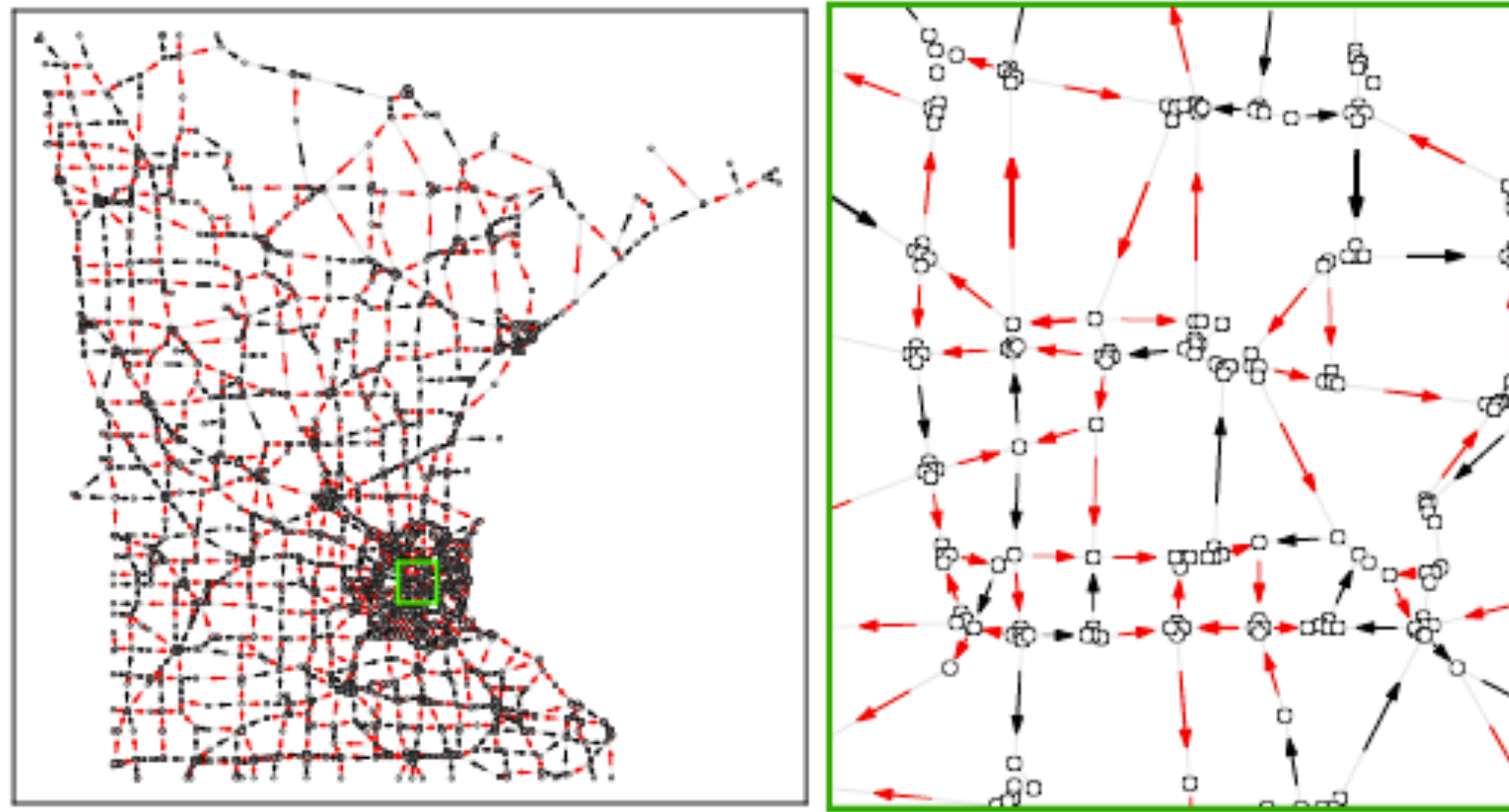
