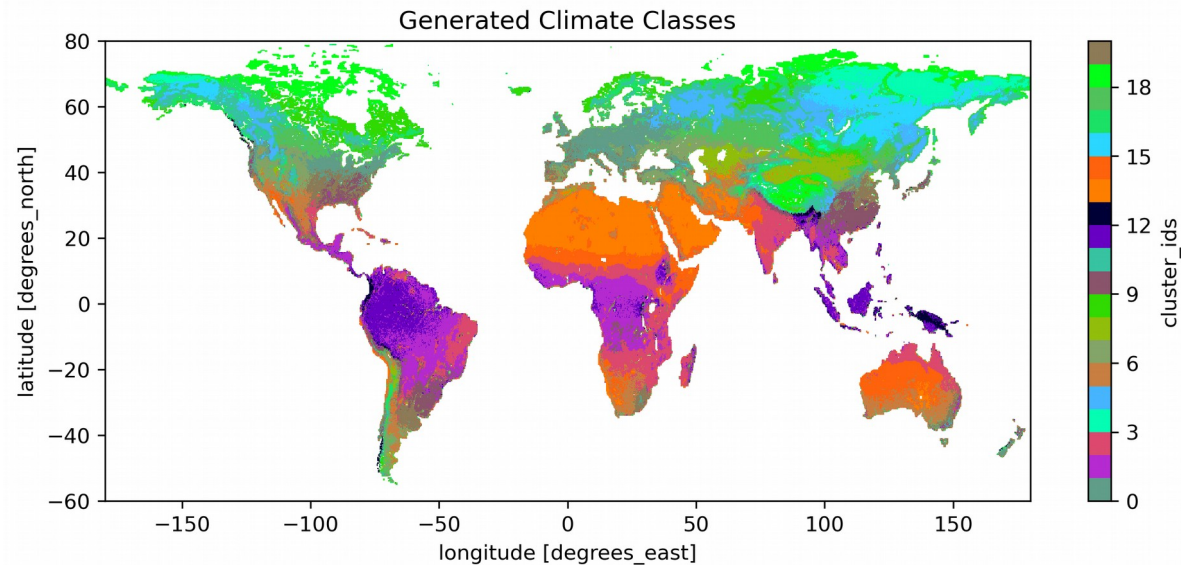# Unsupervised climate clustering using autoencoders

Leander Moesinger[1]
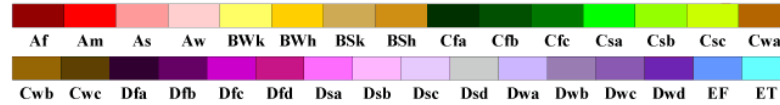
[1]Vienna University of Technology, Department of Geodesy and Geoinformation

