

SAR DTM

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SAR DTM Preparation

What is Interferometry?

Interferometric synthetic aperture radar (InSAR) exploits the phase difference between two complex radar SAR observations taken from slightly different sensor positions and extracts information about the earth's surface.

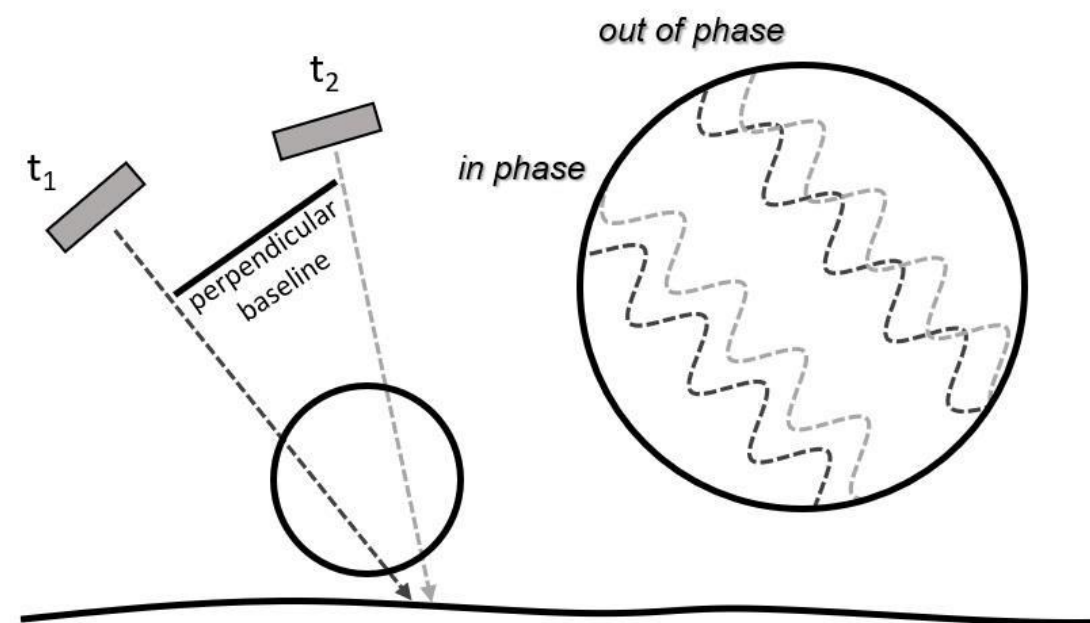
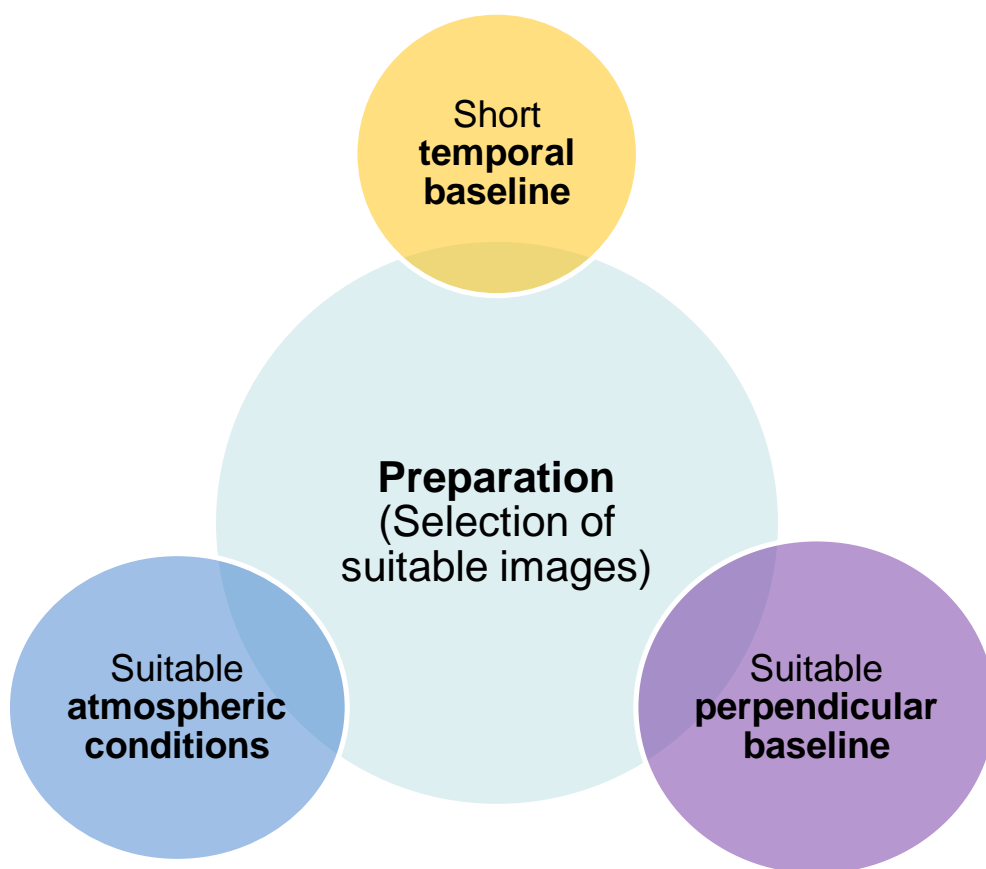
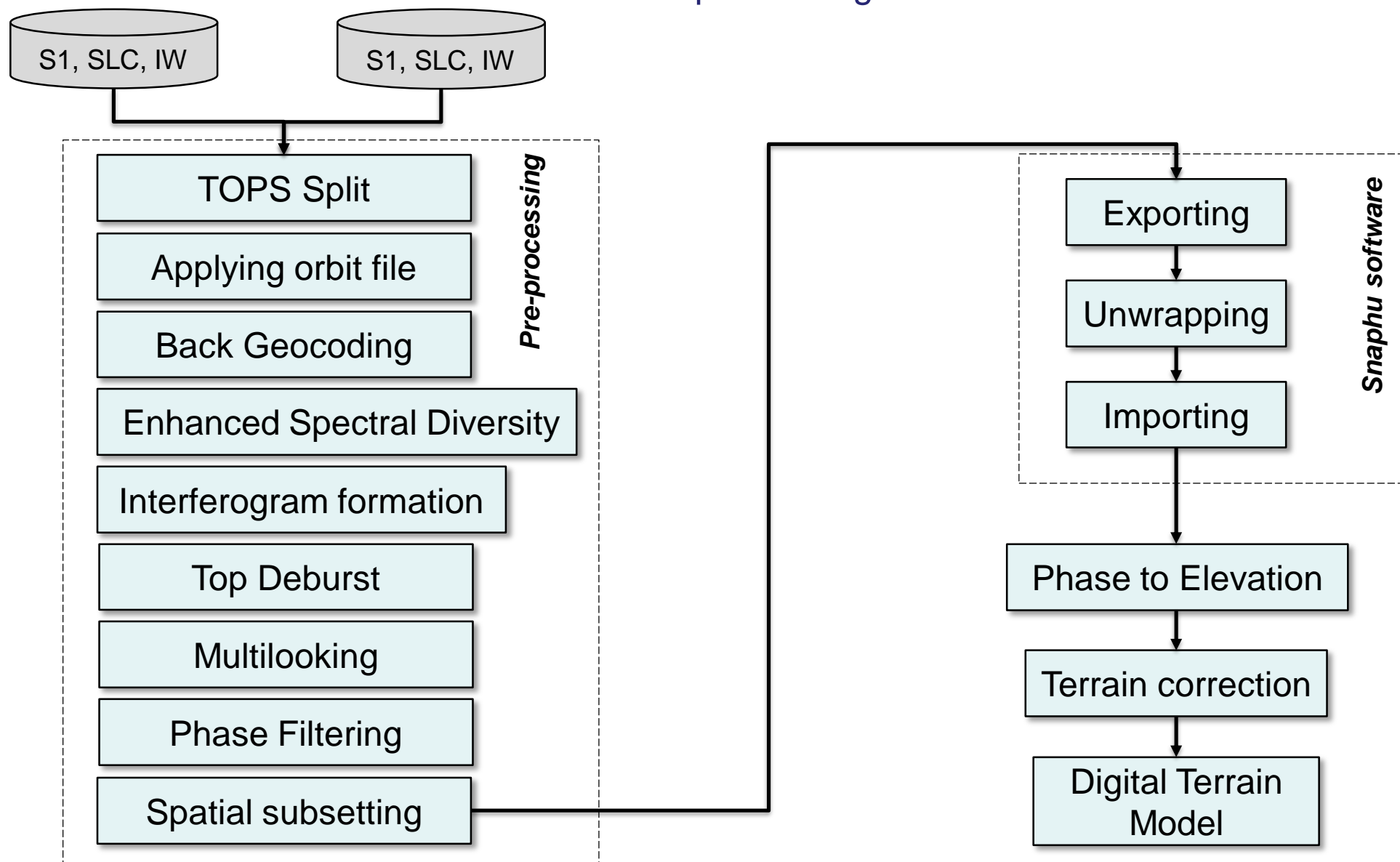
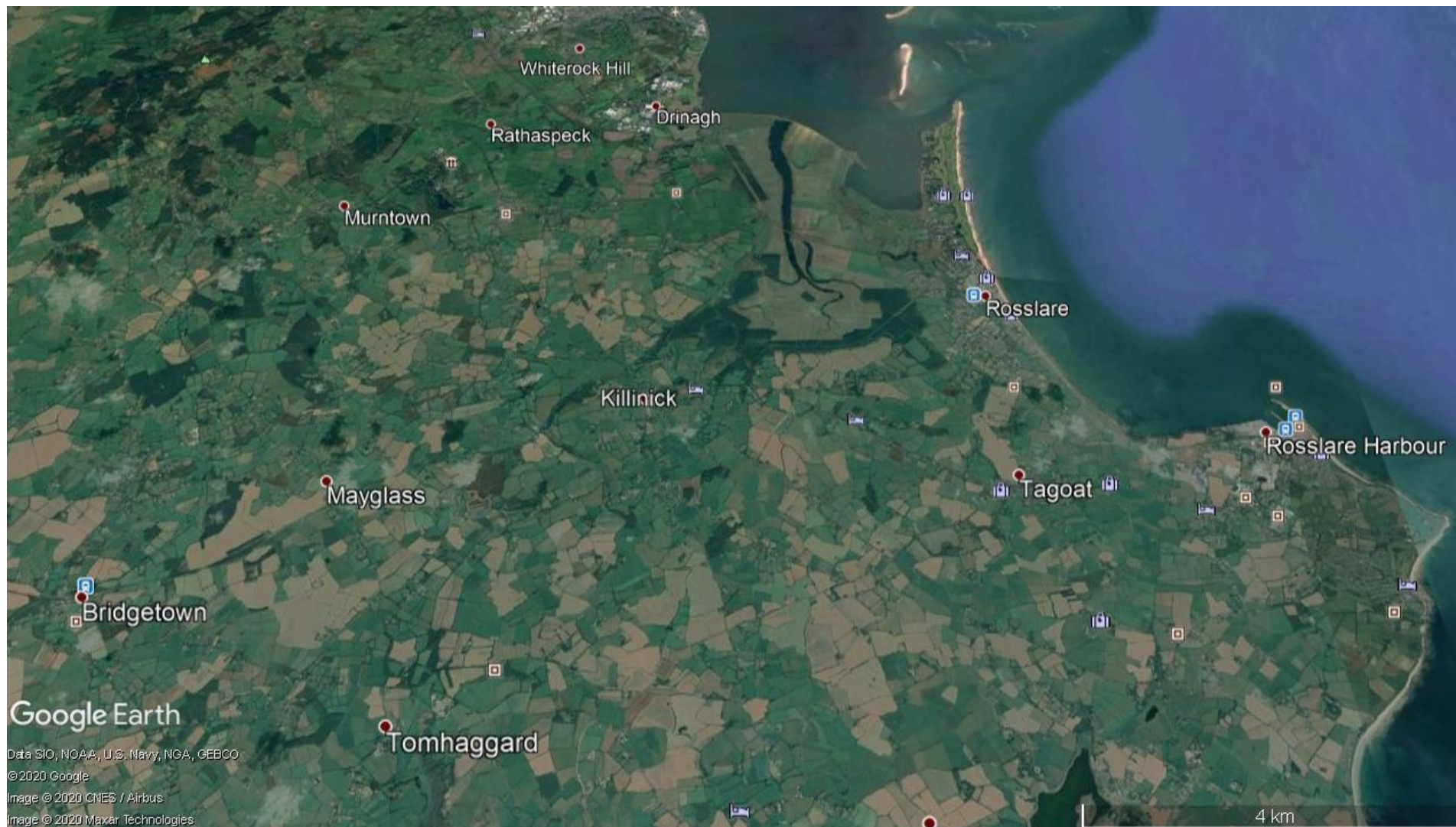


