Activity 1 - 2d turbulence

Introduction

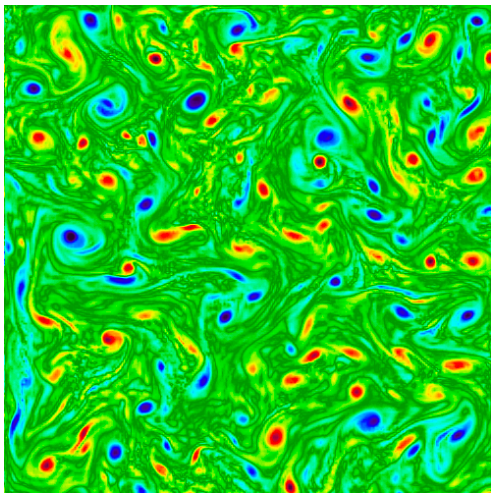
During this activity, we will use the **fluid2d** code to run two dimensional turbulence.

Get and run the script

Download and unzip Fluid2d from: https://github.com/pvthinker/Fluid2d

Install:
- module load anaconda3 (or your python env.)
- Fluid2d-master.zip
- cd Fluid2d-master
- make
- (in bash) source activate.sh
- (in csh) source activate.csh

Run the experiment:
- cd experiments/TwoDimTurb
- python inverse_cascade.py



2d Turbulence

1. Run a first experiment without forcing (free decay)

a) Look at the evolution of vorticity and tracer
b) Plot the evolution of kinetic energy and enstrophy in the system
c) Plot energy density spectra at different times

2. Run a second experiment with forcing (forced 2d turbulence)

- use the white noise forcing by setting param.forcing = True

a) Plot the evolution of kinetic energy and enstrophy in the system
b) Plot energy density spectra at different times
c) Plot tracer variance spectra at different times