

# 고고학에서의 GIS 응용

2022년 숭실대학교 사학과 고고학 전공 겨울방학 스터디

- 1주차 : 오리엔테이션 -

주 찬 혁(숭실대 사학과 석사과정)

주차	내용	진행
1주차	오리엔테이션 및 QGIS 설치	서 하 운, 주 찬 혁
2주차	GIS의 개념과 기초	주 찬 혁
3주차	수치표고모델(DEM)	주 찬 혁
4주차	커널 밀도 추정 분석 / 박지영 2017	주 찬 혁
5주차	R연동과 다양한 공간분석지표 / 박지영 2017	주 찬 혁
6주차	가시권 분석 / 강동석 2019	주 찬 혁
7주차	유적분포도 그리기	서 하 운

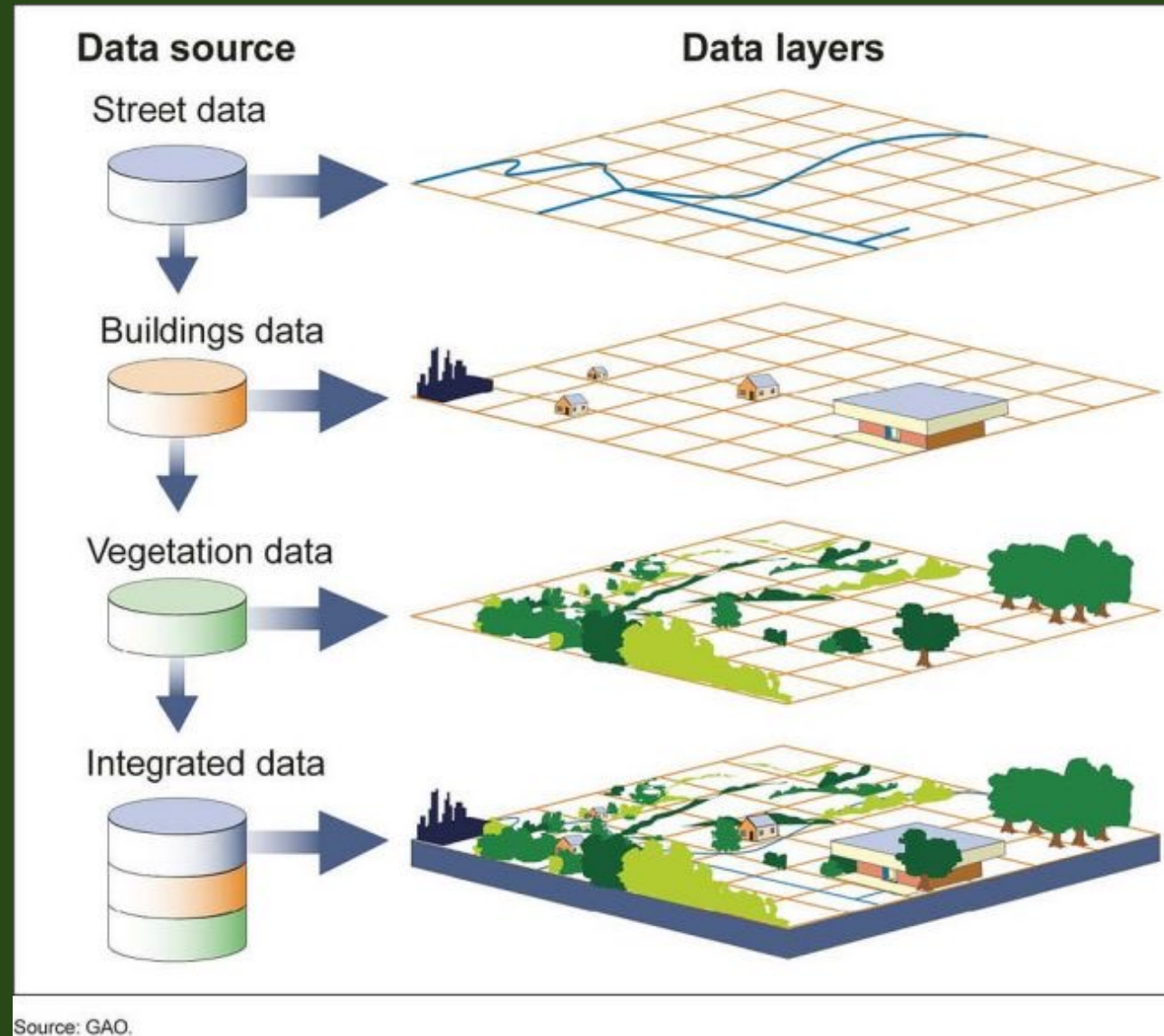
1. 고고학 연구에서 활용되는 방법들을 위주로 살펴볼 예정
2. 분석 방법을 알아보고 어떻게 활용할 수 있을지 함께 고민

