

FIG

FIG WORKING WEEK 2017

Helsinki Finland

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Terrestrial Laser Scanning for the Documentation of Heritage Tunnels: An Error Analysis

Chris Page - Pascal Sirguy - Richard Hemi (New-Zealand)

Ghyslain Ferré - Elisabeth Simonetto - Christophe Charlet - Damien Houvet (France)

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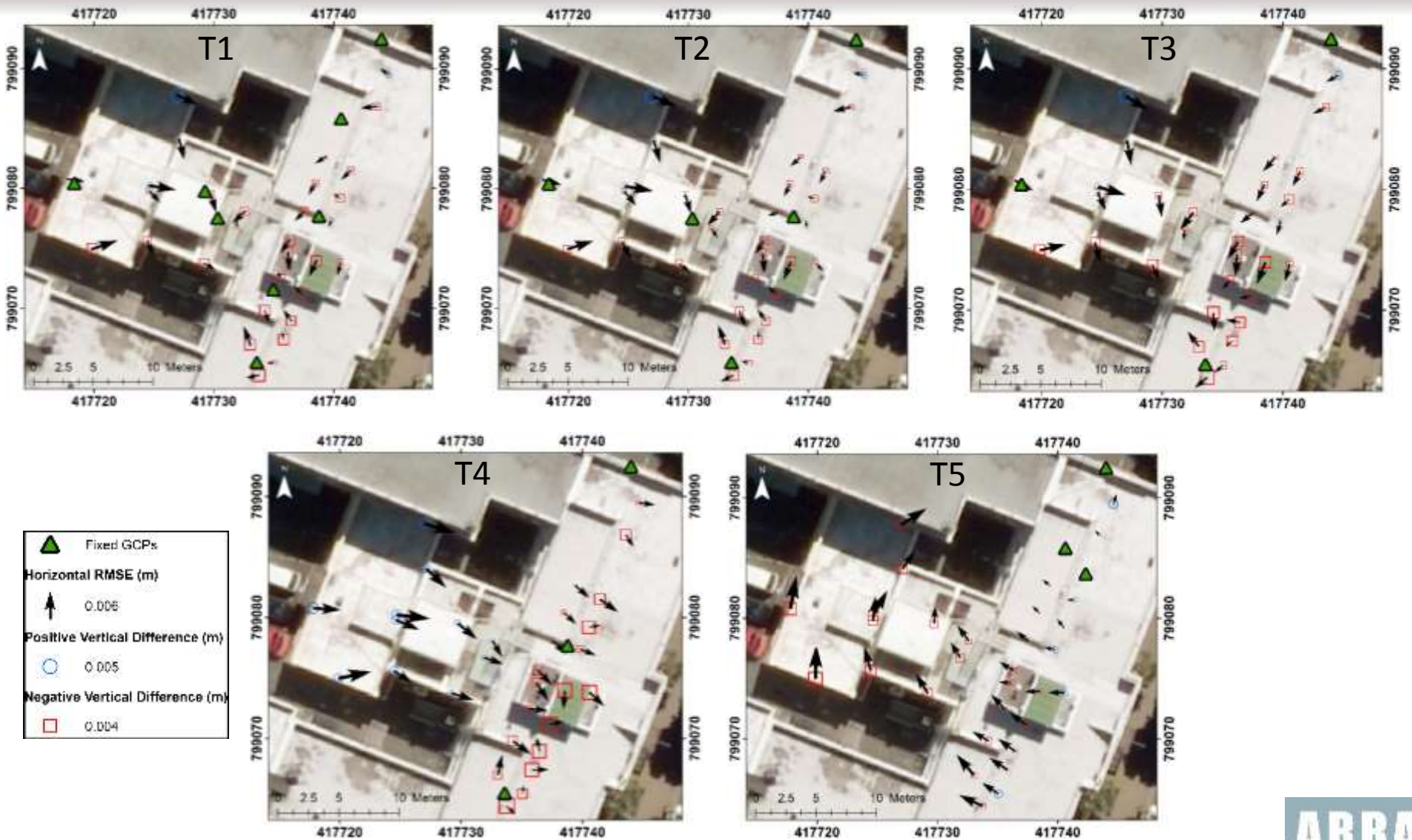
TERRESTRIAL LASER SCANNING FOR THE DOCUMENTATION OF HERITAGE TUNNELS: AN ERROR ANALYSIS



