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Interactive comment on “The GREENROOF module (v7.3) for modelling green roof hydrological and energetic performances within TEB” by C. S. de Munck et al.

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Our response to referee # 2 is in the supplement pdf document attached. It refers to the pages and paragraphs of a revised version of the manuscript. Indeed, the comments of referee # 2 lead us to re-think the analysis of the case study simulations, which were re-run with a slightly improved version of the model. Consequently a revised version of the manuscript was written. The case study part of the manuscript is quite different. We have split comments into key paragraphs to answer them.

Please also note the supplement to this comment:

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<http://www.geosci-model-dev-discuss.net/6/C959/2013/gmdd-6-C959-2013-supplement.pdf>

Interactive comment on Geosci. Model Dev. Discuss., 6, 1127, 2013.

GMDD

6, C959–C969, 2013

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Table 4. Hydrological characteristics tested for green roof calibration exercise.

	Characteristics (unit)	Value	Method (Source)
SUBSTRATE	Porosity ($\text{m}^3 \text{m}^{-3}$)	0.674	Supplier information (Falienor 2010)
		0.411	Measured (Bouzouidja 2012)
	Saturated hydraulic conductivity (m s^{-1})	$1.073 \cdot 10^{-3}$	Supplier information (Falienor 2010)
		$2.162 \cdot 10^{-3}$	Measured (Bouzouidja 2012)
	Matrix potential at saturation (m)	-0.10	Value fitted on observed water retention curves (Appendix A)
	b-coefficient for water retention curve (-)	2.9	Deducted from water retention curve (Figure A1) porosity of 0.674 and matrix potential of -0.10
		3.9	Deducted from water retention curve (Figure A2) with porosity of 0.411 and matrix potential of -0.10
	Water content at field capacity	0.37	Deducted from observations
	Water content at wilting point ($\text{m}^3 \text{m}^{-3}$)	0.15	Deducted from observations
	Porosity ($\text{m}^3 \text{m}^{-3}$)	0.553	Deducted from supplier density data (Table 3)
DRAINAGE		0.9	Literature (Ochs et al. 2006) & manufacturer information (Argex 2012)
	Saturated hydraulic conductivity (m s^{-1})	$3.32 \cdot 10^{-3}$	(Bouzouidja 2012)
		$1 \cdot 10^{-2}$	Technical specification (Leca® 2012)
	Matrix potential at saturation (m)	-0.010	Values for organic matter
	b-coefficient for water retention curve (-)	2.7	(Lawrence and Slater 2008)
	Matrix potential at saturation (m)	-0.121	Values for sand in ISBA
	b-coefficient for water retention curve (-)	4.05	(Clapp and Hornberger 1978)
	Matrix potential at saturation (m)	-0.405	Values for clay in ISBA
	b-coefficient for water retention curve (-)	11.4	(Clapp and Hornberger 1978)

Fig. 1.

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Table 5. Statistical scores for the simulations of the OM ensemble over the evaluation time period (R the correlation coefficient, RMSE the Root Mean Square Error, MBE the Mean Bias Error, PBE the Mean Bias Error expressed in percentages, CBE the Bias Error estimated on the variable accumulated over the period, and SD the Standard Deviation). Score units depend on the variable analysed.

	SUBS. WATER CONTENT				OUTLET DRAINAGE				SUBS. TEMPERATURE				DRAIN. LAYER TEMPERATURE			
SCORES	R	RMSE	MBE	SD	R	RMSE	PBE	CBE	R	RMSE	MBE	SD	R	RMSE	MBE	SD
UNIT	-		m ³ m ⁻³		-	m ³ day ⁻¹	%	m ³	-		°C		-		°C	
OM mean	0.86	0.11	- 0.10	0.04	0.81	0.06	126.7	3.3	0.91	4.32	2.68	6.92	0.89	3.69	1.10	6.73
OM min	0.50	0.04	- 0.01	0.02	0.48	0.05	32.2	1.9	0.88	3.59	2.25	6.35	0.85	2.90	0.69	6.16
OM max	0.87	0.18	- 0.18	0.06	0.88	0.08	246.1	5.0	0.92	5.29	3.23	7.63	0.92	4.74	1.64	7.49
S1 mean	0.71	0.16	- 0.16	0.02	0.83	0.06	192.4	4.2	0.90	4.85	2.99	7.31	0.87	4.25	1.39	7.13
S2 mean	0.86	0.06	- 0.05	0.05	0.66	0.07	61.0	2.3	0.92	3.81	2.37	6.53	0.91	3.15	0.81	6.36
OBS				0.02								4.54				4.25

Fig. 2.