참고자료 : 이준호/유병혁, 2020, [QGIS Cookbook](#)

스터디 자료 : [Chanhyeok Ju Github](#)

# 2주차

출처 : 내셔널지오그래픽, <https://education.nationalgeographic.org/resource/geographic-information-system-gis>



# 3주차

출처 : Long's blog, <https://dothanlong.org/convert-dsm-to-dtm/>

We trained a fully-convolutional neural network to convert a Digital Surface Model (DSM) to a Digital Terrain Model (DTM), by predicting vertical biases due to vegetation and built-up areas, using two DSMs, multi-spectral imagery (Landsat-7 & -8), night-time light, and maps of forest cover & canopy height (all free & global datasets).

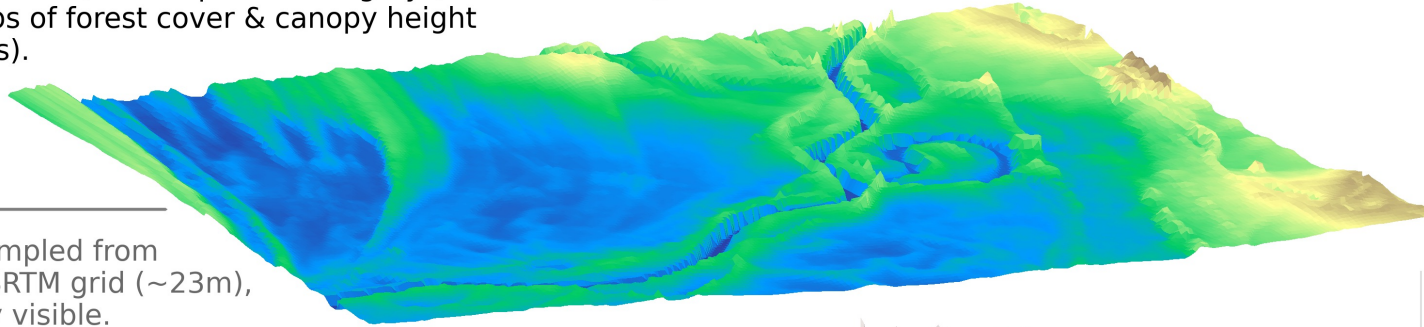
Test zone (data unseen during model training)

Wairau Plains East, Marlborough Region  
Aotearoa New Zealand



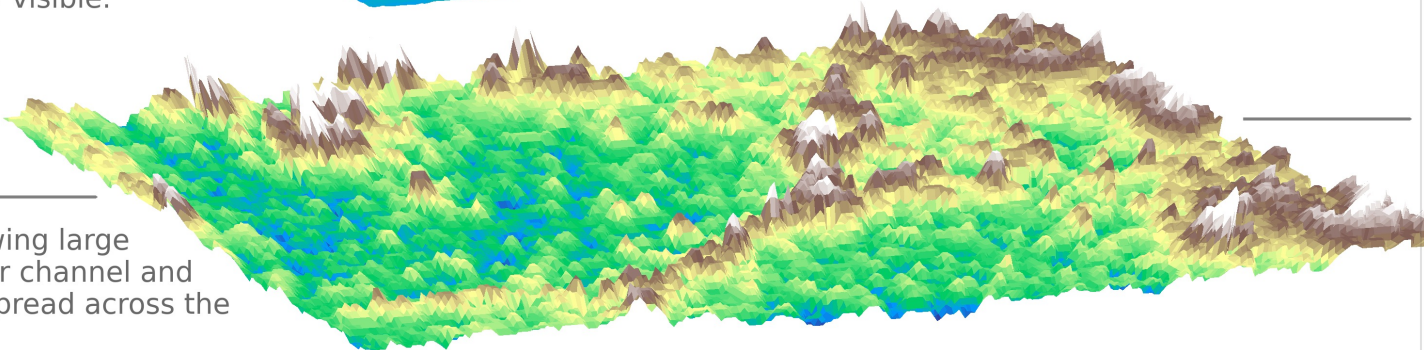
a) DTM (LiDAR)  
Reference data

LiDAR-derived DTM, resampled from 1m resolution to match SRTM grid (~23m), with river channel clearly visible.



