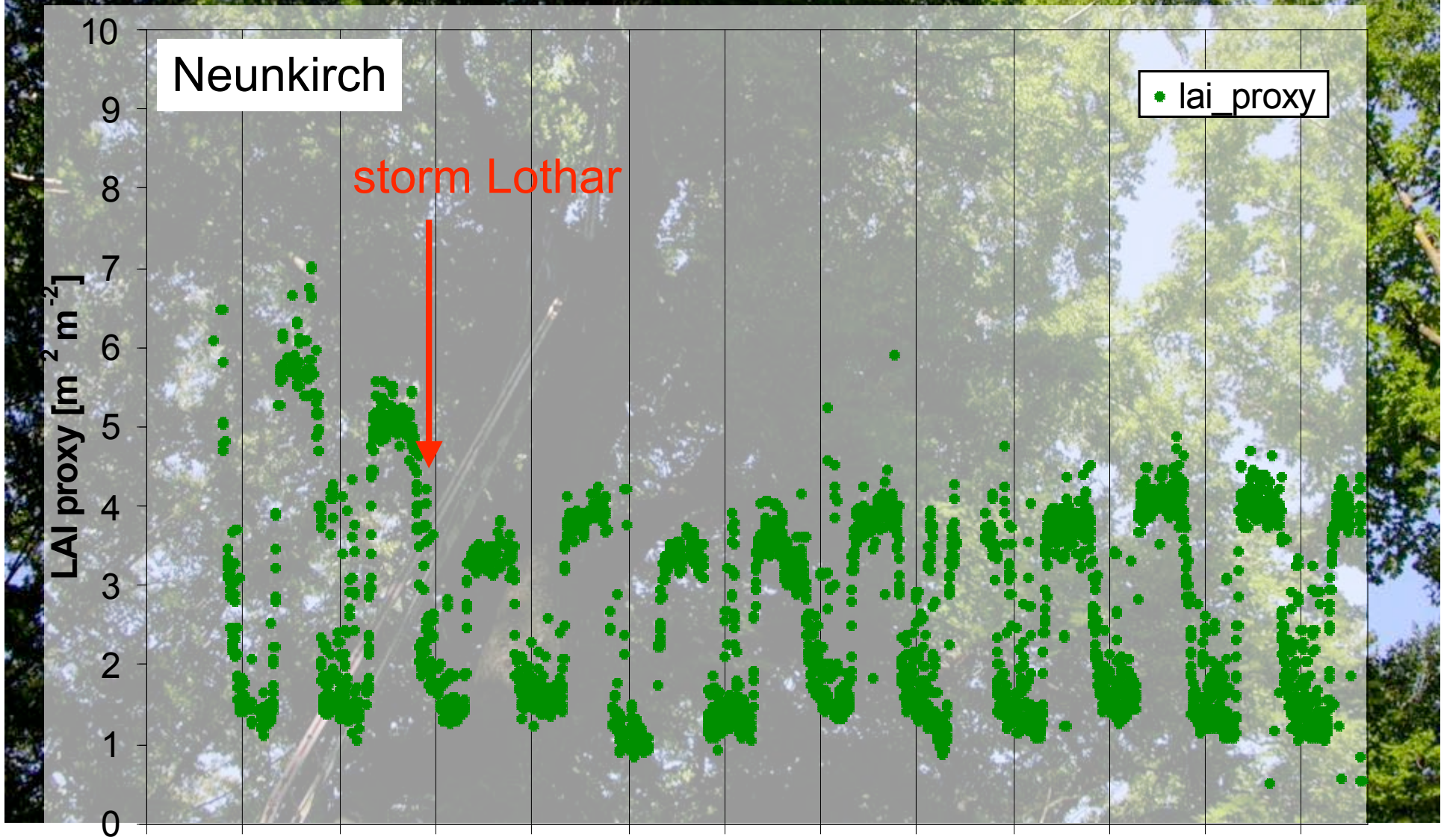
I_0 PAR above canopy (nearby open field)

LAI Leaf Area Index proxy [$\text{m}^2 \text{m}^{-2}$]

