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The Fundamental Framework of Remote Sensing Validation System

X-G. Jiang (1), X-H. Xi (1), M-J. Wu (1,2), and Z-L. Li (3)

(1) Academy of Opto-Electronics, CAS, Beijing, China (xgjiang@aoe.ac.cn), (2) Graduate School of Chinese Academy of Sciences, Beijing, China, (3) Institute of Geographic Sciences and Natural Resources Research, CAS, Beijing , China

Remote sensing is a very complicated course. It is influenced by many factors, such as speciality of remote sensing sensor, radiant transmission characteristic of atmosphere, work environment of remote sensing platform, data transmission, data reception, data processing, and property of observed object etc. Whether the received data is consistent with the design specifications? Can the data meet the demands of remote sensing applications? How about the accuracy of the data products, retrieval products and application products of remote sensing? It is essential to carry out the validation to assess the data quality and application potential. Validation is effective approach to valuate remote sensing products. It is the significant link between remote sensing data and information. Research on remote sensing validation is very important for sensor development, data quality analysis and control. This paper focuses on the study of remote sensing validation and validation system. Different from the previous work done by other researchers, we study the validation from the viewpoint of systematic engineering considering that validation is involved with many aspects as talked about. Validation is not just a single and simple course. It is complicated system. Validation system is the important part of whole earth observation system.
First of all, in this paper the category of remote sensing validation is defined. Remote sensing validation includes not only the data products validation, but also the retrieval products validation and application products validation. Second, the new concept, remote sensing validation system, is proposed. Then, the general framework, software structure and functions of validation system are studied and put forward. The validation system is composed of validation field module, data acquirement module, data processing module, data storage and management module, data scaling module, and remote sensing products validation module. And finally the exterior and interior interfaces are presented. The main functions of remote sensing validation system are the synchronous data (synchronous field measurement and remote sensing data) acquirement, synchronous data processing, data storage and management, scaling of field measurement data, remote sensing data and products, accuracy validation and analysis of remote sensing data, remote sensing retrieval products and remote sensing application products.
Key words: remote sensing; scaling; validation system; framework