CODE BACKGROUND

MOTIVATION:

- To simulate turbulent compressible convection in 3-D
- Relevence to astrophysical processes e.g. the Sun

OBJECTIVES:

- Turbulent state ⇒ high resolution ⇒ efficiency/speed of code is important
- Compressibility ⇒ asymmetry in the vertical direction
- High degrees of turbulence ⇒ local model

CODE:

- Rectilinear geometry
- Periodic boundary conditions in the horizontal
- Various fixed boundary conditions in the vertical
- Use a semi-implicit, hydrid pseudo-spectral/finite-difference method to solve equations for mass, momentum, induction and energy conservation along with an equation of state.

HISTORY:

- Original vector version: Fausto Cattaneo, Nic Brummell, Neal Hurlburt – ETA10, Cray Y-MP, Cray C90
- Parallel, shared memory version: Xin Xie, Nic Brummell – KSR
- Parallel, distributed memory version: Tom Clune, Nic Brummell – IBM SP2, Cray T3E, SGI Origin 2000