ES7023 Fundamentals of Data Science for Earth and Environmental Systems Science (3AUs)

The goal of this class is to develop a working knowledge of data science and its use in earth systems research and practice. The course is split evenly between key concepts / theory and practical experience writing code and analyzing outputs. Some introductory knowledge of statistics is assumed, and some familiarity with programming is helpful but not required.

The course will focus on fundamental processes for scientific modelling, inference and data-science and their application in earth and environmental system science. The class will cover:

1) basic concepts and tools in data science,
2) brief review of statics,
3) goals and principles of scientific modeling,
4) model development,
5) model calibration and selection,
6) sensitivity analysis,
7) model evaluation,
8) model predictions,
9) results visualization and communication.