Lowering the data load

A huge simulation + rich diagnostics

8192^3 grid points, 10 variables, double precision:

2 snapshots:	~ 80 TB
7 slices w. 10 variables, 1000 timesteps:	~ 34 TB
z averages w. 60 variables, 1000 timesteps:	~ 30 TB
xy spectra on 2 planes w. 5 variables, 1000 timesteps:	~ 5 TB

unbearable!!!

Measures

- write all data in single precision

  → testing of “healing after restart” necessary for snapshots

- lossy compression of slices, averages and spectra

  compression ratio 5 … 40 (depending on error bound)

- lossless compression of snapshots

  compression ratio 1.4 … 3

Problems

- compression on CPU, to be concurrent with computation
- incremental compression of slices, averages, spectra?
- decompression speed sufficient for work with diagnostics?
- HDF5: built-in compression?

How to proceed?