

EVALUATION OF RADARSAT-1 STEREO PAIRS FOR GEOLOGICAL APPLICATIONS IN THE CARAJÁS MINERAL PROVINCE (BRAZIL)

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The parallax necessary for a stereo vision is created when an object is viewed from two different positions. RADARSAT-1 has the ability to collect data of the same area from different beam positions, beam modes and look directions. This paper discusses the concept of SAR stereoscopy and related aspects. Different from the optical stereoscopy, a compromise has to be considered between geometric disparity (parallax) and radiometric similarity (stereo viewability) when dealing with SAR stereoscopy. Some authors still discuss the stereo radar depth perception under specific conditions of terrain relief and stereo configuration. Results from RADARSAT-1 Standard images are presented for the Carajás Mineral Province (Brazilian Amazon) based on the analysis of six stereo pairs collected under distinct positions (S5,S6,S7) and illumination azimuth (78 and 282 degrees). The geological performance of the stereo pairs was evaluated as a function of distinct types of terrain relief/geology (mountainous/Proterozoic sediments, rolling/Archean metasedimentary and metavolcanic sequences, flat/Undifferentiated basement). The results of this research have shown that an effective applicability of the radar stereoscopy is only obtained when aspects of the SAR stereo background and the photointerpreter's experience are considered in the approach.