

Contribution for GASS 2014 (session CF02)

**'Overview of Modern Multi-parameter Methods of Radar Remote Sensing  
in Context of Disaster Management'**

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Recent advances in Radar Remote Sensing cover an impressive list of developments, such as: **waveform diversity, polarization diversity, frequency diversity, input-output channel diversity (MIMO), beam-forming and beam tailoring in send-and-receive modes!**

As these new multi-parameter methods continue to become a part of Radar Remote Sensing, one might ask how these technological advancements will translate into benefits for the end user. In view of the ever unfolding technical progression, this question still defies a clear answer. Yet, one may ask how nuances will reflect on the information content and its retrieval afforded via the new multi-parameter radar methods. The aim of this paper is to reflect on this question, particularly in the context of radar remote sensing applications in disaster management. In doing so, the role of remote sensing radar in Earth observation will be highlighted as well.

In this paper, we shall explore the aforementioned current state-of-the-art **developments** in order to critically assess the present-day status with respect to the following questions:

1. How can we systematically describe or understand the currently evolving scientific and technological radar innovations in regard of radar performance for obtaining high-resolution and high-information-level target-images?
2. Where does the performance of remote sensing radars today stand in relation to the physics of observation, particularly in establishing how much performance is yet to be extracted from the confines of the physically and technologically feasible.
3. How does the technology of Radar Remote Sensing match with the needs of the end-user community, i.e. how the radar based information-mining system in place today can be assessed for its aptness in remote sensing?

The issues listed above should help to identify where the state-of-the-art today stands and in which areas progress needs to be made or can be made.