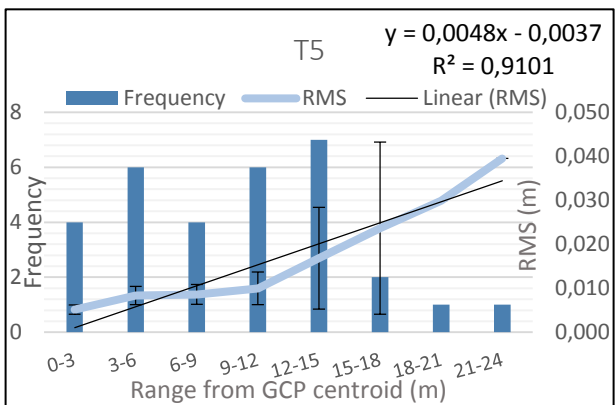
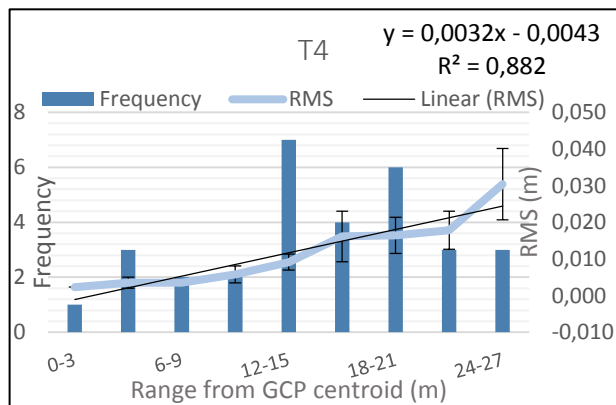
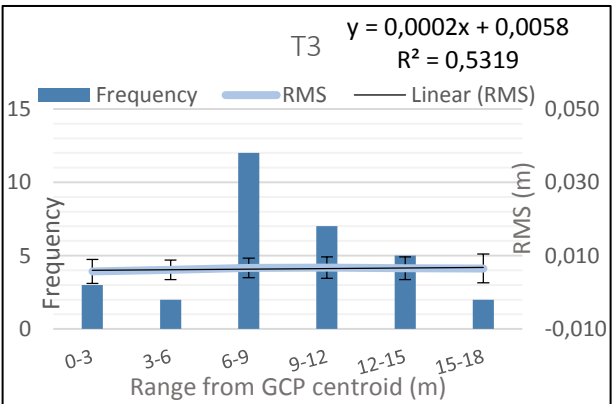
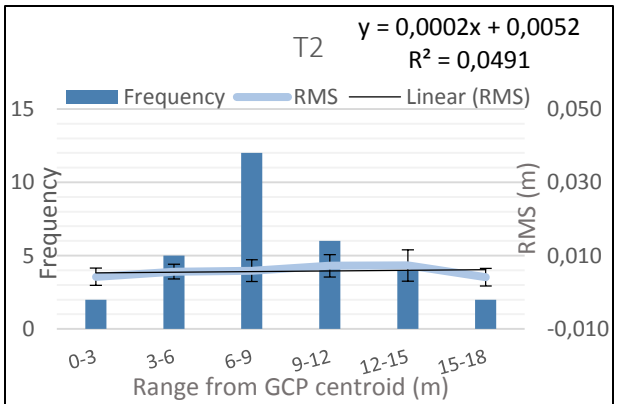
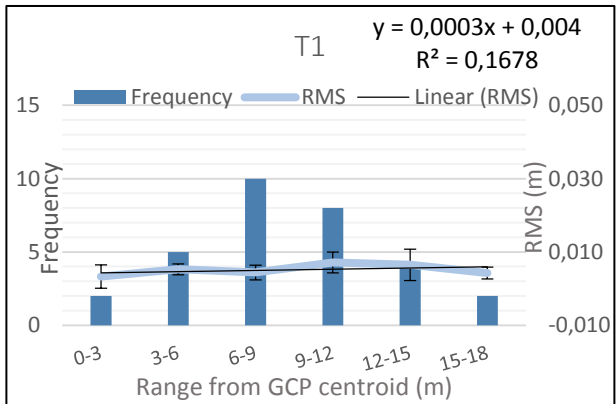
SCHOOL OF SURVEYING TEST NETWORK



