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[ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(1123K\)\]](#) [\[References\]](#)**Polarimetric Calibration of Spaceborne L-band SAR, PALSAR**Toshifumi MORIYAMA¹⁾, Masanobu SHIMADA²⁾, Manabu WATANABE³⁾ and Takeo TADONO²⁾

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Abstract

This paper presents the polarimetric calibration results of the Phased Array type L-band Synthetic Aperture Radar (PALSAR) system installed in the Advanced Land Observing Satellite (ALOS) and discusses the stability of polarimetric calibration parameters during the ALOS calibration phase as well as the influence of Faraday rotation. Data acquired over the Amazon area was used to estimate the polarimetric calibration parameters such as channel imbalance and cross-talk because the Amazon is located in the vicinity of the equator where the effect of Faraday rotation is expected to be small. The Quegan method, which is one of the polarimetric calibration methods that cannot deal with Faraday rotation, was applied to the data. The Amazon data showed that the channel imbalance remained stable during the calibration phase and the cross-talk was very small regardless of the descending path (daytime observation) and the ascending path (nighttime observation). On the other hand, the data acquired over the Tomakomai area, where the effect of Faraday rotation is not expected to be small, was compared with the Amazon data and indicated that there was a correlation between the cross-talk and Faraday rotation. The cross-talk of the Tomakomai is higher than that of the Amazon. Therefore, it is shown that Amazon data is more suitable for estimating the polarimetric calibration parameters of PALSAR than Tomakomai data. The polarimetric calibration parameters derived from the Amazon data showed good calibration accuracy.

Keywords: ALOS, PALSAR, Polarimetric calibration, L-band, Synthetic aperture radar



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