Geophysical Research Abstracts, Vol. 7, 03753, 2005
SRef-ID: 1607-7962/gra/EGU05-A-03753

Syn-depositional tectonism and its bearing on the evolution of the deep-water Tabernas-Sorbas basin, SE Spain

1 P. Haughton

Department of Geology, University College Dublin, Belfield, Dublin 4, Ireland

Deciphering the origin of Neogene basins in SE Spain is complicated by the rapid re-orientation of late orogenic stress fields, transfer between local and far field stresses, extensive fault reactivation and basin inversion. The identification of truly syn-depositional faults is the key to a better understanding of the basins. Although attention has focused on the major structures separating the basins from the adjacent Betic basement blocks, these are generally late structures, in some cases rotated and displaced unconformities, and had little bearing on the earlier subsidence history. Faults within the basins are less obvious but more informative. Subsidence of the deep water Sorbas trough stepped westwards into the Tabernas area with time, rotating axial slopes and accompanied by propagation of strike-slip faults through the basin fill to breach the sea bed. These shallow wet-sediment fault zones are characterised by unusually wide gouge zones and had a demonstrable impact on deep water sedimentation. Local mini-basins developed alongside some of the faults, with evidence of stratigraphic growth and collapse of unstable fault scarps. The fault zones acted to partition the basin floor, dictating the routing of gravity currents and forcing complex ponding effects in the sandy turbidites trapped in areas of deeper structurally controlled bathymetry. The geometry and character of the ponded turbidites can be used to constrain the behaviour of the faults, providing key insight into structures that were clearly active during deposition.