

InnoLab LMU München, Big Data Science - Leitung: Prof. Dr. Thomas Seidl,
Coaches: Florian Pfisterer, Christoph Molnar, Bernd Bischl

Projekt: Climex

Teammitglieder:

Carolin Becker, Henri Funk, Andreas Hofheinz, Guoren Xi, Yao Zhang

Kurzbeschreibung:

Climate Change alters the atmospheric circulation over Europe and increases the risk of heavy precipitation. 'Tief Mitteleuropa' and 'Trog Mitteleuropa' are two atmospheric circulation patterns that are associated with heavy precipitation over Central Europe. Thus the research question of how climate change influences their occurrence is of high relevance. However, the spatio-temporal data structure and the imbalanced classes demand for sophisticated modelling architectures in order to detect these circulation patterns in climate models. This project introduces and compares deep learning algorithms that are able to tackle the problem of detecting the two atmospheric circulation classes. A ResNet18 and a Convolutional LSTM are set up and fitted to the data. The best model achieves a Matthews correlation coefficient of 0.33. Overall, both model types are generally able to detect the atmospheric circulation patterns and, moreover, carry immense potential in the way they can be set up and fitted to the data. These promising results open the gate for further research in the future.

Website: <https://innolab.ifi.lmu.de/>

The official project page on Github is currently private since research on this project is currently being continued.

Projektpartner, Ideengeber:

The Climex project itself was proposed and supervised by Magdalena Mittermeier (LMU Department of Geography) and Maximilian Weigert (LMU Statistical Consulting Unit StaBLab).

