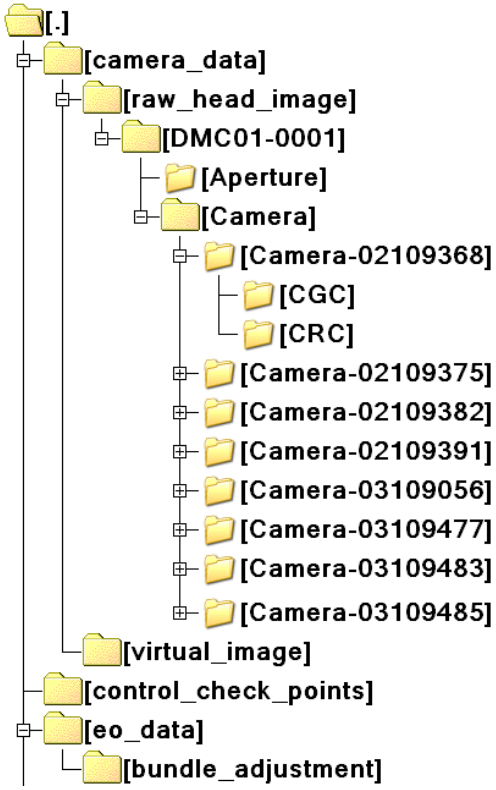
Michael Cramer
Institute for Photogrammetry (ifp)
University of Stuttgart
Geschwister-Scholl-Str. 24D

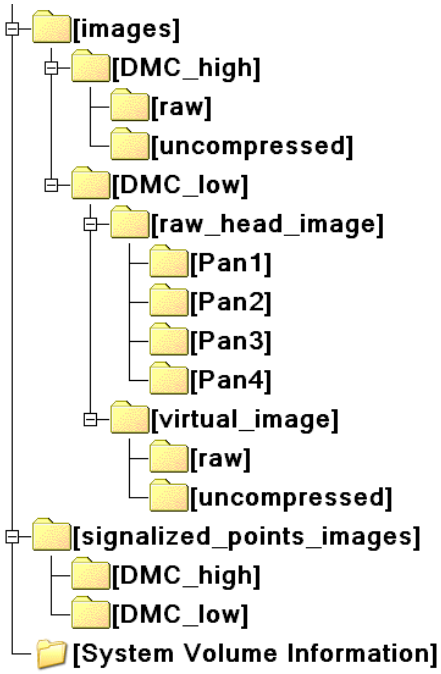
D-70174 Stuttgart/Germany

Stuttgart, March 24, 2006

Phase II – Empirical Data Set Description DMC data, test site Fredrikstad

Data structure on storage disc





Data provider	TerraTec / Norway http://www.terratec.no/
Mission flight	October 10, 2003
Test site	Fredrikstad

Test site

.\control_check_points	Coordinates of ground control points and check points. due to changing visibility conditions given separately for high and low altitude flight Check point coordinates are only given with 1m accuracy level

Fredrikstad - Norway

Maintenance	University of Aas
Test site extensions	5 km x 6.5 km main flight direction from north-east to south-west
Control / check points	51 signalized object points (check points ChP and control points GCP) available not all of them visible in all images See Figure 1 for high altitude flight (21 GCP, 20 ChP) and Figure 2 for low altitude flight (23 GCP, 21 ChP)
Reference frame	UTM projection frame WGS84 ellipsoid, ellipsoidal heights

.\signalized_points_images	point measurement sketches generated from original DMC images, for each check/control point one sketch is provided due to changing visibility conditions (dependent on flying height) given separately for
\DMC_high	high and
\DMC_low	low altitude flight

Exterior orientation data

.\eo_data\Bundle adjustment	Results from a priori PATB bundle adjustment, to be used as *approximate* EO values for fast and reliable image mensuration process Please note the additional remarks on definition of image coordinate system