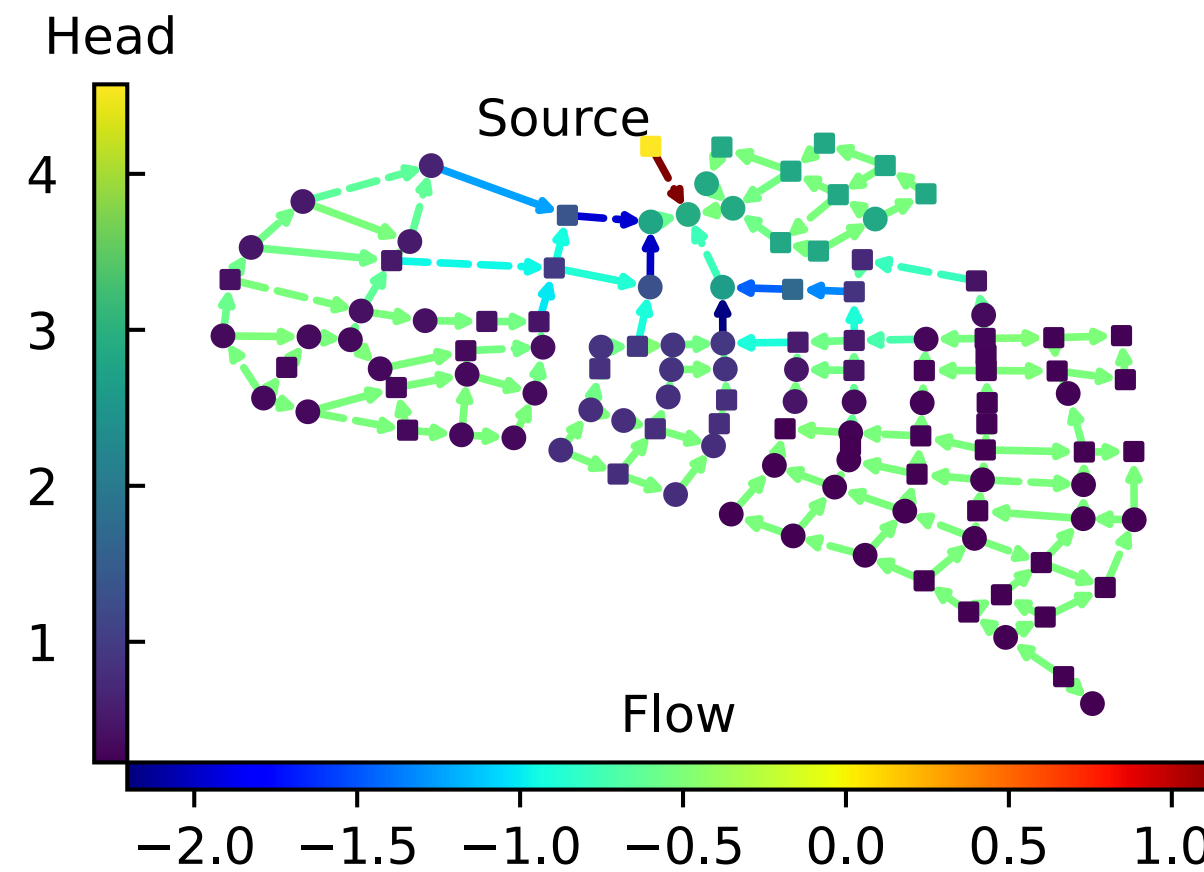