Generated Climate Classes

World Map of Köppen−Geiger Climate Classification

Applied Deep Learning
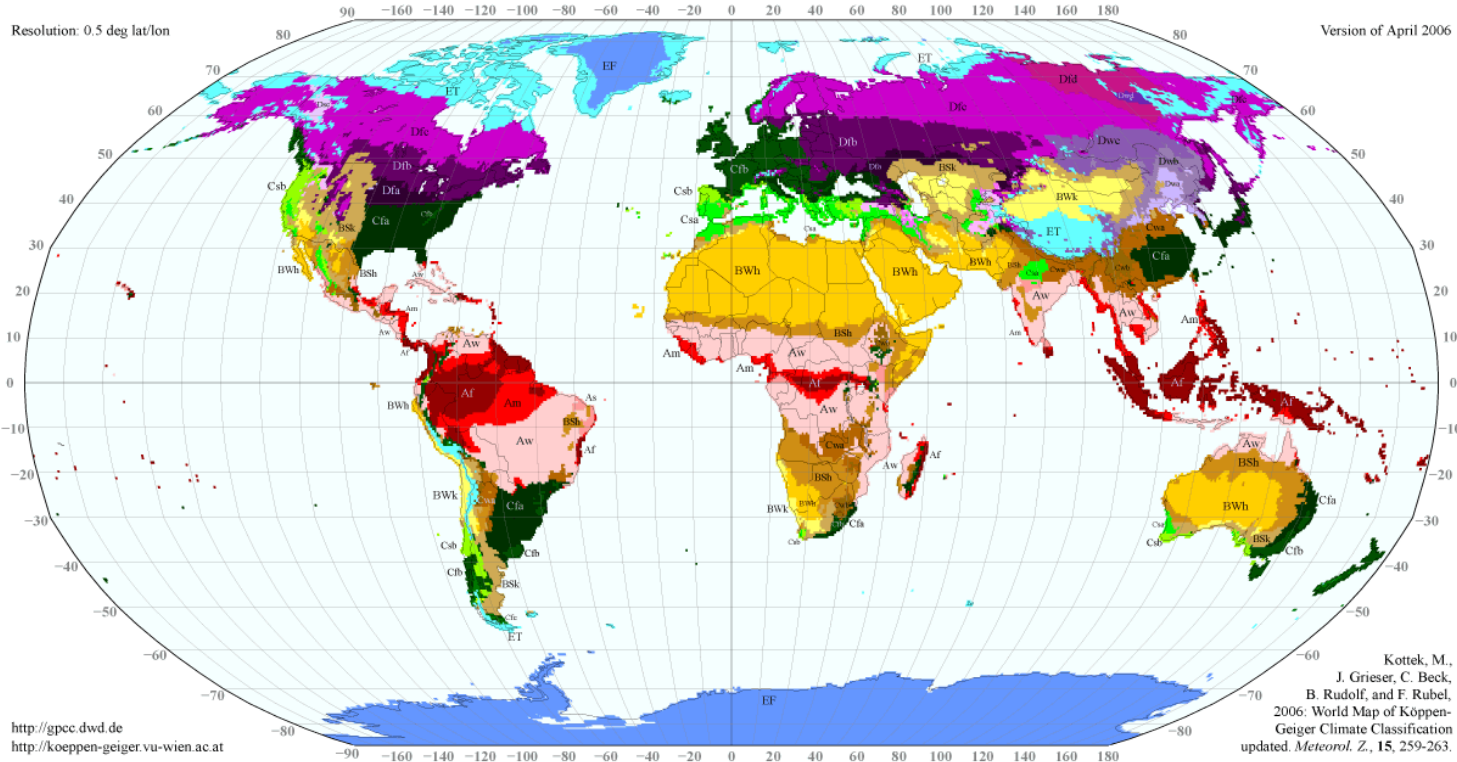
Data

- Vegetation Optical Depth (VOD) time series

  - Related to vegetation water content and biomass

  - Global coverage

  - Since 1987

  - Daily values

