

# Small Satellite Missions for Earth Observation

New Developments and Trends

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# Preface

This book was compiled from contributions given at the 7th IAA Symposium on Small Satellites for Earth Observation, May 4–8, 2009, Berlin (IAA – International Academy of Astronautics). From the 15 sessions for oral presentations and two poster sessions, 52 contributions were selected which are representative for the new developments and trends in the area of small satellites for Earth observation. They reflect the potentials of a diversity of missions and related technologies. This may be based on national projects or international co-operations, single satellites of constellations, pico-, nano-, micro- or mini-satellites, developed by companies, research institutions or agencies. The main focus is on new missions to monitor our Earth's resources (Part I), and the environment in which our Earth is embedded (Part II). Part III deals with distributed space systems, a unique feature of small satellites and in most cases impractical to do with large satellites. Here we concentrate on constellations of satellites with focus on future missions relying on co-operating satellites. For all the new developments and projects we need well educated specialists coming from the universities. Many universities included already the development and implementation of small satellites in their curriculum. The university satellites chapter (Part IV) shows the high quality which is already reached by some of the universities worldwide.

To achieve high performance Earth observation mission on the basis of small satellites, instruments and technologies are essential for both high performance and miniaturization. Part V gives insight into new developments on these sectors. The last two parts (Parts VI and VII) deal with subjects, necessary to make use of the data coming from the satellite systems: attitude and position. But high quality attitude control and navigation systems are essential not only for geocoding of high resolution spatial and spectral data. They are also of very high importance when performing formation flying missions as addressed in Part III.

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