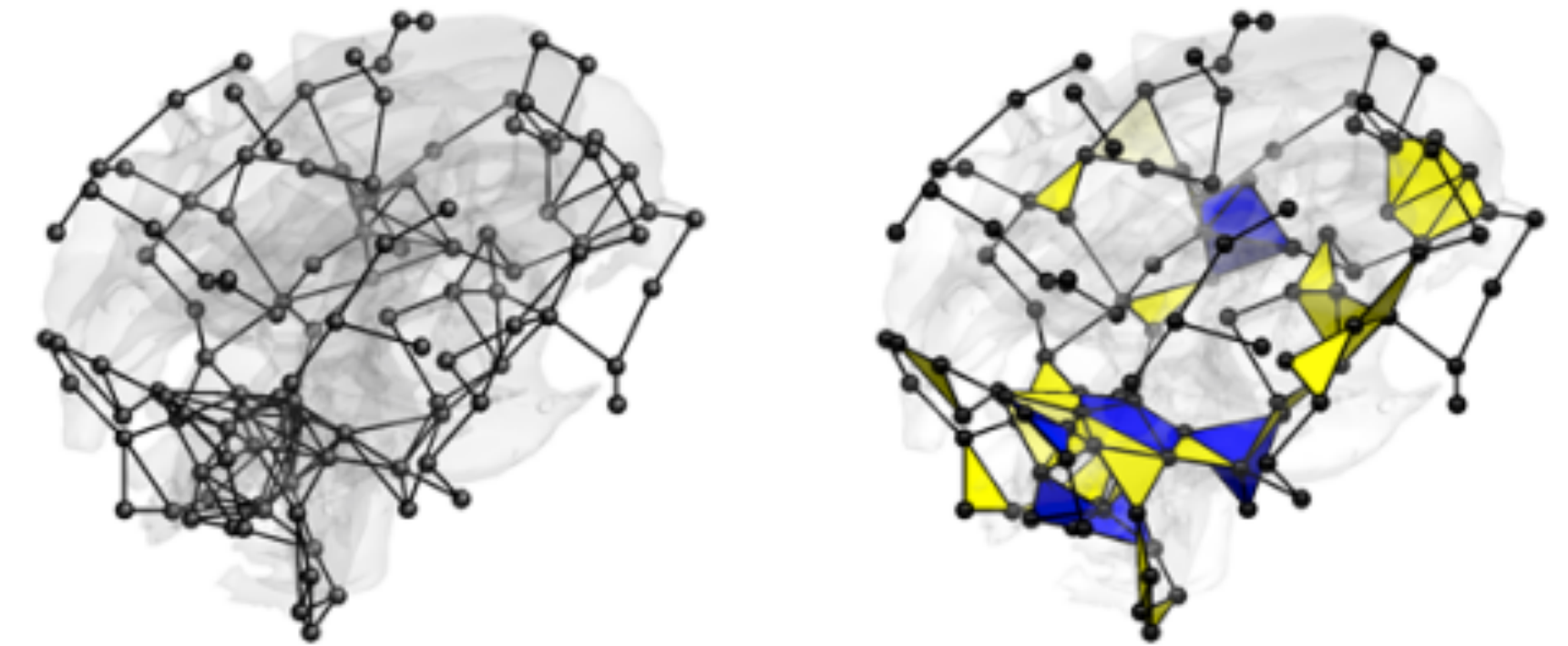
Simplicial complexes and Data in real world



