

Study of the Energy Budget During AGRISAR 2006

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- ▶ Analysis of the Measurements

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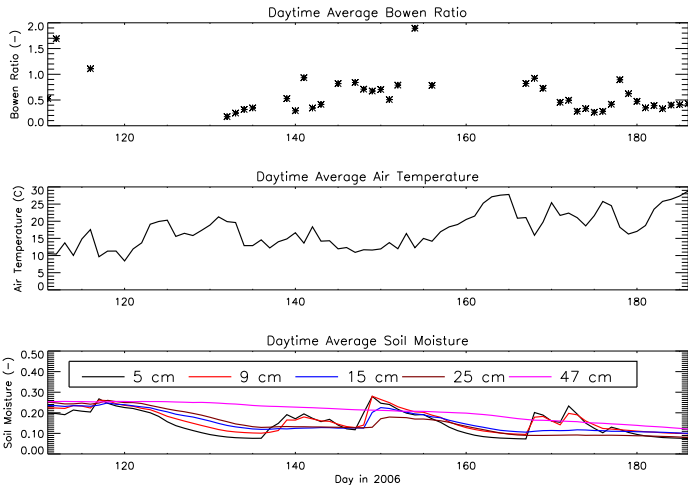
Objectives

- ▶ To study the behavior of the energy balance throughout AGRISAR 2006 using
 - ▶ Observed soil moisture profiles.
 - ▶ Bowen-ratio energy balance measurements.
 - ▶ Scintillometer-based energy balance data.
- ▶ To assess whether commonly used land surface models can reproduce the observed energy balance.

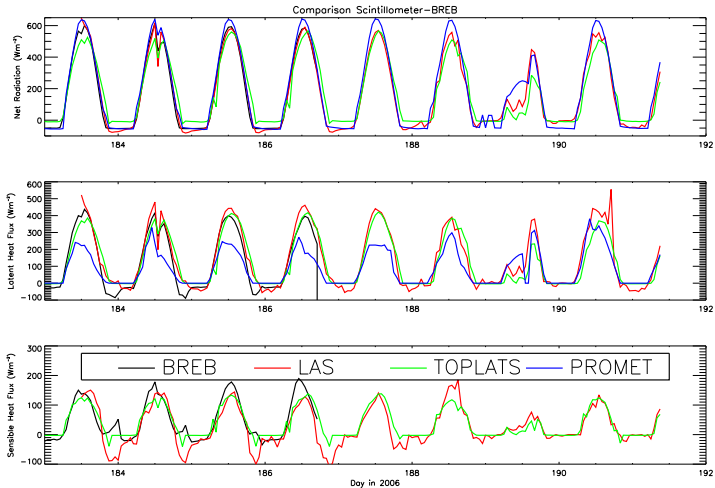
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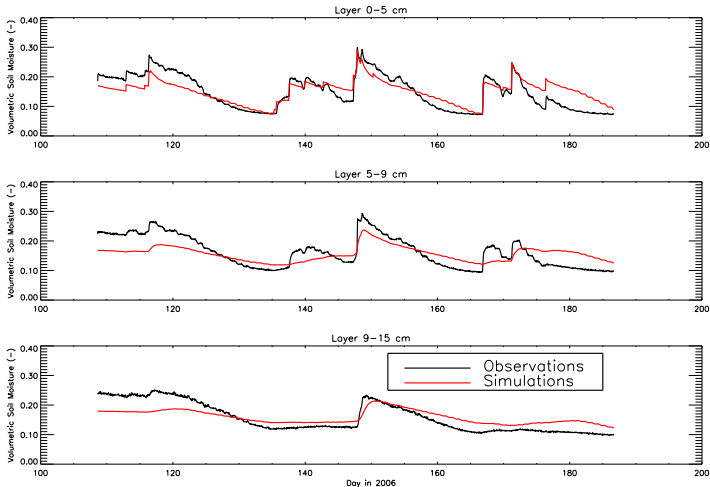
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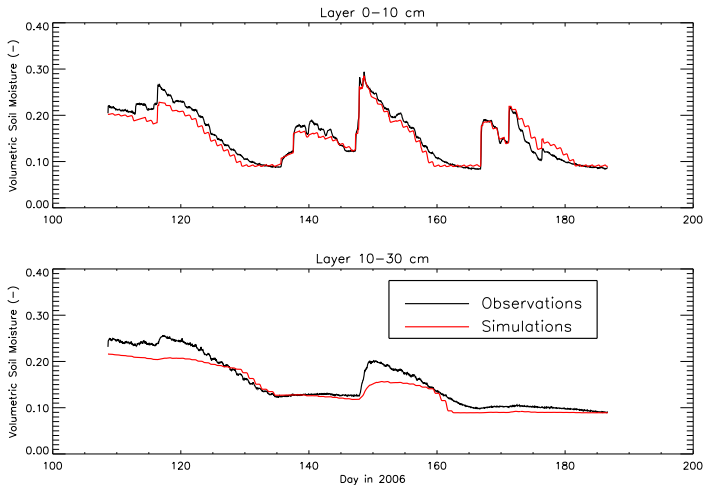
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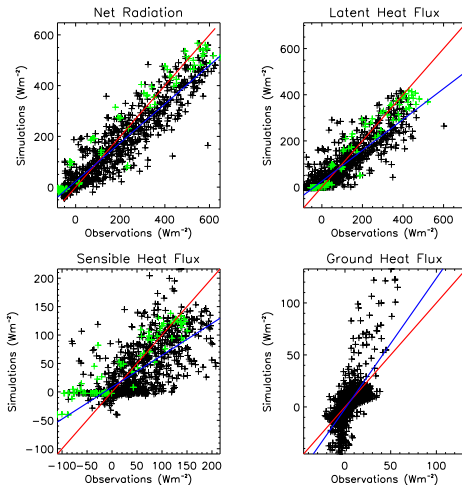
Soil Moisture Content: TOPLATS