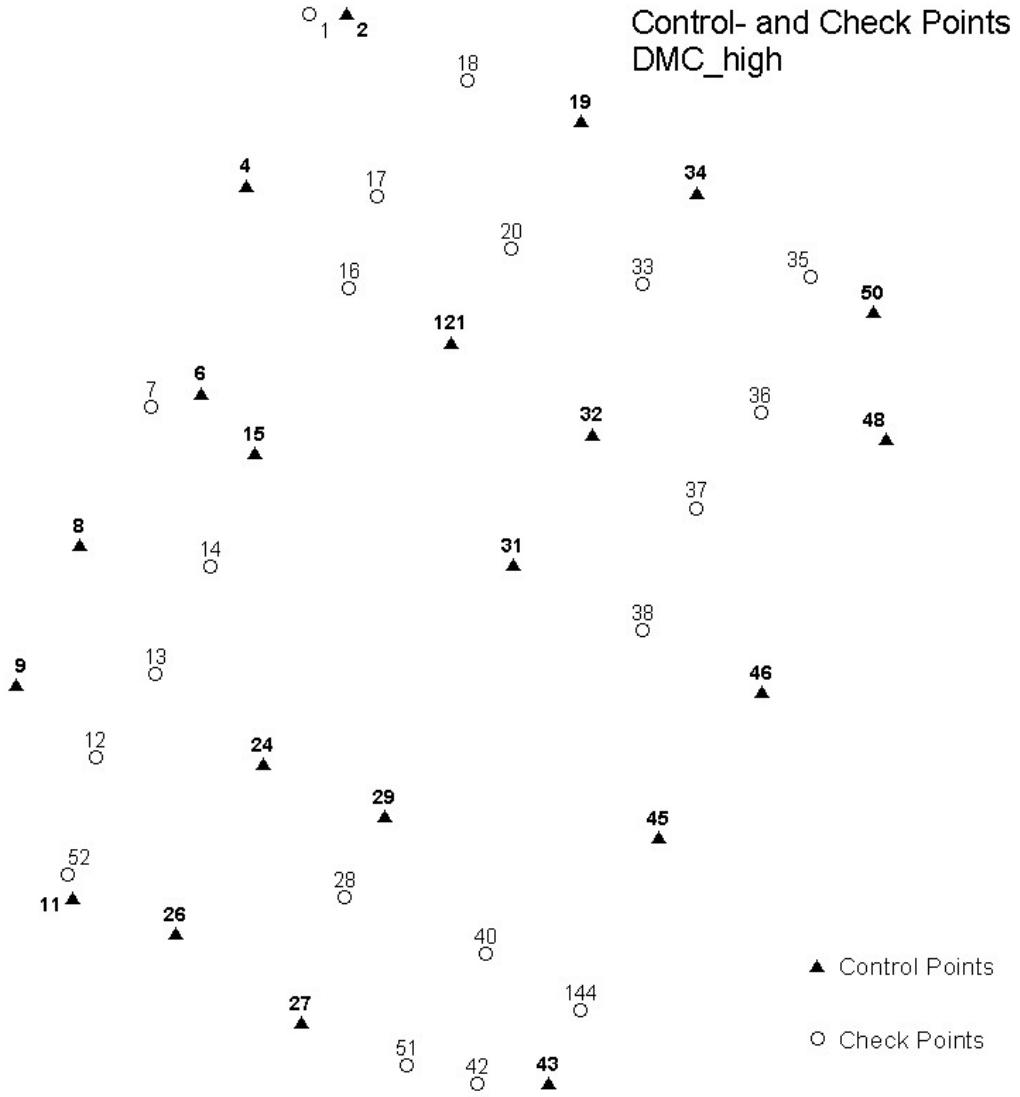


Figure 1, Distribution of control and check point information (DMC high altitude flight)