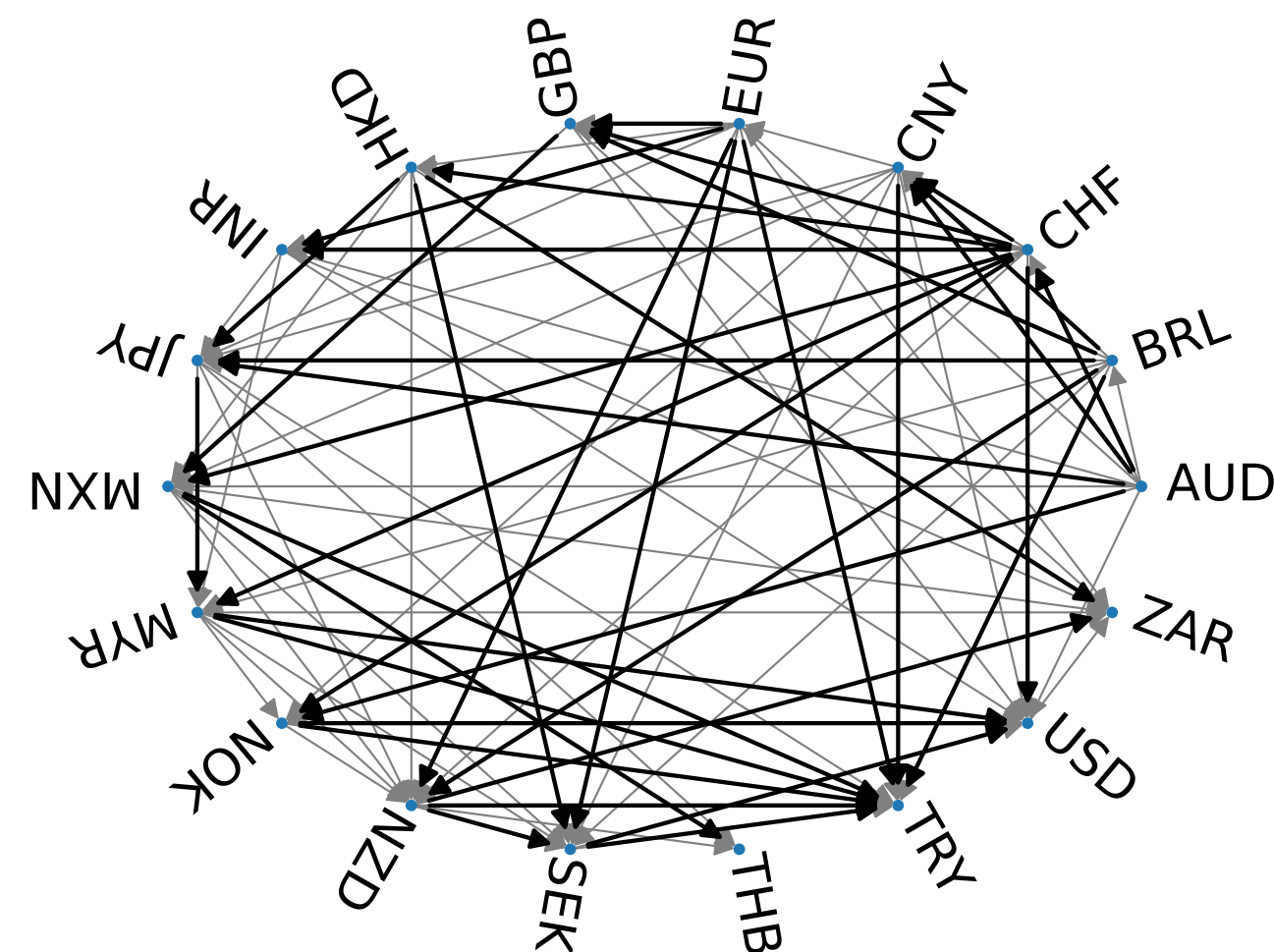
Traffic flows (Jia et al. 2019)



