



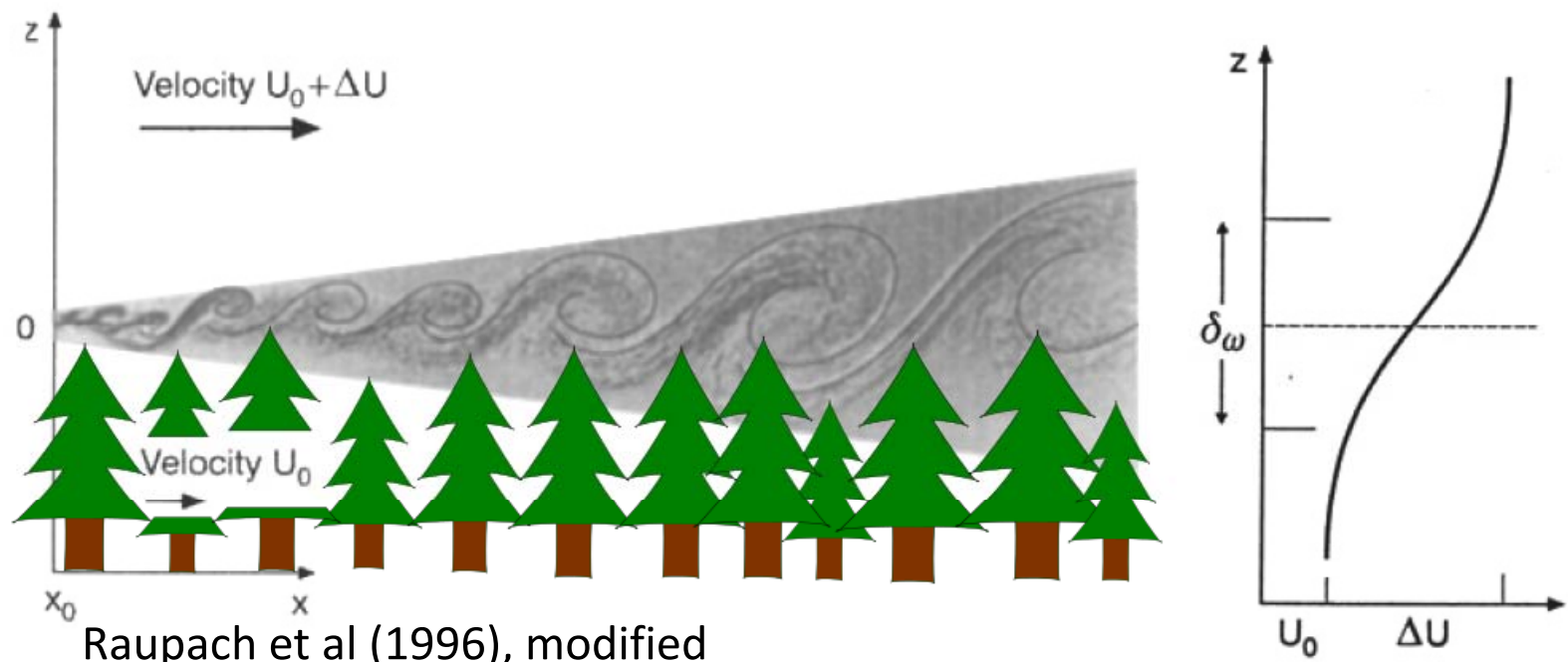
# Influence of a clear cut on properties and vertical coupling of coherent structures

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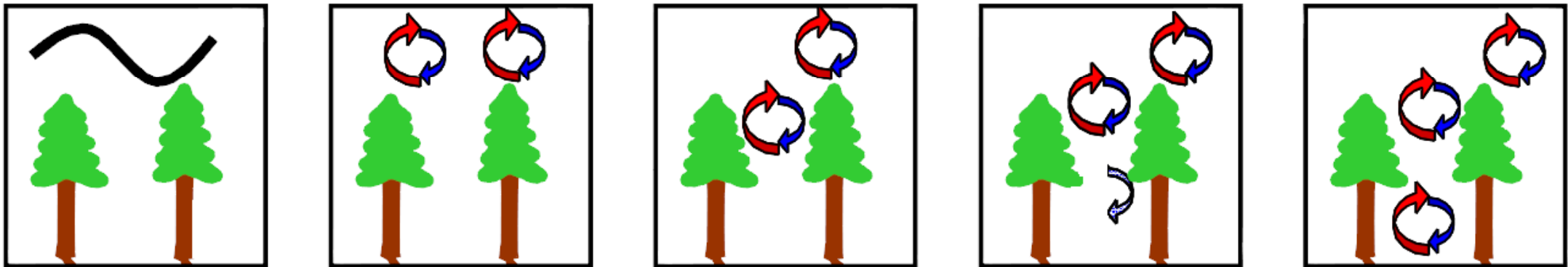
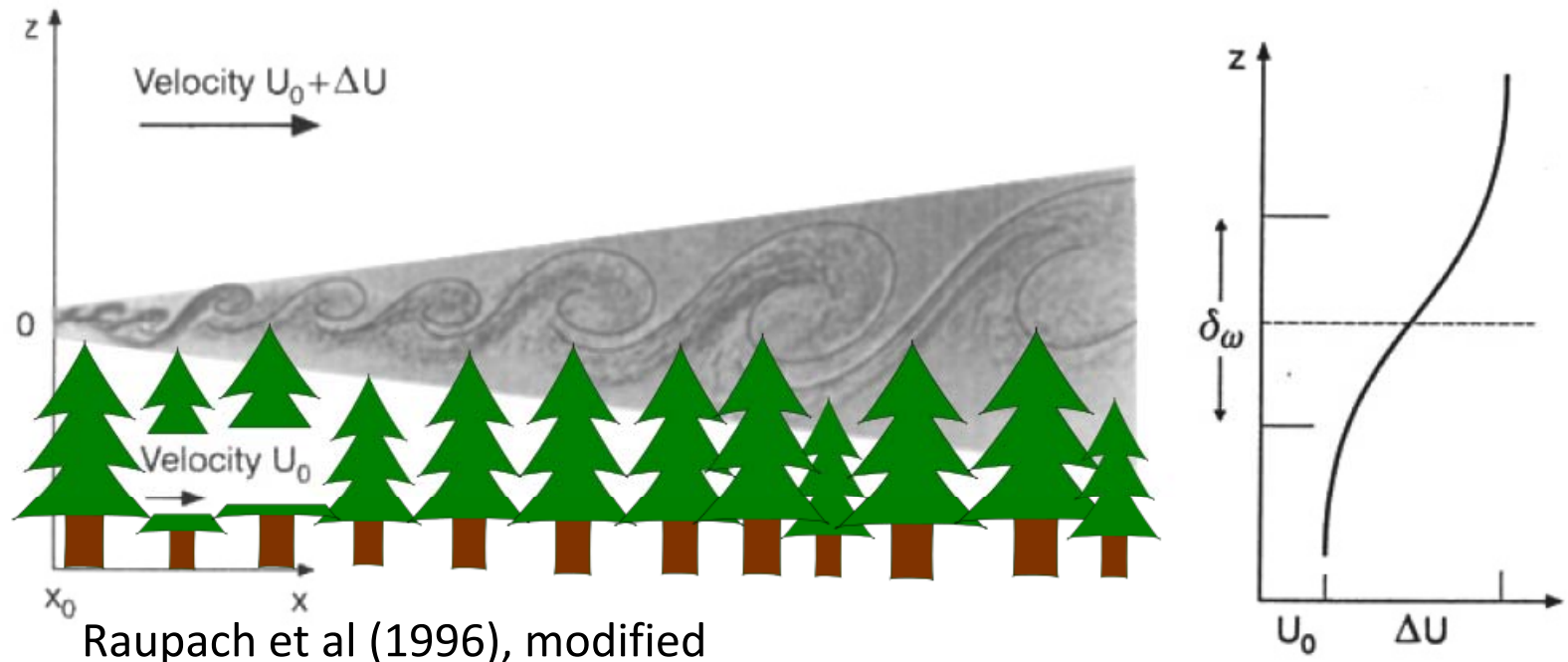
**(2) Institute for Meteorology and Climate Research, Atmospheric Environmental Research (IMK-IFU), Karlsruhe Institute of Technology (KIT), Kreuzteckbahnstrasse 19, 82467 Garmisch-Partenkirchen, Germany**