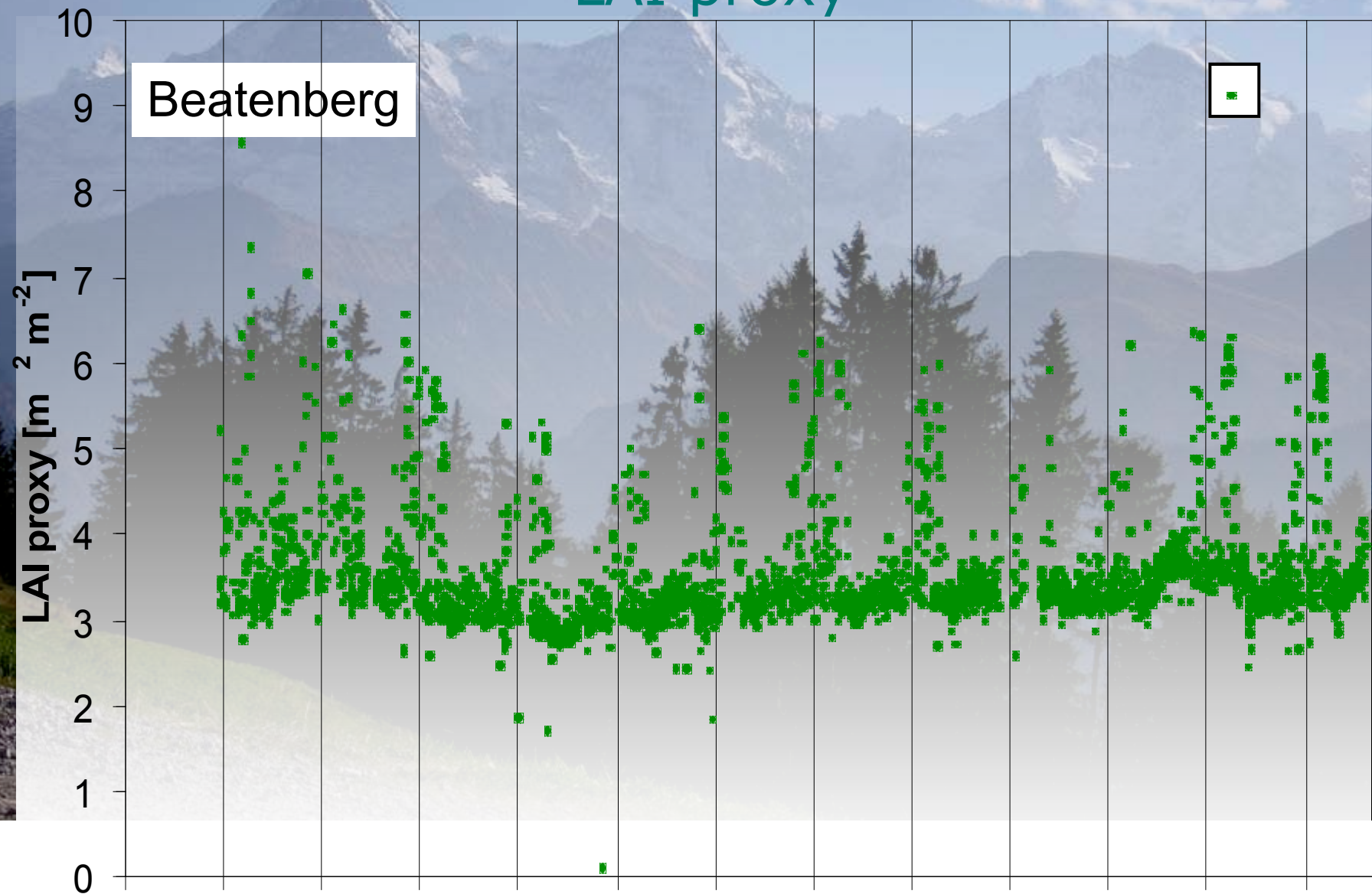
k an empirical constant (leave transparency and canopy geometry): we used $k=0.75$ in this study.



