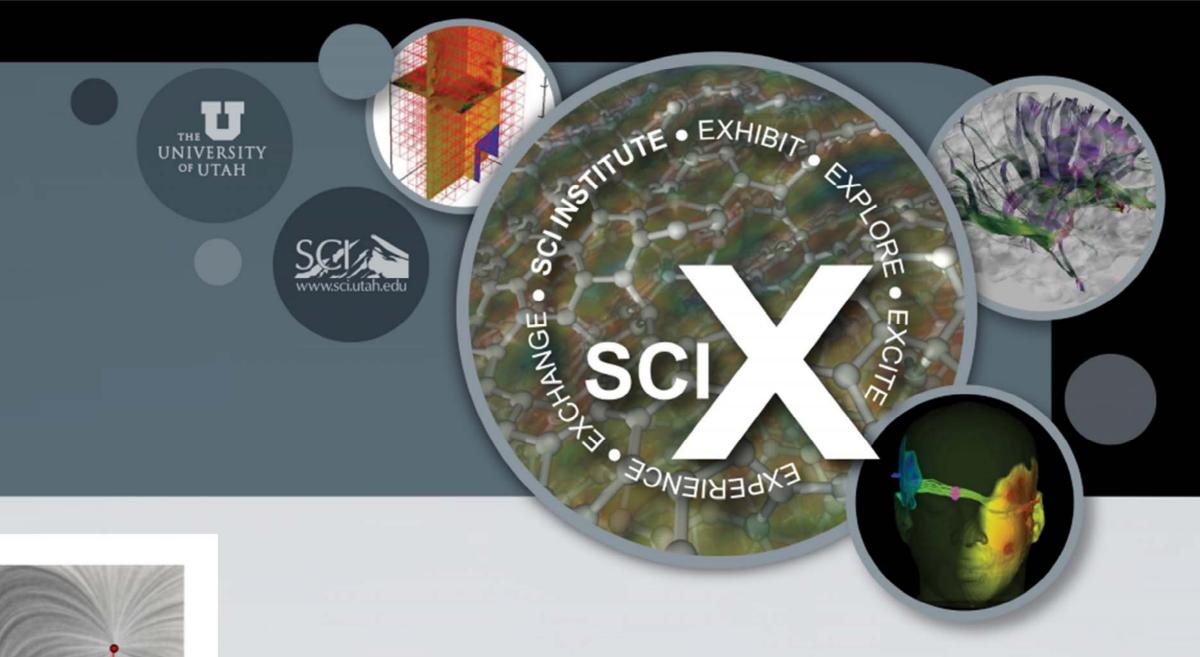
Robust Feature Simplification of Vector Fields

Bei Wang¹, Primoz Skraba², Paul Rosen³, Guoning Chen⁴, Harsh Bhatia⁵ and Valerio Pascucci¹ ¹ University of Utah, ² Jozef Stefan Institute, ³ University of South Florida, ⁴ University of Huston, ⁵ LLNL



