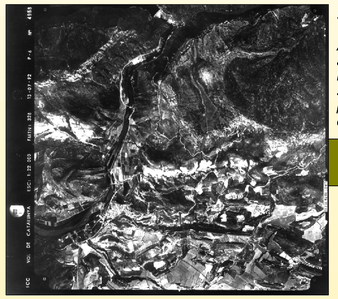
# AERIAL PHOTOGRAPH ORTHORECTIFICATION OF CAMARASA

## Catalunya, North-East Spain


Universiteit Utrecht

Kalijn Peters & Desiree Roerdink

Faculty of Earth Sciences
June 2006

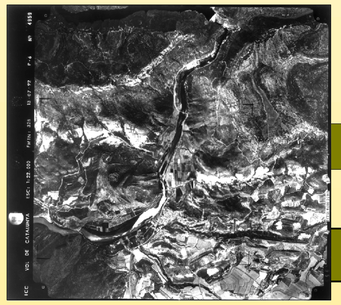



Aerial photograph (left)

*Step 1:*

*Add left and right aerial photograph to block file and subsequently create pyramid layers (for quicker visualisation)*

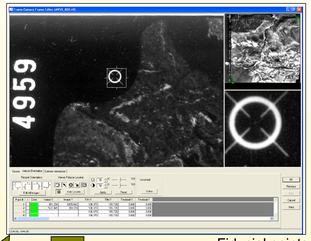
Blockfile with attached images



Aerial photograph (right)

*Step 2:*

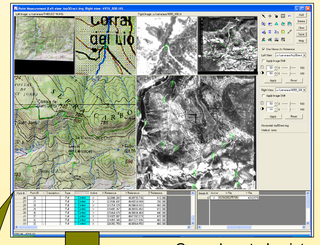
*Define fiducial marks on aerial photographs in order to determine image space coordinates, i.e. calculate interior orientation of the images.*



Fiducial points

*Step 3:*

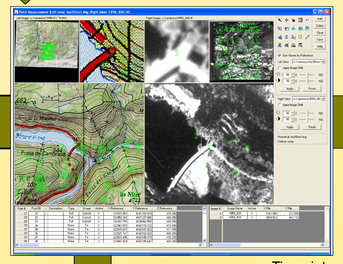
*Select ground control points by identifying similar points on the topographic map and aerial photograph. A total number of 30 GCP's was added to the image in order to define exterior orientation.*



Ground control points

*Step 4:*

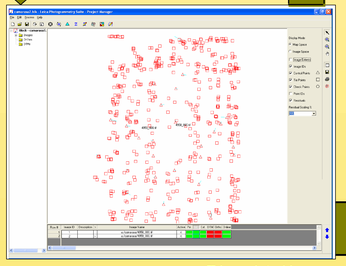
*Add 500 tie points in the overlap area between the two aerial photographs, using the automatic tie point collector.*