# Motivation



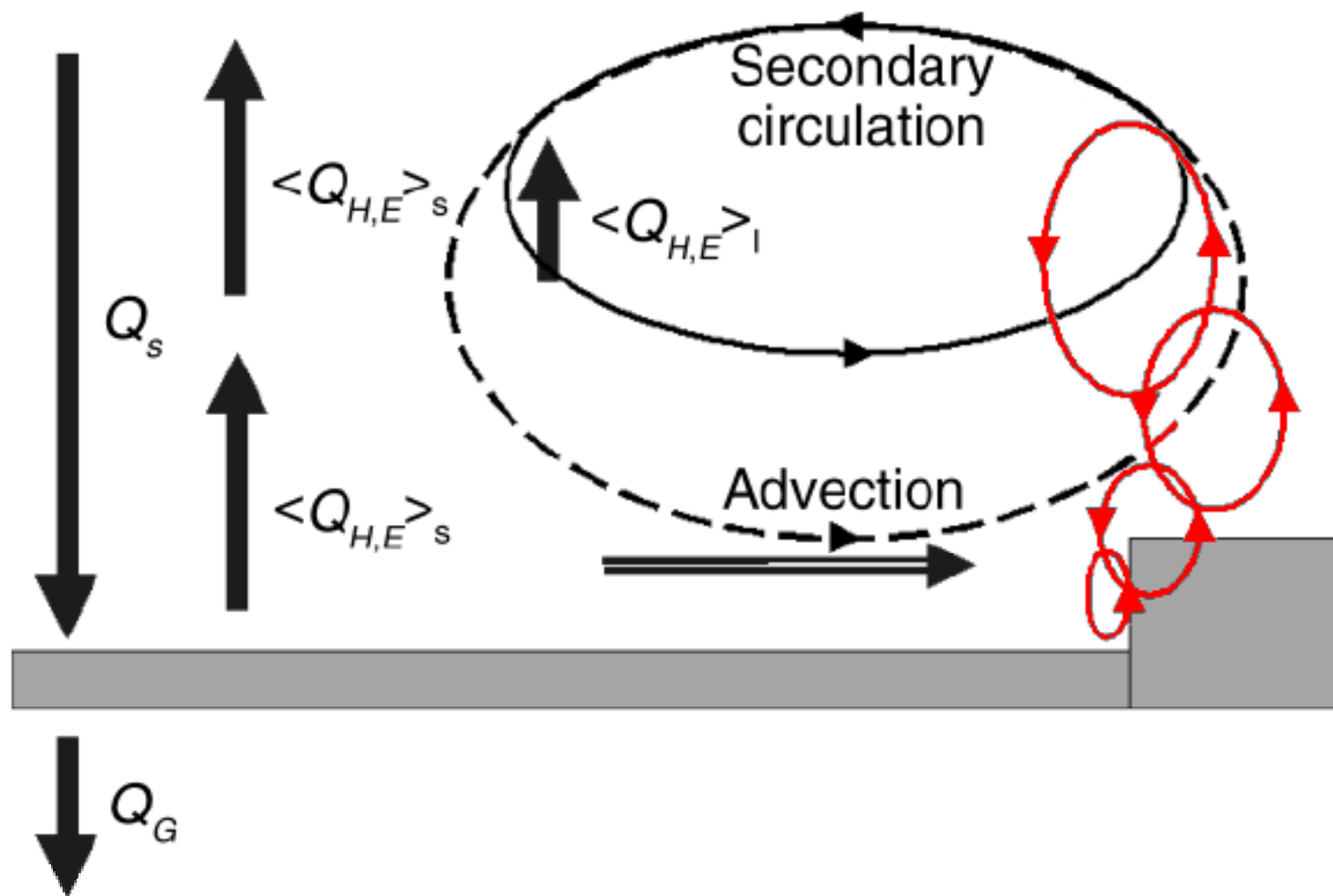
Raupach et al (1996), modified

# Motivation



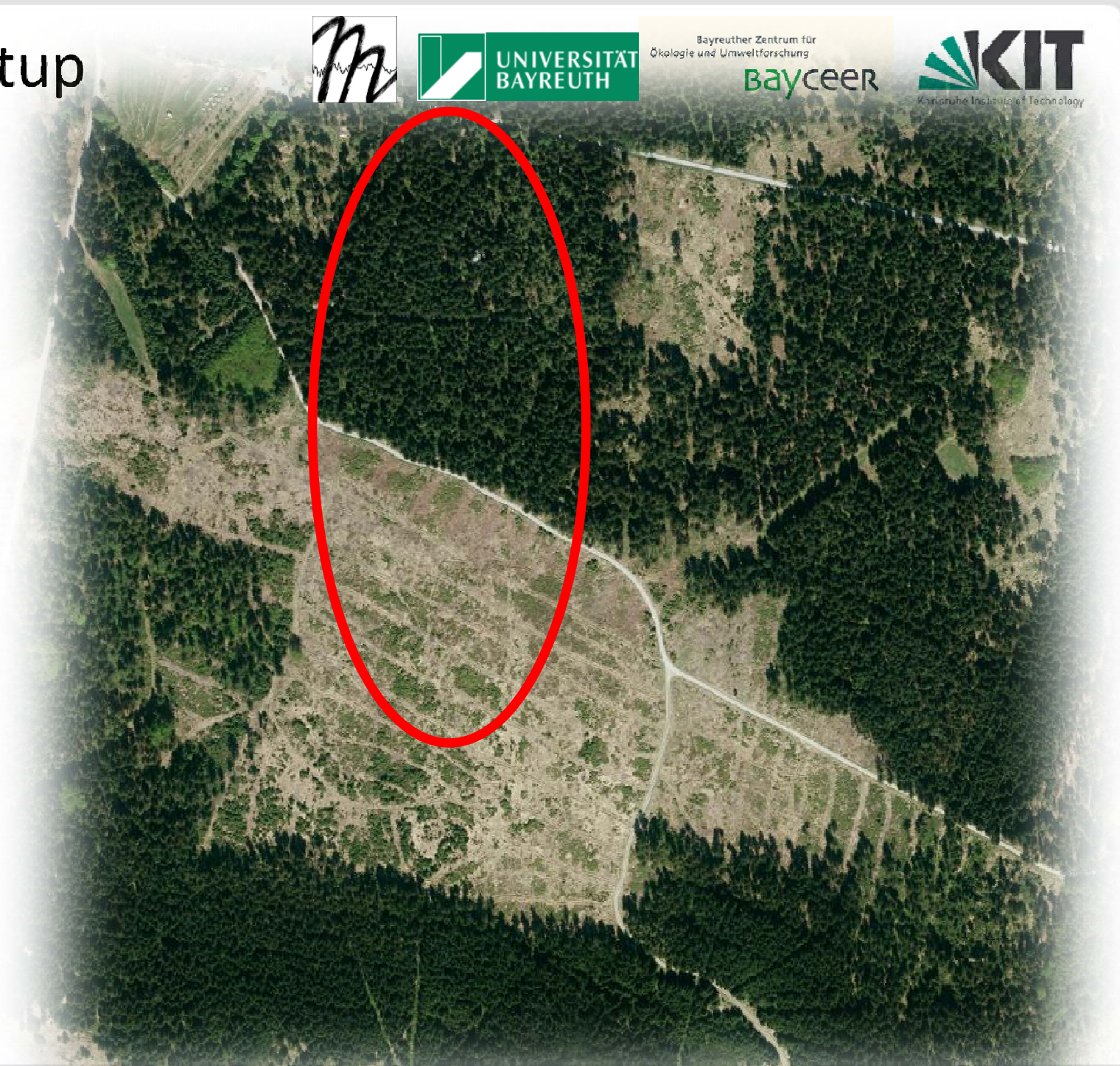
