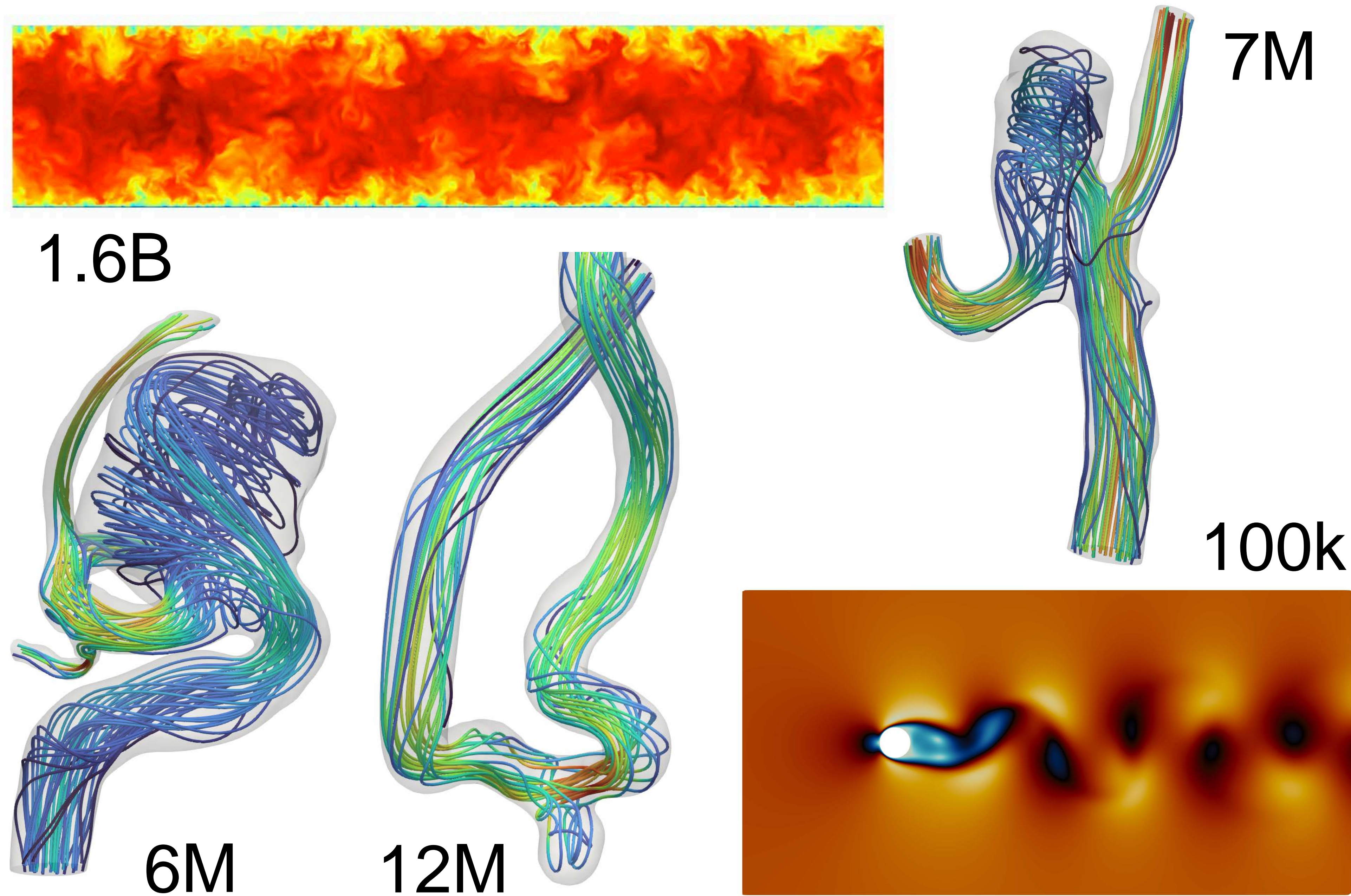


Dimensionality reduction and denoising of unsteady flows

Computational Biomechanics Group
Hunor Csala, Amirhossein Arzani

