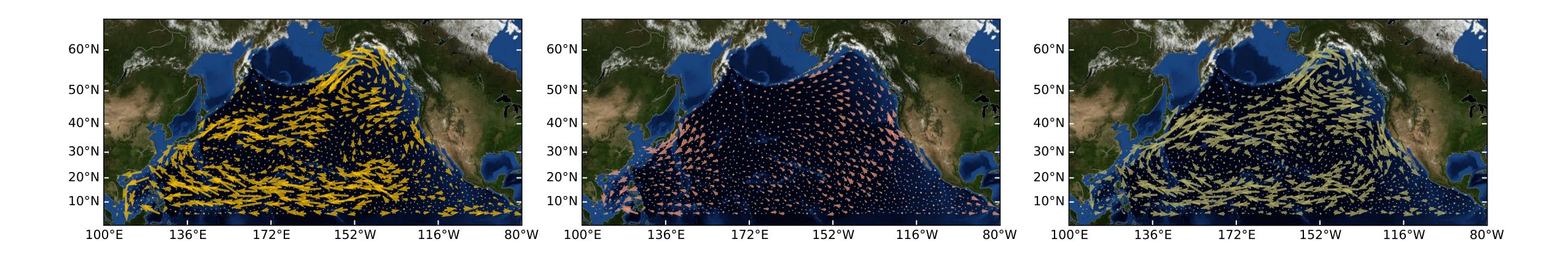
Overview

Hodge decomposition



Edge flow

Gradient flow Curl-free, irrotational

+

Curl flow Div-free, solenoidal

Overview

Convolution

- Simplicial Fourier transform,
 Frequency, Fourier basis
- -Signal variations
- -Convolutional filters
- -Generalizes graph convolutions

Gaussian Process

- -How to define GPs for different parts?
- -Hodge-compositional idea
- -Probabilistic methods

Hodge decomposition

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Convolutional NNs

- -Architecture (attention, message passing)
- -Robustness
- Higher-order link predictions
- -Generalizes GCNs, etc.

Generative learning

- -(Dynamic) optimal transport (Schrödinger bridge) on SCs
- -Gaussian bridge
- -Generative models: diffusion, flow models on SCs