SAVANT 2018

Surface Meteorology Data Report

NCAR/EOL Integrated Sounding System

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In situ Sensing Facility

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OVERVIEW

This document describes NCAR/EOL surface meteorology data at the SAVANT field project. In the event that information from this document are used for publication or presentation purposes, please provide appropriate acknowledgement to NSF and NCAR/EOL and make reference to Witte, J., and W.O.J. *Brown, (2020): SAVANT 2018 NCAR/EOL ISS Surface Meteorology Data Report.*

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SAVANT Homepage: https://www.eol.ucar.edu/field_projects/savant
SAVANT data archive: https://data.eol.ucar.edu/master_lists/generated/savant/
ISS Operations and quicklook plots: https://www.eol.ucar.edu/content/iss-savant
ISS Homepage: https://www.eol.ucar.edu/observing_facilities/iss

Citations:
If EOL surface met. data are used for research resulting in publication, please acknowledge EOL and NSF and include the following citations in your paper as appropriate:

UCAR/NCAR - Earth Observing Laboratory. 2019. NCAR/EOL ISS Surface Meteorology Data. Version 2.0. UCAR/NCAR - Earth Observing Laboratory. https://doi.org/10.26023/GY8A-SFK9-1Y12. Accessed 17 Mar 2021.

Introduction

NCAR/EOL took surface meteorology measurements during the SAVANT (Stable Atmospheric Variability and Transport) field campaign between August 24 and November 15, 2018 [1]. The Integrated Sounding Systems (ISS) [2] operated sensors that measured surface meteorology parameters (refer to the sensor list in table 1) at the farm homestead site. In Figure 1, the 449 MHz Modular Profiler was located at this northwest location, along with a radiosonde sounding, a 10 meter surface meteorological tower system and the ISFS base trailer.

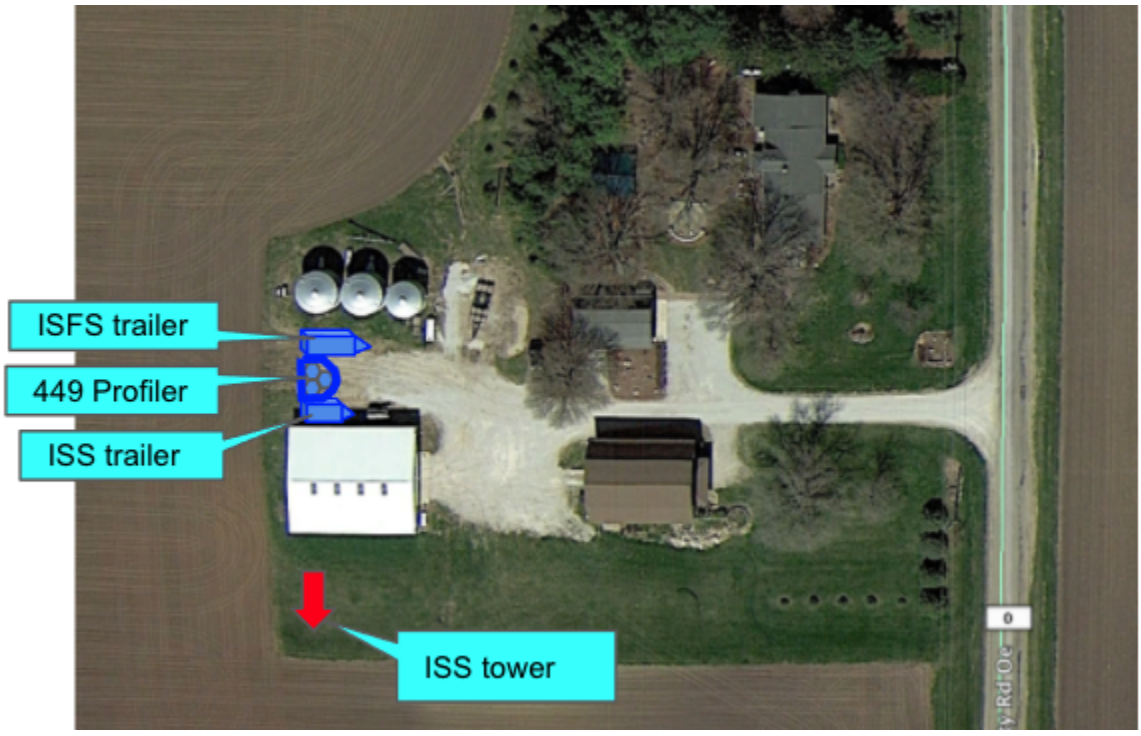

Figure 1: Approximate layout of the ISS1 site at SAVANT.

