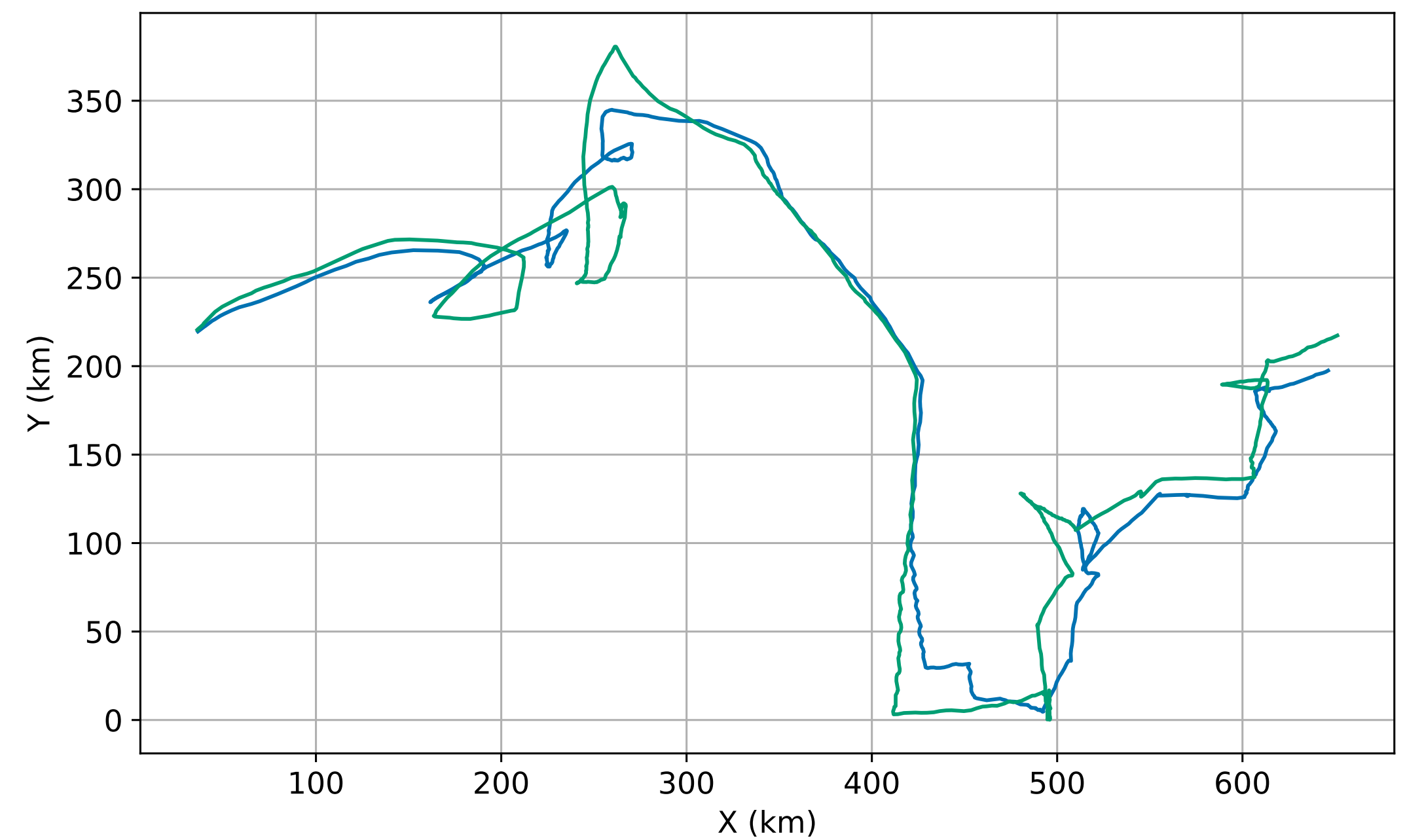
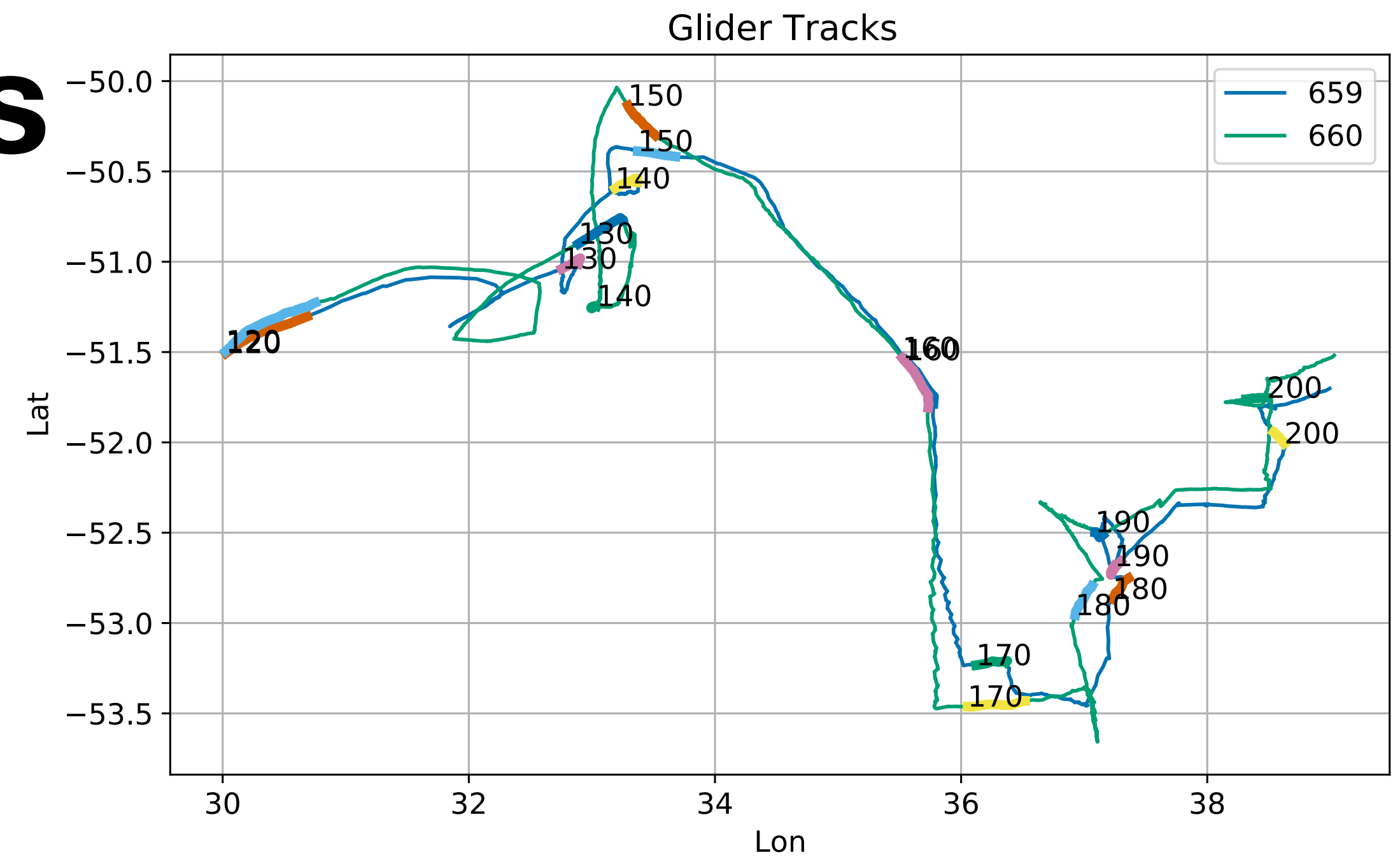
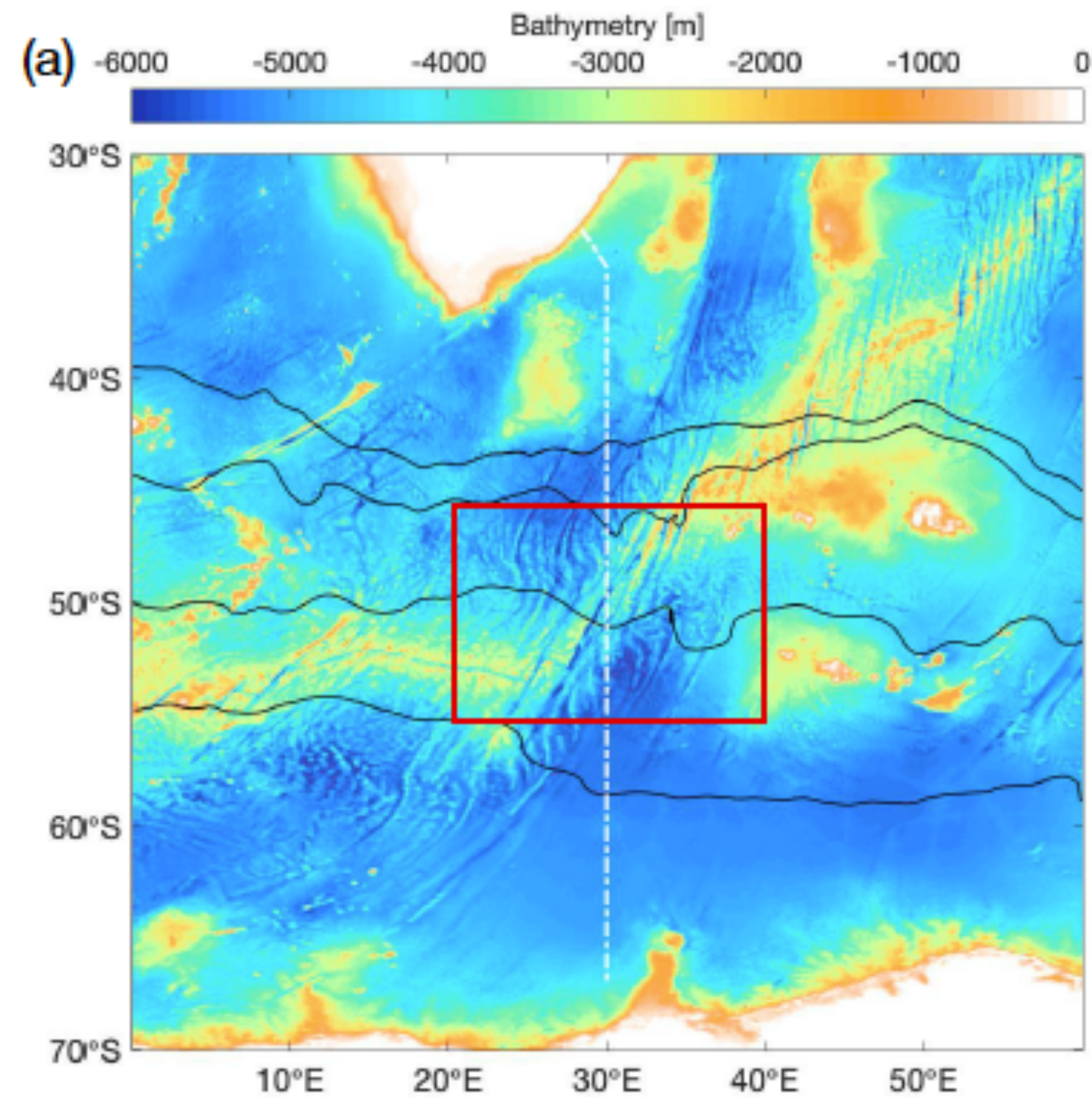


Spatio-temporal statistics from gliders

