Coding Project: Crop Wars

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1 Introduction

Due to population growth, urbanization, and climate change, competition for water resources is expected to increase, with a particular impact on agriculture [1].
Consequently, both farmers and policymakers can benefit from farm-level models which optimise water usage and crop nature, based on a set of different externalities including water ressources availability and market dynamics.
The model featured in this coding project aims to illustrate the process behind the development of agent-based farm-level models, by starting with a simple, deterministic model that is progressively complexified with elements from physics-based models and game theory.

2 State-of-the-Art

To guide the development of our agent-based model, a literature review was conducted to assess the state-of-the-art on agent-based models for water ressources allocation and farming simulations.
A seed review paper was selected, "A review of Agent Based Modeling for agricultural policy evaluation" by Kremmydas et al.(2018) from which a literature graph was generated from online tools, and the result is presented on Fig.(1).

[1] https://www.worldbank.org/en/topic/water-in-agriculture

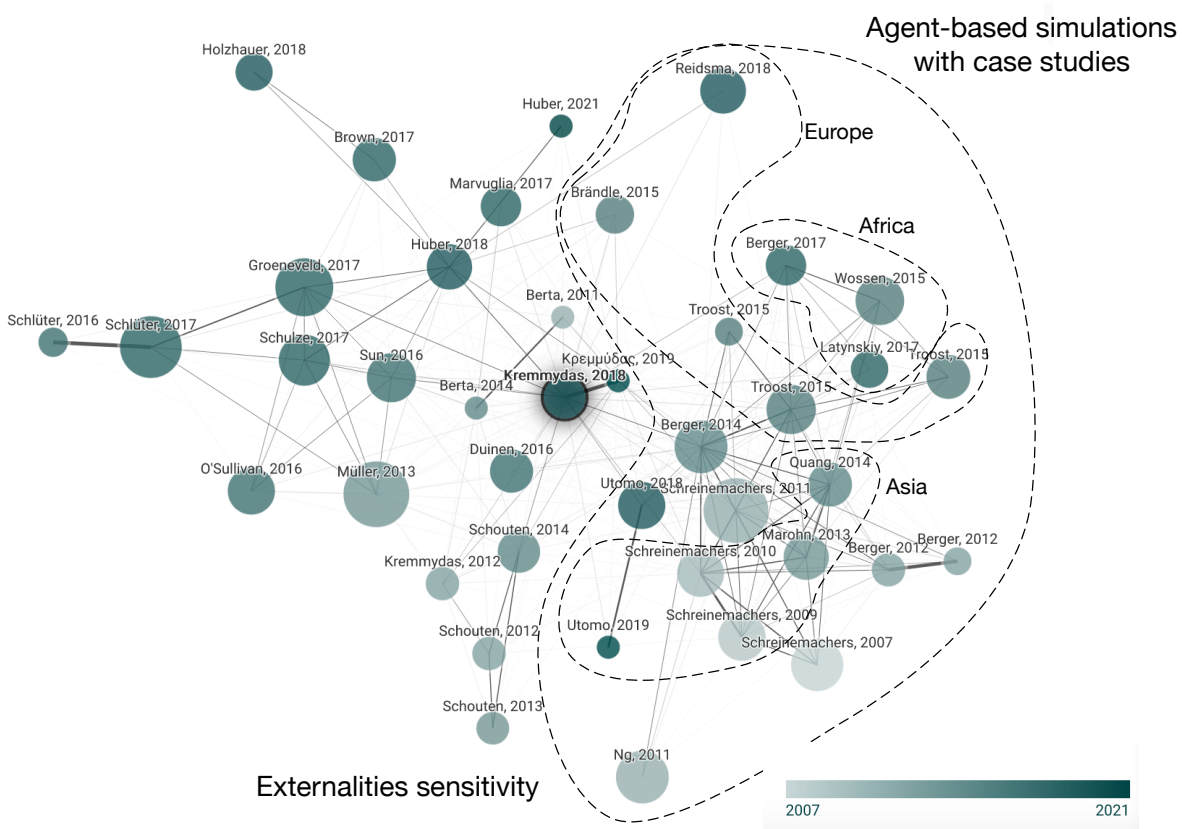

Figure 1: Graph showing papers related to ref.X generated on ConnectedPapers.com. Circle radius is proportionnal to number of citation, color to publication date, dashed line refers to paper categories.