



## **On the progress of the nano-satellite SAR based mission TOPMEX-9 and specification of potential applications advancing the Earth Observation Programme of the Mexican Space Agency.**

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TOPMEX-9 is put forward in this paper, advancing a mission for the Earth Observation Programme of the Mexican Space Agency, a distributed Micro-SAR concept within a Master and Slaves flight formation. International collaboration is essential and a start project is being developed between the Microwaves and Radar Institute of the German Aerospace Centre (DLR), the Mexican Space Agency (AEM). While the basic idea is making use of the transmitting component of a SAR on a microsatellite and the receiving component on a nano-satellites cluster, only a brief illustration is given here. The objective of this work is mainly to present some SAR characteristics and the most important potential applications. Special attention is given to the capabilities and limitations of SAR systems to properly detect ocean surface waves. We do take into account the nonlinear nature of the ocean surface imaging processes, mainly based upon the SAR and the waves characteristics, and certainly considering the K band SAR being proposed. Some other ocean applications are also overview, regarding coastal erosion-deposition estimation, as well as ship detection and monitoring. International co-operation is also addressed as an essential component of TOPMEX-9 Mission.

This work represents a DOT Project (CONACYT-SRE 186144) contribution.