

ICC-BANYOLES 2008 CAMPAIGN IN THE FRAMEWORK OF EUROSDR RADIOMETRY PROJECT. PROJECT DESCRIPTION AND PRELIMINARY RESULTS

Roman Arbiol (roman.arbiol@icc.cat), Lucas Martínez (Lucas.Martinez@icc.cat)
Institut Cartogràfic de Catalunya
Parc de Montjuïc s/n
08038 Barcelona

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Abstract:

In 2008 the European Spatial Data Research (EuroSDR) organisation started a new collaborative applied research project focused on Radiometric Performance of Digital Cameras. The project has these main objectives:

- a) Improve knowledge on radiometric aspects of digital photogrammetric cameras.
- b) Review existing methods and procedures for radiometric image improvements.
- c) Compare and share operative solutions through the comparison of these techniques on the same test dataset.
- d) Analyse the benefit of radiometric calibration in order to open new applications (classification).

The Institut Cartogràfic de Catalunya (ICC) leads this project in collaboration with other cartographic institutions, universities and research centres in Europe. In order to share experiences with different institutions working on common and well known data sets different flight campaigns have been designed in different European areas. ICC contribution has been the Banyoles 2008 campaign. The main part of this campaign performed on July 15th 2008 has been the simultaneous acquisition of Z/I Digital Mapping Camera (DMC) and Compact Airborne Spectrographic Imager (CASI) at different orientations and flight altitudes. The flight campaign has been complemented with the measurements of different complementary sensors obtaining data of the atmosphere and the incident radiometry. All this images and complementary information will be part of a complete data set to be distributed to the institutions participating in the EuroSDR activities.

The planned contributions of ICC to these activities include:

- i) Radiometric calibration of a DMC.
- ii) Atmospheric correction of CASI and DMC imagery by using aerosol and water vapour contents, derived by an inversion method and subsequent validation with radiometric targets and in-field atmospheric measurements.
- iii) Colorimetric calibration of sensor towards CIE standard colour space and validation with radiometric targets.
- iv) Resolution studies by means of Siemens stars and edge targets. Study of the relationship between atmosphere state and resolution and comparison with computer radiative transfer simulations.

This communication is an overview of the Banyoles 2008 campaign, the measurements and a description of the airborne imagery and ground-truth data collected. A description of the first results obtained will be also presented.