Rethink VF Data novel scalable math. rigorous structural stability

Increase Interpretability feature extraction tracking

simplification

visualization

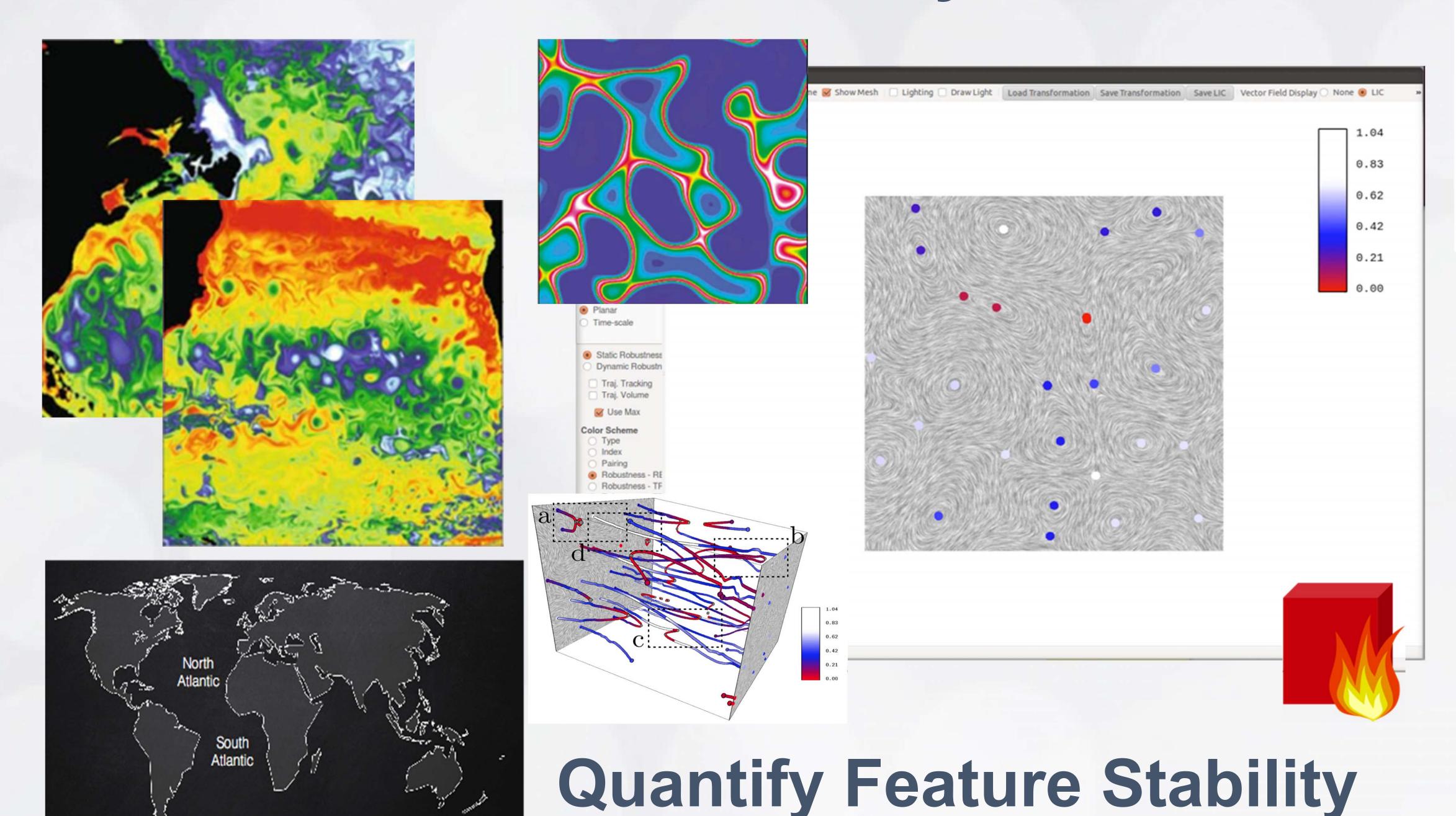
Multiscale View flow dynamics stationary time-varying hierarchical rep.