Tie points

*Step 5:*

*Interpolate tie points using triangulation method, creating TIN.*



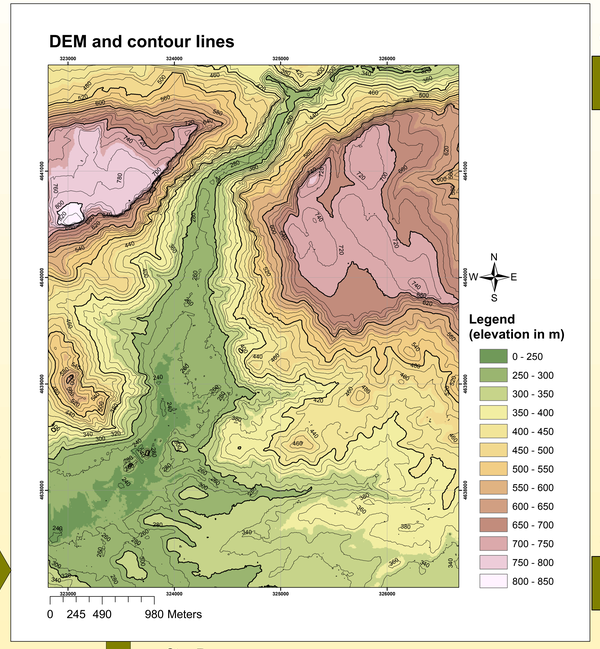
Triangulated images

*Triangulation results:*
*RMS error = 5.6*
*(after correcting anomalous points)*

Topographic map of Camarasa and surroundings

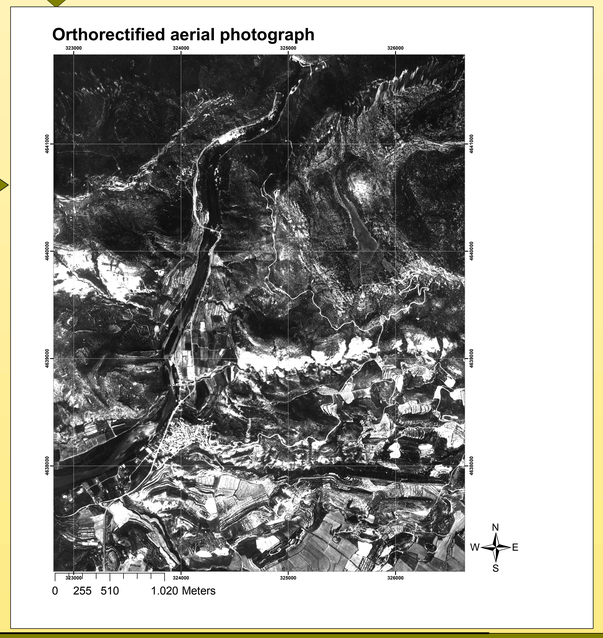
*Step 6:*

*Extract DEM from TIN and calculate contour lines (contour interval of 20 m)*

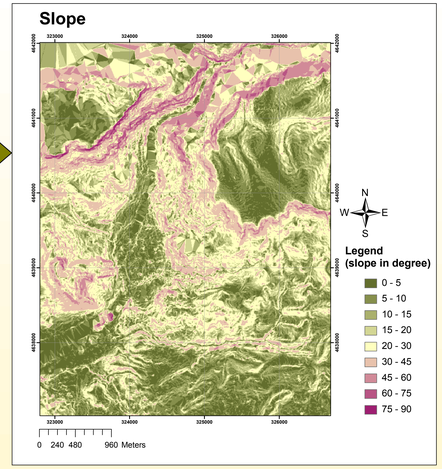



*Step 7:*

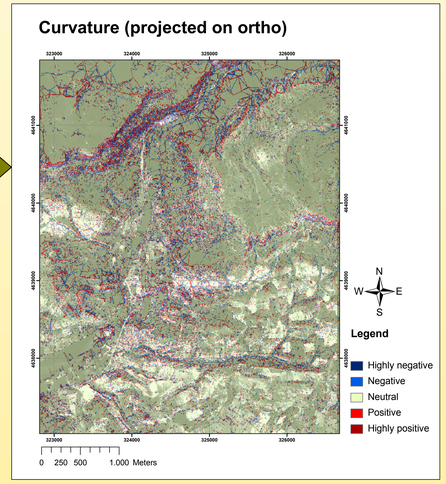
*Create map-accurate orthorectified image from aerial photograph and DEM*

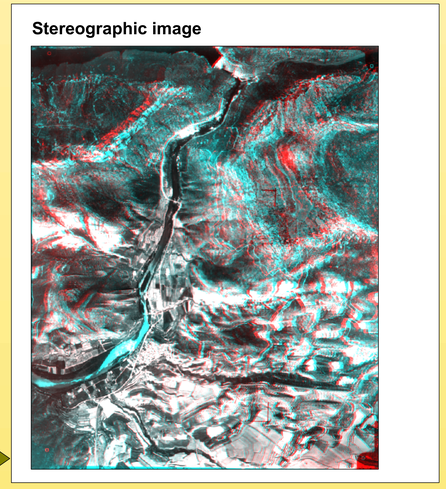



*Calculate slope from DEM*




*Calculate curvature of slopes from DEM*




*Create stereographic image from triangulated images*