Erasmus Intensive Program (2011-2013) on Hydrography and Geomatics

Alain DE WULF\textsuperscript{1}, Timothy NUTTENS\textsuperscript{1}, Cornelis STAL\textsuperscript{1}, Bart DE WIT\textsuperscript{1}, Nicolas SEUBE\textsuperscript{2}, Volker BODER\textsuperscript{3}

\textsuperscript{1}Ghent University, Department of Geography, Belgium
\textsuperscript{2}ENSTA Bretagne, France
\textsuperscript{3}HafenCity Universität Hamburg, Laboratory Marine Geodesy, Germany

Outline

- Introduction - project
- Data acquisition
- Data processing
- Quality control
- Conclusions
Introduction - project

- Erasmus Intensive Program (2011-2013) between 3 partner Universities.
  - ENSTA (Ecole Nationale Superieure des Ingenieurs des Etudes et Techniques d'Armement, BREST, FRANCE) (Prof. N. Seube)
  - UGENT (Ghent University, BELGIUM) (Prof. A. De Wulf)
  - HACU (Hafencity University, HAMBURG, GERMANY) (Prof. V. Boder)

Introduction - project
First cooperation: Hydrographic & topographic survey of Lake Vassivière, Limousin, France (29 Oct – 9 Nov 2011) (ca. 50 students + 12 staff)
Introduction - project

- Cooperation of the 3 partner Universities, with:
  - Boskalis(sponsor)
  - EDF
  - Vassiviere Lake Planning Authority

- Highly detailed bathymetric (IHO-S44, first order) and topographic map

- Lambert 93 coordinate system (France)

- Height reference system IGN69 (France)

Data acquisition

- Bathymetric survey:
  Kongsberg Em3002 Multi beam; Leica HDS 6200 laser scanner
  Tritech seaking towfish side scan sonar
Hydrographic data acquisition: laserscanning, sidescan, multibeam.

- Vassivièrè dam
- Bridge
- Riverbed
- Old road

Topographic data acquisition: GNSS, total station, laserscanning

- Total stations (Leica, Pentax, Robotic Trimble)
- Trimble RTK GPS using TERIA RTK network (France)
- AdNav UHF GPS satellite positioning (local reference)
Data processing

- Validation of navigation and depth data
- Data cleaning

Unclean bottom

Tree line

Topographic outlier

Quality control

- Depth comparison of different surveys of the same area
- Computation of 95 % precision intervals for GPS and total station (< 15 cm)
- Comparison total station – laser scan DEM
- Comparison different GPS systems
Conclusions

- Highly detailed 3D data sets were acquired
- Still to be completed in 2012 – 2013
- Integration of different measurement techniques was useful for quality assessment
- Requirements of IHO S-44, first order were met