A black silhouette of an irrigation system, including a vertical riser pipe, a horizontal lateral pipe, and a wheel-line with a wheel, is positioned on the left side of the slide. The background is a gradient from dark blue at the top to orange and yellow at the bottom, suggesting a sunset or sunrise.

Actual rain sensor dry out times compared to estimated soil dry out times

Bernardo Cárdenas and Michael D. Dukes

*Agricultural and Biological Engineering Dept.,
University of Florida*

Irrigation Show and Education
Conference
*Long Beach, CA
December 4, 2018*



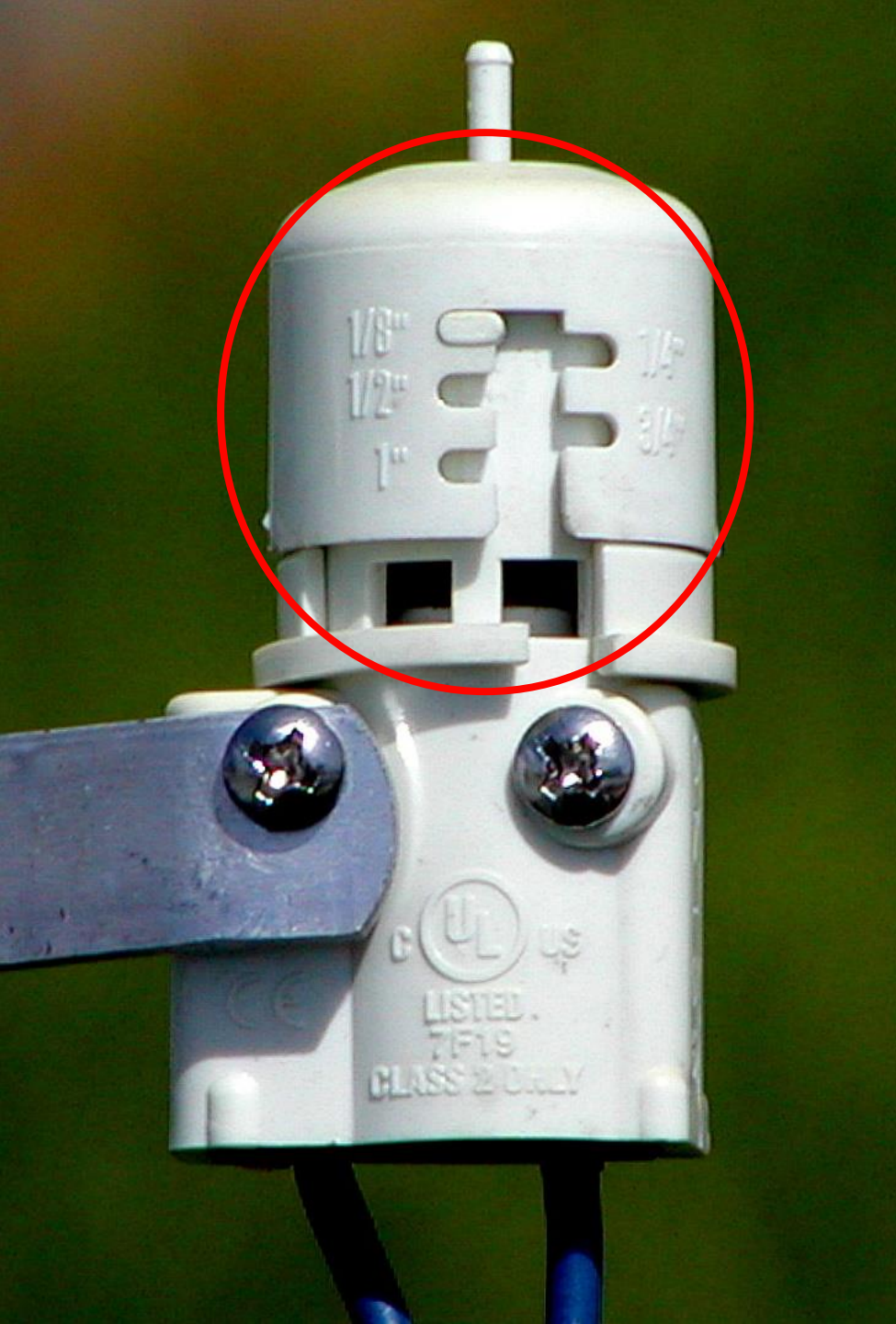
Timer



Rain Sensor (RS)

