**Can land intensification and abandonment in Latvia be linked to key socio-political events?**

Land-use change is a global concern, with changes having vital consequences through changing climate conditions through temperature change and through the release of carbon dioxide (Ramankutty and Foley, 1999). Such conversion has primarily occurred through changes in agricultural practices (ibid). However, the extent to which policy and socio-political events influence land-use change has seldom been quantitatively studied.

Due to Latvia’s quick-changing political status, it proves as an appropriate study site to examine if such land-use change can be linked to key socio-political events. The two events I will be examining are (1) the Soviet Union collapse in 1991 and (2) the addition of Latvia to the EU in 2004 (vote in 2003). After the Soviet Union, there was an increase in abandoned land, tree cutting and percent coverage of protected areas. After joining the EU, the share of large farms (intensive) increased, while the share in small farms (extensive) decreased (Csaki and Jambor, 2009). Agricultural abandonment has the potential to cause biodiversity loss, a global driver of climate change (MacDonald *et al.*, 2000).

Analysing if socio-political shifts can be detected through land-use change would shed light into if and how long political influence has an effect on land-use at community level. Ultimately, this type of analysis could be replicated for other countries to outline the impacts of shifting political power on land cover and thus, have implications for wider aspects such as ecosystem services, the economy and human movement/urbanisation. Results can also be used potentially to project into future land coverage.

**Research questions**

1. Can key socio-political events in Latvia be detected through land-use change?
2. Is the strength and direction of land-use change different with differing practices?
3. Is there a time lag between socio-political events and when the land-use effects are observed? Does this differ between land use type?

**Methods**

To examine the effects of the two aforementioned events, I will be using Google Earth Engine, which is an online GIS platform. Specifically, I will be creating a classification of land use types in Latvia to see whether key socio-political events can be detected. Using satellite data, I will first define land use types into several categories: extensive, intensive and abandoned. I will then create a classification for each year, allowing me to plot the overall trend in land use change. The time frame studied will be determined after researching which satellite data would be most beneficial to the study. Having a yearly classification will also permit me to consider time lags and differences between the two key socio-political events. I will test and train the classification with training datasets and assess the accuracy through estimating error with validation data. To detect and assess change, I will overlay each year and compute gain, loss and change on a pixel scale. Statistical analyses including mixed-effects models and figure production will be conducted in the programing language R.

**References**

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