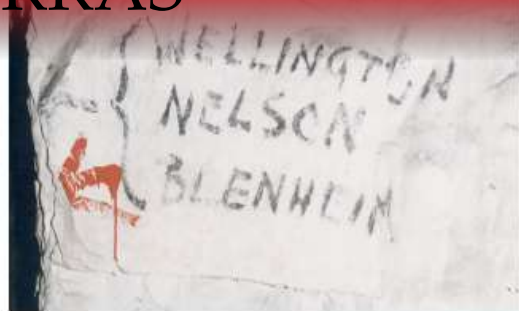
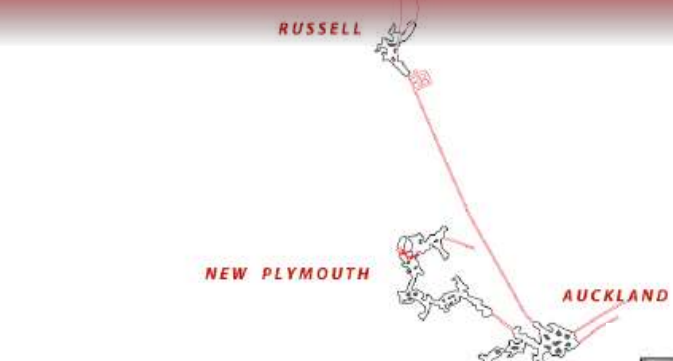
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3D RMSE AS A FUNCTION OF RANGE FROM GCP CENTROID



THE UNDERGROUND OF ARRAS



Photographie : Service
 Géologique Municipal d'Arras)