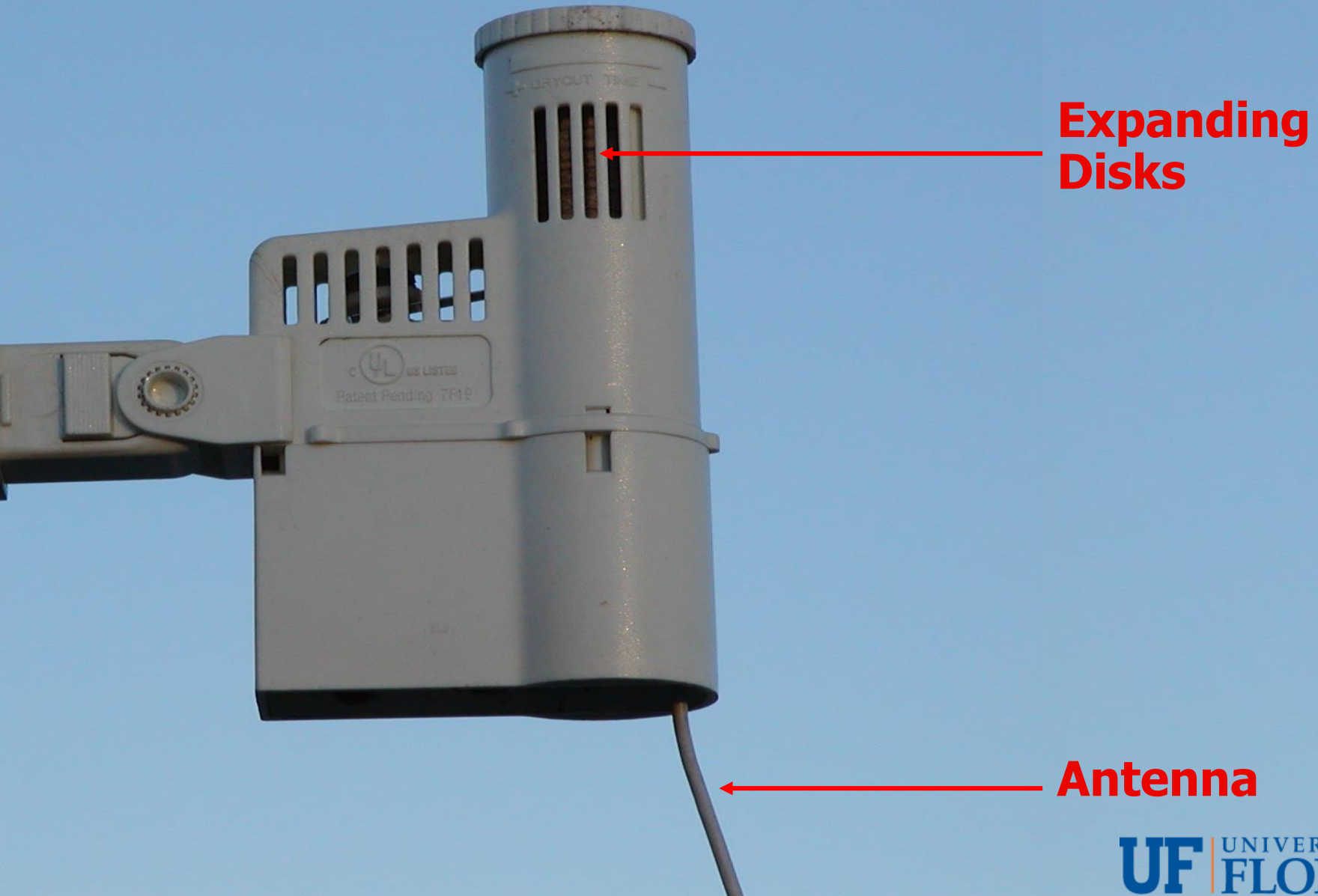


- RS can **bypass** the timer settings, when there has been sufficient rain.



Expanding Disks

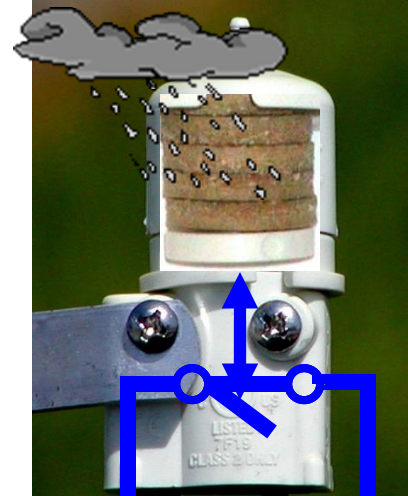
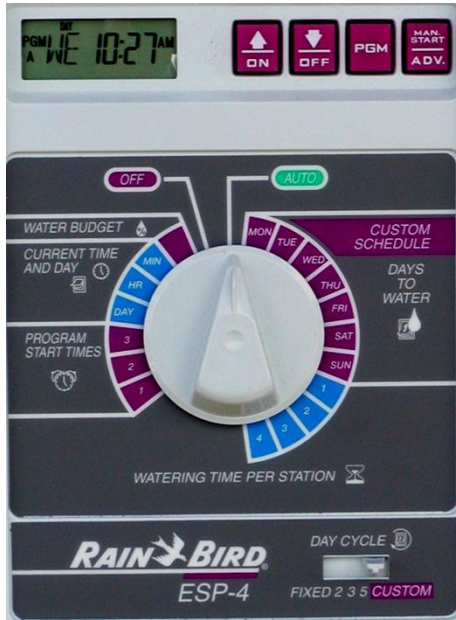
Wireless RainClick



