## Foreword to the Special Issue on Advances in SAR and Radar Technology

**T** HIS SPECIAL Issue presents 25 papers to exhibit the latest advances in SAR and radar technology. It basically follows the Asia-Pacific Conference on Synthetic Aperture Radar (APSAR) 2013, an International Conference devoted to SAR and radar technology, held in Tsukuba, Japan, on September 23–27, 2013 [1]. There 163 papers were presented to over 240 attendees with worldwide 17 exhibiting companies. It was a very exciting activity [2] held by IEEE GRSS All Japan Chapter [3] and the Institute of Electronics, Information, and Communication Engineers (IEICE) Electronics Society.

APSAR covers a wide variety of SAR and radar related topics including SAR applications, analysis techniques, signal processing, and SAR system design and concepts. In APSAR 2013, "Disaster Monitoring" was the main theme, providing the attendees with an opportunity to think about how each of us can contribute through SAR technology to overcome the hardships after disasters.

To further promote research activities in this and relevant areas, IEEE JSTARS planed to publish this Special Issue on Advances in SAR and Radar Technology. The scope of this Special Issue is then identical with that of APSAR 2013 Tsukuba, which ranged over the six topical fields, namely:

- A. Disaster Monitoring: Contribution of SAR remote sensing on the Great East Japan Earthquake, ALOS2 projects for prediction, mitigation, and restoration, SAR applications for various disasters, and present and future SAR systems and missions in Asia-Pacific region;
- B. *SAR Applications:* Land use and land cover, soil and vegetation applications, atmosphere and ocean observation, snow and ice, and coastal and wetlands;
- C. *Analysis Techniques:* Electromagnetic modeling, InSAR and high-resolution SAR, POL and POLInSAR, and Bistatic SAR;
- D. SAR Signal Processing: High-resolution SAR processing, SAR/GMTI/STAP and change detection, image filtering, correction and enhancement, and SAR/ISAR signal processing;
- E. *SAR Systems and Sensors:* Spaceborne and airborne SAR systems and missions, advanced and innovative SAR concepts and modes, ground-based systems, and calibration;
- F. *Radar Technology:* Radar components and subsystems, antenna technology and adaptive arrays, UWB, GPR, bio-medical imaging radar systems, and automotive radar.



Fig. 1. Words found in the titles of the special issue papers (created with Worditout.com).



Fig. 2. Fields of the special issue papers.

Fig. 1 represents the word distribution found in the titles of the special issue papers by following the idea in another special issue foreword [4]. Fig. 2 shows the fields of the papers when even fractional counts are applied if a paper ranges over multiple fields. Since disaster monitoring sessions have been held for brainstorming discussion in the conference, the amount of publications in this issue seems not so large. But it is also true that not a few papers categorized into other fields lead strongly to mitigation of disasters after natural or artificial hazards. Application paper amount is large on a par with those on analysis techniques or signal processing.

The biennial APSAR conference series grows steadily. The next one is going to be held in Singapore in September 2015. Enjoy this Special Issue by thinking forward to the future APSAR conferences. The Guest Editors thank all the authors, reviewers, and the members of the conference organizing committee.

Color versions of one or more of the figures in this paper are available online at http://ieeexplore.ieee.org.

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Dr. Rosen was a Team Leader of the Shuttle Radar Topography Mission, for which he received NASA's Exceptional Service Medal (2001) and NASA's Exceptional Achievement Medal (2002).



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Dr. Zing has been an active member of the CEOS Working Group on Calibration and Validation, SAR Subgroup, since 1991, and he has been chairing this group, since 2011. He was the General Chairman of the European SAR Conference (EUSAR) 2014. He was the recipient of the DLR Science Award in 1991 and the EUSAR Best Paper Award in 2008. In 2012, he and his colleagues were presented with the IEEE W.R.G. Baker Prize Paper Award and have been nominated for the "Deutscher Zukunftspreis"—Federal President's Prize for Technology and Innovation.