Göckede (2007), concept according to Thomas and Foken (2007)

# Motivation

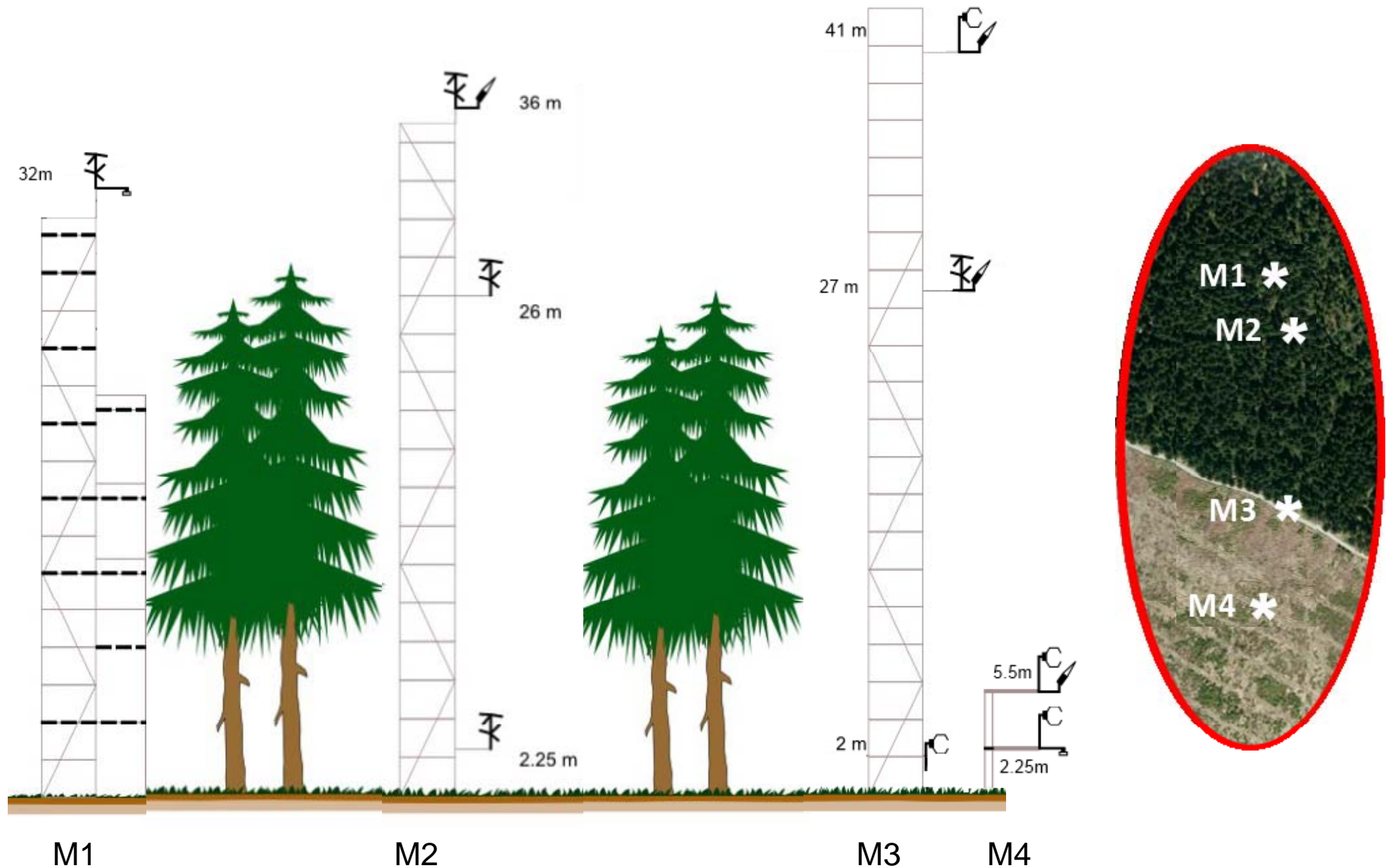
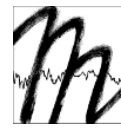