LAI proxy



LAI proxy



LAI proxy

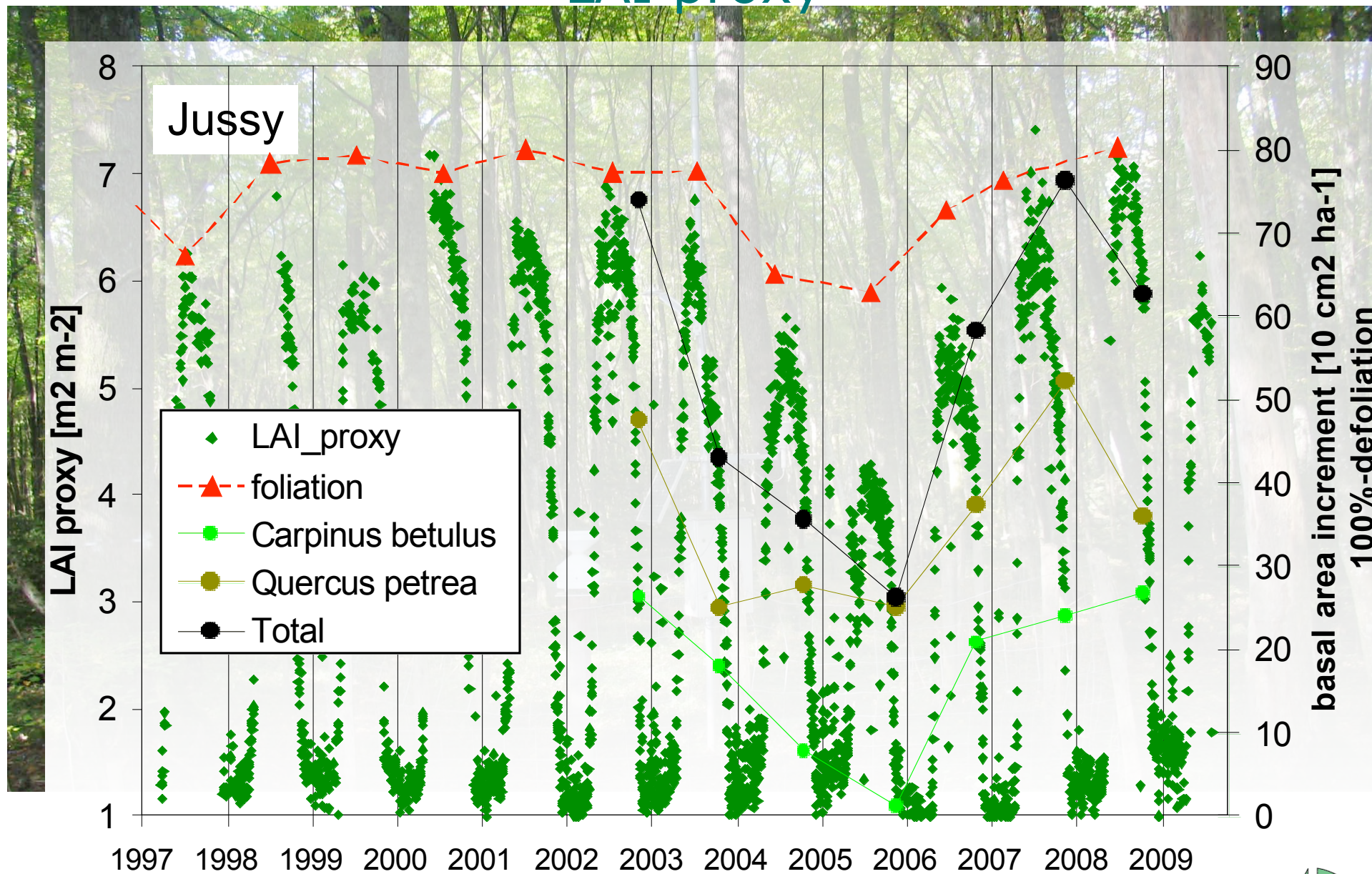
Schänis

LAI proxy [$\text{m}^2 \text{m}^{-2}$]

10
9
8
7
6
5
4
3
2
1
0

1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

LAI proxy



Conclusions

- Leave area and stem growth correlated well in the case of massive budworm attacks.
- Defoliation and below canopy radiation measurement seem to be good proxys for the inter- and intra-annual Leave area development, respectively, in deciduous forests.



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