Vector Field Simplification: The Algorithm

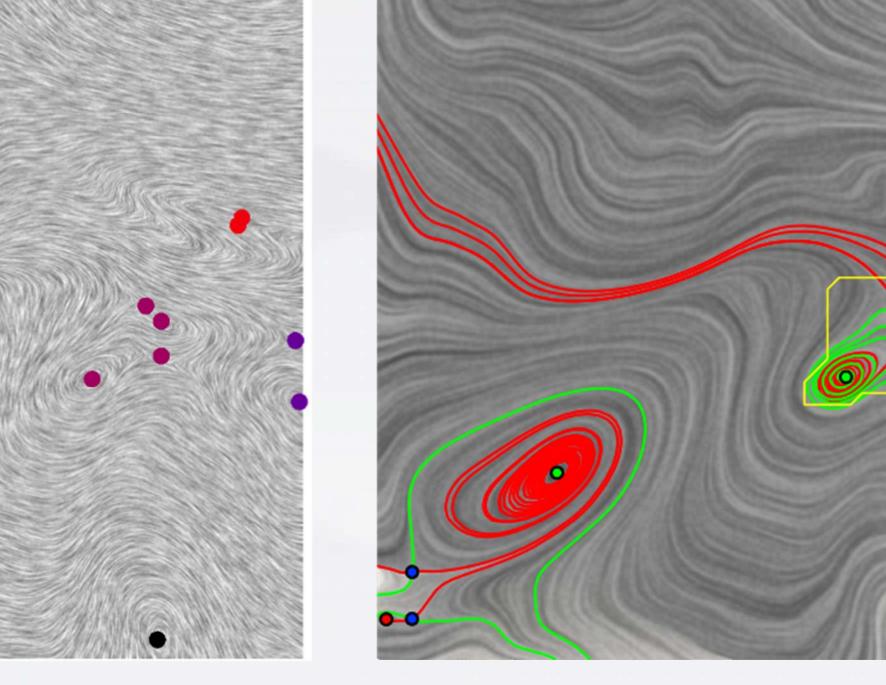
Goal

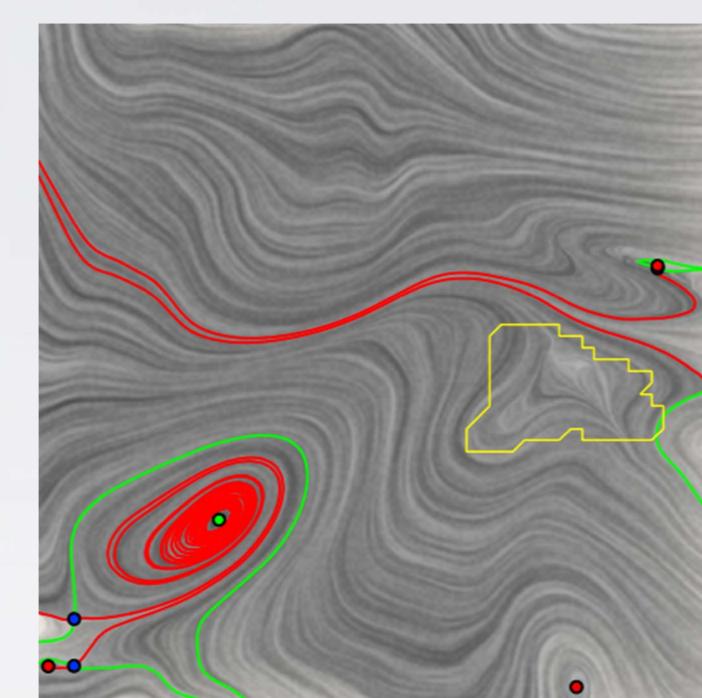
Increasing the interpretability of flow data by studying its structural stability. Robustness of a critical point: minimum amount of perturbation required to cancel it from the vector field.

Combustion and Ocean Eddy Simulation

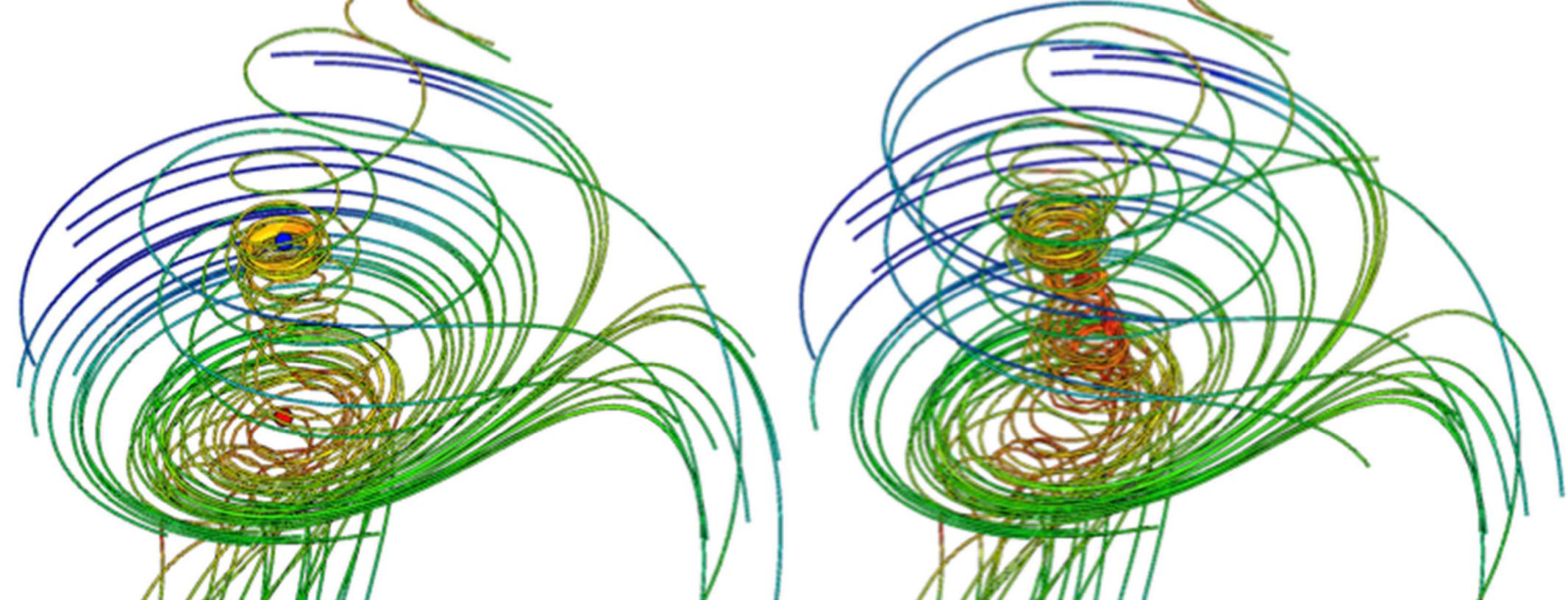


Scientific Computing and Imaging Institute





Understand Turbulent Flow



Separate Features from Noise at Multi-Scale

Credit: Hawkes, Sankaran, Pebay, Chen 2006;

Maltrud, Bryan, Peacock 2010