

Erroneous Offset Corrections and Impact on MFRSR Measurements



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1=PNL, 2=NOAA, 3=NASA GIS

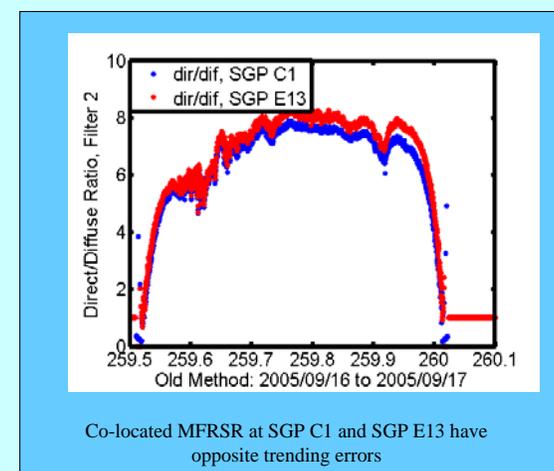
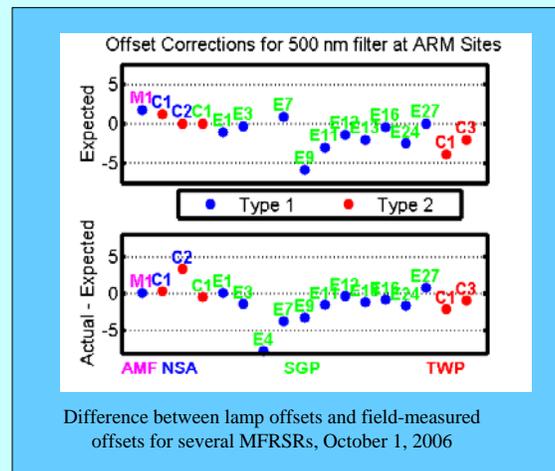
Multi-Filter Rotating Shadowband Radiometers (MFRSRs) have been used world-wide and by the ARM program for more than a decade. Errors have been identified in the vendor-supplied offset corrections. Almost all MFRSR data collected by ARM are affected.

While the scope is broad, as shown below, the actual impact is frequently negligible (units are counts).

Impact of the ratio of direct normal to diffuse hemispheric irradiance.

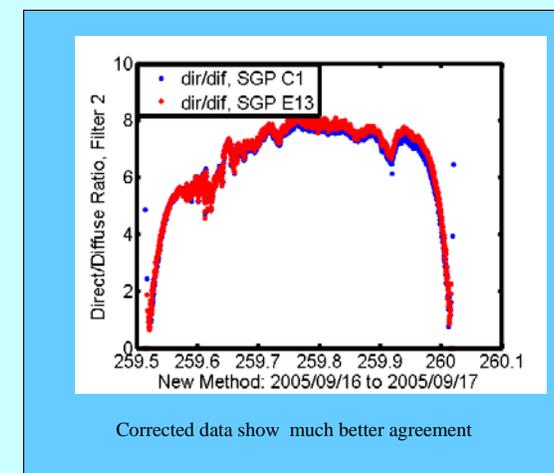
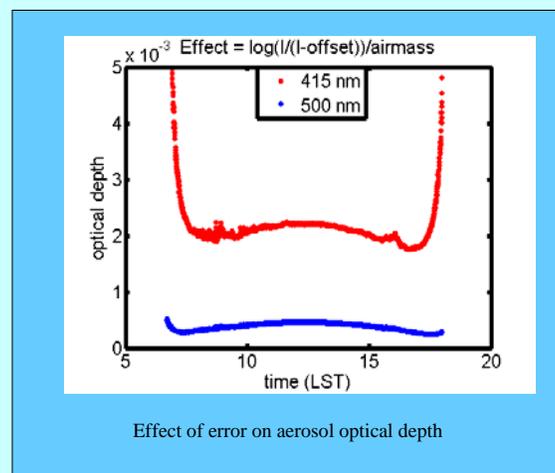
Type 1 = Offset was subtracted from direct normal, effect is on optical depth and direct/diffuse ratio
 Type 2 = No offset subtraction from hemispheric, diffuse, no effect on optical depth, but does affect direct/diffuse ratio

Site/Facility	Start	End
SGP/C1	2003/05/01	2006/07/26
SGP/E1	2005/07/26	2005/07/26
SGP/E2	2003/05/29	2003/07/03
SGP/E3	2005/09/27	2006/03/08
SGP/E4	2005/06/29	2006/09/14
SGP/E6	2003/12/19	2006/09/18
SGP/E7	2005/02/22	2006/09/12
SGP/E8	2005/07/13	2006/01/10
SGP/E9	2000/12/19	2006/07/11
SGP/E10	1999/10/15	2001/06/06
SGP/E12	2003/03/18	2006/03/28
SGP/E13	2002/07/05	2006/09/05
SGP/E15	2001/05/15	2005/08/09
SGP/E19	2002/07/12	2005/08/09
SGP/E25	2001/07/25	2001/07/25
SGP/E27	2003/12/30	2006/01/04
TWP/C1	2002/10/30	2006/09/13
TWP/C2	2005/11/17	2006/09/28
TWP/C3	2004/05/25	2006/09/28
NSA/C1	2005/02/14	2006/03/27
NSA/C2	2005/02/14	2006/09/26



Impact of Type 1 error on AOD retrievals

After Type 1 and Type 2 error correction, agreement is better.



NOTE: Not all sites/facilities included in above table;