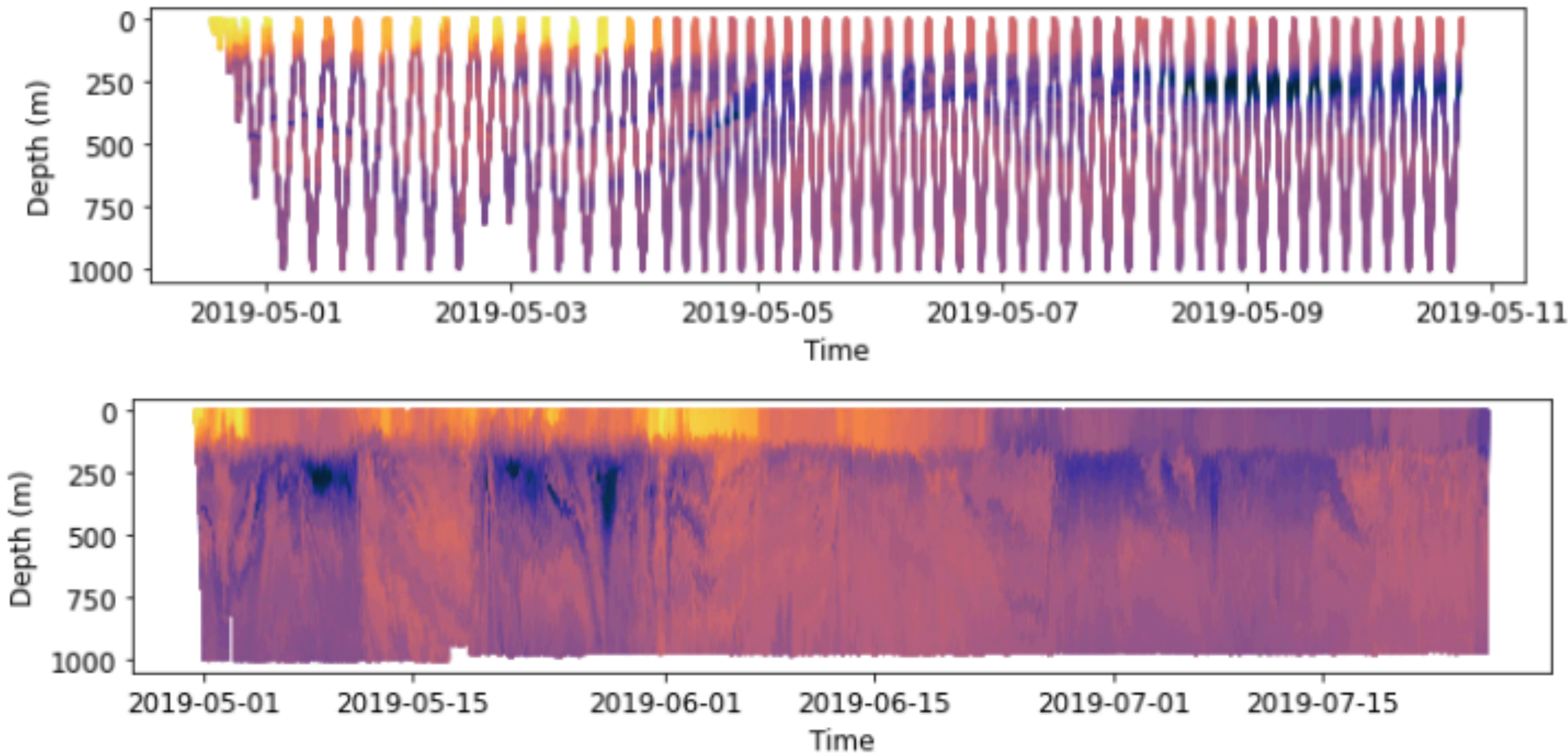
Southern Ocean

Dhruv Balwada, 19 Feb 2021

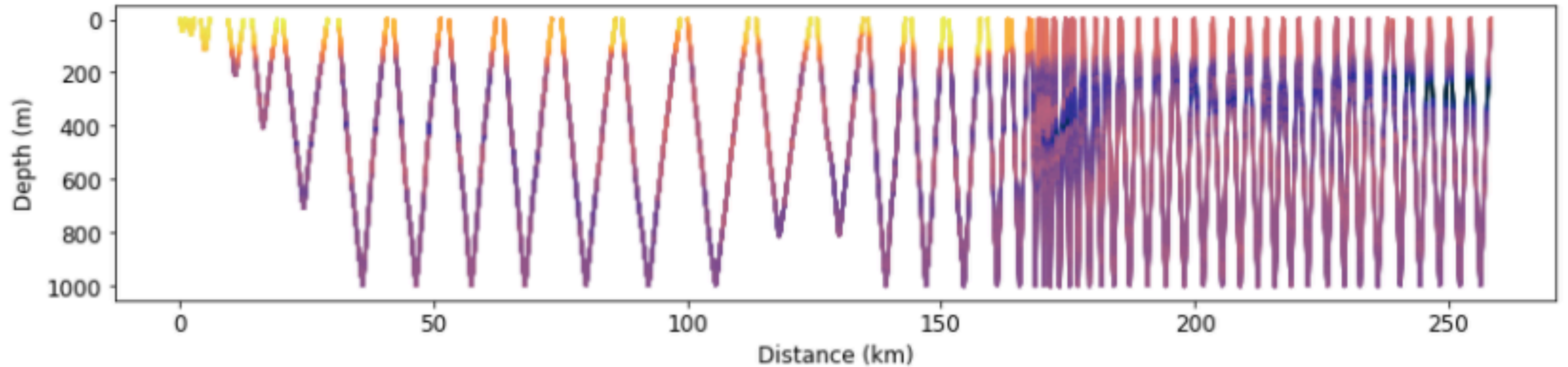
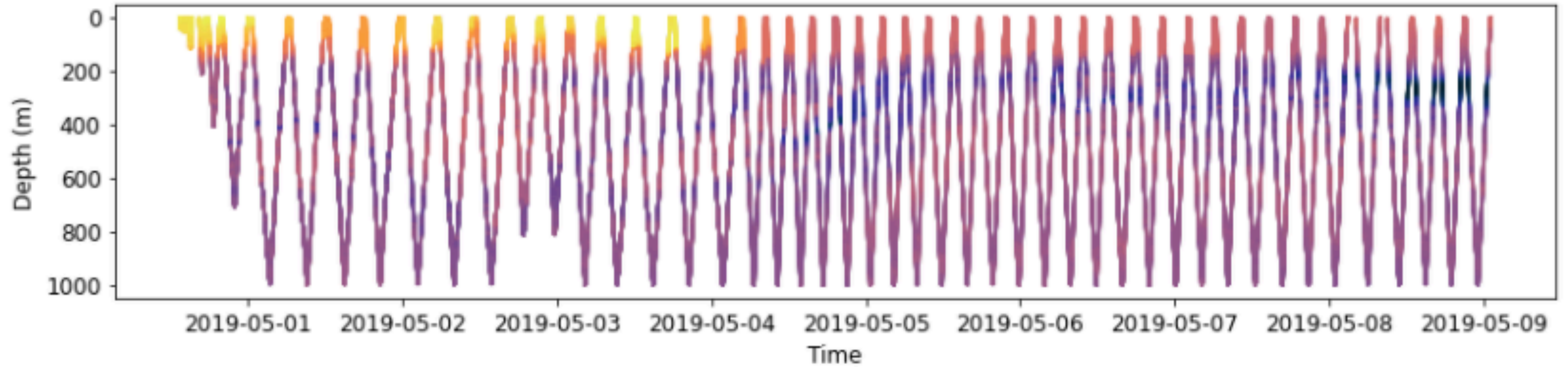
Southern Ocean Gliders