Water flows (Yang et al. 2023)



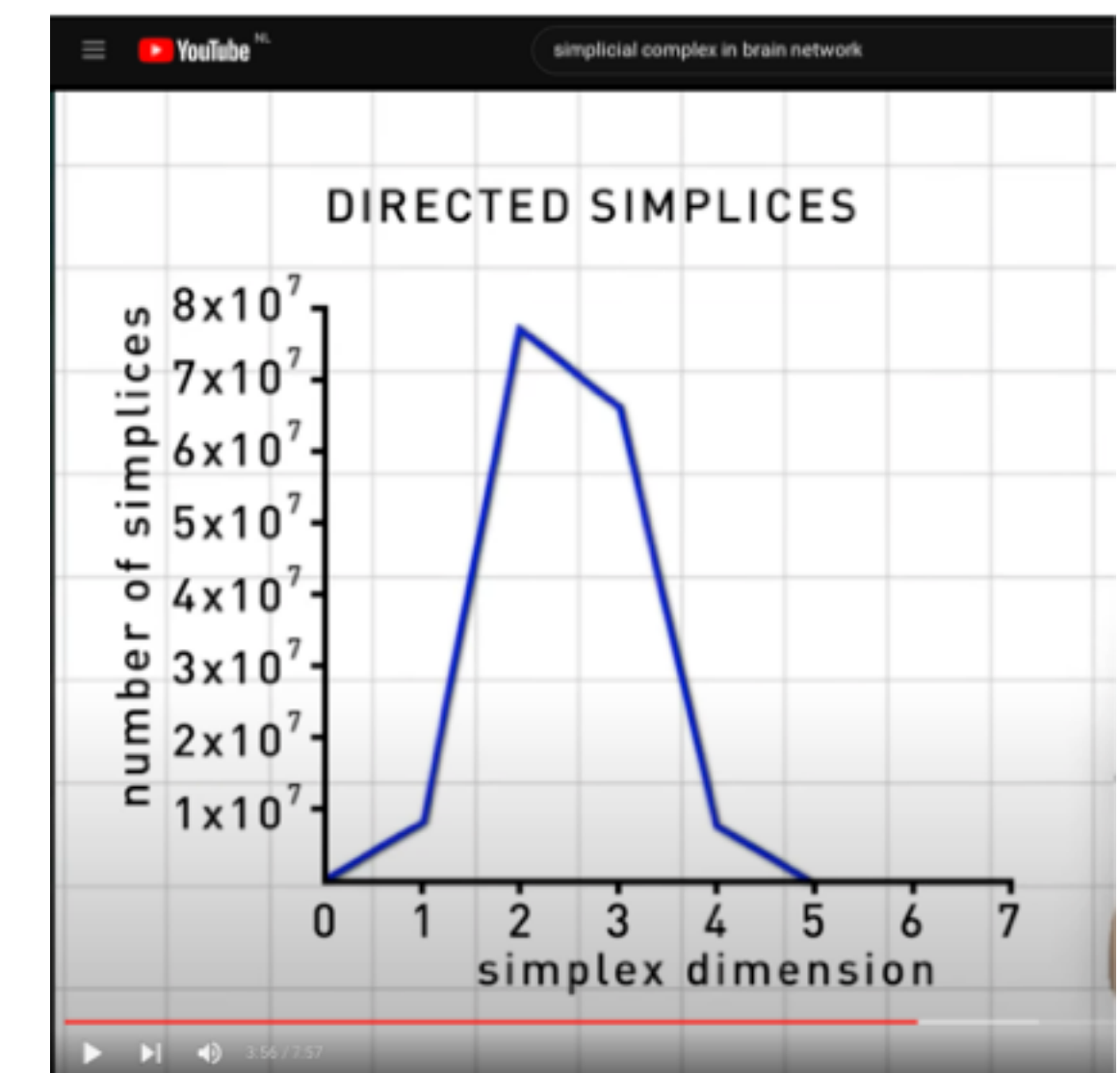
Neuroscience (Anand et al. 2023):
1. Firing of neurons
2. Activation of multiple brain regions



Foreign currency exchange (Jiang et al. 2011)

Others:

- Currents/Voltage in electric circuits/grid
- Game theory (Candogan et al. 2011)
- Ranking theory (Jiang et al. 2011)
- Information flows
- ...
- Discrete vector fields



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Overview

Convolution (Filters)

Statistical Learning
Gaussian Processes

Simplicial Complex

Convolutional NNs

Generative learning
(Distribution matching)