

Geospatial awareness of a hurricane-induced flood by means of ALOS-2

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We need prompt providing of a flood map when a large-scale flood is caused by a hurricane. In this study, we propose a new flood-mapping method by means of a space-borne L-band synthetic aperture radar, PALSAR-2. Images of mean and standard deviation are calculated from multiple pre-flood PALSAR-2 backscatter amplitude images. Difference between a post-flood image and a mean pre-flood image divided by pre-flood standard deviation is defined as normalized backscatter amplitude difference index (NoBADi), which is applied on a west coast of Florida, the U.S. affected by Hurricane Irma on Sep. 2017. Validation by means of high-resolution optical satellite image suggested that NoBADi has shown appropriate area of flooding parts. This method also quantifies the frequency/rarity of flooding, which has a possibility of use in potentially low float lands such as a part of Florida.

Keywords: SAR, Flood, NoBADi