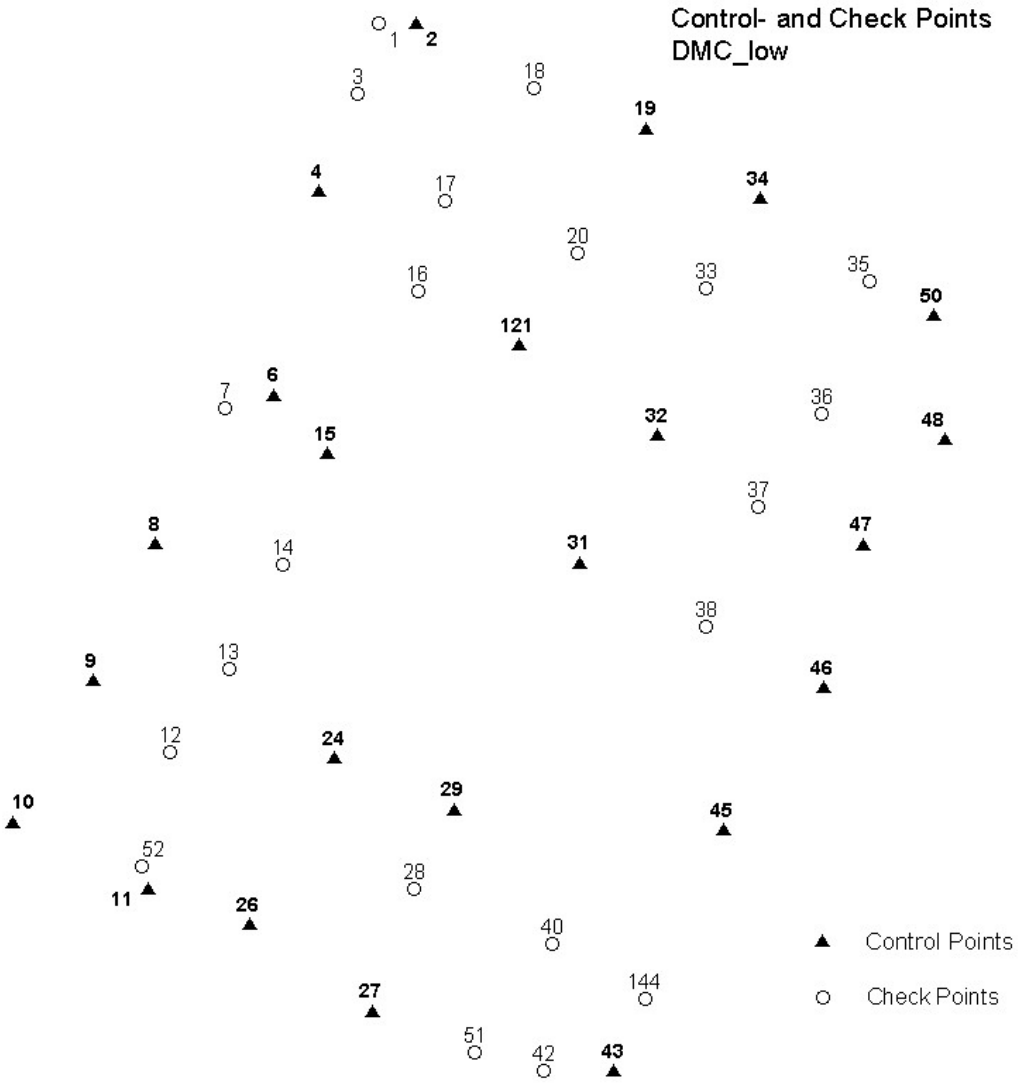


Figure 2, Distribution of control and check point information (DMC low altitude flight)

Camera Data / interior orientation

.\camera_data\virtual_image	Camera data file conformal to Intergraph project
.\camera_data\raw_head_image	within this subdirectories complex information is given for the individual camera head calibration. This is only of concern if you deal with the raw single head imagery. Most of the files are binary and only necessary for the appropriate Intergraph software

\DMC01-0001\Camera\Camera-xxxxxxxx
Information related to the individual heads PAN1, PAN2, PAN3, PAN4, MS1, MS2, MS3, MS4, including camera head specific calibration protocol (PDF document)

\CRC radiometric calibration data, related to individual camera head

\CGC geometric calibration data, related to individual camera head

Image data

Flight configuration

DMC-low (Figure 3)

flying height 950m, GSD 0.10m, 5 long strips (lines #1 - #5), no cross lines, approx. 60% forward lap, 30% side lap, 115 images

DMC-high (Figure 4)

flying height 1800m, GSD 0.18m, 3 long strips (lines #6 - #8), no cross lines, approx. 60% forward lap, 30% side lap, 34 images

.\images\DMC_high PAN image material of high altitude flight

\raw DMC virtual, high resolution, large format images in Intergraph proprietary raw file format:
Original: tiled tiff, jpeg compressed, 12 bit/pix, with overviews

\uncompressed virtual large format images in converted file format:
Converted: tiled tiff, uncompressed, 16 bit/pix

.\images\DMC_low PAN image material of low altitude flight

\virtual image virtual, high resolution, large format images

\raw Intergraph proprietary raw file format:
Original: tiled tiff, jpeg compressed, 12 bit/pix, with overviews

\uncompressed converted file format:
Converted: tiled tiff, uncompressed, 16 bit/pix

\raw_head_image single head raw images (*no* Intergraph standard product, so-called DMC intermediate images[1])
Images are given in Intergraph proprietary raw file format:
Original: tiled tiff, 16 bit/pix, with overviews