Figure 1: Image geometry and phase decorrelation (Braun 2019)

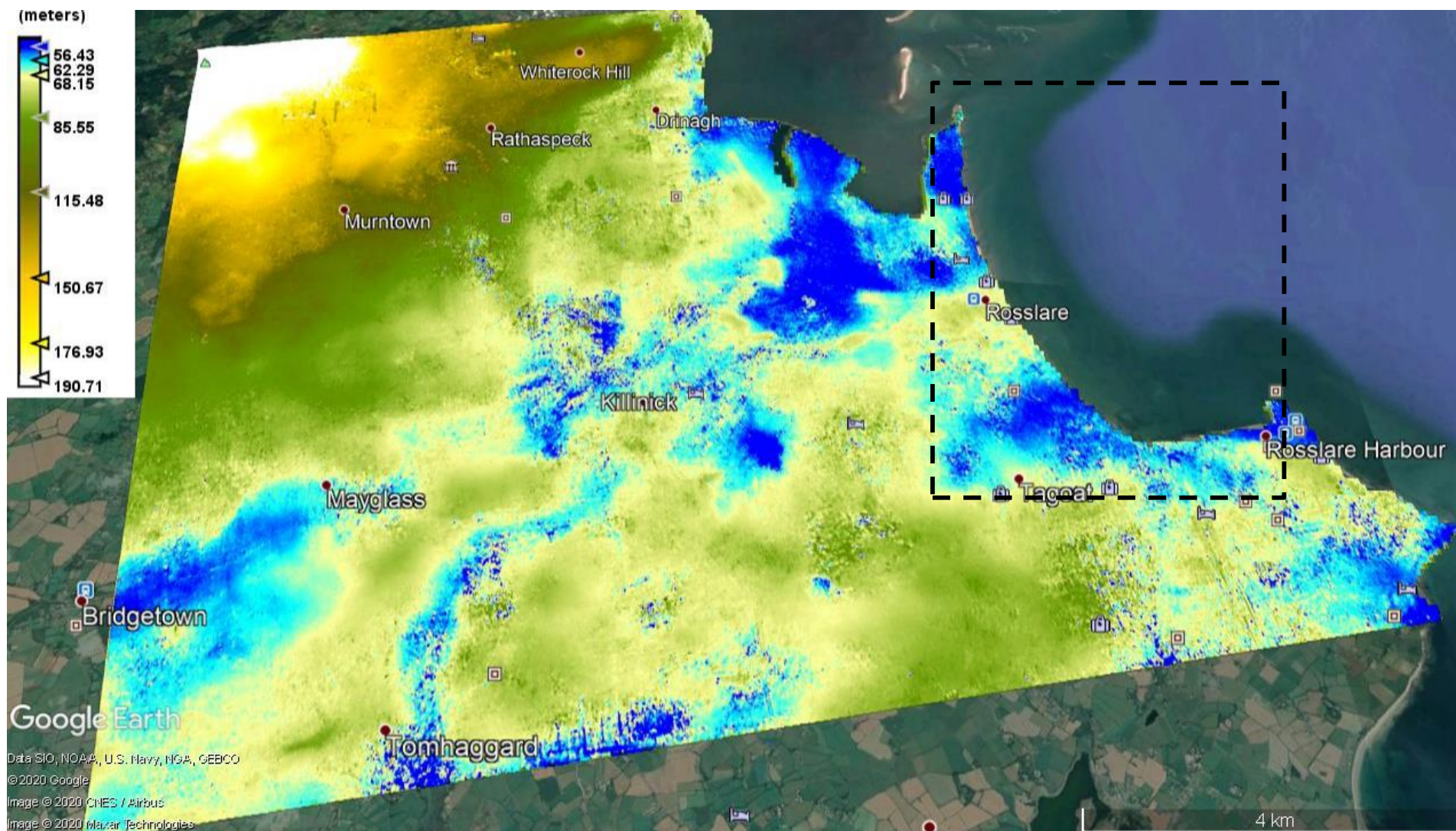
SAR DTM processing chain



SAR DTM USE CASE: IRELAND EAST COAST

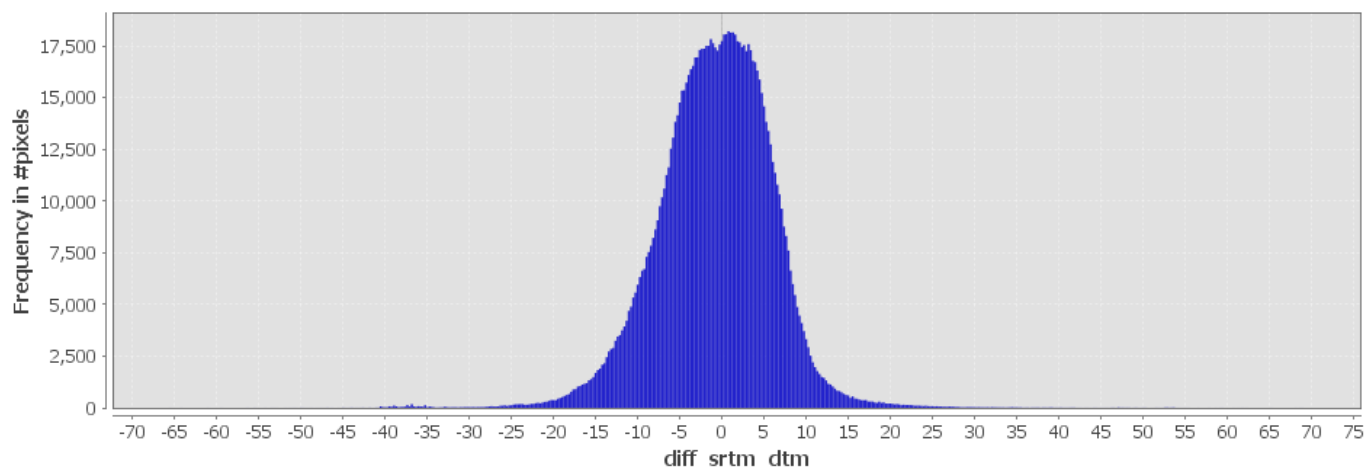


SAR DTM USE CASE: IRELAND EAST COAST

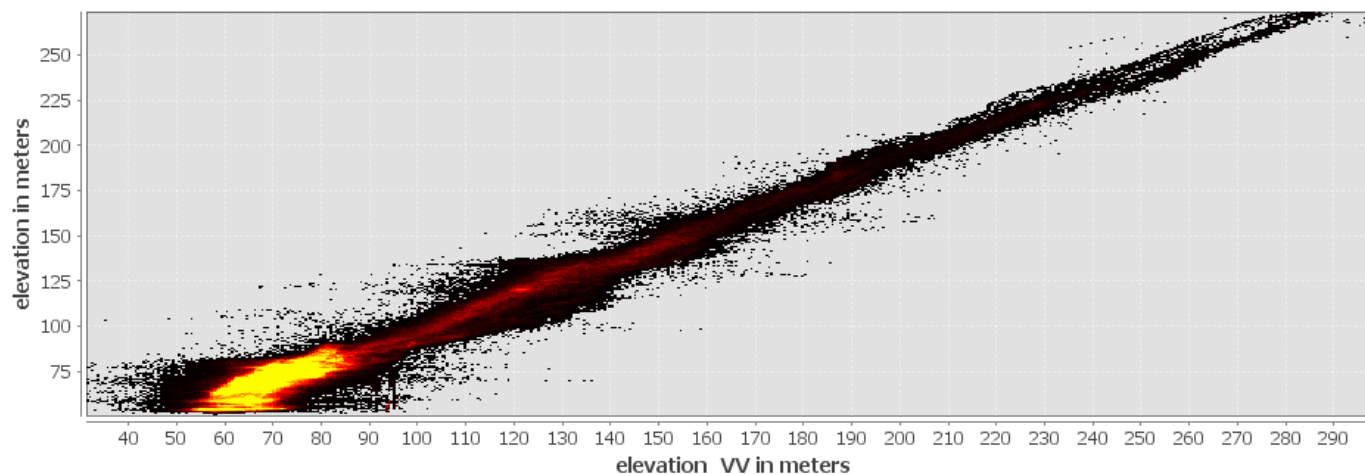


COMPARISON BETWEEN SRTM 3 SEC (~90 m) vs SAR DTM (~15 m)

Histogram for diff_srtm_dtm



Scatter Plot



Number of pixels total:	2196030
Number of considered pixels:	1125169
Ratio of considered pixels:	51.23650406
Minimum:	-65.64765167
Maximum:	68.98860931
Mean:	-0.843967498
Standard deviation:	6.758584567
Coefficient of variation:	-8.00811001
Median:	-0.539572525
P5 threshold:	-11.92778354
P10 threshold:	-9.235058319
P15 threshold:	-7.350150665
P20 threshold:	-6.003788055
P25 threshold:	-5.061334229
P30 threshold:	-3.984244141
P35 threshold:	-3.176426575
P40 threshold:	-2.233972748
P45 threshold:	-1.426155182
P50 threshold:	-0.618337616
P55 threshold:	0.18947995
P60 threshold:	0.997297516
P65 threshold:	1.805115082
P70 threshold:	2.747568909
P75 threshold:	3.555386475
P80 threshold:	4.497840302
P85 threshold:	5.440294128
P90 threshold:	6.786656738
P95 threshold:	8.671564392
Threshold max error:	0.134636261

WORKING IN PROGRESS

- Focusing the analysis on the Rosslare beach (ROI)
- Finding suitable SAR images for 2017 and 2018
- Performing a statistical analysis on the obtained DTMs
- Adopt a suitable validation method for the results.