Daily change of L-band $\sigma^0$ for a tree

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Uncertainty of $\sigma^0$-biomass relation

A few dB dispersion

Boreal, tropical, temperate forest

Forest biomass (tons/ha)


Dispersion $\downarrow$

Difference of number density of tree stands

$\sigma^0_{HH}$ (dB)

$\sigma^0_{HV}$ (dB)

Daily change of a dielectric constant in a tree.

Peak of Dielectric constant value
- 12:00-18:00 (balsam poplar)
- 00:00-09:00 (black spruce)
Measurement with scatterometer

Frequency : 1-10GHz
Date : Sep. 9th, 18:00~11th, 18:00, 2008
(48 hours, Every 3 hours)
1-4 GHz

HH

Tree

Wall

VH

Daily Change!
Cross pol.: A few dB variability
Like pol: 1 dB variability
Almost same value at 18:00
Same tendency as 1-4GHz
Continuous change
Complicated variability
Summary

- Daily variation of $\sigma^0$ from a tree (1-4GHz, 4-7GHz).
  - Cross pol.: A few dB variability
  - Like pol.: 1 dB variability
  - $\sigma^0$ peak around 18:00
- Complicated variability (7-10GHz).
Diameter of a tree

Tree surface