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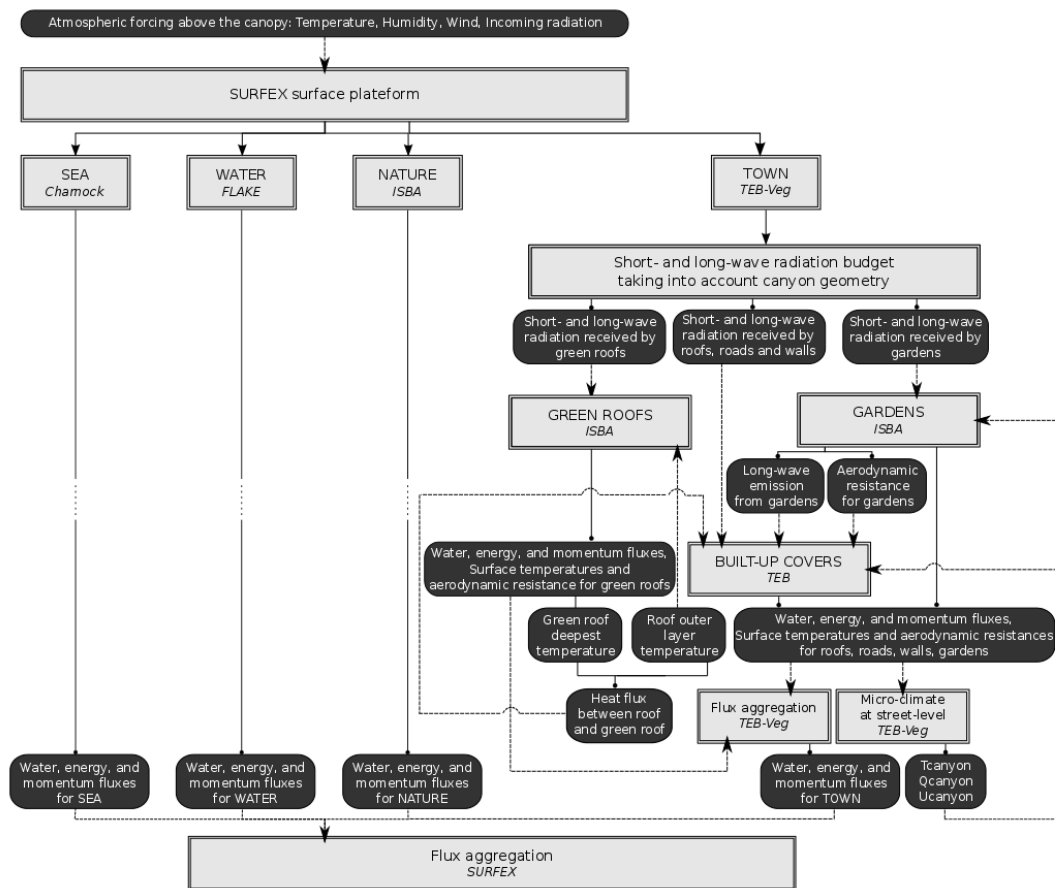


Fig. 3.

