

# GIS technology verifies Caesar and Helvetii history

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According to Caesar, more than a quarter of a million Helvetii were settled in the Swiss plateau before they decided to abandon their territory and invade Gaul in 58 BCE. Credit: Thomas Whitley

An international team is using Geographic Information Systems (GIS) modelling to assess Julius Caesar's account of his war with a Celtic tribe.

According to Caesar, more than a quarter of a million Helvetii were settled in the Swiss plateau before they decided to abandon their territory and invade Gaul in 58 BCE.

In his Gallic Wars he says the Helvitii were running out of food.

UWA archaeologist Tom Whitley is developing a GIS model to test Caesar's population estimate and is testing geophysical techniques to see if they can detect signs of the migration and war.

He is using the GIS to model a large scale economic system focussing on subsistence; looking at local wild and agricultural sources of [potential energy](#) available in the environment.

The model tests Caesar's assertions against the amount of calories that would have been available to the people if they had completely populated the territory.

"Does that in fact reflect what he was saying, that there was a stress on the amount of energy that's available versus how many people are there to use it?" Professor Whitley says.

"Or does it look like he's exaggerating his numbers to make it look like he defeated more people than actually he did?"

Prof Whitley says using the historical account, ecological and archaeological data allows him to construct detailed models of a complex [economic system](#).

"If we try to reconstruct what was going on from the [archaeological data](#) alone when we have just a very fragmentary record, we don't know exactly how this mechanism is operating," he says.

"So with computer simulation we can simulate different kinds of effects and what the results were."

## **Part two of study investigates Roman war**

## impressions

The other part of the study aims to find specific archaeological signatures for the war, such as Roman riverfront fortifications, using untested techniques.

"Some of the GIS modelling is intended to say where it is likely that the Romans would have been building these structures," he says.

"Can we simulate what that past environment looked like where people were likely to have crossed and ... go to those locations and see if we can find them?"

They are also testing the effectiveness of ground-penetrating radar, magnetometry and aerial photogrammetry, to see if the massive Helvetian encampments can be identified on what are now vineyards and small farms.

Vineyards contain wire and metal posts, making magnetometry impractical, and radar can only be used in strips between the vines.

**More information:** A translation of "Caesar's Gallic Wars" is available online: [classics.mit.edu/Caesar/gallic.html](https://classics.mit.edu/Caesar/gallic.html)

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