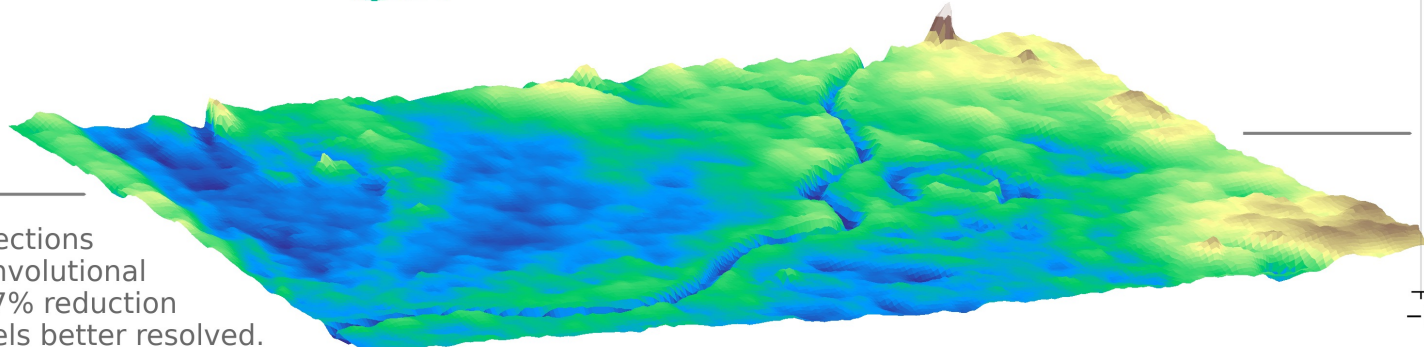
b) DSM (SRTM)  
Before correction

Original SRTM DSM, showing large vertical biases along river channel and random 'speckle' noise spread across the floodplain.

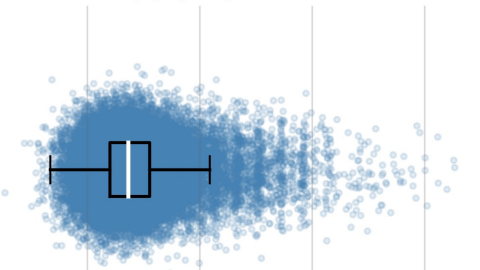


c) DSM (SRTM)  
After correction

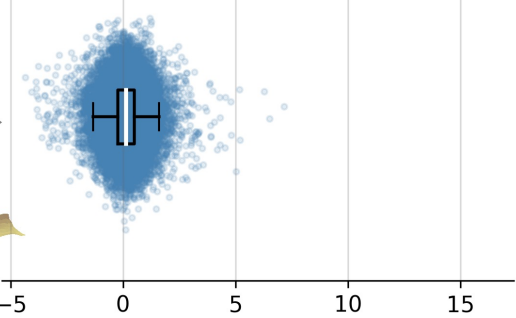
SRTM after applying corrections predicted by the fully-convolutional neural network, with a 77% reduction in RMSE and river channels better resolved.