Foken (2008)

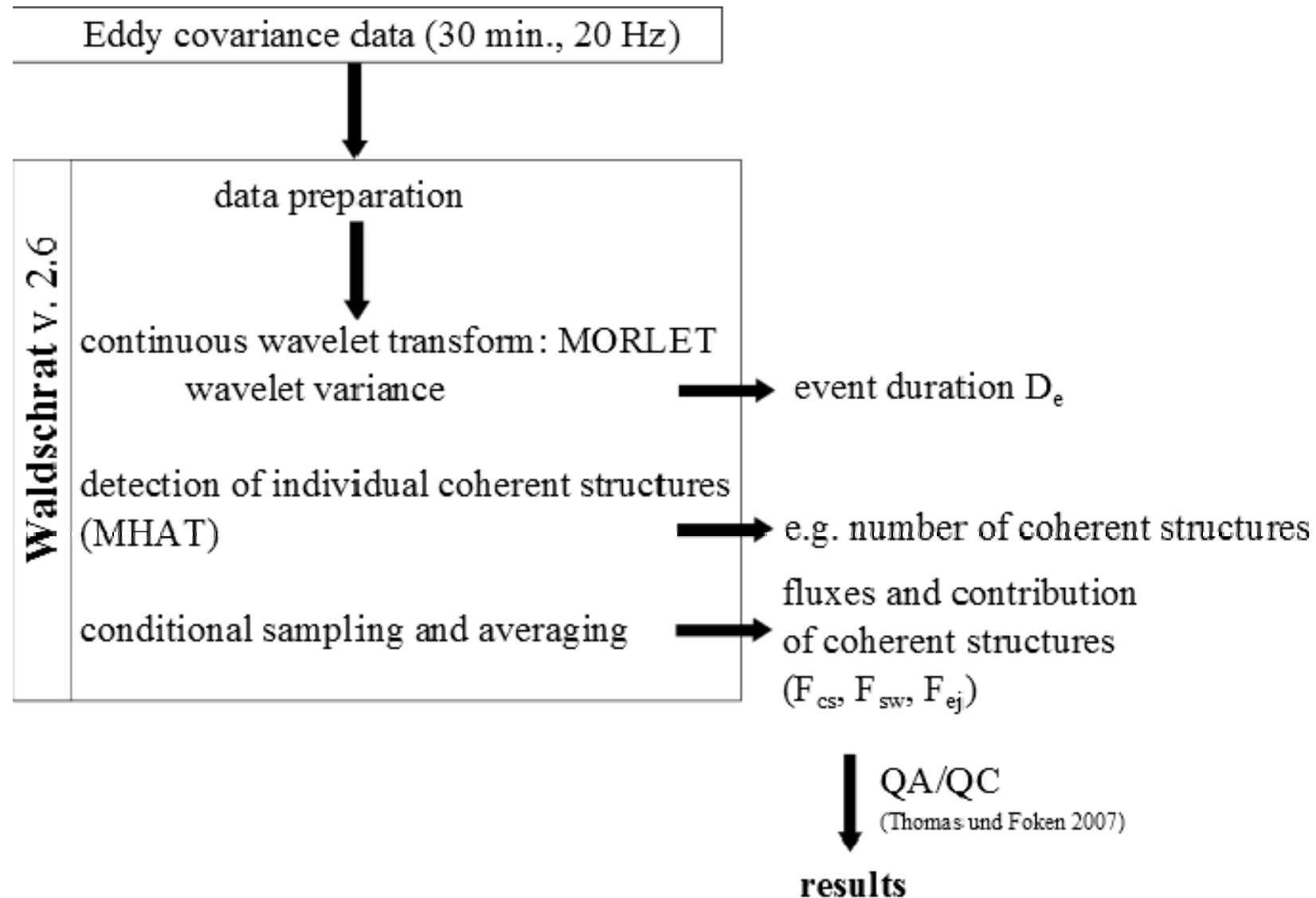
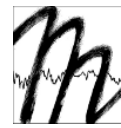
# Measurement setup



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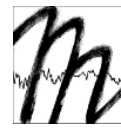


# Data analysis



This concept was developed by Thomas and Foken (2005, 2007), which is based on the work of Collineau and Brunet (1993a,b).