Illustration 40 – Panneau de
 9231120 9231040 9230960

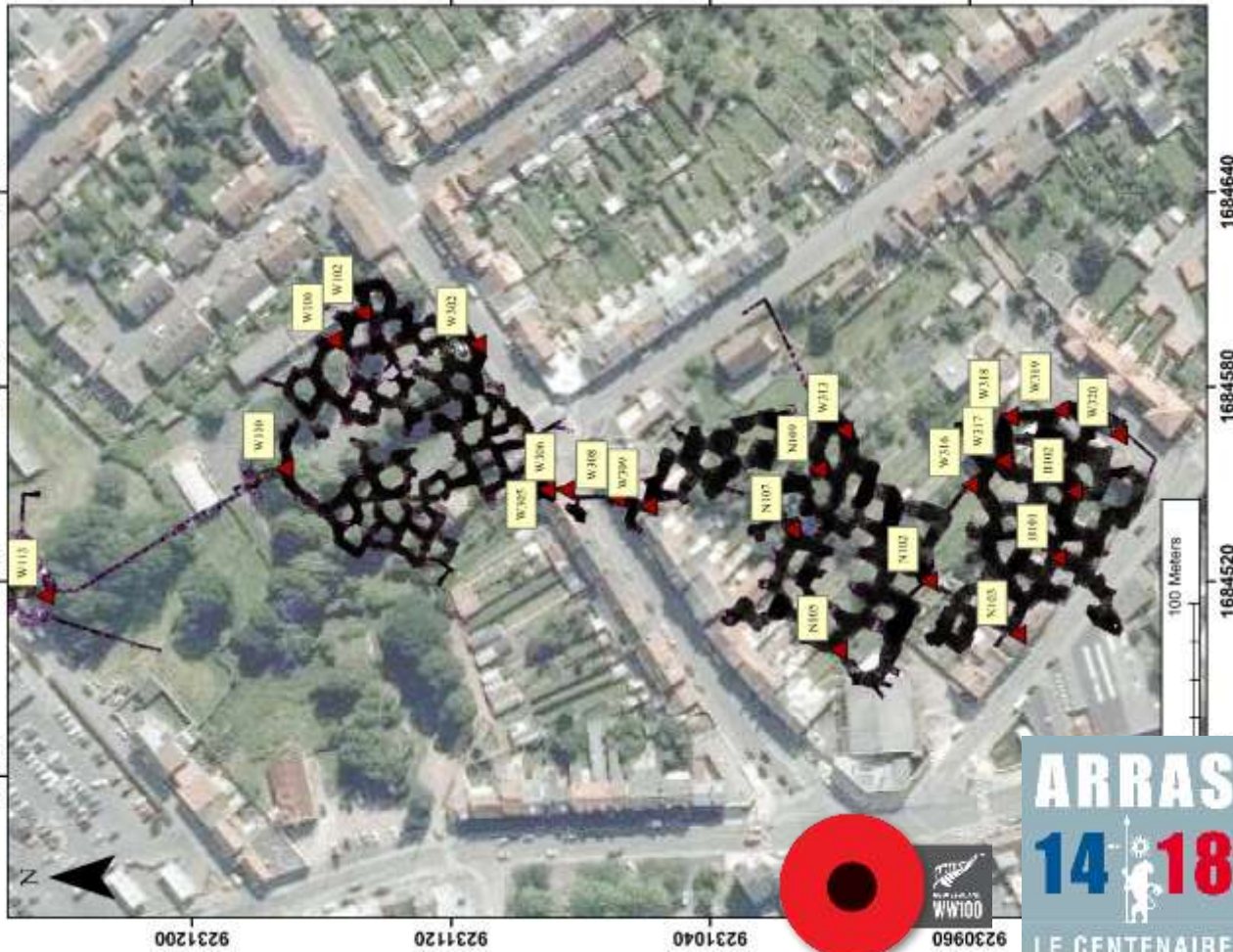
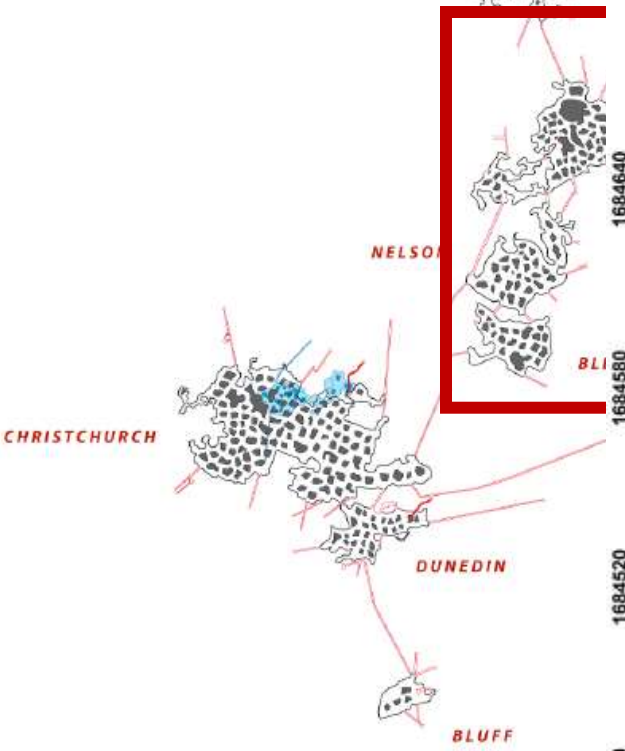
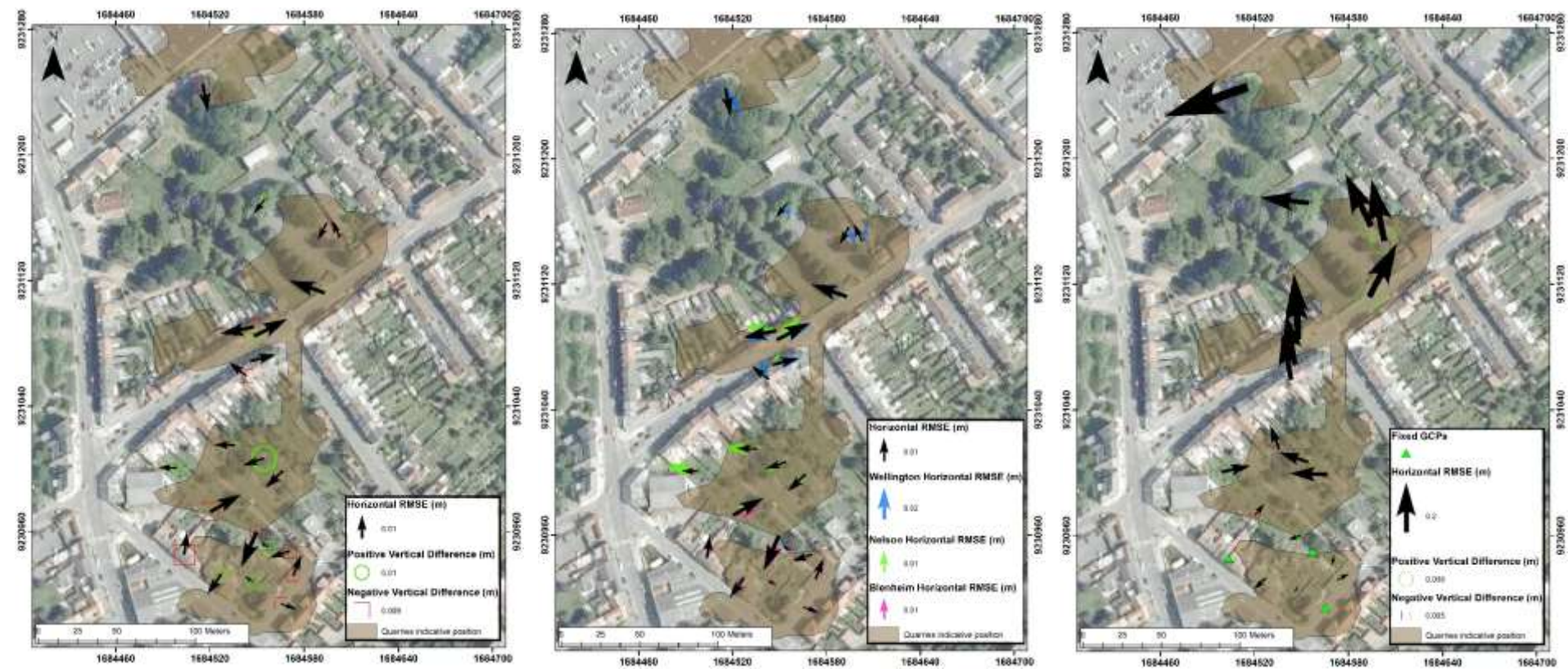


Illustration 41. – Les noms des di



ARRAS
14 18
 LE CENTENAIRE

QUARRY RMSE RESULTS



Scenario	All	Wellington	Nelson	Blenheim	Blenheim 3 GCPs Fixed
rX	12	15	12	9	102
rY	8	8	10	8	70
rZ	10	5	12	9	9
rXYZ	17	17	20	15	124

SUMMARY

- A reduction in GCPs, placed favourably around the scan scene, shows comparable accuracies to a more dense network of GCPs in the scan scene.
- There is a strong correlation between an increase in RMSE and standard deviation with respect to an increase in distance from the GCP centroid, where the placement of GCPs does not cover the extents of the scan scene.
- Results from the LiDARRAS case study align with the “Test Network” results where the RMSE increases significantly with an increase in range from GCP centroid.
- Where possible, optimise the placement of GCPs in a scan scene and mitigate the distance between the GCP centroid and extents of the scan scene.

THANKS, QUESTIONS?

TEAM LIDARRAS

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Christophe Charlet (ESGT)
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SPONSORS AND SUPPORT

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PROJECT WEBSITE

<http://www.otago.ac.nz/lidarras/index.html>