Change in residuals  
after applying corrections

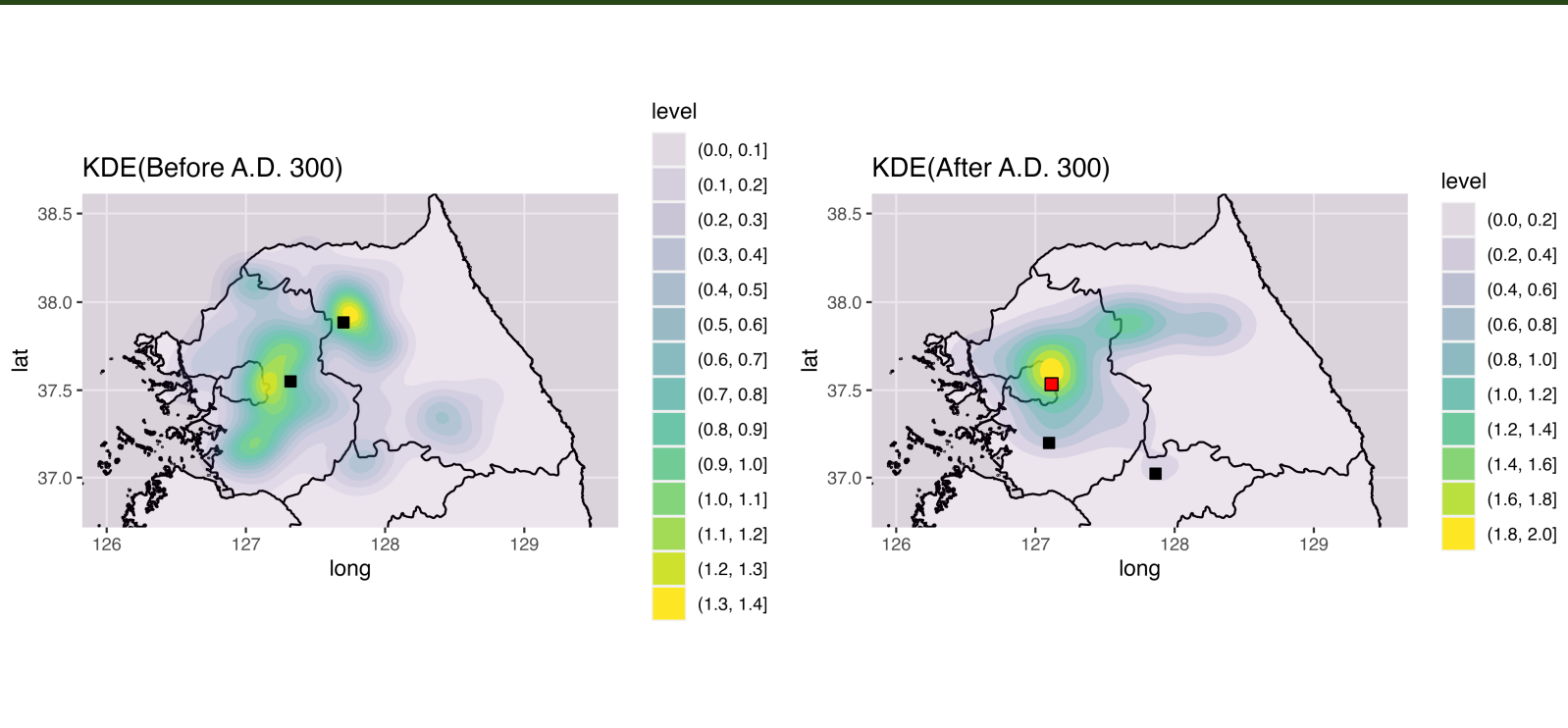


Applying corrections predicted by model reduces RMSE from 2.80m to 0.65m (-76.7%)



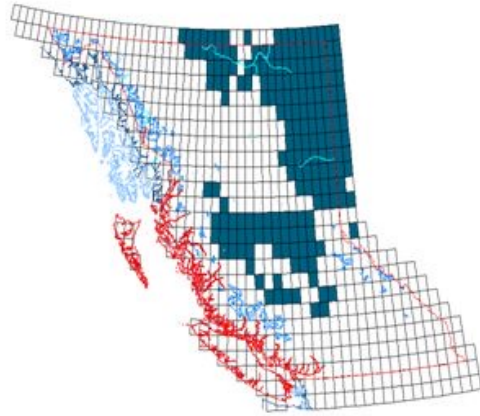
Residuals [m]  
(compared to reference DTM)

# 4주차



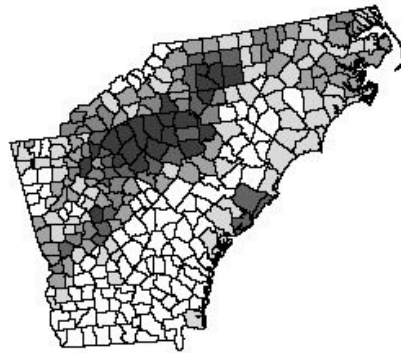


## Chapter 12 – Correlation between two maps



### Testing spatial correlation (autocorrelation)

1. Moran's I
2. Geary's c
3. Variogram
4. Join counts



## 6주차

출처 : 유병혁, <https://foss4g.tistory.com/1395>





# 7주차

출처 : 중부고고학연구소, 2012, 화성 왕림리 노리재골 I 유적



저도 공부하는 입장입니다 ㅠ  
함께 공부해보아요 ㅠ