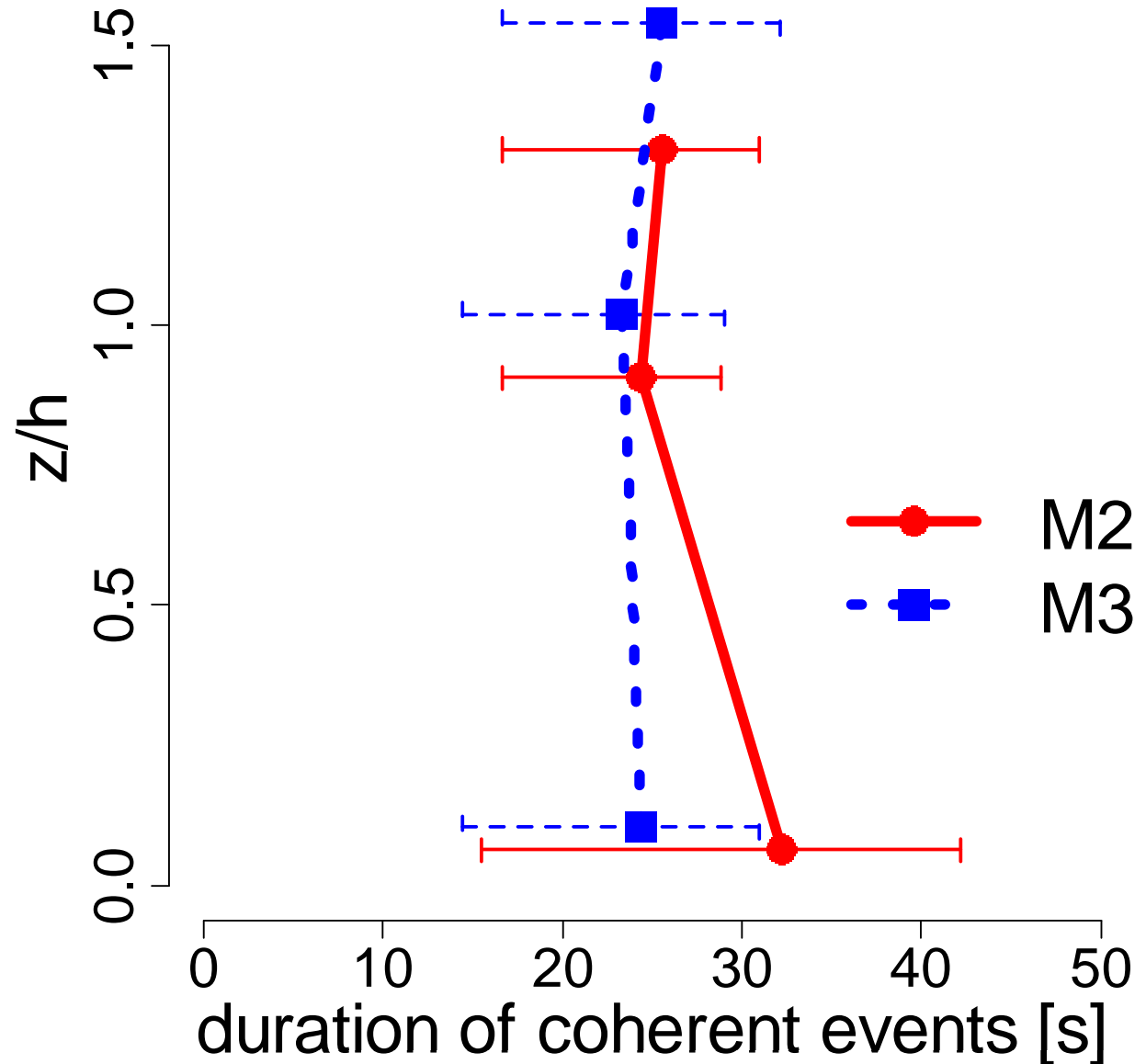
# Time Scales



tower	measuring height [m]
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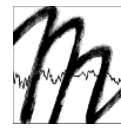
M2	36
	26
	2.25