**Expanding
Disks**

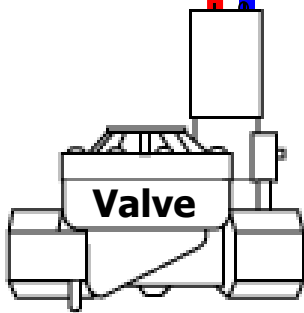
Antenna

Timer



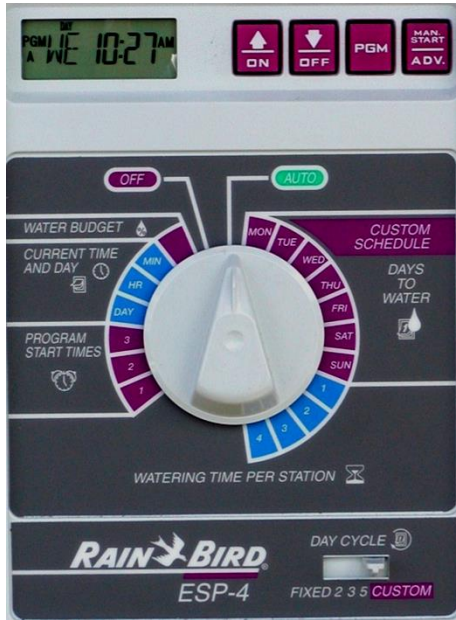
Common

Hot

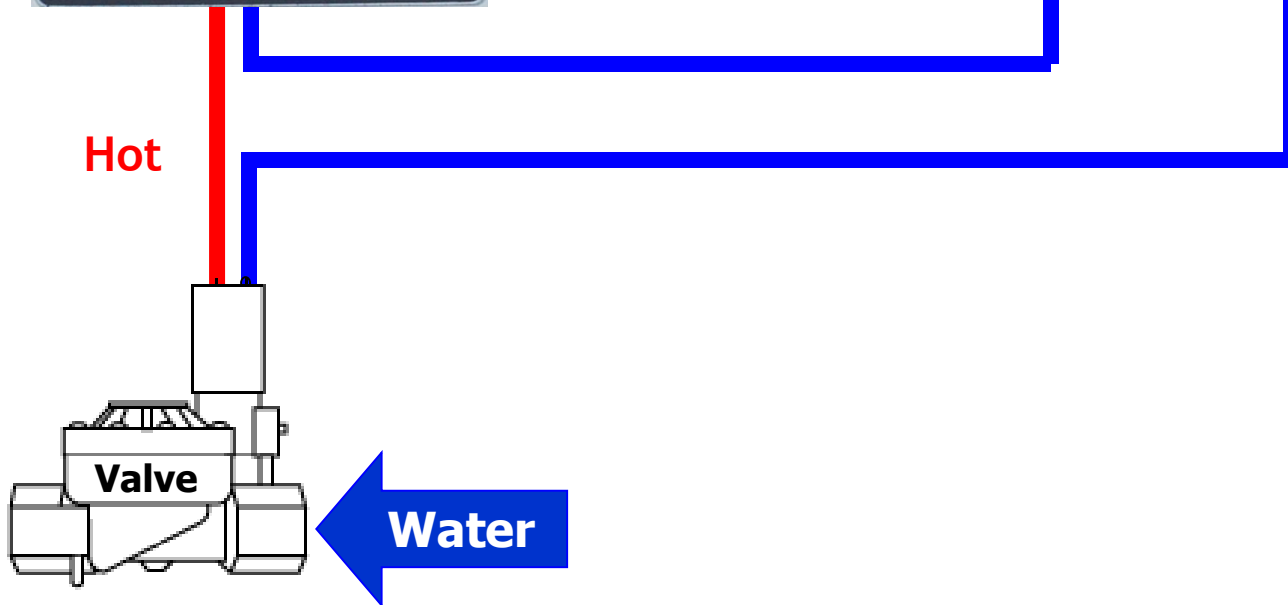


Water

Timer



Common



Question

Do the RS dry out periods match the soil dry out periods?

OBJECTIVES

- a) Determine the dry out periods of 2 RSs
- b) Estimate the dry out periods of 3 soil textures through a soil water balance model
- c) Compare a) vs b)

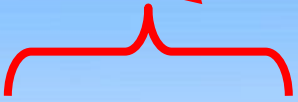
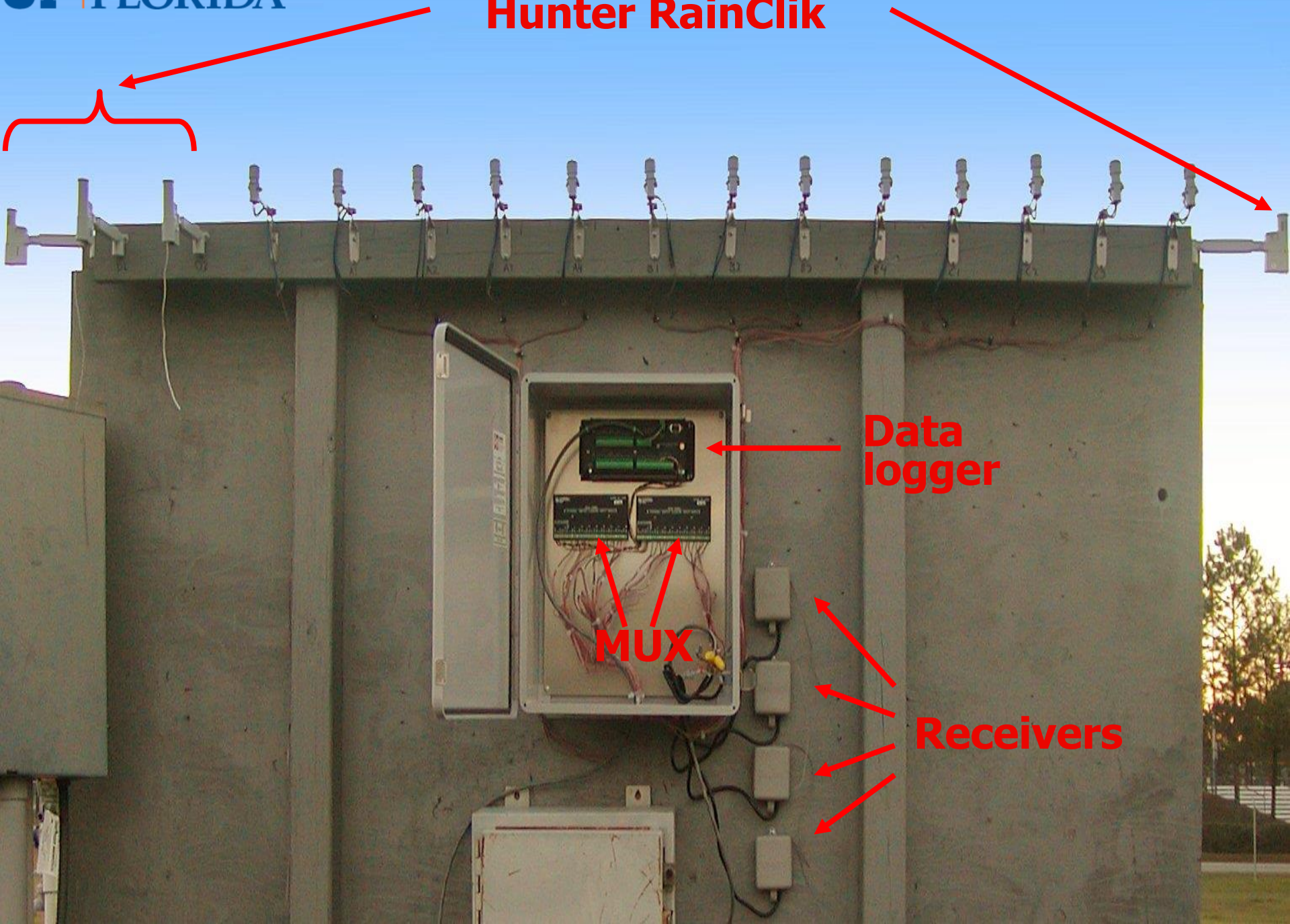
MATERIALS AND METHODS