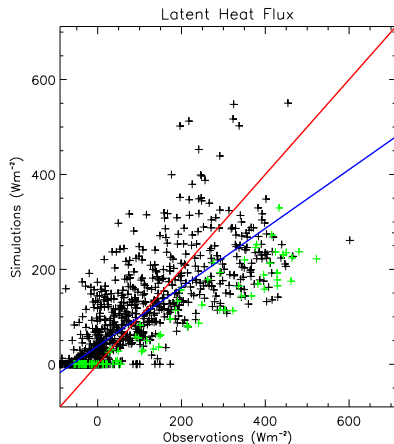
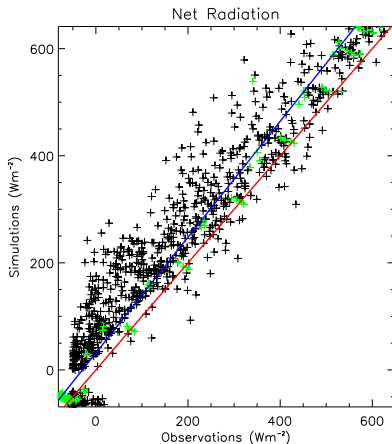
Soil Moisture Content: PROMET



Energy Balance: TOPLATS



Energy Balance: PROMET



Energy Balance: Intercomparison

	\bar{X}	\bar{Y}	Slope	Intercept	R	RMSE
$R_{n,T}$	93.01	93.23	0.76	22.31	0.95	62.28
$R_{n,P}$	93.01	132.20	1.08	31.57	0.92	72.24
LE_T	55.16	62.37	0.67	25.39	0.90	59.44
LE_P	55.16	72.42	0.62	38.24	0.81	76.01
H_T	30.40	25.33	0.56	8.30	0.73	39.26
G_T	4.33	3.65	1.26	-1.78	0.71	14.18

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- ▶ Daytime maxima of the BREB and the LAS are of the same order of magnitude.
- ▶ The LAS shows relatively large negative values at night. These values are very sensitive to the surface roughness values.

Conclusions (2)

- ▶ Both TOPLATS and PROMET reasonably match the evolution of the soil moisture profile and the partitioning of the energy balance.
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⇒ PROMET performs slightly better for the soil water balance, TOPLATS for the surface energy balance.
- ▶ The net radiation from PROMET shows a stronger diurnal cycle than the measurements, but the diurnal cycle of the latent heat flux is underestimated.