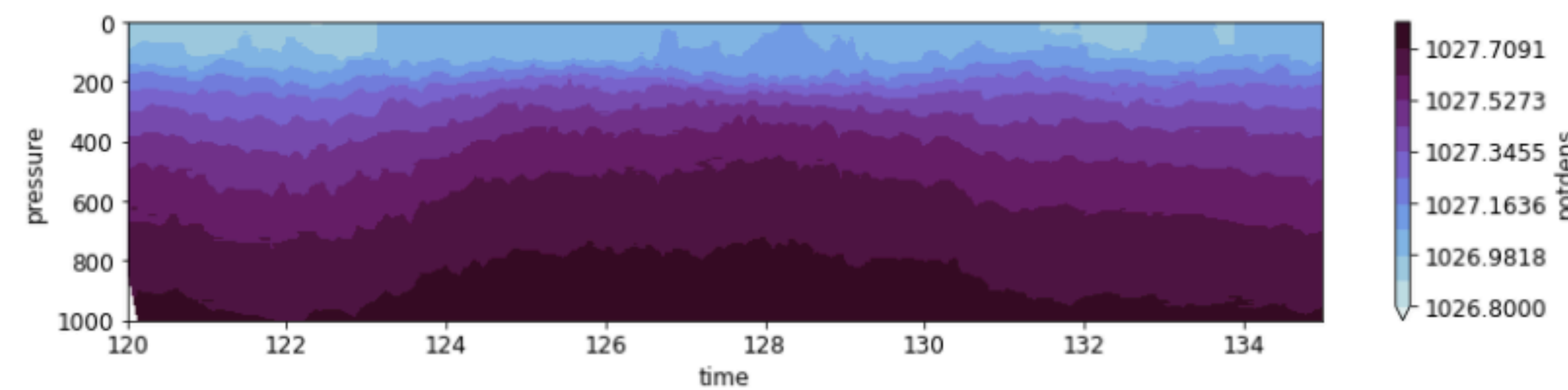
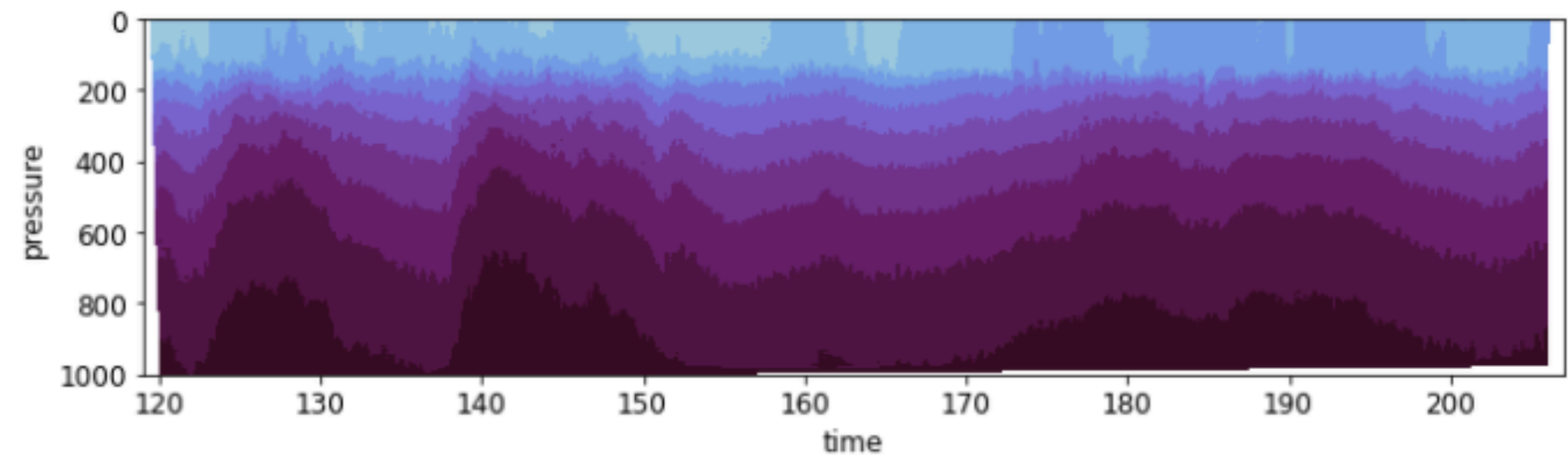
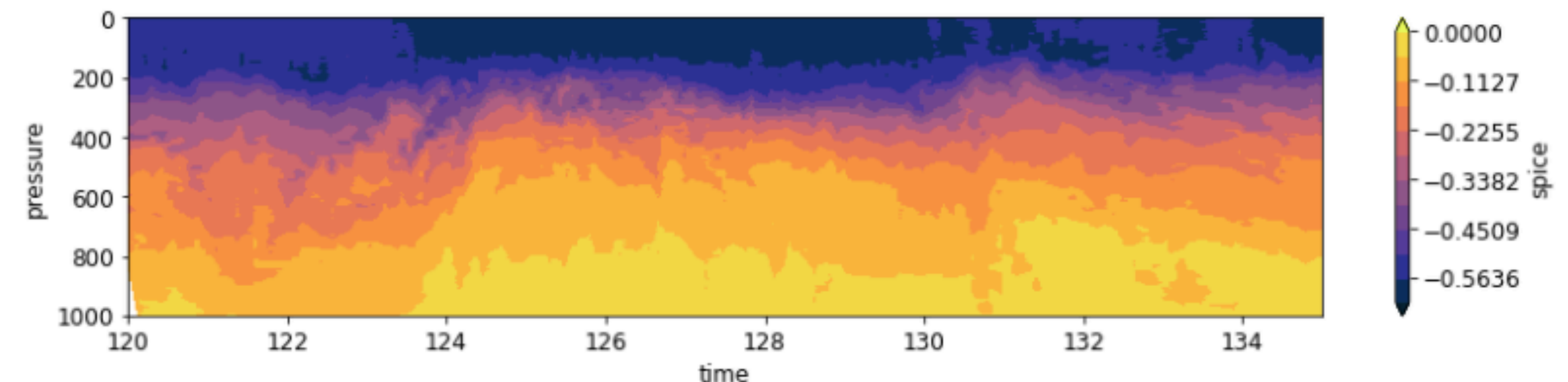
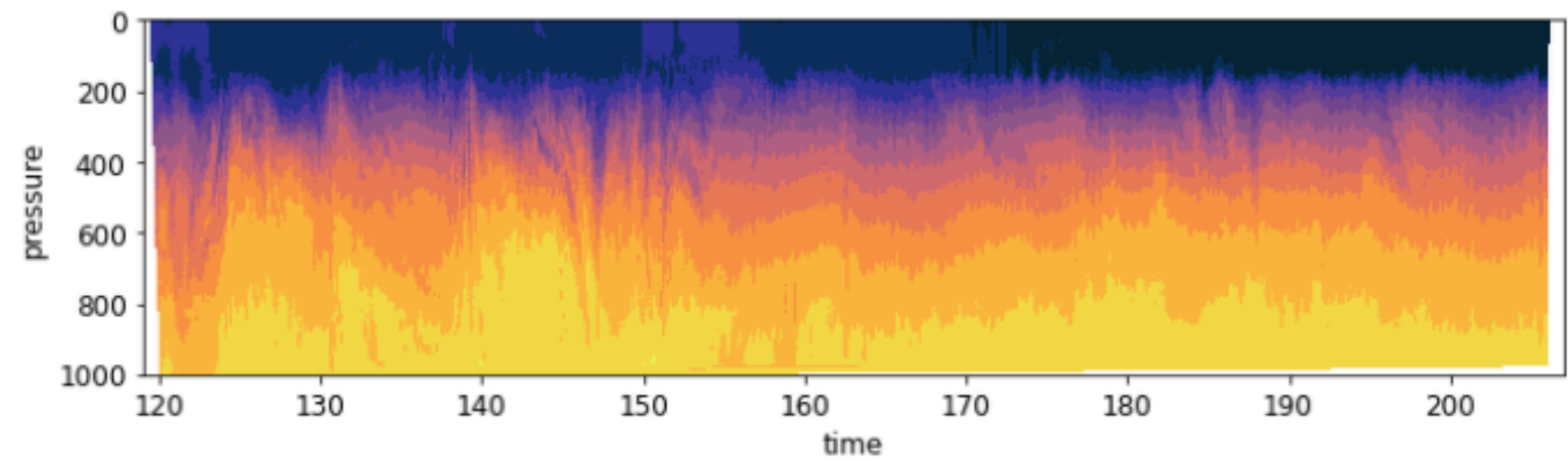