  - Has data gaps

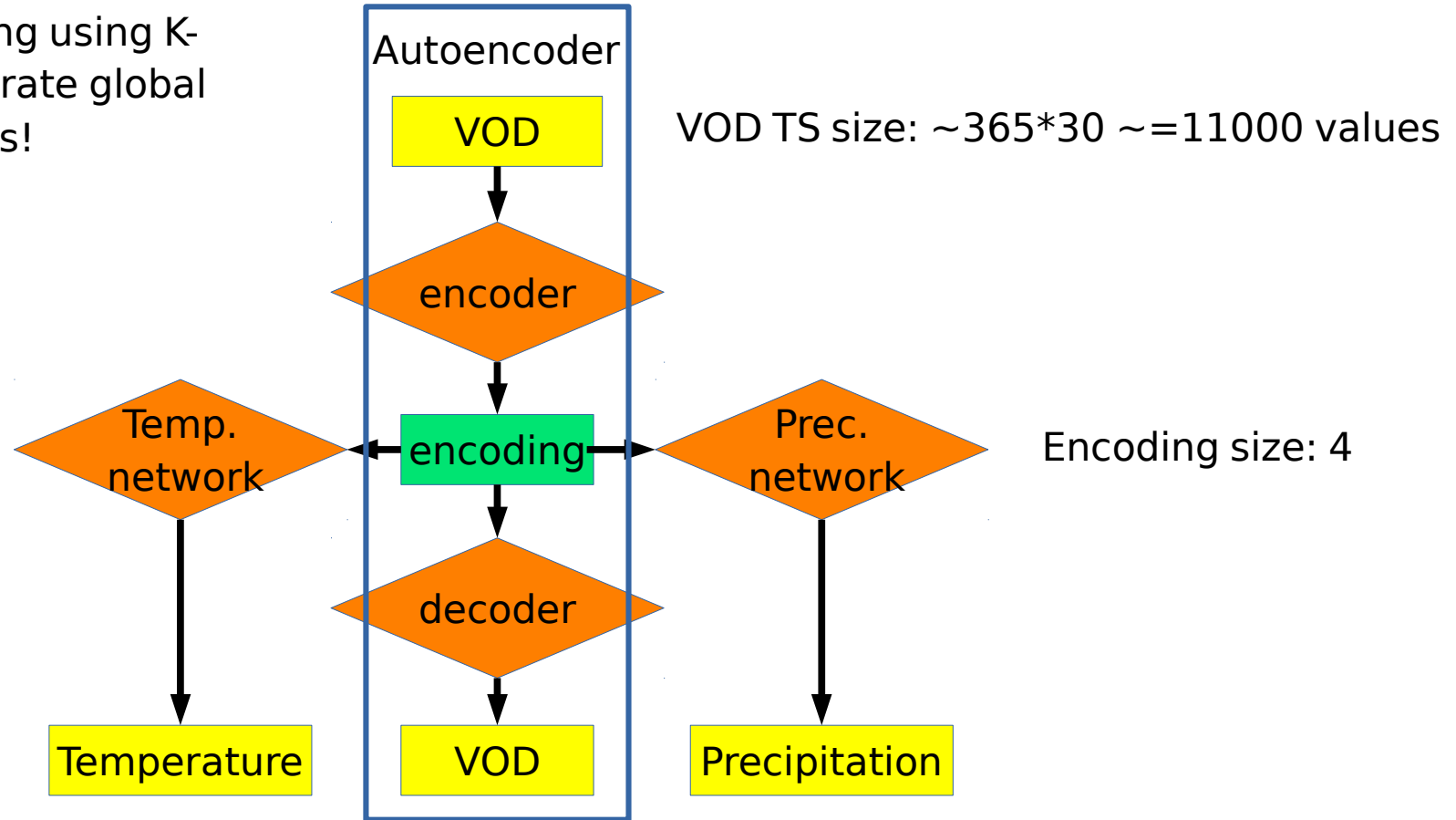- Also mean temperature and precipitation is used
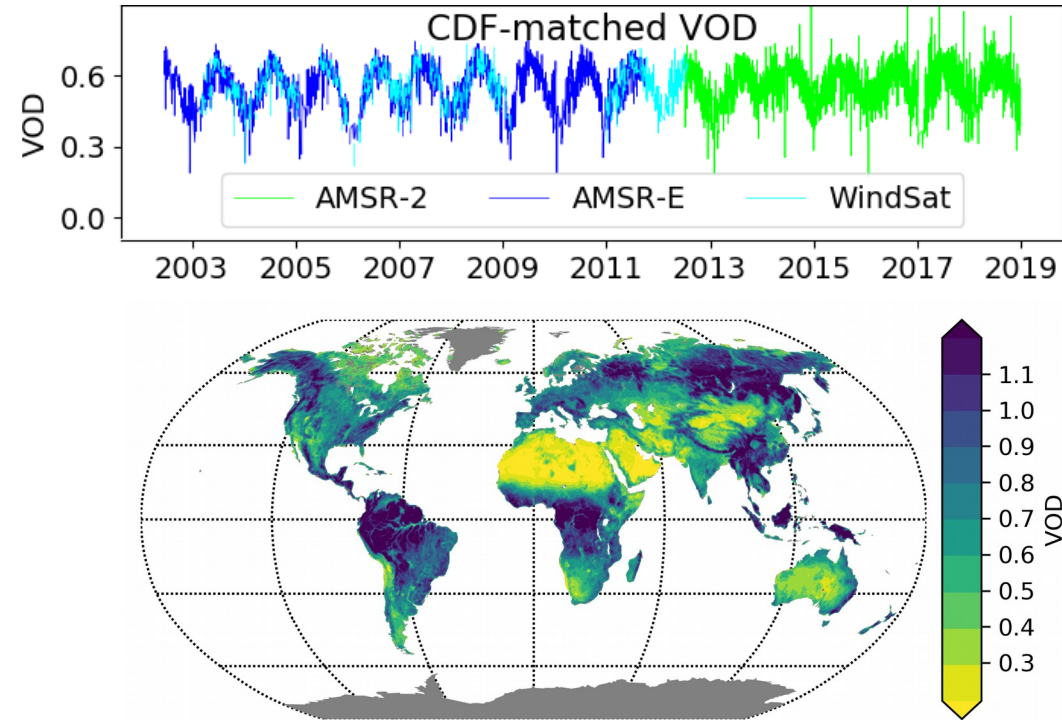
VOD time series and global mean

Applied Deep Learning

Network Architecture

- Cluster encoding using K-means to generate global climate clusters!

