

# MICROWAVE SCATTERING BEHAVIOUR ANALYSIS OF TYPICAL TARGETS WITH SAR IMAGE

*Xiaofang-Li<sup>1</sup>, Kun Li<sup>2</sup>, Fengli-Zhang<sup>2</sup>, Yun Shao<sup>2</sup>, Qulin-Tan<sup>1</sup>*

<sup>1</sup>Beijing Jiaotong University ,Civil Engineering and Architecture, Microwave Remote Sensing Laboratory , Datun Road, Chaoyang District, Beijing 100101, China

<sup>2</sup>State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing Applications, Chinese Academy of Sciences , Datun Road, Chaoyang District, Beijing 100101, China

## ABSTRACT

SAR image have several advantages compared with optical image, the biggest characteristic of SARs is that they can make up for the lack of remote sensing data in cloudy and rain-fed areas. Currently, the SAR data C, L and X bands are Widely used international, but sufficient knowledge is still lacked toward to S-band. China is about to launch a constellation for disaster reduction and environment monitor (HJ-1 A / B / C), the main task include several cores: take full advantage of satellite remote sensing technology; acquire disaster and environment signal accurately and rapidly; fully grasp the process of happening, development and evolution about nature disaster and environment pollution; provide scientific foundation for government about disaster and environment pollution monitoring and prevention. In order to develop synthesized capability of disaster reduction and prevent the environment we rely on. HJ-1C is one of the S-band synthetic aperture radar satellites. It can provide excellent data source for us to do research about microwave scattering characteristic of land feature. Microwave scattering characteristic of land feature is the physical foundation of microwave remote sensing. Land feature has different imaging character in different parametric of SARs. Currently, Because of lacking the experience of using S-band SARs widespread, this paper work hard to find the back scattering discipline of the land feature among C, L and X bands to predict the correspondence land feature of S-band by a comprehensive analysis of C, L, X bands microwave scattering characteristics of the typical features. At the same time, we can compare with the data acquired from the actual S-band SARs latter, to find out the distinction and analysis too. In addition, we could use Multi-polarization data as possible as we can to analysis different polarization response in different bands. Only when we are well aware of the land feature of S-band, we could substantial the classification and identification using the band and polarization information. At last, compare the effect of S-band and C, L, X-bands on the identification and classification of features, establish the typical features' microwave scattering logo library of S-band. At the same time ground-based scatterometer measurements, as well as models are an

essential element, according to the results of a reasonable algorithm, the model for the S-band microwave scattering features rational analysis, bands commonly used to identify classification characteristic of features will be more perfect.

Our main purpose of this work is to find out all kinds of features to identify the best band and best combination of polarization so that SAR images can be more convenient for the land and resources investigation, disaster detection and environmental monitoring.