Sensor Suite

Brand	Height
Gill Wind Observer (2D sonic)	10 m
Lufft WS300 (Temp/RH/Pressure)	2 m
Vaisala PTB210 (Pressure)	2 m
Hydro Services rain gauge	sfc
NCAR ISFS hygrothermometer (Temp/RH)	2m
Hukseflux NR01 radiometer	1 m

Table 1: Sensor suite

Figure 2: (left) Vaisala PTB. (right) ISFS Temp/RH sensor (top) and Lufft WS300 (bottom).

Known Data Issues

Hukseflux NR01 Issue First Documented 23 Dec. 2020

An error was discovered in the NR01 radiometer measurements. Coefficients provided by the manufacturer and unique to each sensor were swapped for the Rsw_out (outgoing shortwave radiation) and Rpile_in (radiant heat within the radiometer dome) parameters. This would also affect the derived parameter Rlw_in (incoming longwave radiation). Figure 3 below is an example with the upper left Rsw_out, lower right Rlw_in, and Tcase before correction (black) and after correcting for this switch (red).

There is a drift in the Tcase measurements after November 1st. These data have been replaced with fill values.

These measurements have been corrected for the 5-minute averaged data files (now version 2.0), and are available at the EOL Field Data Archive:
https://doi.org/10.26023/GY8A-SFK9-1Y12

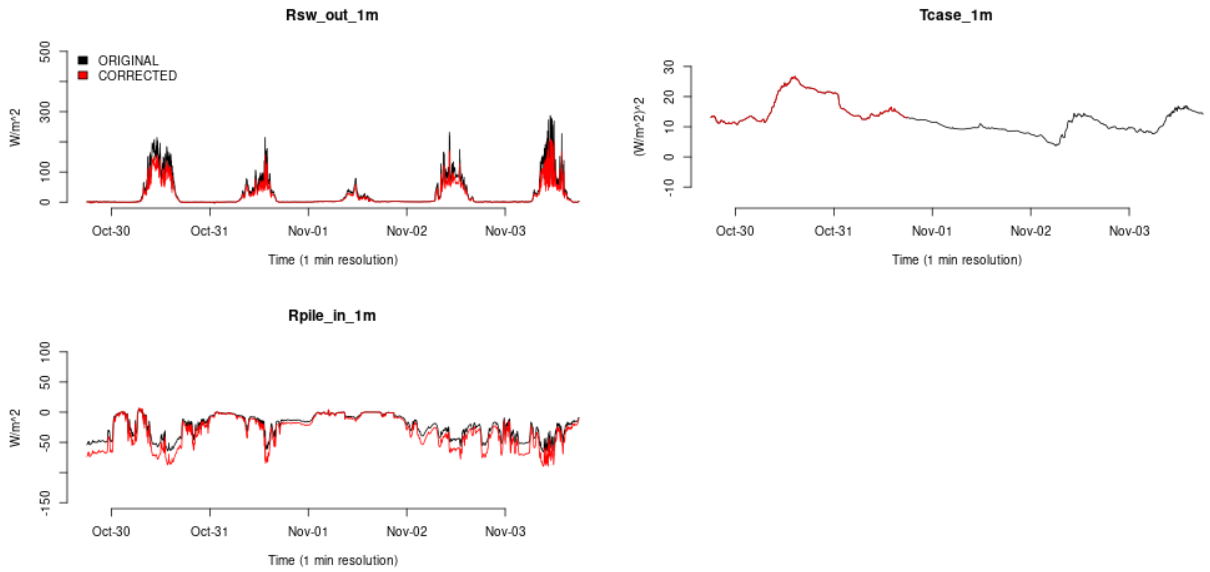

Figure 3: Corrections to the Hukseflux radiometer parameters before (black) and after (red).

References

[1] SAVANT
Homepage: https://www.eol.ucar.edu/field_projects/savant
ISS Savant page: https://www.eol.ucar.edu/content/iss-savant
Data Archive: https://data.eol.ucar.edu/master_lists/generated/savant/
Field Catalog: http://catalog.eol.ucar.edu/savant

Hiscox, A.L., Wangm J., Kristovich, D.A.R., Patton, E.G., Sun, J., Brown, W.O., Sokol, N.J., Desai, A.R., Petty, G.W., Nappo, C.J. 2019: SAVANT: A Field Campaign for the Stable Boundary Layer. American Meteorological Society.

[2] ISS Integrated Sounding System
Website:https://www.eol.ucar.edu/observing_facilities/iss
DOI: http://dx.doi.org/10.5065/D6348HF9
Reference: Parsons, D., W. Dabberdt, H. Cole, T. Hock, C. Martin, A-L. Barrett, E. Miller, M. Spowart, M. Howard, W. Ecklund, D. Carter, K. Gage and J. Wilson, 1994: "The Integrated Sounding System: Description and preliminary observations from TOGA COARE". *Bull. Amer. Meteor. Soc.,* 75, 553–567, doi:10.1175/1520-0477(1994)075.

[4] NetCDF: UCAR/Unidata netcdf web site:
http://www.unidata.ucar.edu/content/software/netcdf/

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