Location: On campus, UF,
Gainesville, FL

Data collection period:
Jan 1 – Dec 31, 2007



Hunter RainClik



Data logger

MUX

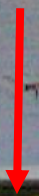
Receivers

Toro TWRS



Emitters

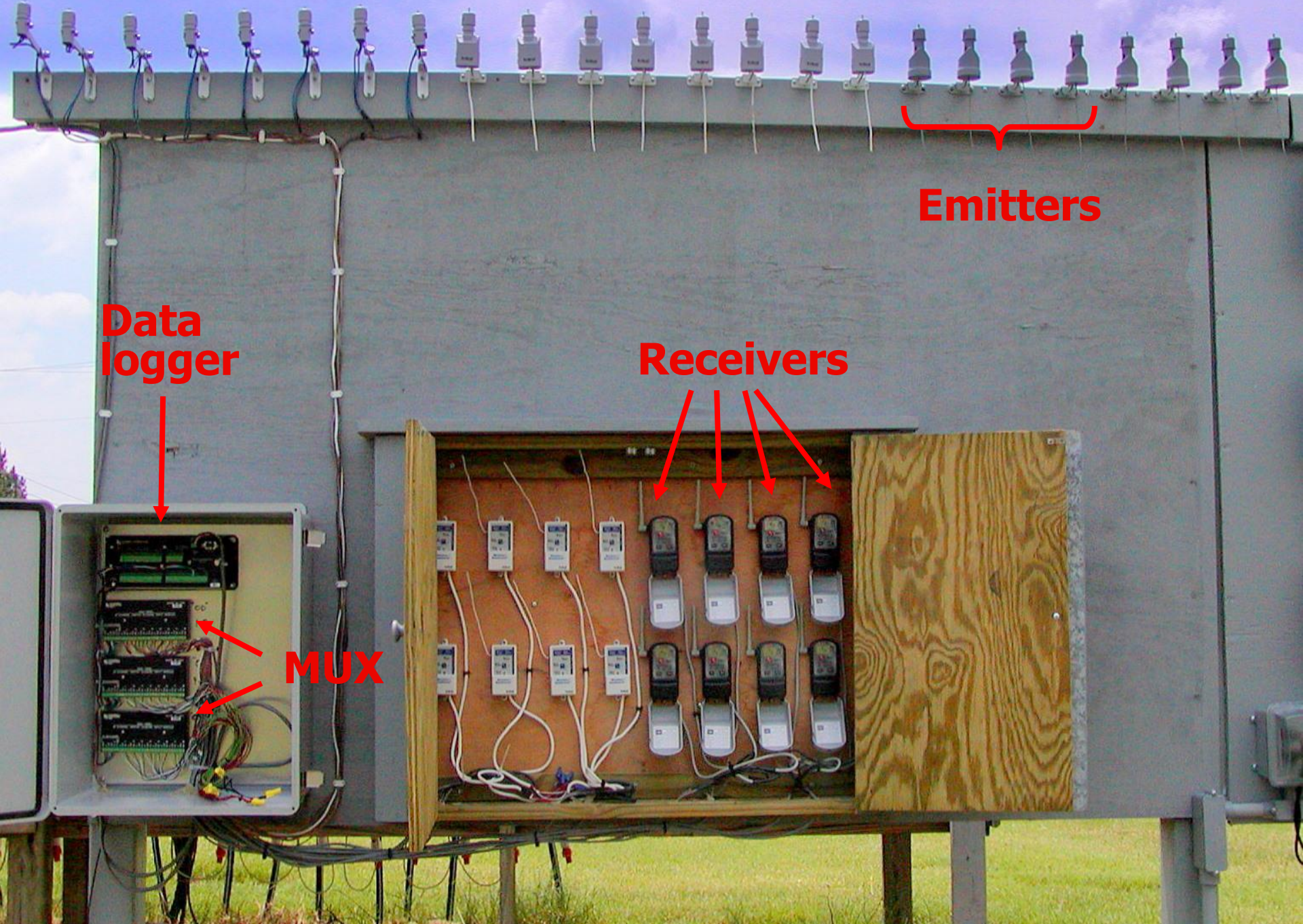