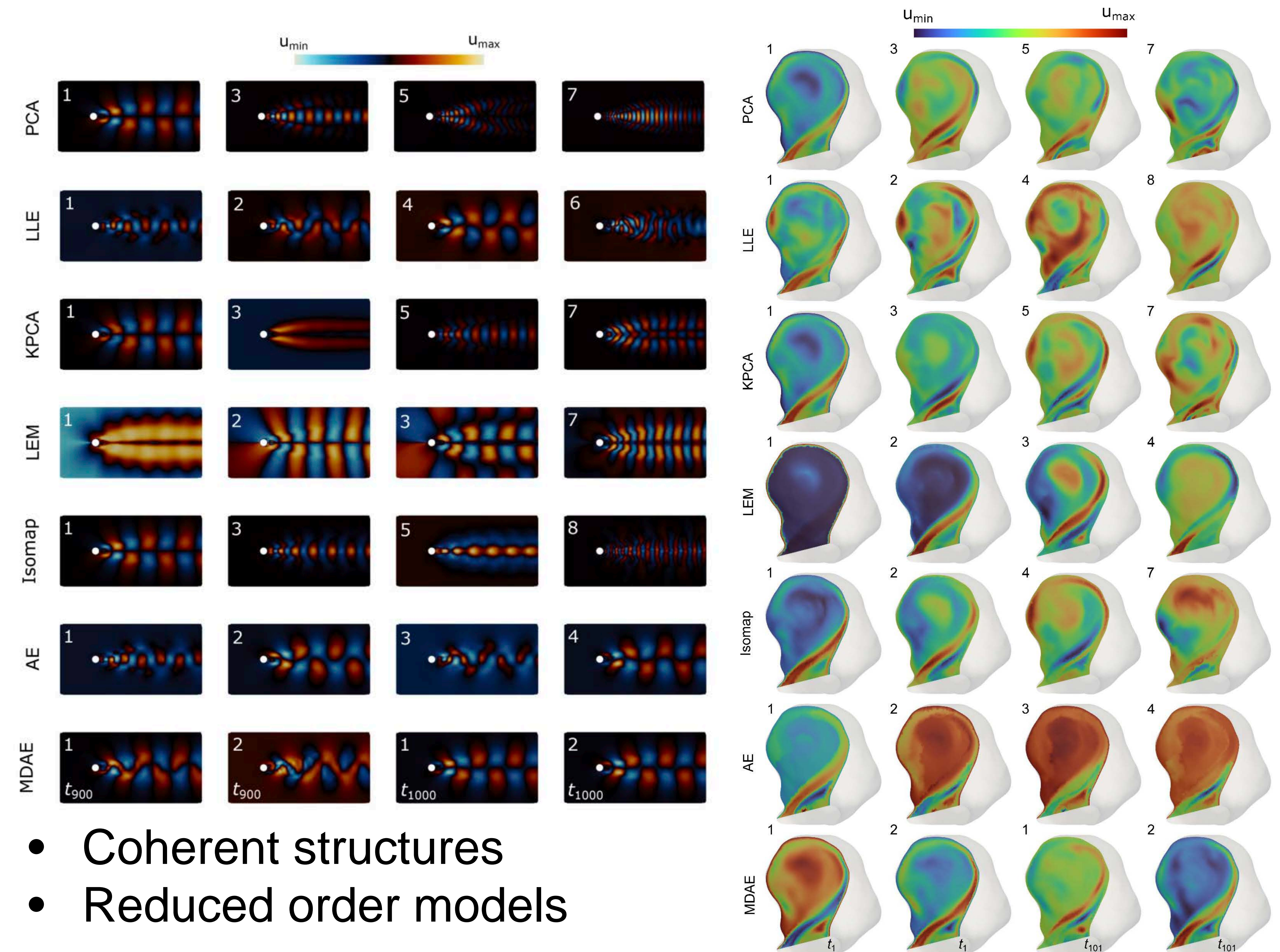


Big data



- Millions of cells, thousands of timesteps
- Natural systems → low-dimensional manifolds