M3	41
	27
	2.25





# Coherent flux contribution



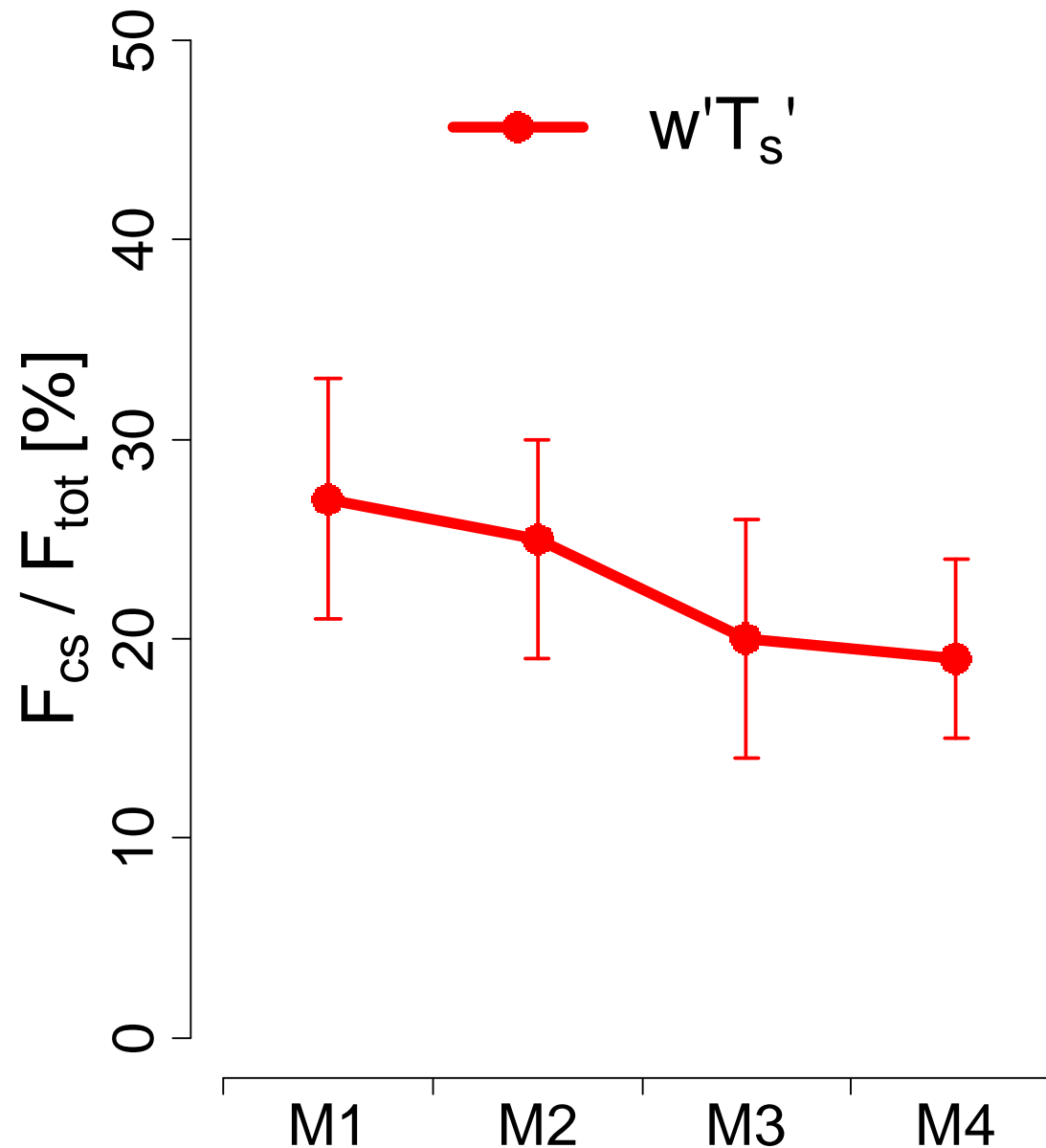
tower	measuring height [m]
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M1	32
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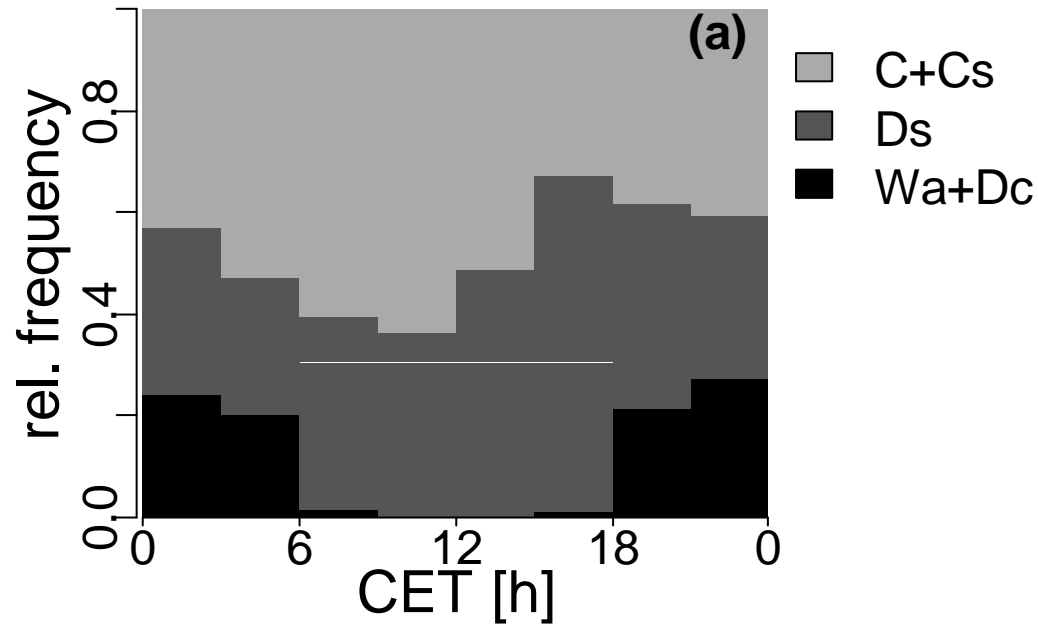
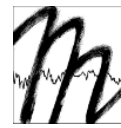
M2	36
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M3	41
----	----

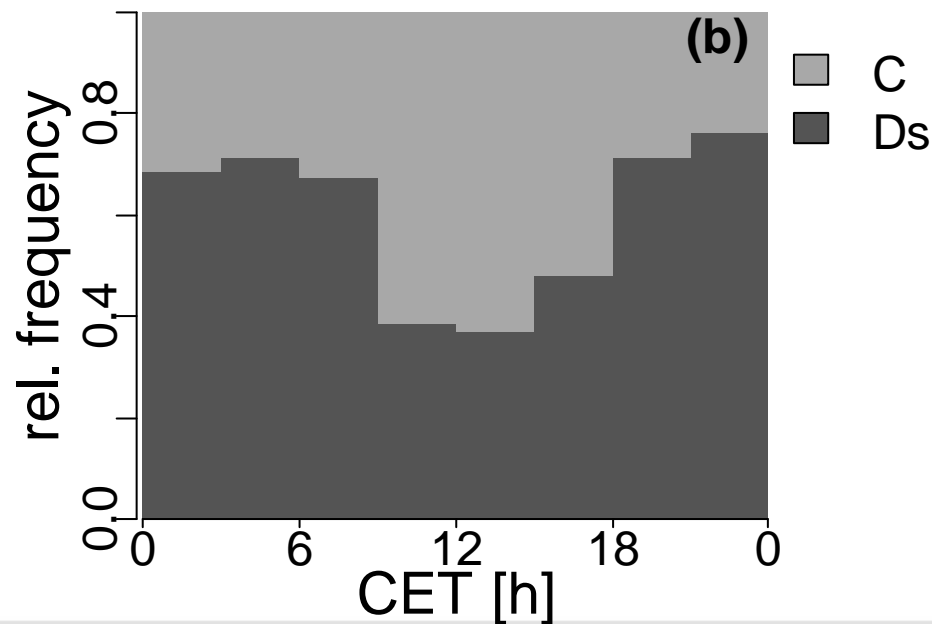
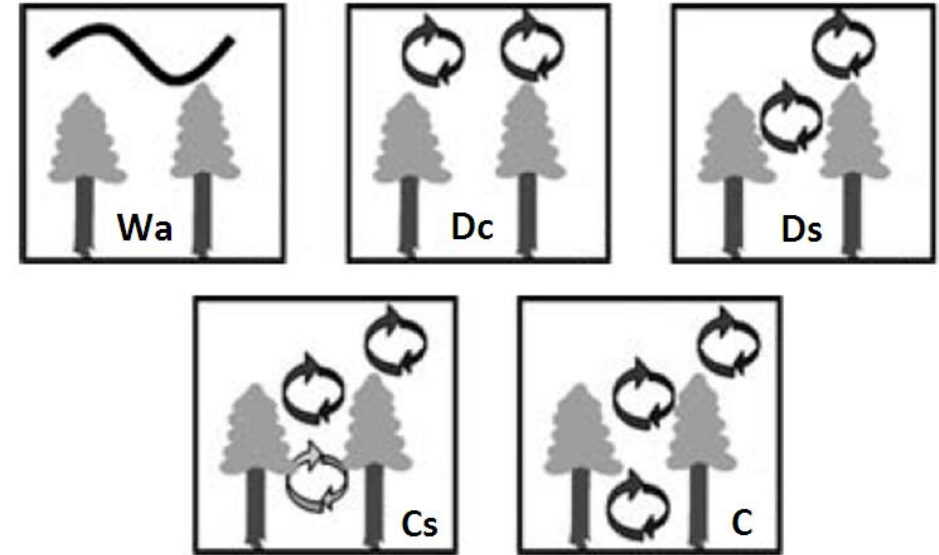
M4	5.5
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# Vertical coupling