Data logger



Receivers



MUX



Weather Station

**Tipping bucket
(0.25 mm)**



**Data
logger
(m/d h:m:s)**



Weather Station

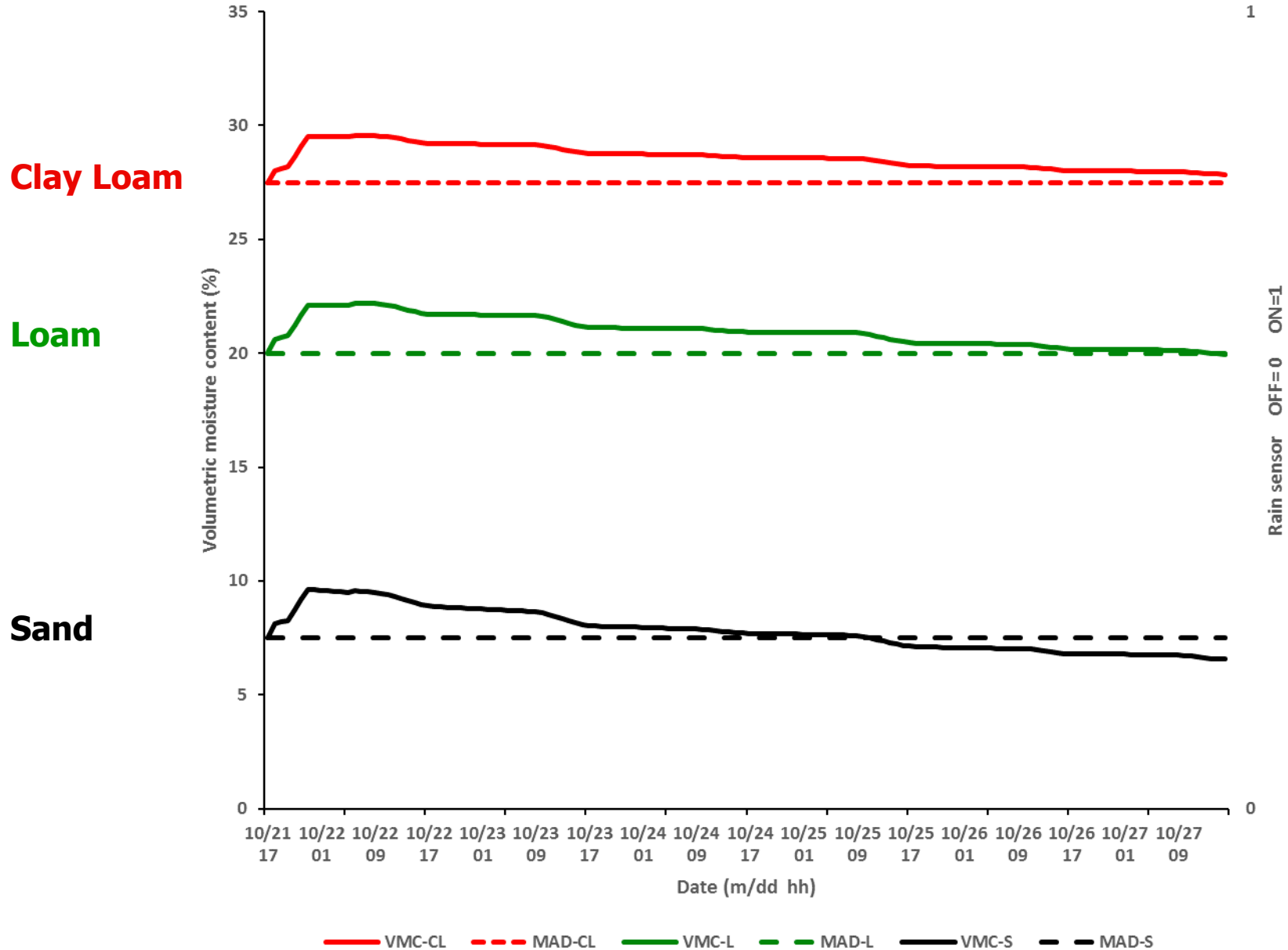
Weather data



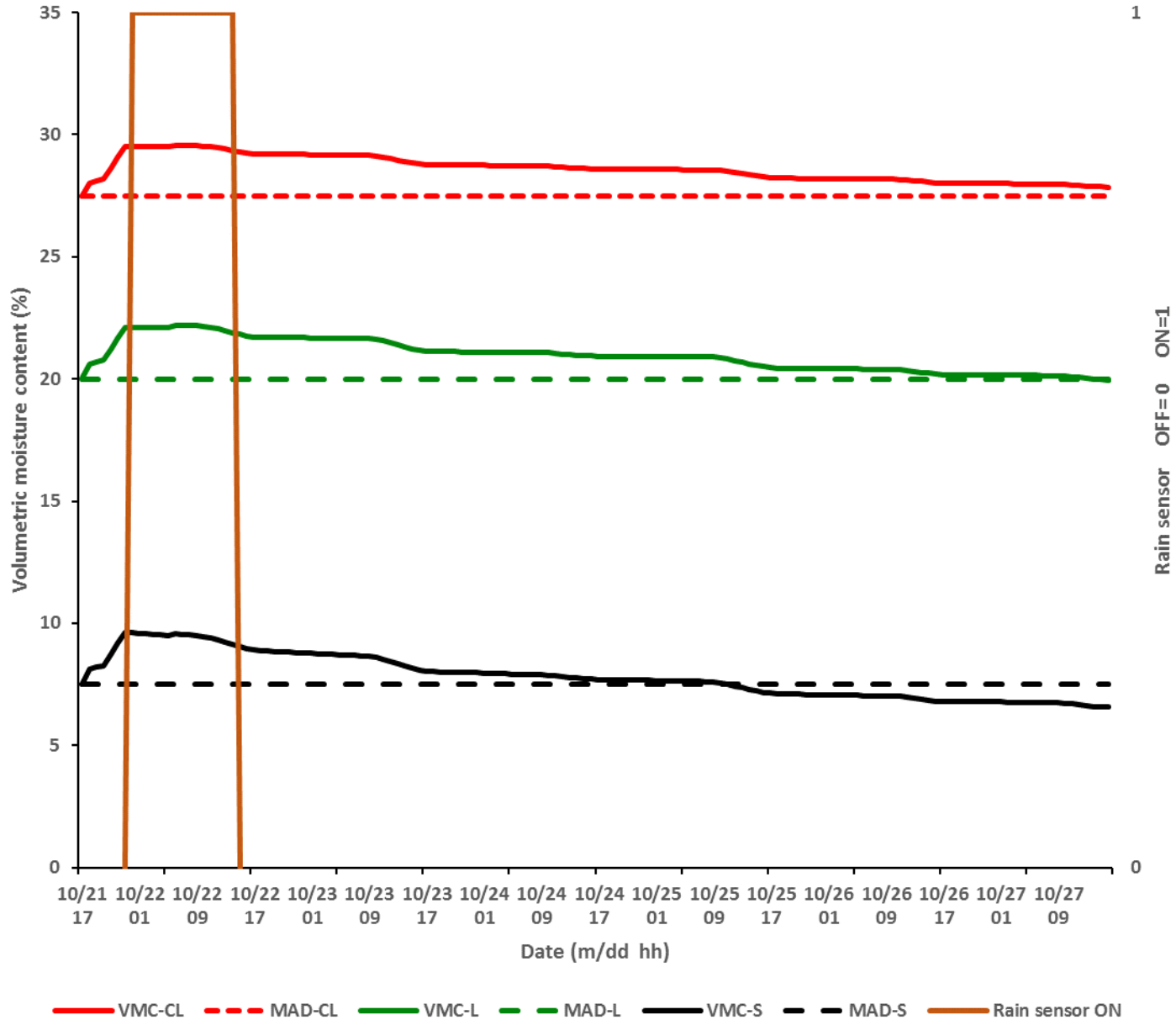
Software Ref ET