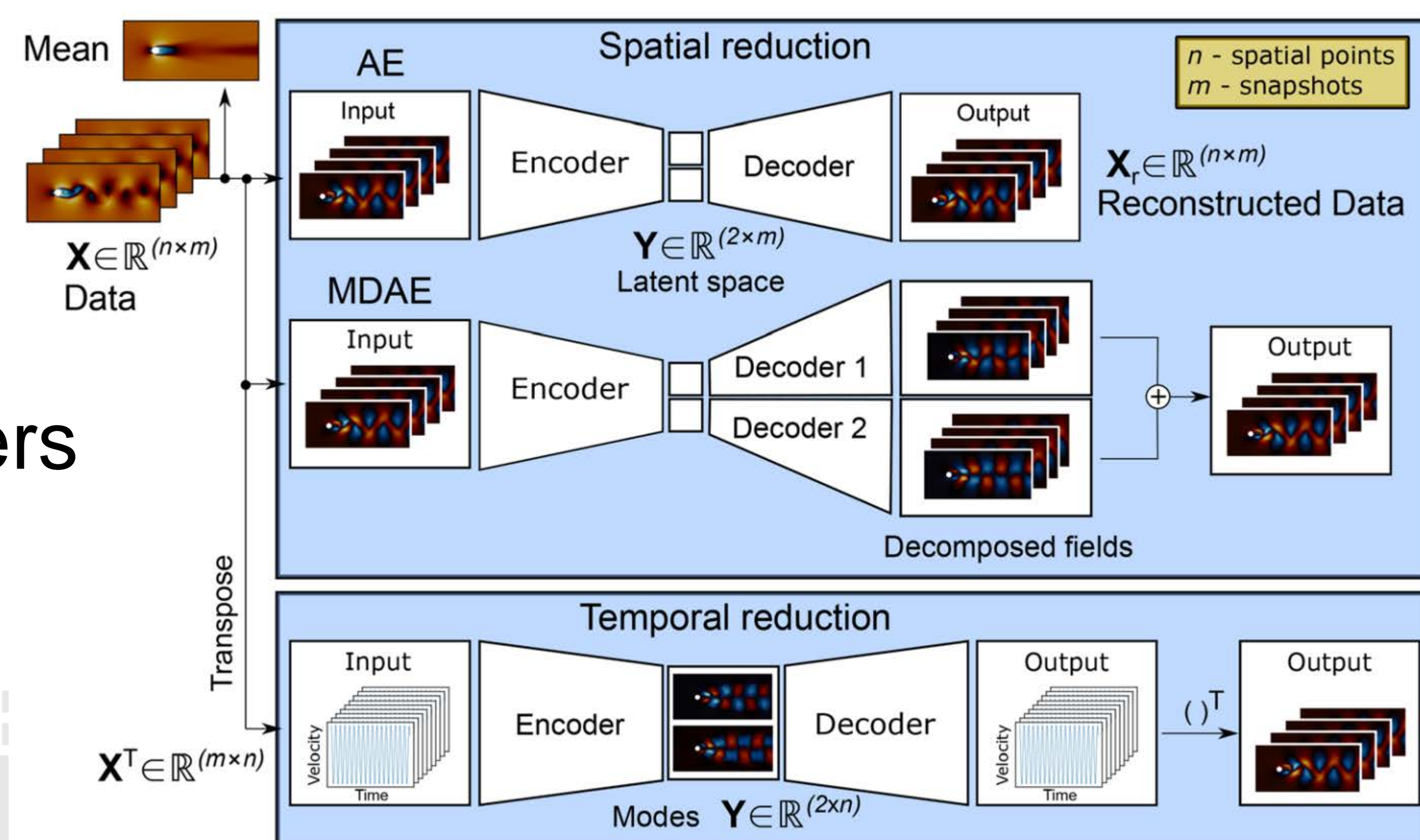
Mode extraction



- Coherent structures
- Reduced order models

Dimensionality reduction

- PCA
- Manifold learning
- Autoencoders



Denoising

- Removing noise from experimental data
- Use CFD data for training – Supervised vs Unsupervised

