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Satellite Data Compression, Communication, and Processing IV

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Editors

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Introduction

The papers in this volume are the manuscripts behind presentations made at SPIE's annual meeting, SPIE Optics + Photonics 2008, held 10-14 August 2008 in San Diego, California, USA. These papers and their presentations constitute SPIE conference 7084 on Satellite Data Compression, Communication, and Processing IV, held 10-11 August 2008. This is the fourth year of this essential, dedicated Earth science satellite remote sensing data compression and processing conference.

The conference brought together researchers, engineers, and administrators involved in observation and analysis of the Earth's environmental data from satellites. Participants included members of the civilian Earth and space community from around the globe. Presentations and papers were submitted from participants from Canada, China, Finland, France, Germany, Singapore, South Korea, Spain, Taiwan, the United Kingdom, and the United States of America.

The conference at its inception in 2005 had been dealing with technical issues associated with emerging environmental satellite sensor data volume. Data compression is an essential tool to manage data volume, which must share the limited radio frequency bandwidth as it is transmitted from the satellite. Data compression also has an important role in distribution and archiving. Because the requirements on the satellite data end use and the characteristics of the data vary, a wide range of different data compression schemes are considered. For some applications such as transmission over a satellite communication system, which by its nature is noisy, error correction is essential; for other applications, the algorithm throughput or compression rate are more important. This has driven an effort to evaluate and develop open algorithms that can be shared globally.

A lesson that can be drawn from the diverse presentations at this conference is that the heterogeneous nature of satellite sensor data characteristics (statistics) and the variety of end uses (requirements) has led to the realization that available generic compression algorithms are insufficient. By collecting a wide range of novel and creative approaches to satellite data compression, this volume of the associated conference is aimed at advocating a broad and global dialog that allows us to find or develop better tools for this new challenge.

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