Polarimetric calibration of weather radar using the sun

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The sun is used for weather radar calibration for a long time. It is used to monitor receiver stability and antenna alignment.

It will be shown, that the unpolarized signals from the sun can be used for verification of the polarimetric properties of a radar system. By correlating the received signal of two polarimetric, orthogonal channels, an antenna pattern can be retrieved. This technique is verified with additional measurements using a dedicated ground-based point source.

Using the advanced polarimetric properties of the POLDIRAD radar near Munich, antenna pattern for different polarization bases can be analyzed. These measured antenna pattern fit well with the theoretical behavior and the point source measurements.