Report
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NRPA multi-band filter radiometer intercomparision
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I was hosted by NRPA, represented by Bjorn Johnsen. The mission took place during the FARIN intercomparison of multiband filterradiometers, and it was aimed at:

- participation in the intercomparison with one's own instrument,
- proper installation and operation of the instruments,
- performing daily inspections,
- getting knowledge on calibration methodology,
- assisting in the data analysis.

The FARIN intercomparison took place at NRPA, Norway, from 16 May to 3 June 2005. There were a large number of institutions and instruments participating in the campaign. Some of the participants stayed at NRPA for helping in the intercomparison. I reached NRPA just before the coretime began, where all instruments measured the global sky radiation. First, I was familiarised with the laboratory equipment, methodology of characterization (measurement of spectral and angular responses in the laboratory) of the filterradiometers. Then I was shown the solar platform used for outdoor measurements and assisted in the spectral response measurements of our NILU UV instrument. I measured the angular response of one instrument myself and also assisted in mounting the instruments on the solar platform. During the coretime, The other STSM applicant and I analysed the data obtained from angular response measurements. We found that the light beam falling on the diffuser was not homogenous enough for the NILU radiometers with big diffuser. Therefore the methodology should to be improved. In the meantime, the failure of monochromator shutter occurred. The shutter got stuck and I repaired it so that the spectral response measurements could be continued. After the coretime finished, the angular responses of IMWM instrument with big diffuser (NILU UV no. 990319) were measured in laboratory, both with an inhomogenous and homogenous (within 5% accuracy) light beams. The azimuthally averaged cosine responses and their standard deviations for the inhomogenous light beam (left column) and homogenous one (right column) are shown in figure 1.

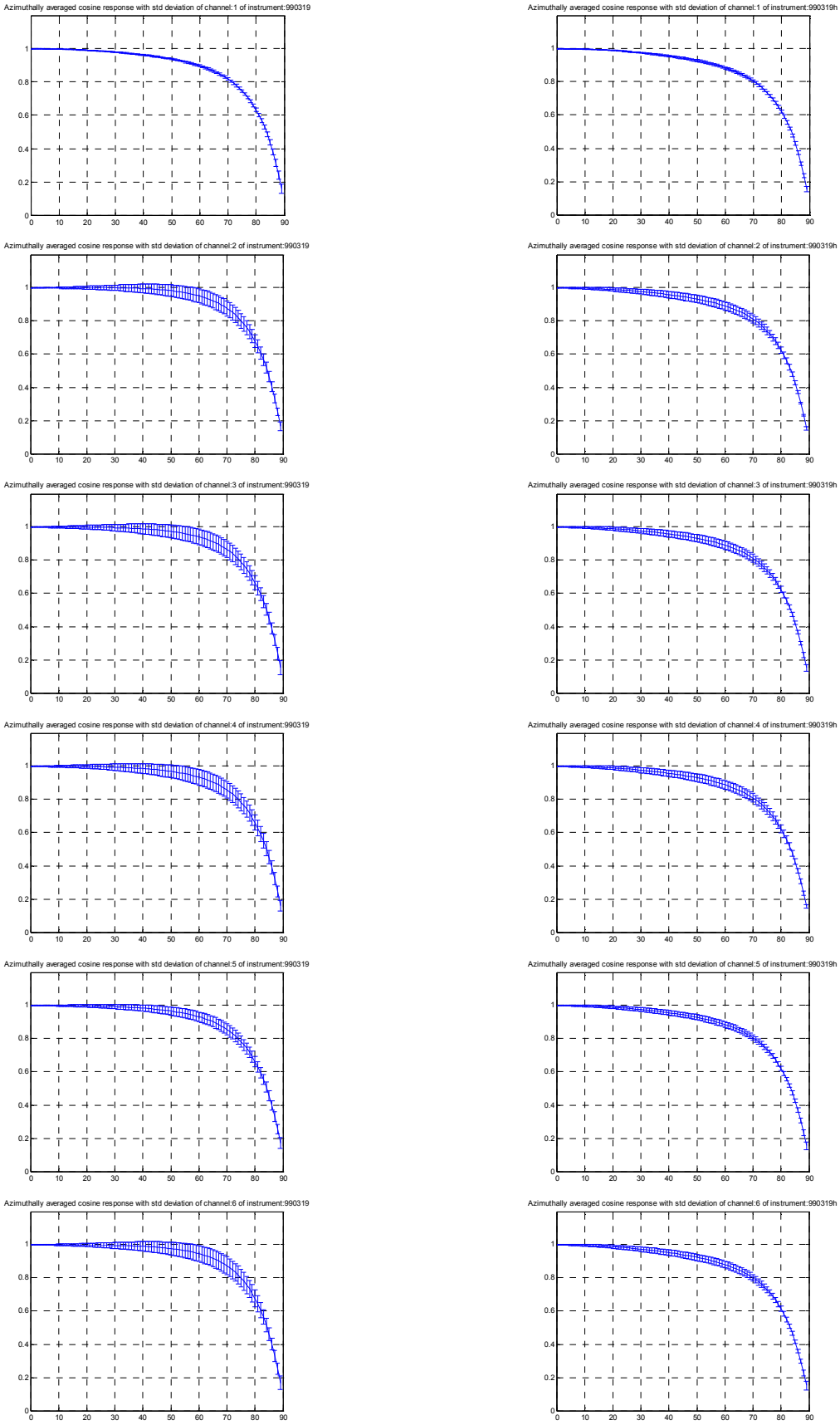

Figure 1. The azimuthally averaged cosine response and its standard deviation for each channel of NILU instrument no.990319, for the inhomogenous (left) and homogenous (right) light beam.

The results show that for channels with excentrically mounted detectors their cosine responses are overestimated and their standard deviations are significantly bigger for inhomogenous beam than for homogenous one. Therefore assurance of the light homogeneity during the cosine response measurements is so important, especially for the NILU radiometers with big diffuser.

During my stay, I got knowledge on the laboratory equipment, calibration methodology, and details of the instruments construction (representatives of the instrument manufacturers were also present at the campaign). I helped to improve the methodology of the angular response measurements performed in NRPA laboratory. I repaired the monochromator so that the spectral responses measurements could be continued. The final results of the intercomparison will be published by NRPA.

Grzegorz Zablocki