'Photogrammetric Week '97' D. Fritsch & D. Hobbie, Eds., Wichmann Verlag, Heidelberg, 1997.

Digital Photogrammetry within the MOMS-2P/PRIRODA Mission

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ABSTRACT

The PRIRODA Earth Observation Module is docked to the Russian Space Station MIR. PRIRODA carries many different sensors including the German *MOMS-2P* (*M*odular *O*ptoelectronic *M*ultispectral *S*canner*2* on *P*RIRODA). MOMS-2P combines a high resolution three-channel along-track stereo module with a four-channel multi-spectral unit. GPS and INS data are acquired by a high precision navigation package MOMSNAV. A large number of pilot projects related to agriculture, ecology, geology, mapping and vegetation shall be carried out.
The development of the digital MOMS sensor was initiated by a science team. DARA (German Space Agency) contracted three scientific centers to support potential users of MOMS-2P. They are: The mission center at DLR (German Aerospace Research Establishment), the center for coordination of topographical data evaluation at the Institute for Photogrammetry (ifp) at University Stuttgart and the center for coordination of thematic data evaluation at GFZ (Geo-Research Center) in Potsdam.
At ifp the work of the photogrammetric group is coordinated. The main task is the photogrammetric topographical evaluation of the MOMS-2P data. Results of data processing are the parameters of interior and exterior orientation of the images, digital terrain models and digital ortho images. Image orientation parameters result from a simultaneous adjustment of image, position, attitude, and ground control data. Digital terrain models are derived from the two-or threefold stereo imagery of MOMS-2P. Ortho images can be calculated from the high-resolution nadir looking channel, the two other stereo channels or the multi-spectral channels.
The photogrammetric group of the science team consists of five Institutes at different Universities in Germany. The responsibilities of the Institutes are:

University of the Federal Armed Forces Munich (Co-Investigator Egon Dorrer)

- Analytical versus digital evaluation of MOMS-2P imagery

Technical University Munich (Co-Investigator Heinrich Ebner)

- Reconstruction of image orientation and determination of ground point coordinates for strips and blocks of MOMS-2P imagery
- Update of ATKIS (Official Topographic Cartographic Information System) road data based on semi-automatic image analysis

University Stuttgart (Principal-Investigator Dieter Fritsch)

- Reconstruction of MOMS-2P position and attitude from GPS/INS integration
- Automatic generation of digital terrain models

University Hannover (Co-Investigator Gottfried Konecny)

- Geometric accuracy and information content of MOMS-2P imagery for cartographic applications
- Automatic update of ATKIS water and forestry data

University Bonn (Co-Investigator Wolfgang Förstner)

- Automatic segmentation of urban areas based on road structures

The determination of MOMS-2P position and attitude data is supported by GFZ and DLR.
An in-flight calibration of the interior orientation of MOMS-2P will be carried out by DLR, Technical University Munich and ICC (Institute of Cartography of Catalonia).
The paper gives a detailed representation of the mentioned tasks and of the results obtained with MOMS-2P data.