WAVE to simulate hourly soil water balance

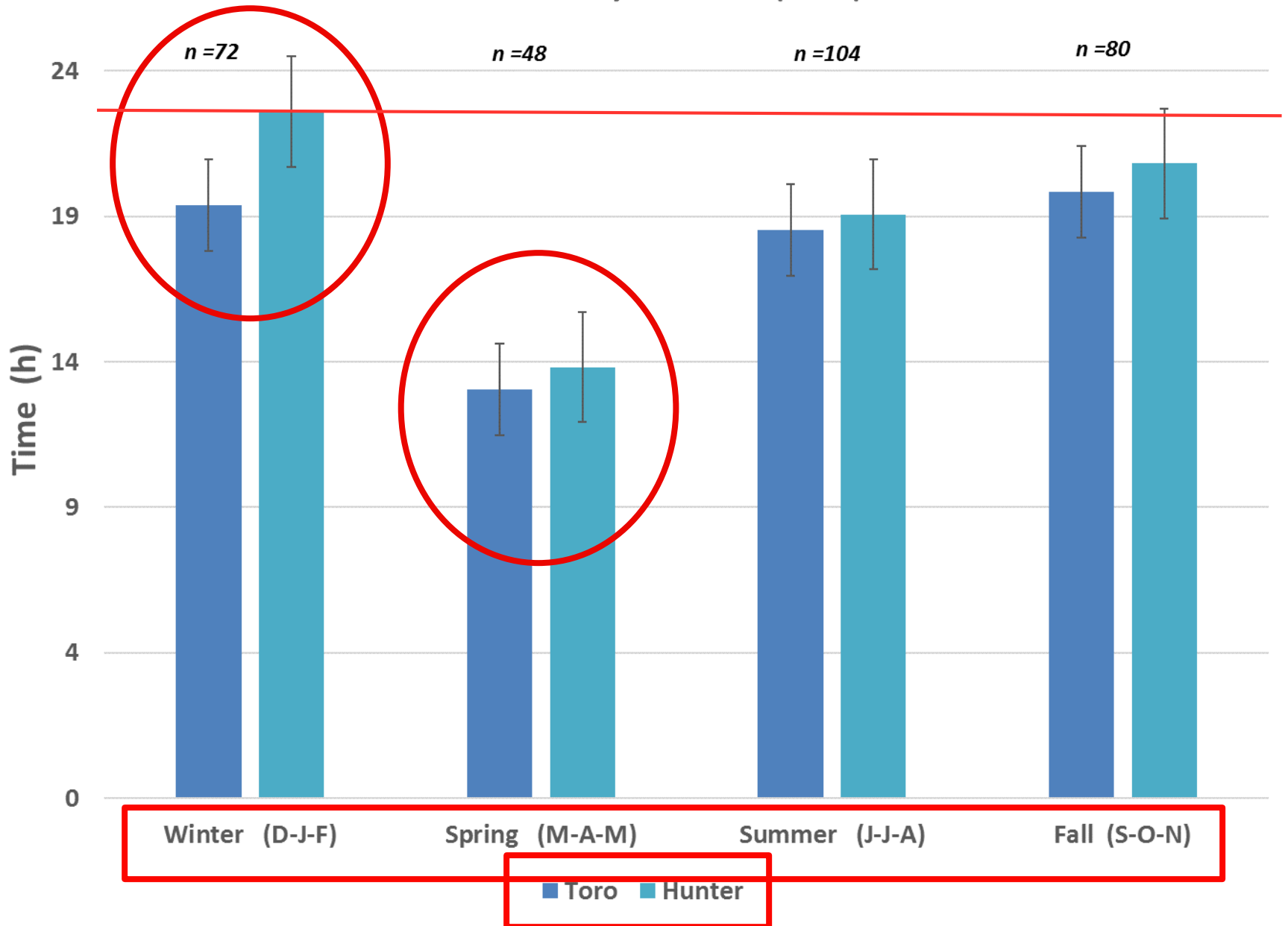


WAVE to simulate hourly soil water balance



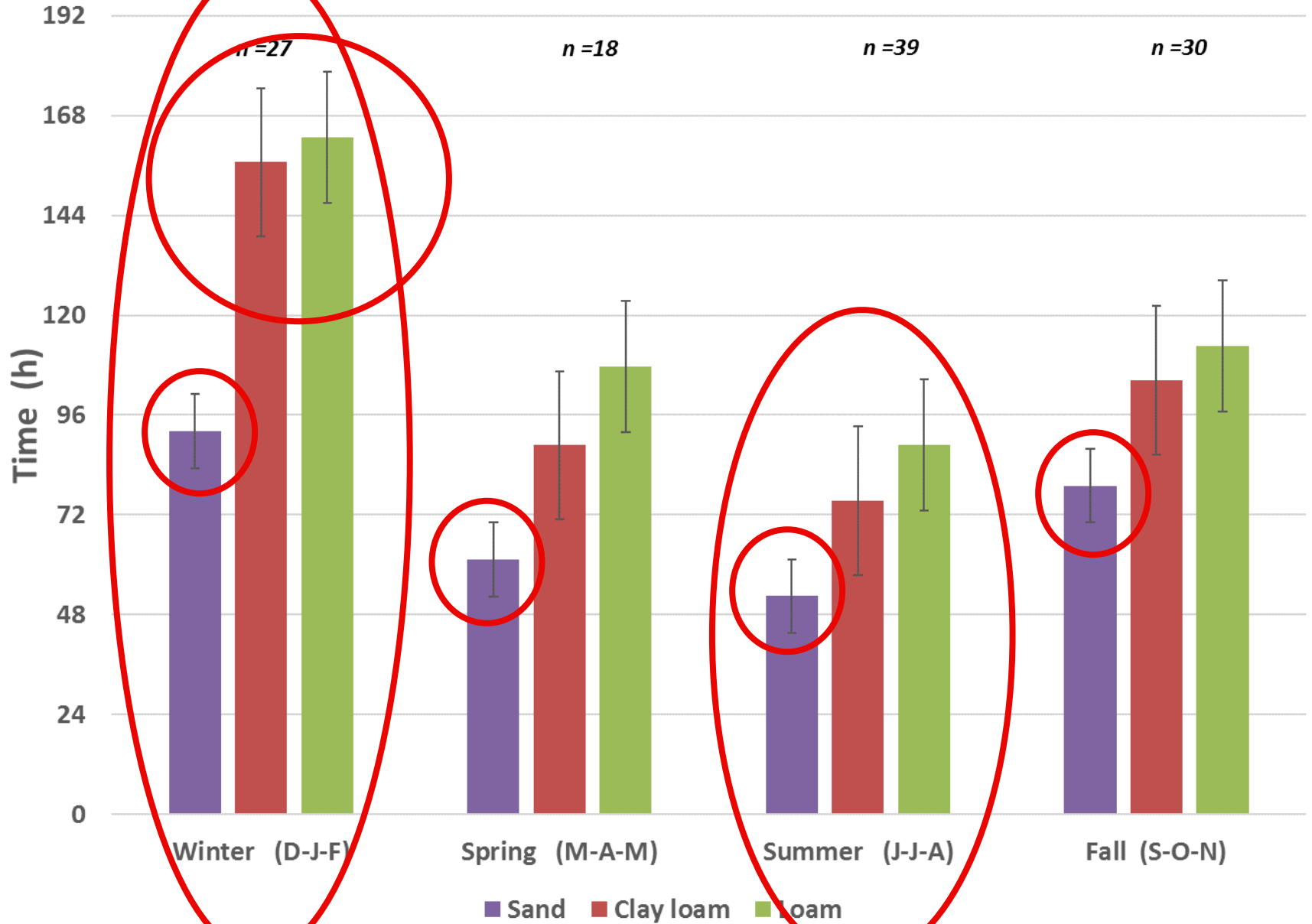
RESULTS AND DISCUSSION

Rain sensor dry out times (2007)