[1] DMC intermediate images are used during the formation of the DMC virtual images in the PPS post processing software. Please note: DMC intermediate images are geometrically uncorrected. Calibration parameters are provided in the camera calibration protocols. However the algorithms for co-registration and rectification of intermediate images are not published (Email correspondence: Christoph Dörstel, Intergraph, March 20, 2006)

\PAN1	first camera head (“upper left” in virtual DMC image)
\PAN2	second camera head (“upper right” in virtual DMC image)
\PAN3	third camera head (“lower right” in virtual DMC image)
\PAN4	fourth camera head (“lower left” in virtual DMC image)

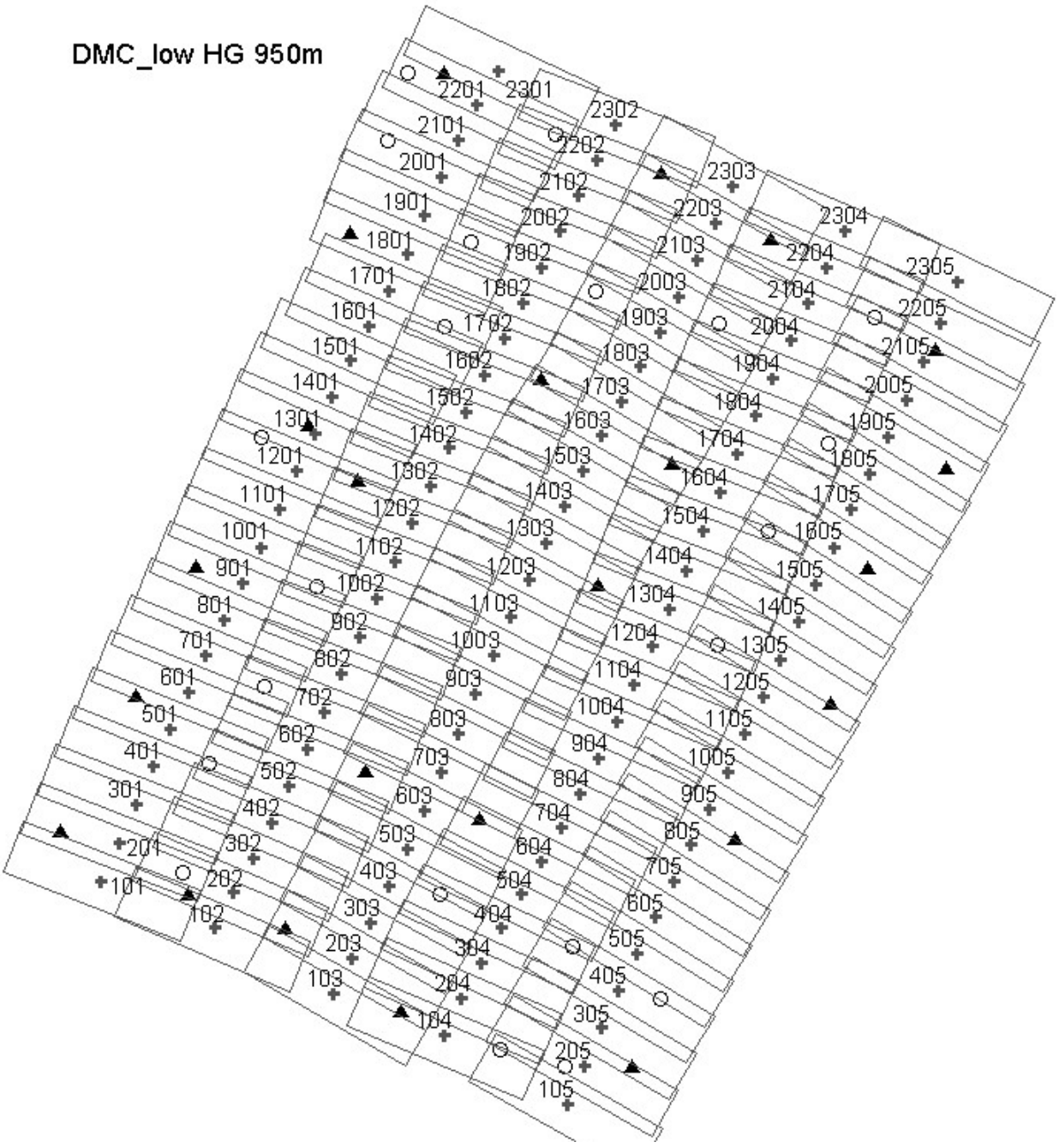


Figure 3, Flight configuration DMC-low altitude mission

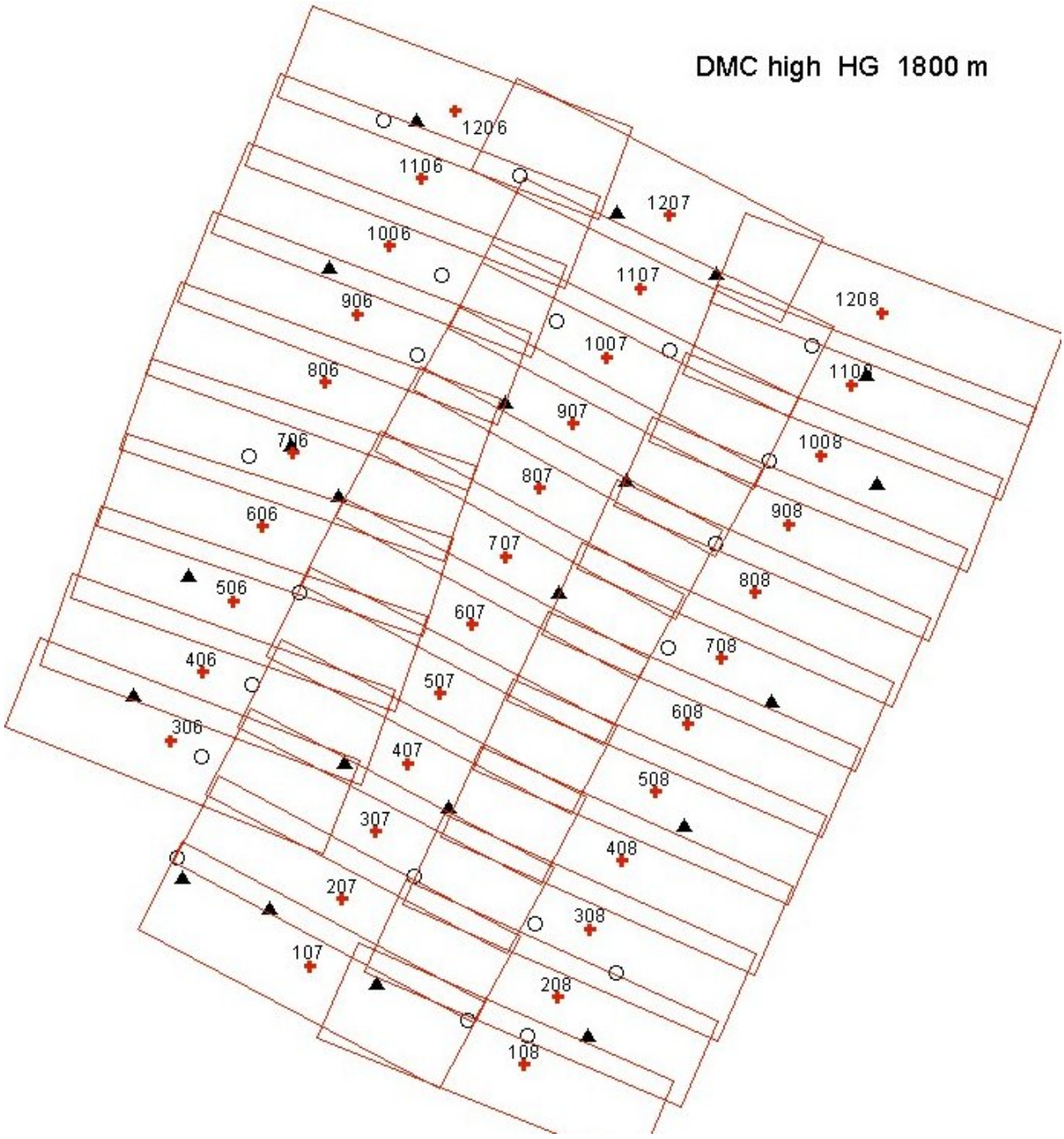


Figure 4, Flight configuration DMC-high altitude mission

Final remarks

The image flight was done at October 10, in the time window between 12:00 – 13:00 h (GPS time). At that time the sun angle is about 25 deg (at 60deg northern latitude).

In some cases the visibility of control / check point signals in image is poor. It is recommended to individually adapt the histogram for the local surrounding of the measured point to increase the performance of image measurement.