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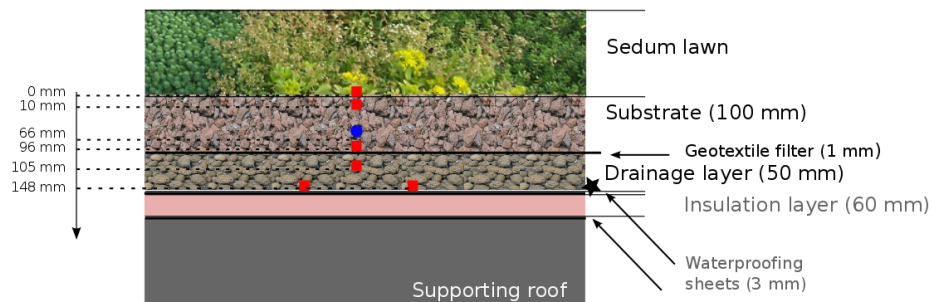
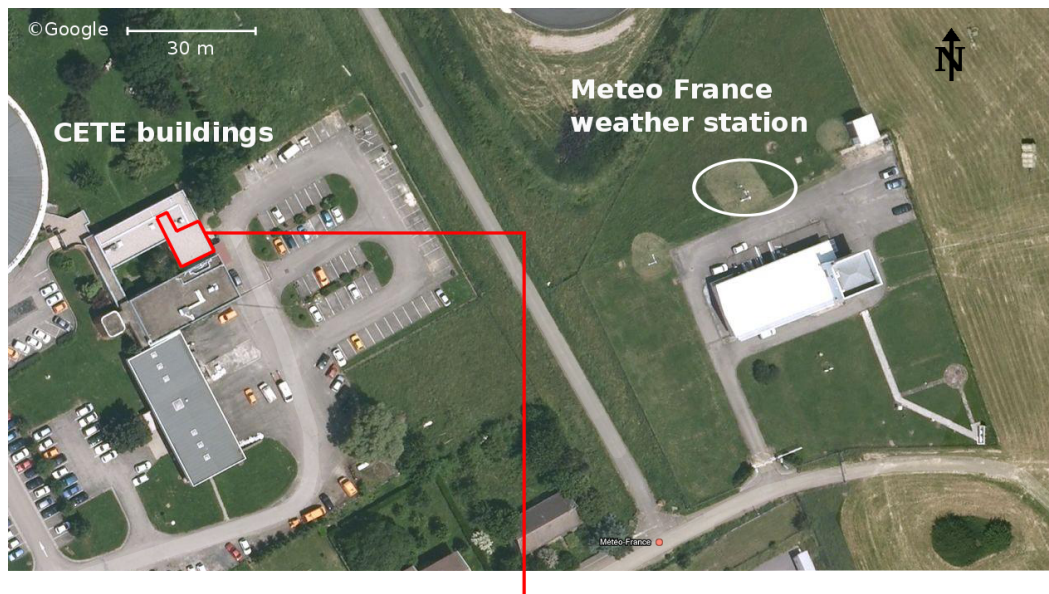


Fig. 4.

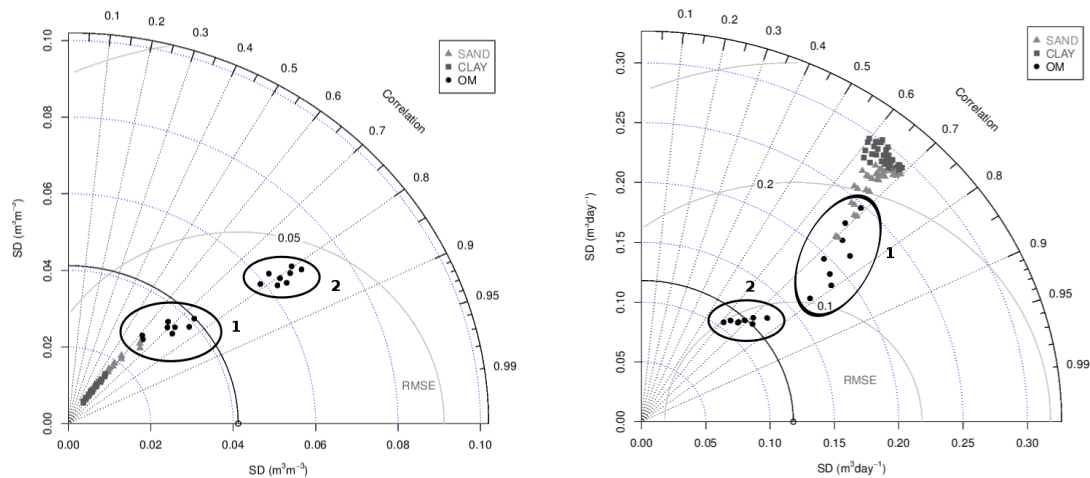


Fig. 5.