Standard error bars

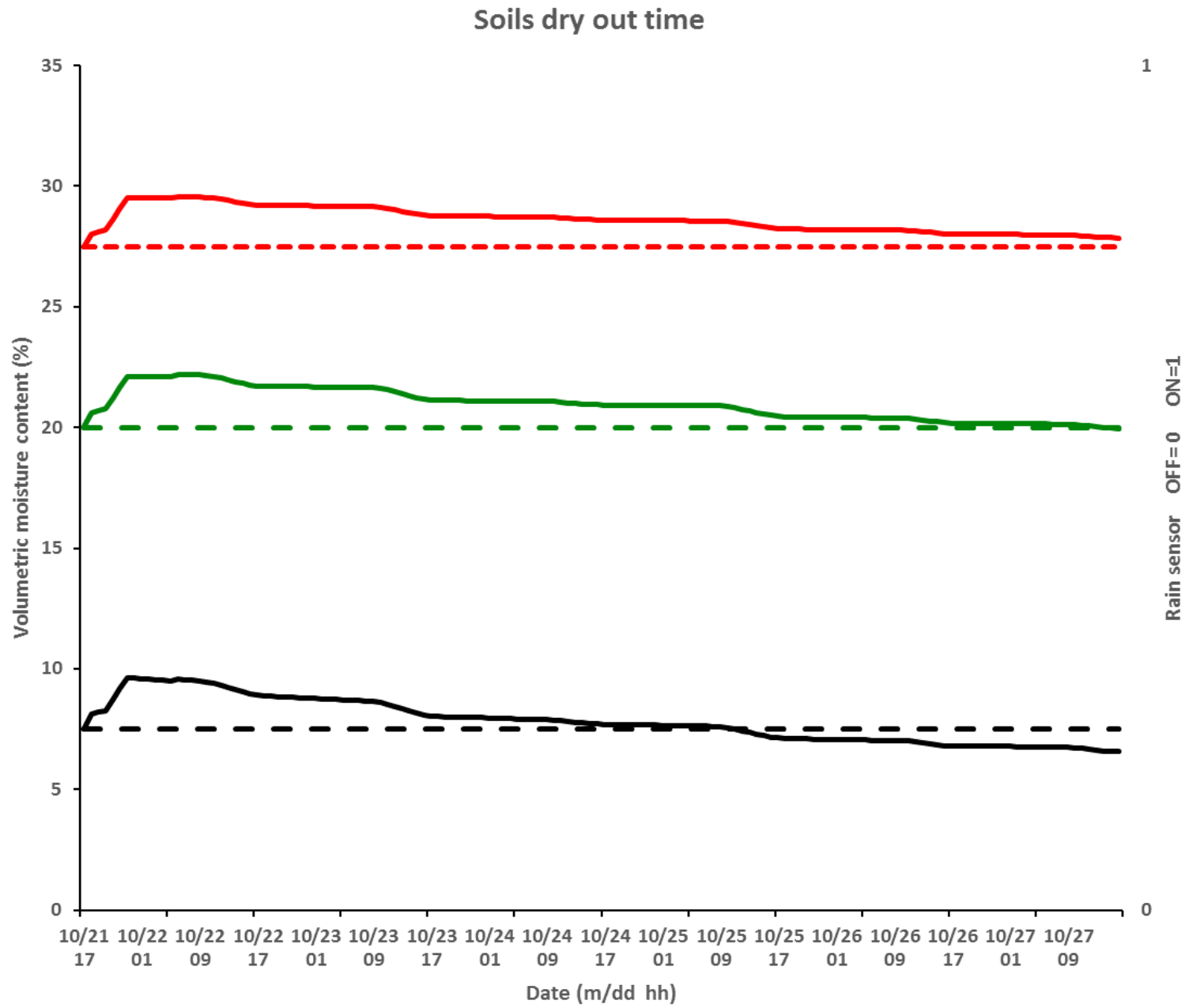
Soil-type dry out times (2007)



Standard error bars

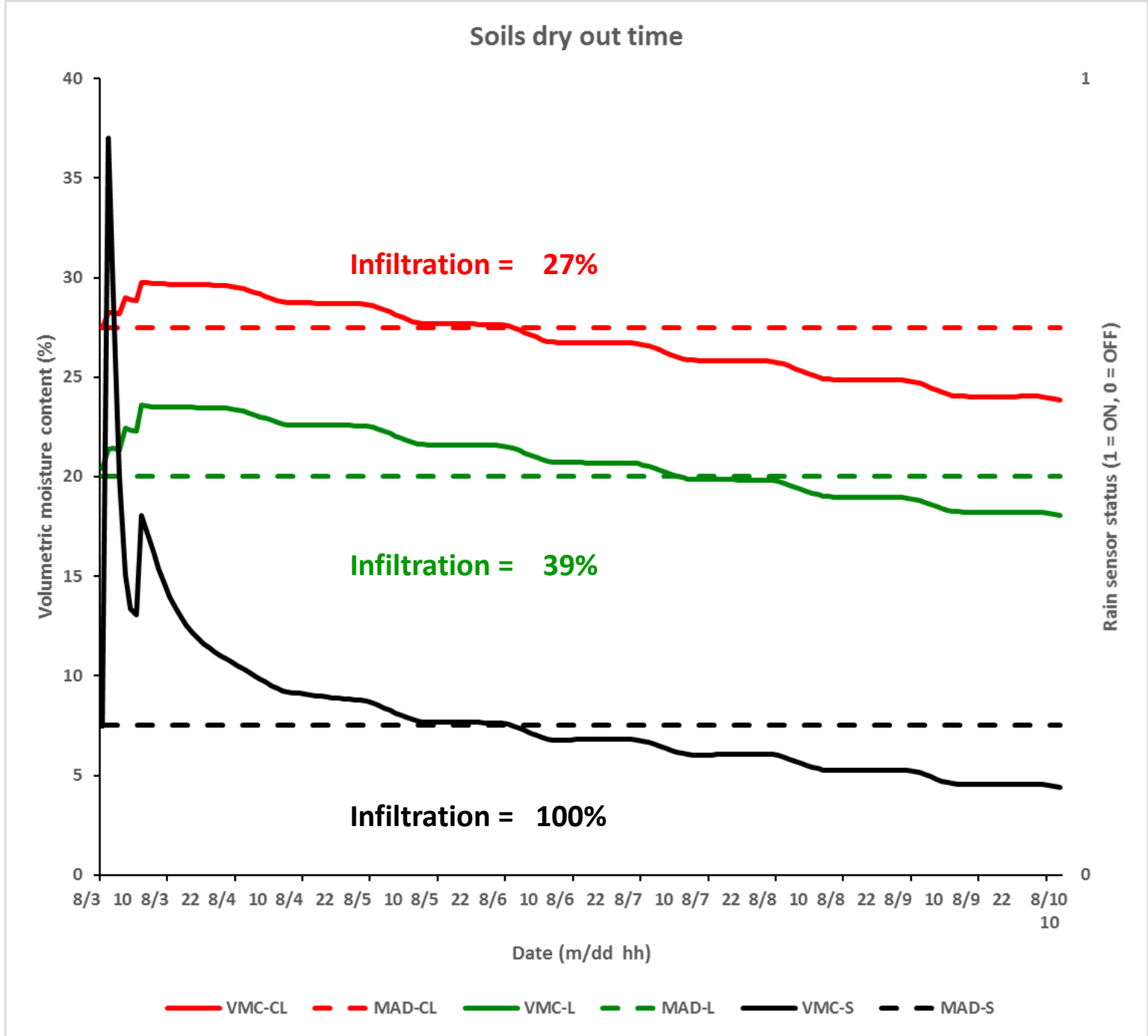
Time (hh:mm)	Rain (mm)
18:00	1.5
19:00	0.3
20:00	0.3
21:00	1.3
22:00	1.3
23:00	1.3
Total	5.8