**a) M2 (36m - 26m - 2.25m)**

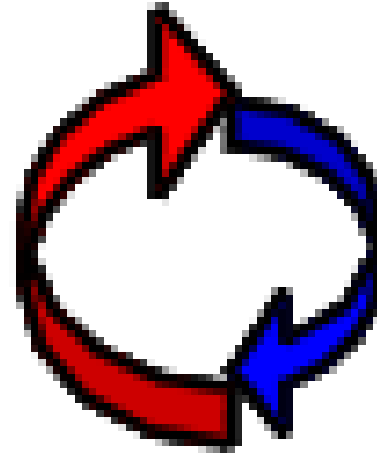


**b) M3 (41m - 2.25m)**  
 subcanopy coupled (C)  
 or decoupled (Ds)

# Shape of structures

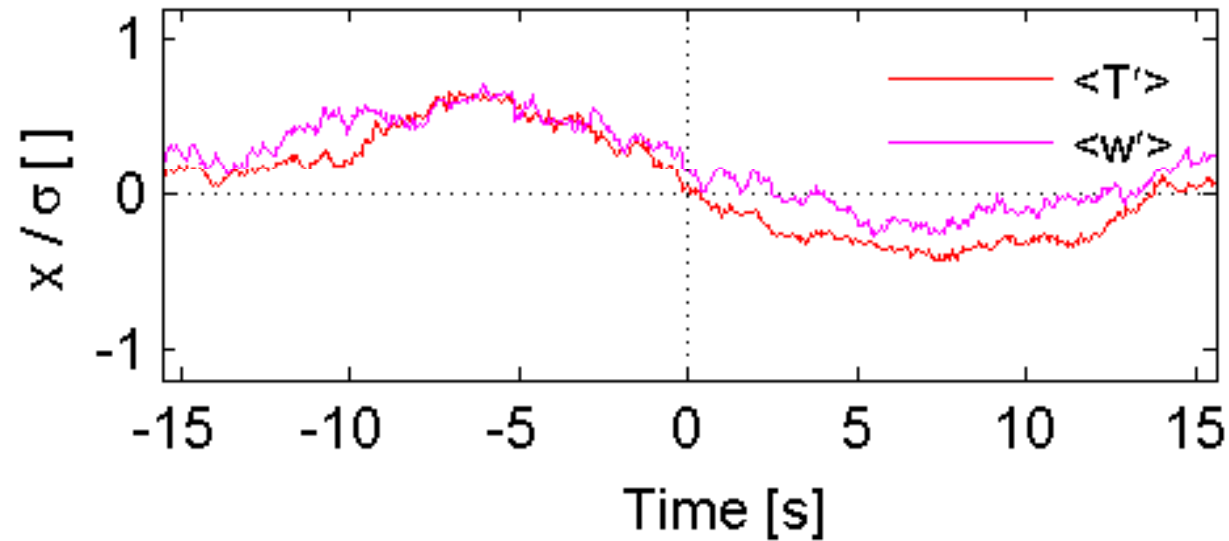


ejection



sweep

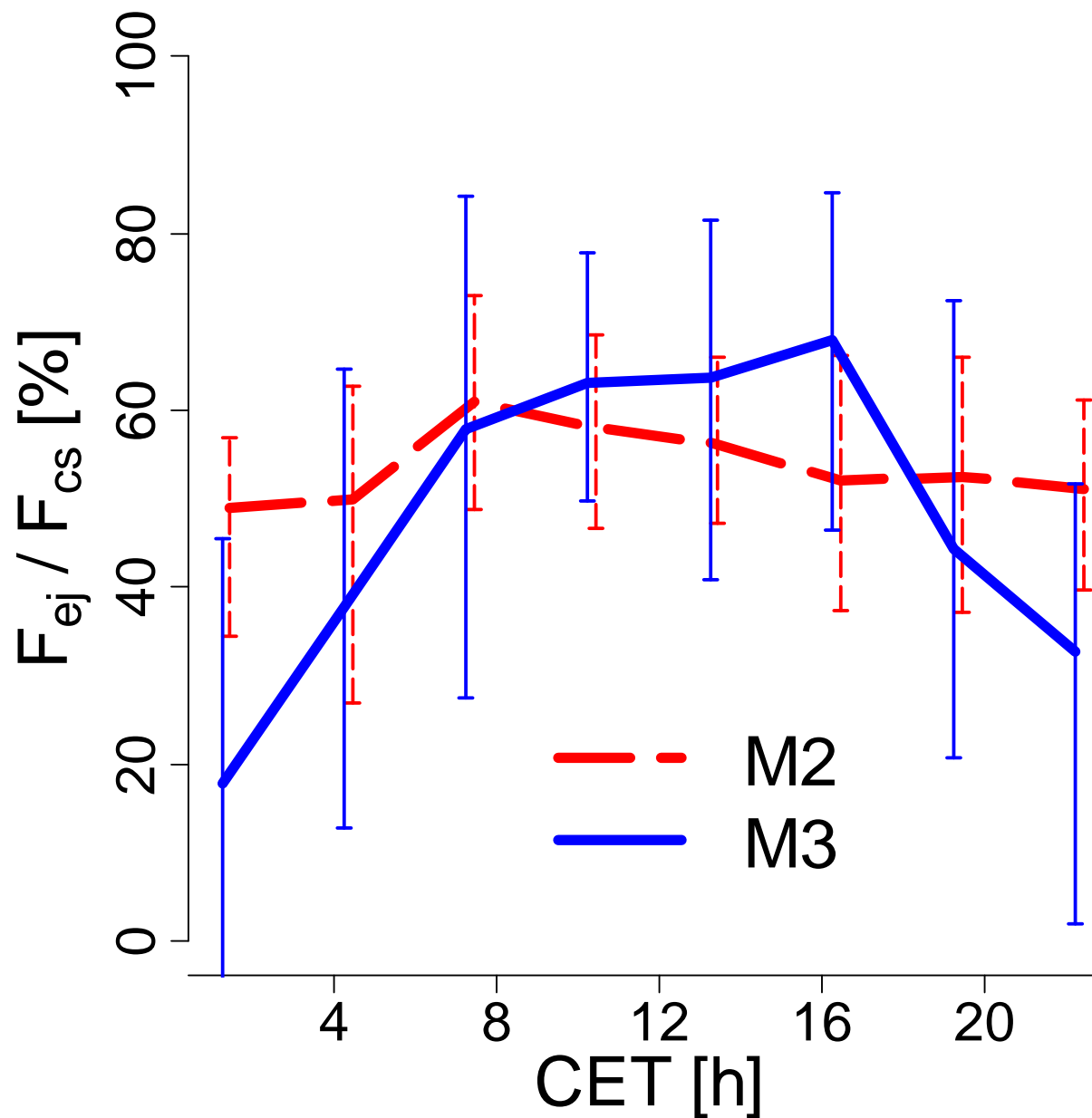
Conditional averages, normalised 06.07.2011 16:30  
Events are detected by T moments:  $De=15.6s$



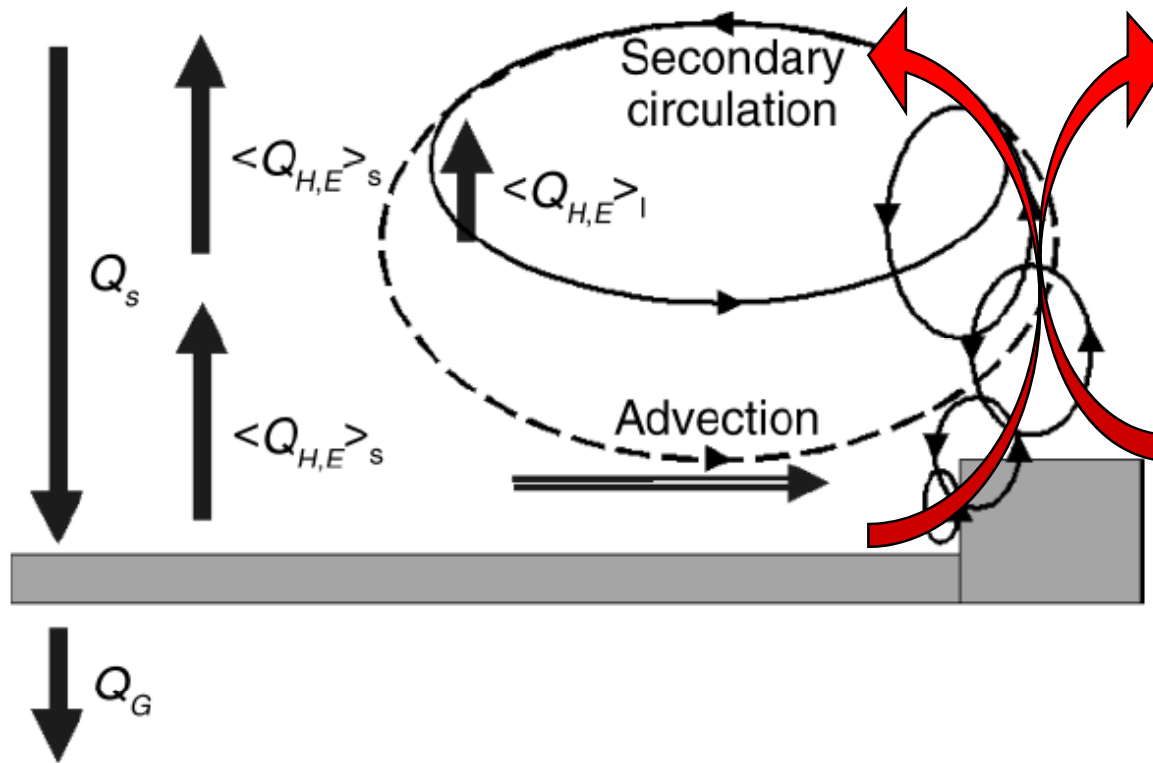
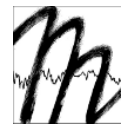
# Shape of structures



tower	measuring height [m]
M2	36
M3	41



# Conclusions



**during the day  
(convective conditions)**

- Enhanced vertical transfer of energy and trace gases at the forest edge?
- Exchange by coherent structures seems to be modulated by larger structures which can not be directly captured by this routine.
- These stationary circulations above the clear cutting might have implications on the Energy Balance Closure of near-surface measurements.