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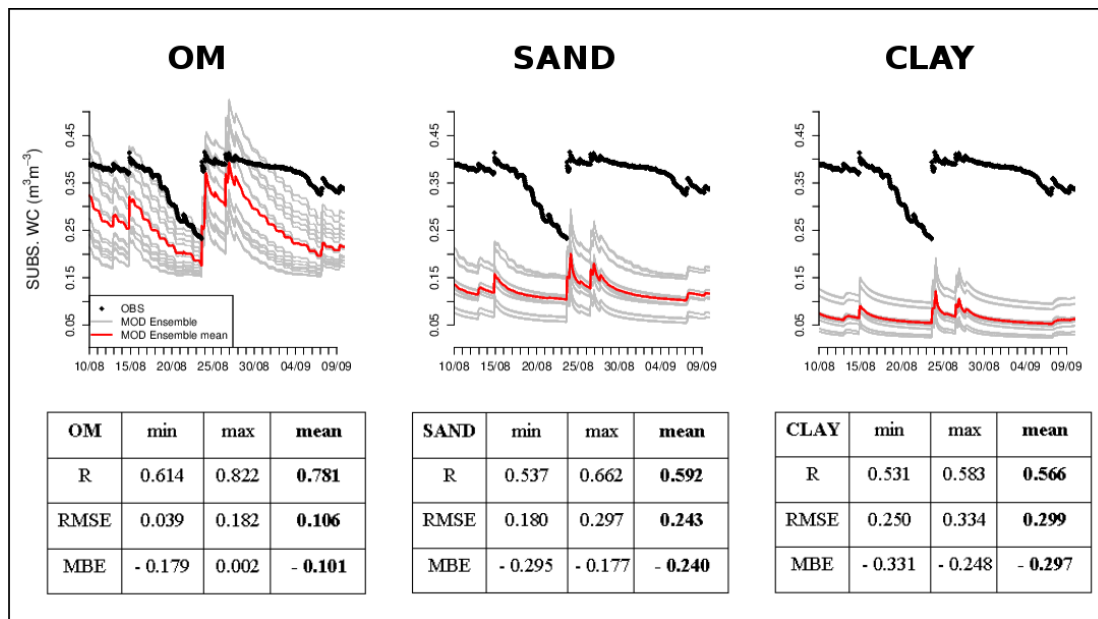
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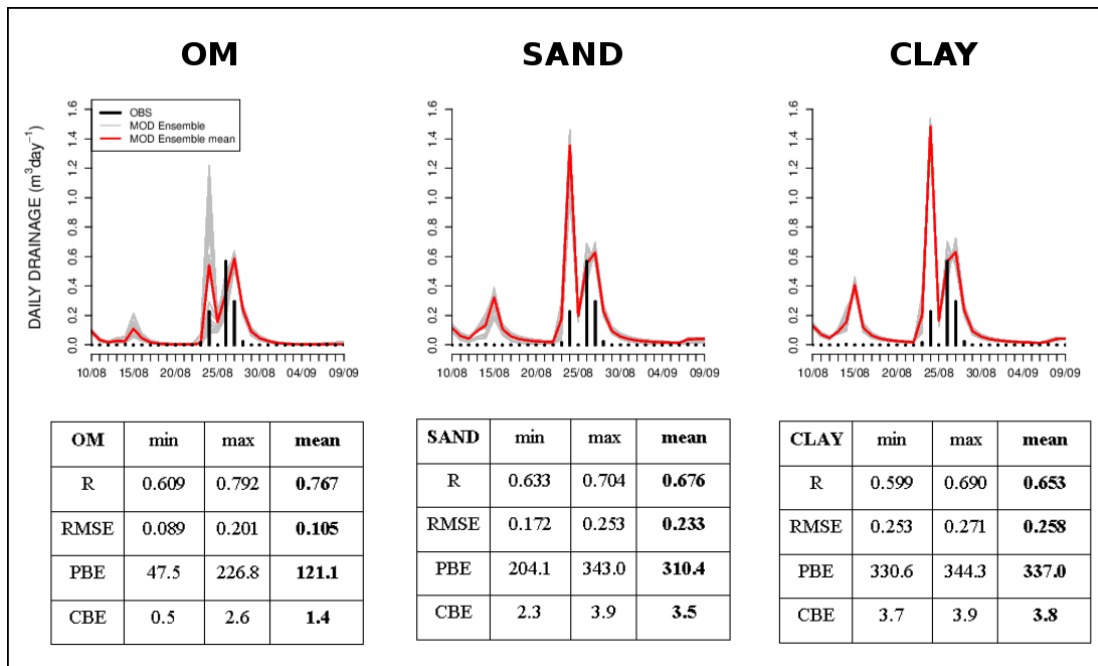
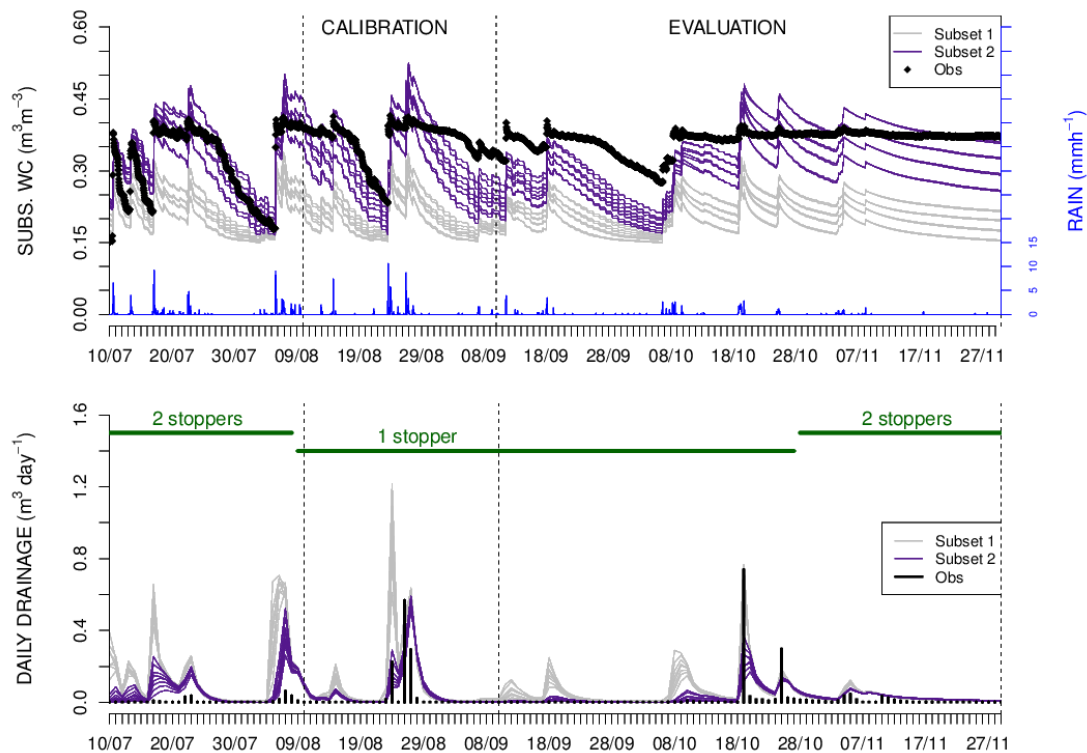
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Fig. 7.