No runoff

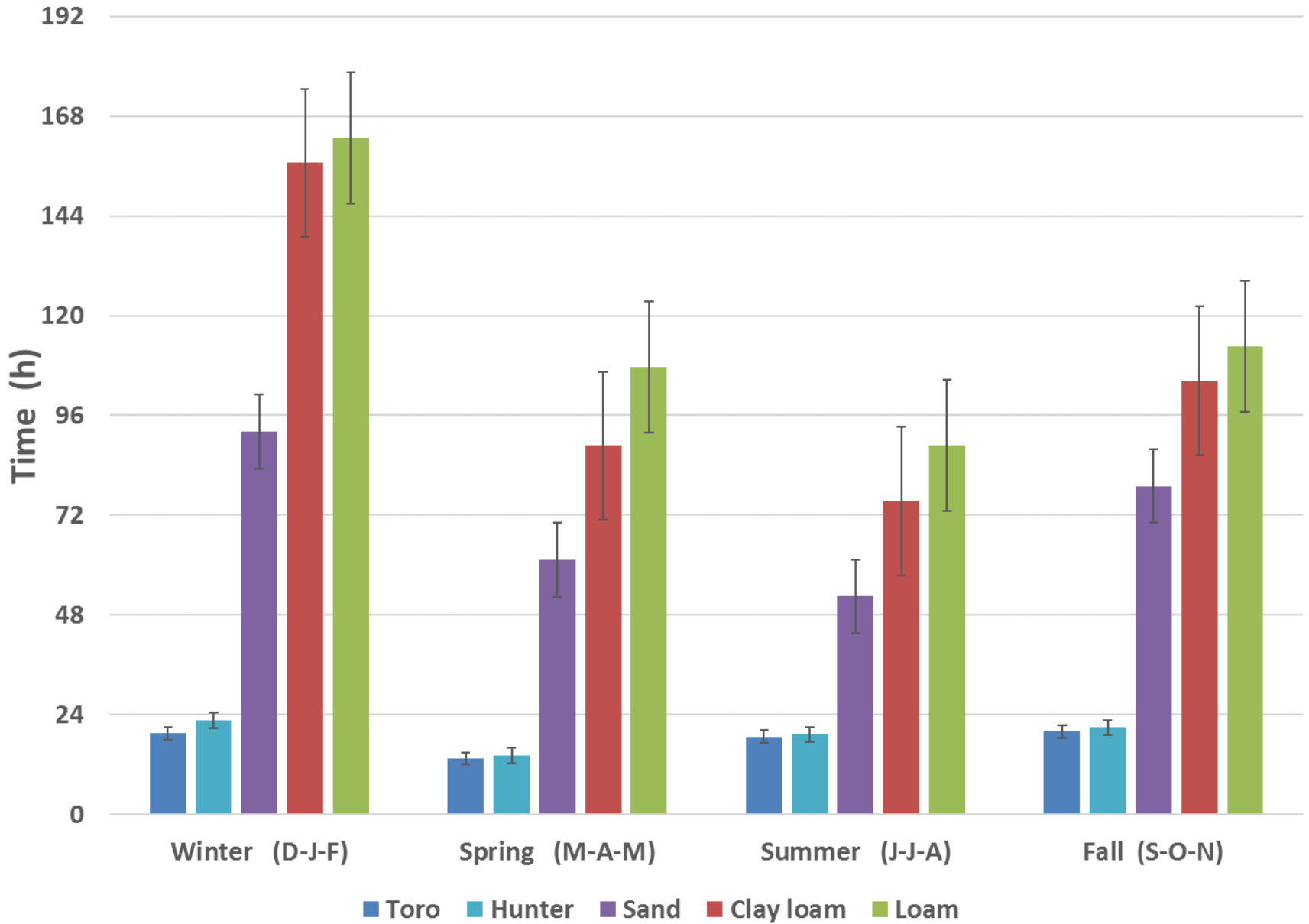


— VMC-CL
 - - - MAD-CL
 — VMC-L
 - - - MAD-L
 — VMC-S
 - - - MAD-S

Time (hh:mm)	Rain (mm)
11:00	14.2
12:00	0.3
13:00	
14:00	7.9
15:00	
16:00	
17:00	14.7
Total	37.1



Rain sensor vs soil-type dry out times (2007)



Standard error bars

CONCLUSIONS

- **The dry out periods of the tested RSs were shorter than those of the different soil types modeled**
- **RSs: limited usefulness under Florida conditions**

