

\*\*\* Raw signal simulation of synthetic aperture radar altimeter over complex terrain surfaces  
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Authors: Zhanyu Zhu, Hai Zhang, and Feng Xu. Key Lab for Information Science of Electromagnetic Waves (MoE), Fudan University.

Corresponding author: Feng Xu

Contact Information:

fengxu@fudan.edu.cn

Key Lab for Information Science of Electromagnetic Waves (MoE), Fudan University, Shanghai 200433, China.

\*\*\*General Introduction\*\*\*

This dataset contains data collected during experiments of raw signal simulation of SRAL over complex terrain surfaces at EMW Lab of Fudan University. It is being made public both to act as supplementary data for publications and the PhD thesis of Zhanyu Zhu's and in order for other researchers to use this data in their own work.

The data in this data set was collected in the Key Lab for Information Science of Electromagnetic Waves (MoE), Fudan University.

\*\*\*Purpose of the test campaign\*\*\*

The purpose of these experiments was to verify the raw signal simulation of SRAL over complex terrain surfaces proposed in our work with the Sentinel-3 measured data.

\*\*\*Description of the data in this data set\*\*\*

The data included in this data set has been organised per specimen. The .xml file is the standard Extensible Markup Language. The .nc file is NetCDF(network Common Data Form) network Common Data format, which was developed by Unidata program scientist of University Corporation for Atmospheric Research (UCAR) for the characteristics of scientific Data. The .tif file follows Tag Image File Format.

In the case of ice surface simulation, the SRAL parameters and Sentinel-3 measured echo waveforms are derived from the file 'S3Adata/Ice/enhanced\_measurement.nc'.

In the case of mountain surface simulation, the SRAL parameters and Sentinel-3 measured echo waveforms are derived from the file 'S3Adata/Chengdu/enhanced\_measurement.nc'.

In the case of urban surface simulation, the SRAL parameters and Sentinel-3 measured echo waveforms are derived from the file 'S3Adata/Santa\_Ana/enhanced\_measurement.nc'.

Thanks to the European Space Agency (ESA), more Sentinel-3 measured data can be

downloaded from <https://scihub.copernicus.eu/dhus/#/home> with public permission.

The "tmap.tif" file contains the terrain classification results in our work. The 30m resolution DEM data used in the simulation is acquired from the JAXA earth observation satellite ALOS which can be downloaded in the internet with public permission.

The DEM file and the classification results are combined used to simulation the SRAL raw signal with the Sentinel-3 operation parameters and the comparison between the simulation raw signal and the measured raw signal were taken and listed in our paper "Raw signal simulation of synthetic aperture radar altimeter over complex terrain surfaces".