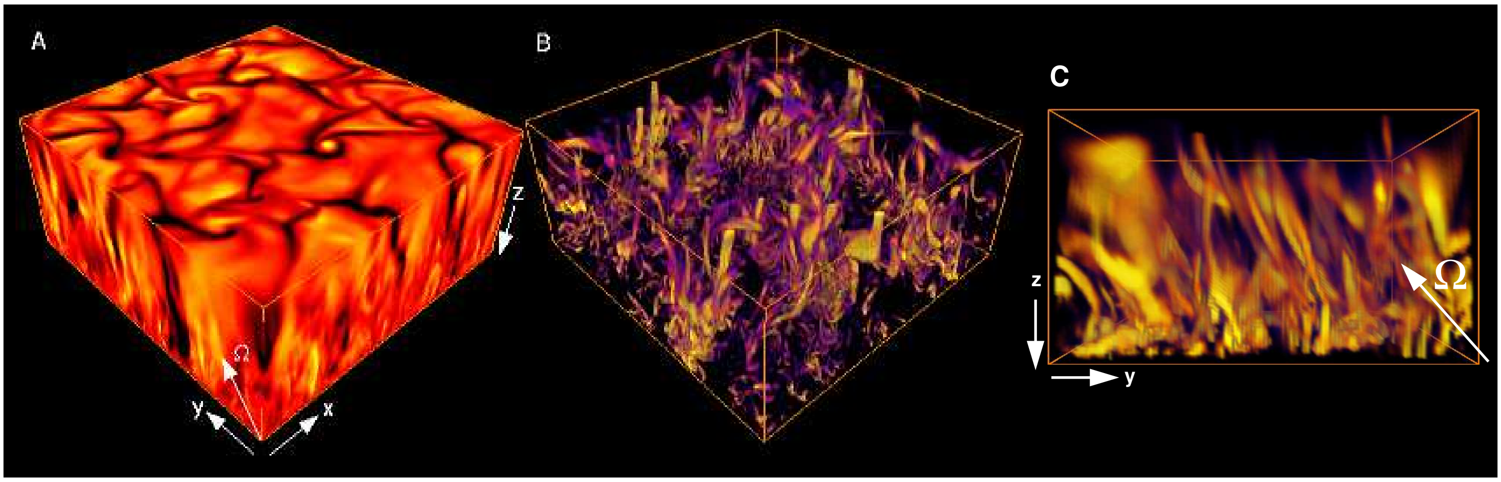

Fig. 1. 3−D turbulent compressible convection with rotation on a local f−plane, showing (A) vertical velocity and (B),(C) enstrophy. Apparent are coherent structures associated with the vortex tubing in the interior which may align with the rotation vector Ω .

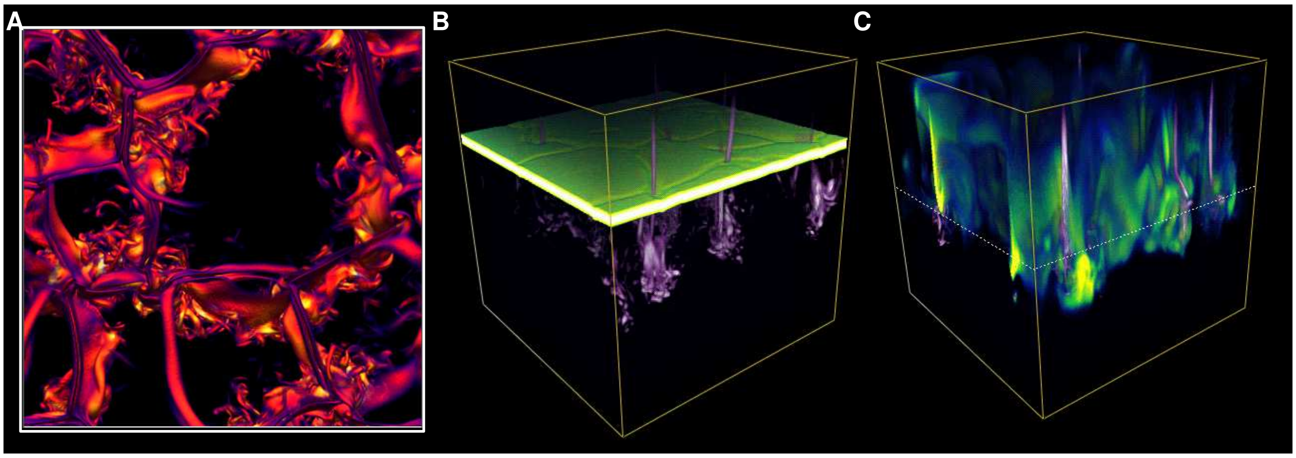

Fig. 2. 3−D turbulent compressible convection with penetration and magnetic fields. The upper half of the domain is convectively unstable whilst the lower half is stable by virtue of an imposed conductivity profile. Enstrophy is volume rendered in (A) from directly above in a case without magnetism, whereas (B) and (C) show views which include the magnetic field strength rendered in blue/green. A layer is initially place within the convection zone (B), but is soon redistributed (pumped) (C) such that the strongest field lies below, in the stable layer.

