WRR to SI intercomparisons 1991 - 2005

W. Finsterle, S. Möbus, C. Wehrli, I. Rüedi, and W. Schmutz
PMOD/WRC, Dorfstr. 33, CH-7260 Davos Dorf, Switzerland

Abstract. Since 1977 the World Radiometric Reference (WRR) has served as the primary standard for Solar Irradiance Wm^{-2} (Fröhlich et al. 1977). The WRR is realized by the World Standard Group (WSG) of pyrheliometers. In order to check the compatibility of the WRR with the SI system of units, the WSG was compared to cryogen standards in 1991, 1995, (Romero et al. 1991, 1995) and 2005 (Möbus 2005). In this poster we present an overview of these comparison. Due to a re-determination of the area of the radiometric aperture used by Romero et al. (1991, 1995) their results had to be corrected by roughly 0.1%. The corrected results still agree with the assumption WRR/SI=1. Together with the latest results of the 2005 campaign the high stability of the WRR and excellent reproducibility of the comparisons to within a few hundred ppm are shown.

Acknowledgments We thank Claus Fröhlich for helpful discussions as well as Peter Blattner of metas and Malcolm White of NPL for their support of the 2005 comparisons.

References

Fröhlich, C., et al., World Radiometric Reference, in *WMO/CIMO Abridged Final Report of the 7th session*, WMO-No. 490, 97-100, 1977

Möbus, S., Experimenteller Vergleich von Primärstandards für die optische Strahlungsmessung, *Diploma thesis*, Fachhochschle Ravensburg-Weingarten and PMOD/WRC, 2005

Romero, J., Fox, N. P., Fröhlich, C., First comparison of the Solar and an SI Radiometric Scale, *Metrologia*, 28, 125-128, 1991

Romero, J., Fox, N. P., Fröhlich, C., Improved comparison of the World Radiometric Reference and the SI radiometric scale, 1995: *Metrologia*, 32, 523-524, 1995