

Polarimetric Temporal Backscattering P-Band SAR Coherence on Tropical Forests: Rainy and Dry Seasons

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To measure with accuracy tropical forest biomass and its temporal change is one of the objectives of the BIOMASS mission, a candidate for the European Space Agency 7th Earth Explorer Mission. The possible retrieval algorithms currently developed for BIOMASS are based on the use of backscatter measurements derived from intensity, polarimetry and interferometry. However, these quantities are subject to evolution with the life cycle and the meteorological conditions at very different time scales, ranging from a few minutes to days, months... with the possibility that their changes may affect the inversion algorithms. A ground experiment has been set up to follow systematically these evolutions over a tropical forest in French Guiana, delivering P band polarimetric, interferometric impulse responses and 2D (range/height) imaging every 15 minutes (Koleček, & Al., IGARSS proceedings, 2012, pages 7597-7600).

In this paper the results of temporal decorrelation are presented in the case of canopy only and full forest during 3 months of rainy season and 2 months of dry season of the year 2012. Their relation with biophysical parameters and meteorological events is analyzed in detail for diurnal cycles, in which possible rain has a very important role, as well as for long term in which similar values are reached for both dry and rainy seasons.