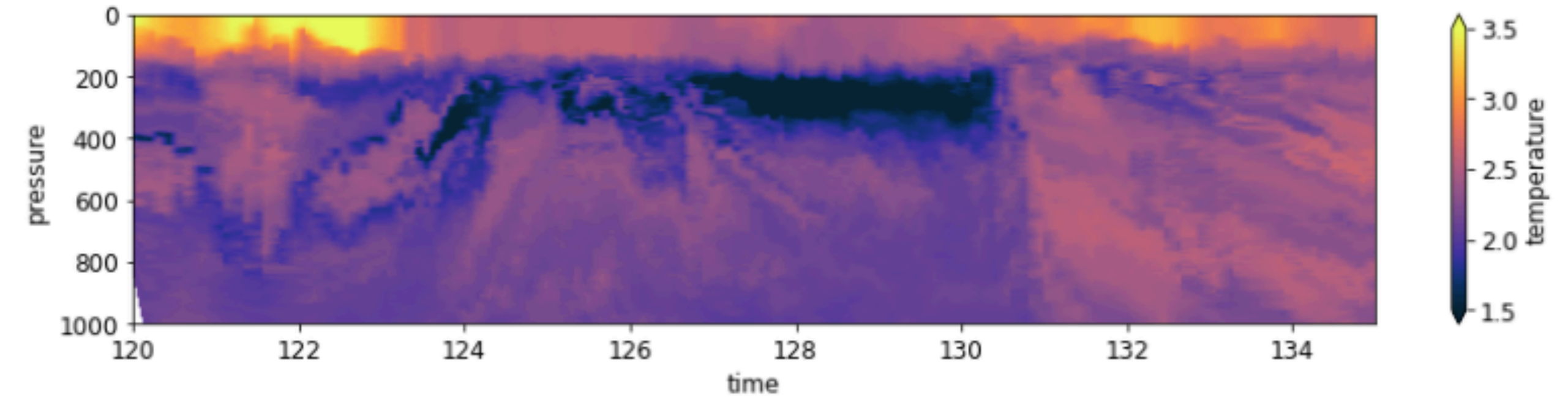
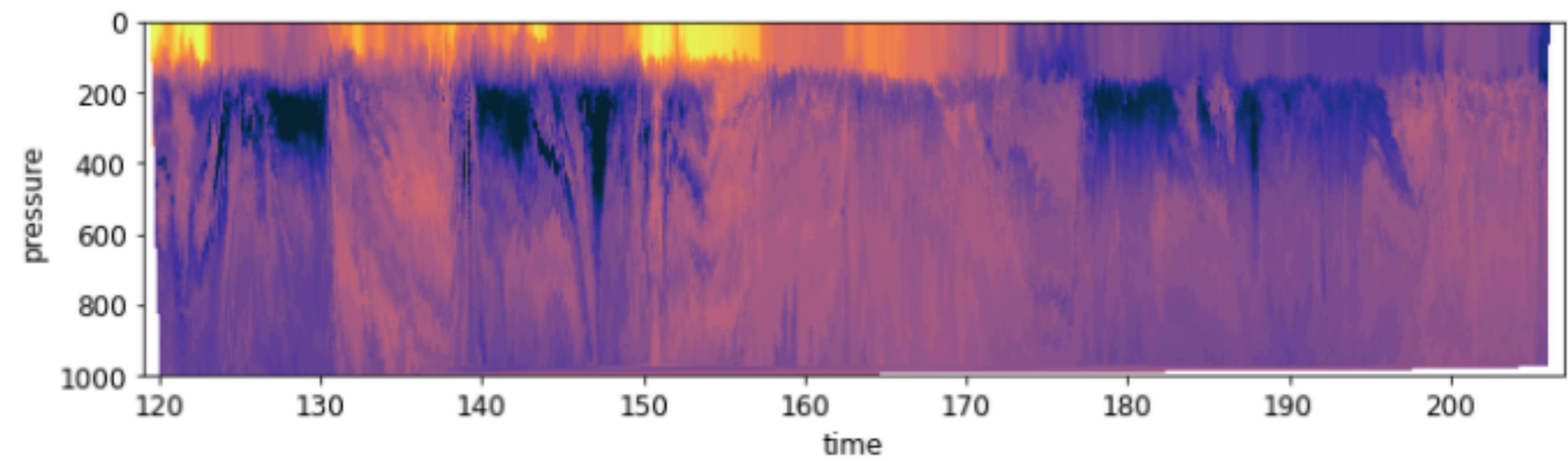
Complex sampling and interesting structures



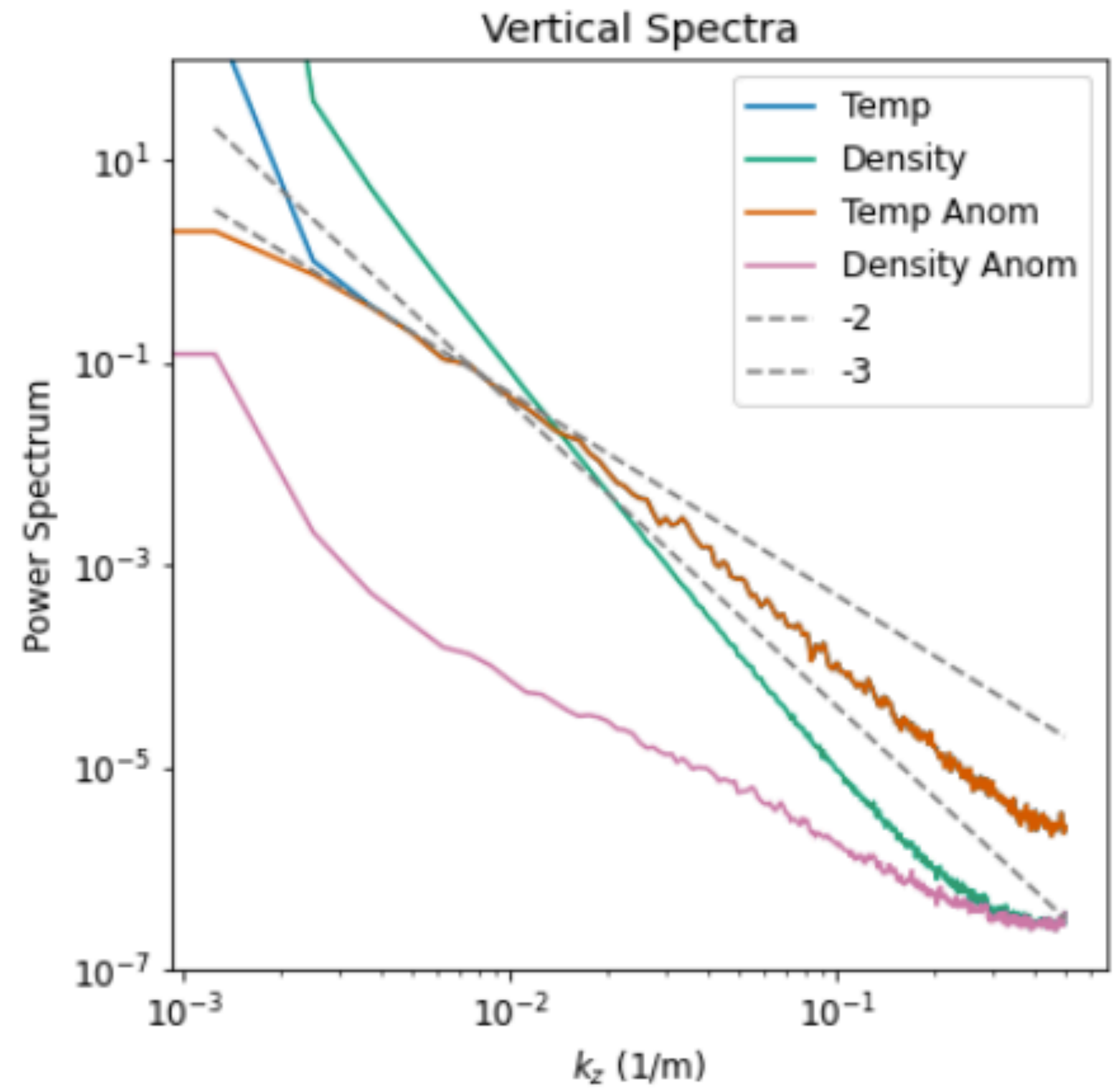