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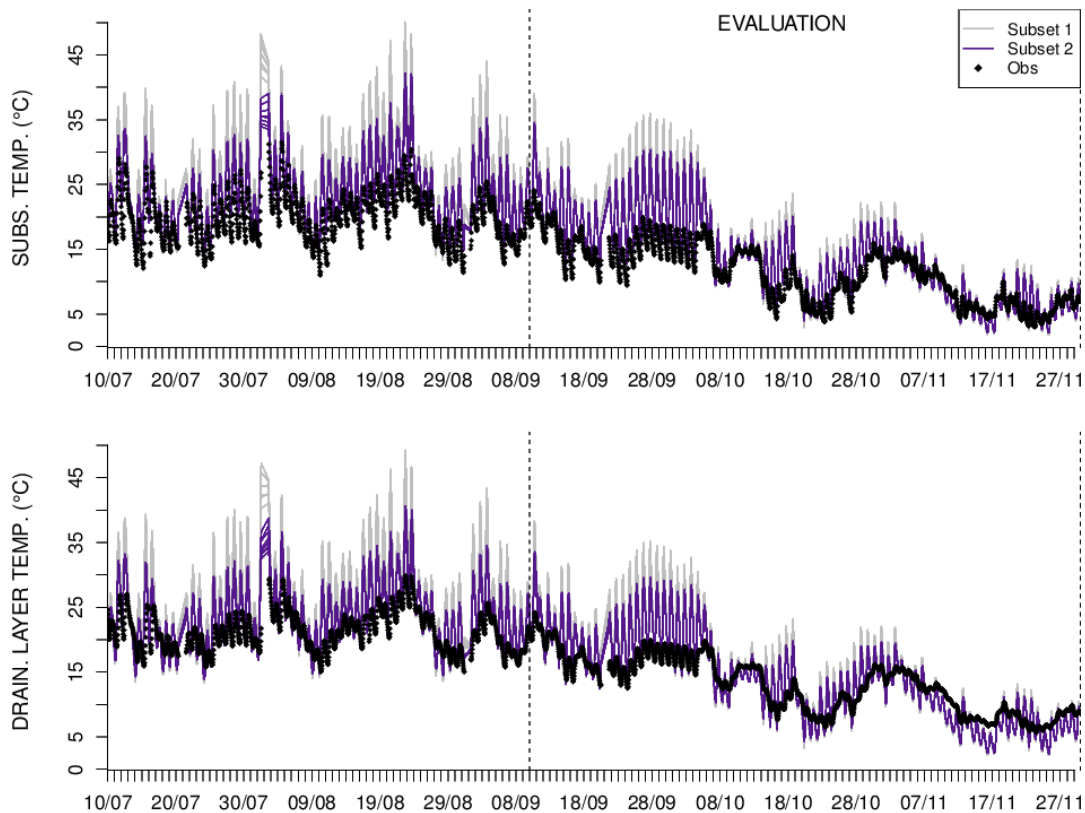


Fig. 9.