Autoencoder

VOD

encoder

Temp. network ← encoding → Prec. network

decoder

Temperature   VOD   Precipitation

VOD TS size: ~365*30 ~=11000 values

Encoding size: 4

Results

Generated Climate Classes
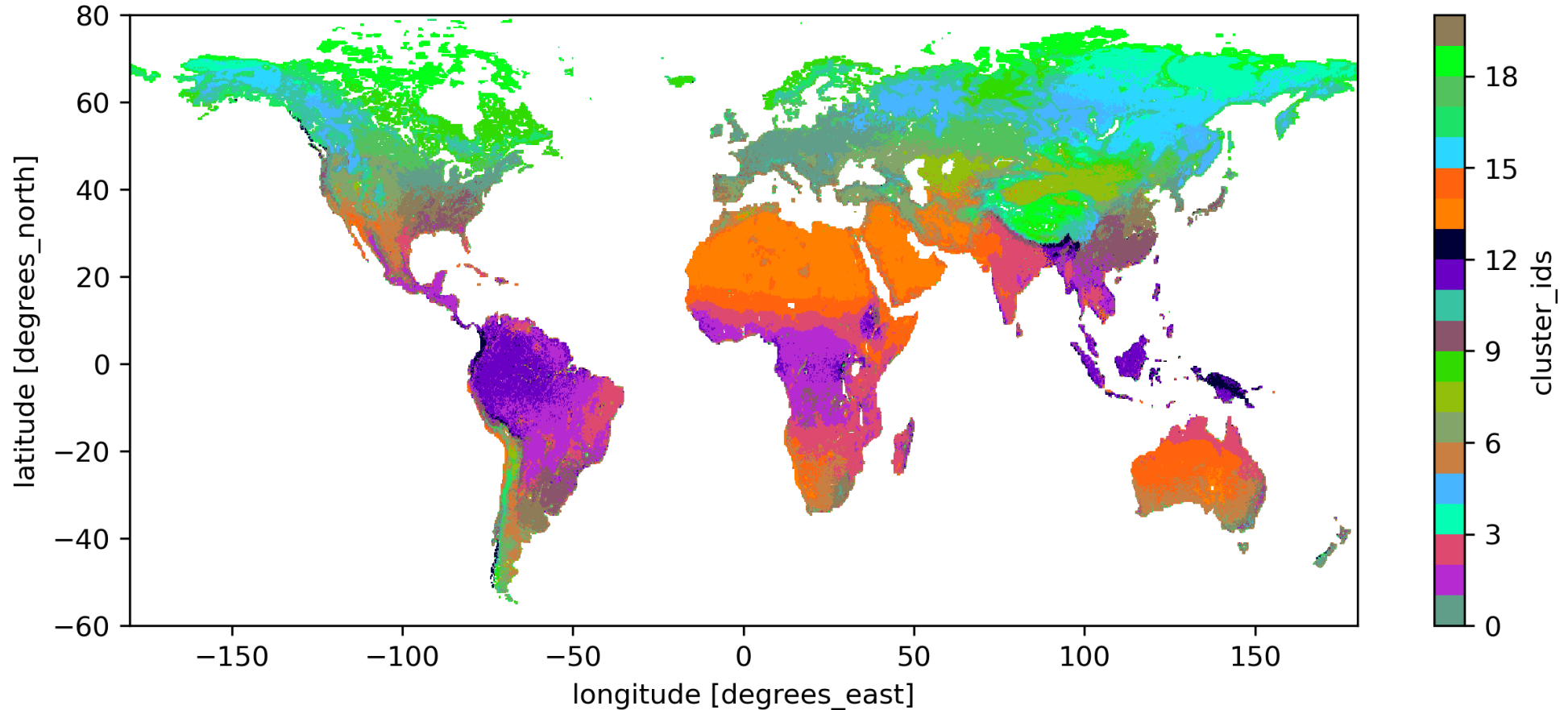
Lessons learned

- Dont spend too much time optimizing hyperparameters, data used and preprocessing is much more important!

- The loss of an autoencoder does not directly translate to how good an encoding is

Applied Deep Learning