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SIRS and SKYRAD/GNDRAD Configurations
Ventilator Fan Screen Effects




2018 ASR Science Team Meeting

by

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TOPICS OVERVIEW

- **Discuss converting SIRS or SKYRAD/GNDRAD systems to a Single Radiometer Configuration.**
- **Ventilator Screens**
  - Conduct a study to determine effects of using, or not using ventilator fan screens during BORCALs.
  - Site observations of operating without ventilator fan screens.

SIRS, SKYRAD/GNDRAD: Present Configurations

SIRS- 18 SGP Sites	SKYRAD/GNDRAD- ENA, OLI, NSA, AMFs
One CR3000 Datalogger	**Two CR3000 Dataloggers**
Instruments on Solar Tracker: • Short Direct Normal-NIP • Downwelling Longwave- One shaded PIR • Diffuse- Shaded 8-48 **On Support:** • Global Horizontal- PSP	**Instruments on Solar Tracker:** • Short Direct Normal-NIP • Downwelling Longwave- Two shaded PIRs • Diffuse- Shaded 8-48 **On Support:** • Global Horizontal- PSP
Instruments on Tower: • Upwelling Shortwave- PSP; signal cable to CR3000 • Upwelling Longwave- PIR; signal cable to CR3000	**Instruments on Tower or Stand:** • Upwelling Shortwave- PSP; CR3000 at base • Upwelling Longwave- PIR; CR3000 at base

SIRS, SKYRAD/GNDRAD: Configuration Options

CONFIGURATION OPTIONS AND COMMENTS	
Single Radiometer Configuration Options:	**Comments:**
Option 1: Convert SKYRAD/GNDRAD sites to use 1 CR3000.	GNDRAD towers at OLI and NSA too far from SKYRAD positions for signal cables.
Option 2: Modify SIRS CR3000 programs to provide SKYRAD/GNDRAD file outputs.	Modified SIRS program checked on a CR3000. Change in ingest and data reprocessing would be required.
Maintain Present Configurations:	
Mentor Recommendation: Keep SIRS and SKYRAD/GNDRAD systems in present configurations.	Changing configurations does not provide sufficiently strong advantage for justifying change. Possibly add second PIR to SIRS.

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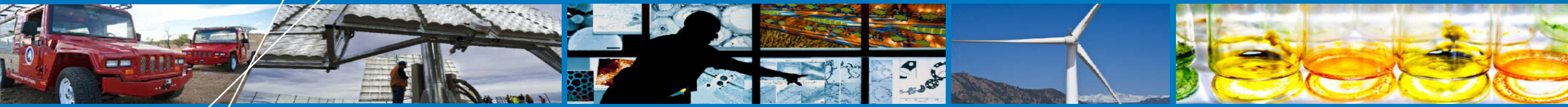


Ventilator Screens

Ventilator Screens: Effects of Ventilator Fan Screens in SGP BORCALs

- SGP BORCAL ventilator fans screens were removed prior to 2017 calibrations based on 2017 BBRad discussion.
- Fan screens removed from SGP and OLI ventilators at times of annual radiometer change-outs.
- Testing at NREL SRRL is in progress to compare using/not using screens prior to start of 2018 SGP BORCALs.
- If no discernable effect is seen, mentor will recommend the use of screens to be based on site operator's judgement of anticipated conditions.

Ventilator Screens: Site Operator's Observations

SITE OPERATOR'S OBSERVATIONS

SGP SITES

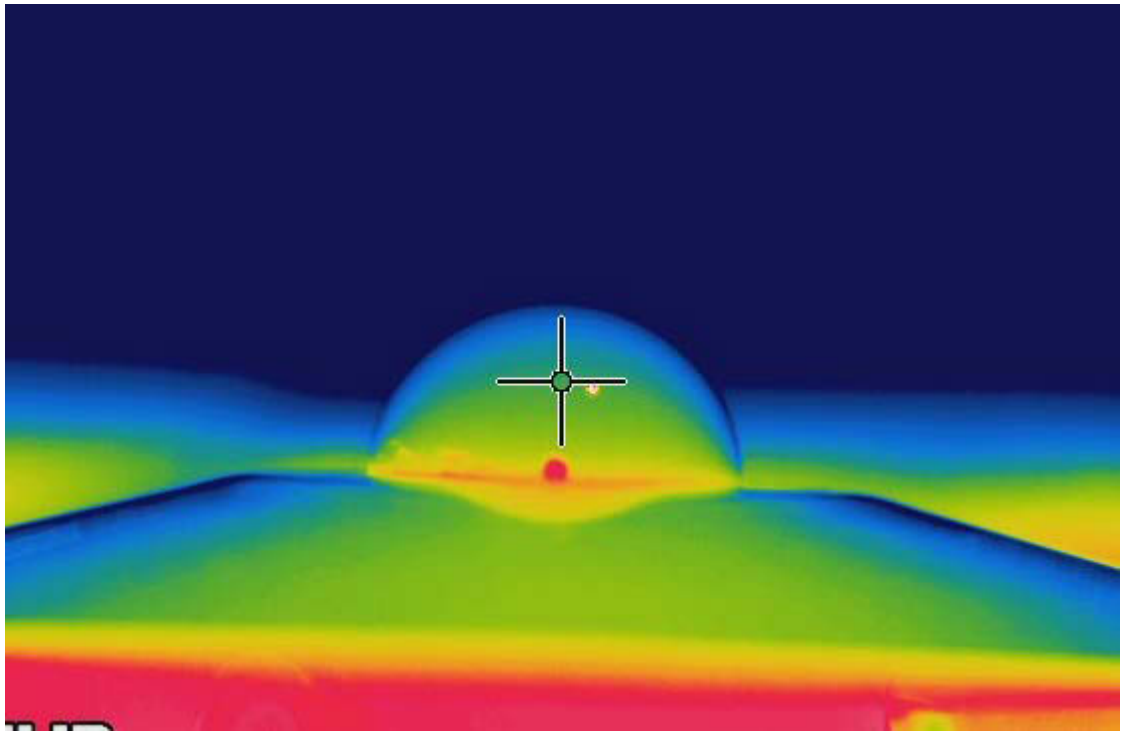
- No noticeable differences in dome conditions due to screen removals.
- More grass, insects, etc. seen inside ventilators after screen removals.
- Not all sites operated yet for an entire year without screens.

OLI SITE

- Fan screen removal resulted in noticeable increase in ventilator interiors being packed with snow during snow/blowing snow events.
- Dome frost accumulations increase when airflow is reduced/stopped.
- Screens were removed after the June-August 2017 mosquito season.

THANK YOU!

Questions?



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