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SUBMITTED ABSTRACT

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| 0. | Paper Number | 52 |
| | Session Name | 1. Characterization and standardization of environmental measurements - traceability assurance |
| 1. | Title of the paper | Calibration of scatterometers using a reference transmissometer in Korea |

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| 4. | Abstract of the paper |
| | <p>Scatterometers are now widely used in the Korean visibility observation network. While they have many advantages in fabrication, operation and maintenance compared to conventional transmissometers, it is not so trivial to link their observed values to SI-traceable metrological optical range (MOR) because their measurement principles deviate from the definition of MOR. Their observed values commonly show a significant disagreement with each other depending on their types (or manufacturers), weather condition, and MOR range. The Korean visibility observation network is operated by 5 types of scatterometers (Vaisala PWD-22, Biral VPF-730, Biral SWS-200, Belfort 6550, and OSI OWI-430), and we are also troubled from the instrument-dependent disagreement in visibility observation. In order to resolve this, we decided to perform a long-term comparison of the 5 types of scatterometers to a reference transmissometer and investigate their type-dependent deviations from the reference transmissometer. For this purpose, we installed 5 type-representing scatterometers and a reference transmissometer (Vaisala LT31, baseline = 75 m) at Boseong weather observatory. In advance to comparison, the reference transmissometer was calibrated using a set of neutral density filters, whose regular luminous transmittance values had been calibrated, which ranges from 0.2 % to 99.5 %. The comparison was performed by recording MOR data of the 5 scatterometers and the transmissometer at every minute. We identified unreliable dataset based on present weather data and short-term statistics on the MOR data and excluded them from analysis. It is expected that we can present a more detailed information on this comparison and analysis results on type- and weather-dependent deviation of the 5 scatterometers from the reference transmissometer at the conference presentation.</p> |