



## **The AXIS airborne SAR system: first flight-test results**

Antonio Natale (1), Carmen Esposito (1), Paolo Berardino (1), Gianfranco Palmese (2), Riccardo Lanari (1), Stefano Perna (1,3)

(1) IREA - CNR, NAPOLI, Italy (natale.a@irea.cnr.it), (2) Elettra Microwave S.r.l., Italy, (3) DI, Università degli Studi "Parthenope", Italy

Synthetic Aperture Radar (SAR) is a powerful and well-established tool for Earth observation, due to its all-weather, night & day and high resolution imaging capabilities [1]. In last decades, SAR data have been indeed successfully exploited in many fields of study and applications, including environmental and infrastructures monitoring [2]. In particular, SAR systems mounted onboard smart and flexible platforms, such as airplanes, helicopters, and drones, are gaining increasing interest among the remote sensing community due to their operational flexibility which allows timely monitoring of the area of interest and very short revisit times [2].

In this work, we show the imaging capabilities of the Italian Airborne X-Band Interferometric SAR (AXIS) system, based on the Frequency Modulated Continuous Wave (FMCW) technology. The system has been developed in the frame of a cooperation between a public research institute (IREA-CNR) and a private company (Elettra Microwave S.r.l.) with the aim of making operative a complete infrastructure (which includes the SAR system, the airplane and the data processing chain) to monitor damages induced in urban areas by natural phenomena.

In particular, the contribution is aimed at showing the first results relevant to the dataset collected by the system during the flight-test campaign carried out in April 2018, over the Salerno area, Italy.

[1] G.Franceschetti, and R.Lanari, Synthetic Aperture Radar Processing, CRC PRESS, New York, 1999.

[2] A. Moreira, P. Prats-Iraola, M. Younis, G. Krieger, I. Hajnsek, K. P. Papathanassiou, "A tutorial on Synthetic Aperture Radar", IEEE Geoscience and Remote Sensing Magazine, pp. 6-43, March 2013.