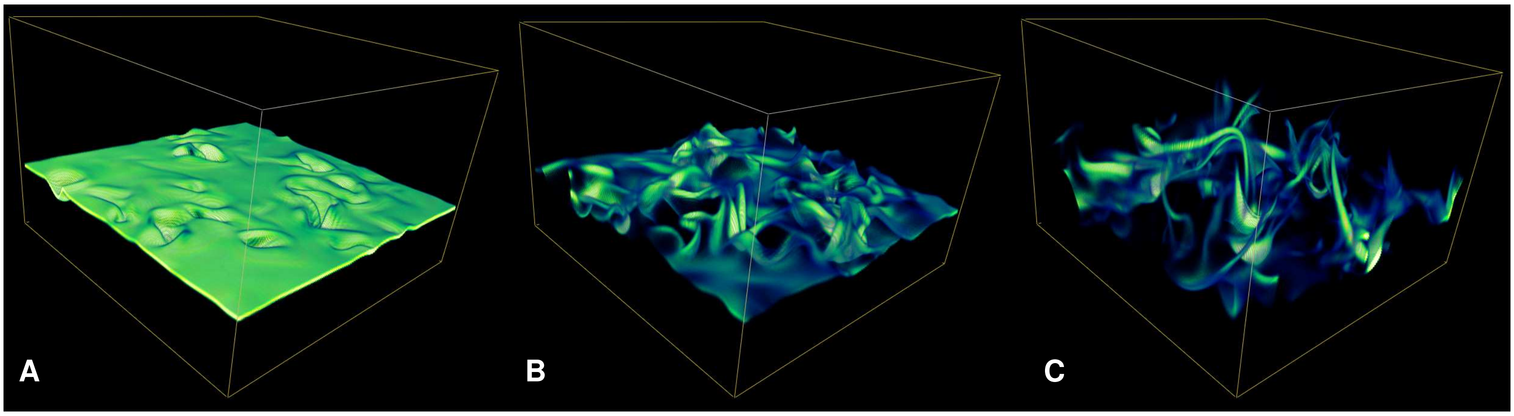

Fig. 3. As above, except with penetration impinging on a magnetic layer. The initially uniform magnetic field is disrupted by convection penetrating into the stable layer, and is subsequently formed into more intense and isolated structures by the motions.

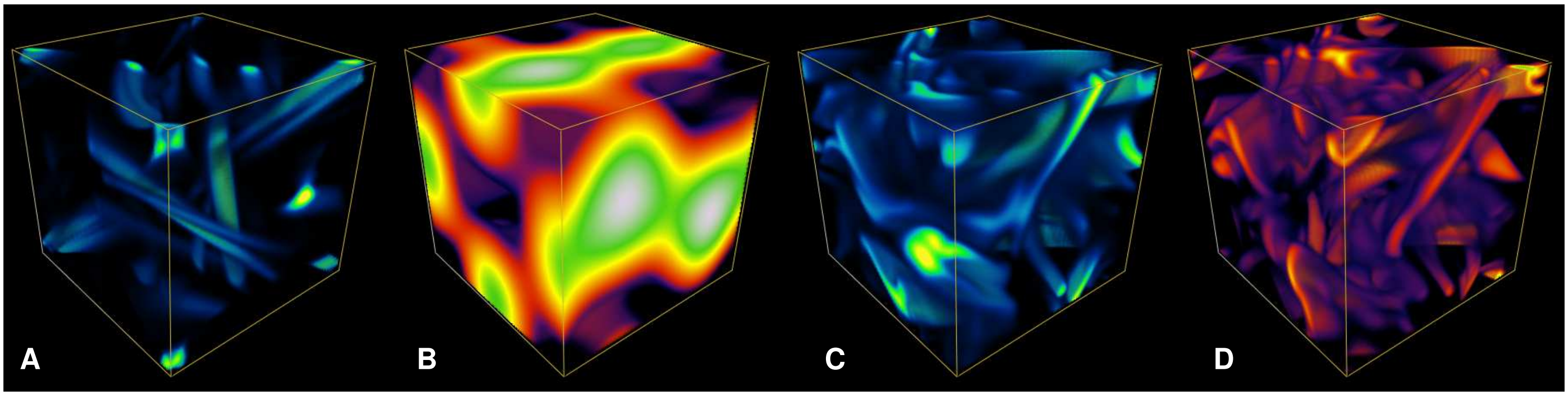

Fig. 4. 3−D fully nonlinear, forced MHD dynamo. Two states are shown: (A) and (B) show the early stages of linear growth in B^2 and enstrophy, whilst (C) and (D) show the eventual nonlinear saturated state,in the same variables.