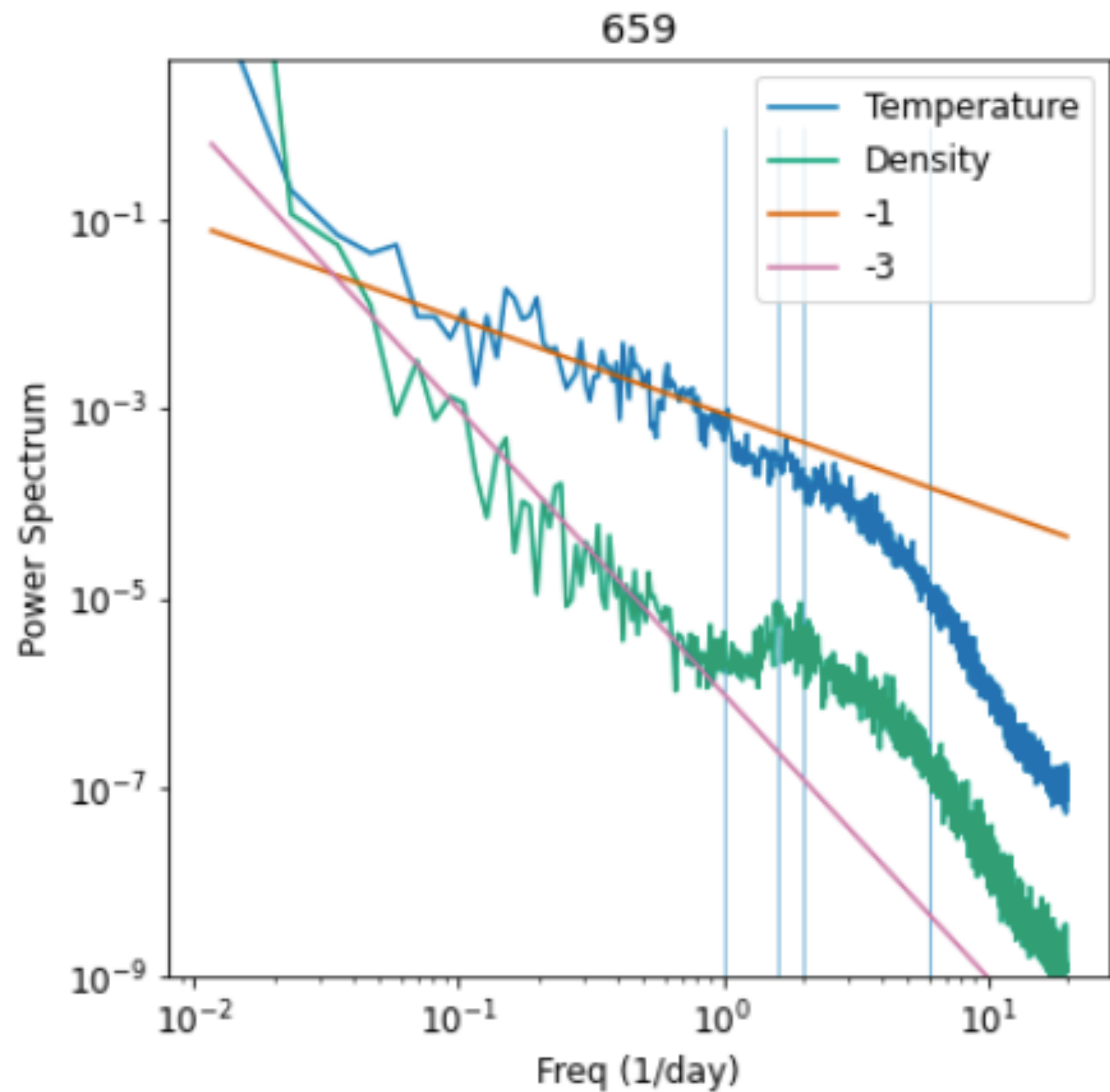
Complex spatio-temporal sampling



Different spatial structures in different variables



Different Spectra for different fields



How do we map this field?

- Too many data points ($\sim 10^6$)
 - Box (eg 100m X 10 dives)
 - Single depth or short depth range
 - Stochastic
- Interpolating 4D data
 - (z,t) ignore spatial dependence
 - ($|x|$, z, t) isotropy
 - ($|x|$, t) individual depth, ignore any information coming from depth
 - ($|x|$, z) stationary field
 - (x,y,z,t) full
- Choice of correlation functions
 - RBF + ARD (traditional)
 - Matern
 - Matern + periodic
 - ?
- Choice of library
 - Numpy/JAX
 - Scikit learn
 - GPy
 - GPflow
 - GPytorch
 - ???

First naive attempt

