

In this issue

Evidence of a seismic event

Palaeoliquefaction features, such as sandblows, fault off sets and other seismically induced signatures are often used to develop earthquake history of a region, useful for regional hazard assessment. Occurrence of two large earthquakes (1819 and 2001) in the Kachchh rift basin has highlighted the need for identifying potential seismogenic sources in



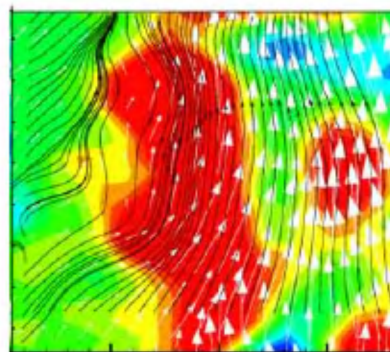
Gujarat. Ongoing efforts employing palaeoseismic techniques have identified older earthquakes from different parts of this rift basin, but the map of seismic sources is far from complete, not to mention their past histories. The paper by Rachna Raj *et al.* (**page 812**) presents evidence for a deformation event about 5500 years BP, from Dhadhar river basin, in the Gujarat alluvial plain. Given the history of recent and historic earthquakes in this region, the presence of soft-sediment deformation features is not surprising. The important task however, is to confirm the seismic origin of these features and to isolate the time and location of the causative earthquake/s.

Equation-of-state of copper using laser-induced shock pressures

Scientists have been pursuing a programme of measuring the equation-of-state (EOS) of metals using a 2J/200 ps Nd:YAG laser. An earlier communication in *Current Science* (2002, **82**, 149–158) had dealt with EOS studies of gold in the pressure range 9–13 Mbar. The importance of these measurements was described in the 'In this issue' column of the same issue. M. Shukla *et al.* have now reported (**page 802**) EOS of copper in the pressure range 8–11 Mbar at 8.9 Mbar and 10.4 Mbar using the same facility and technique. Till about a decade ago, there was no material with an EOS that was sufficiently accurate to be used as a standard at the pressures of interest. One of the goals was to provide accurate experimental data to test theory over a wide range of pressures, densities and temperatures. Among the materials suggested to be qualified as standards were, for example, aluminum and copper, because the theory of EOS of these metals was under development and also because of the relative ease of fabricating targets from these materials. Hence the experiments reported here are of importance. In addition, the authors have arrived at the Hugoniot of copper following first principle calculations. The theoretical Hugoniot is in close agreement with that from measurements.

PIV study of a cloud-like flow

Clouds have a large impact on earth's climate but we still do not understand what factors control the height to which clouds rise. The release of latent heat within the clouds on account of condensation of water vapour alters the manner in which it evolves. In this issue Venkatakrishnan *et al.* (**page 778**) have used particle imaging velocimetry (PIV) to investigate the impact of internal heating on 'cloud-like' flows in the laboratory. They have shown that



internal heating has a profound impact on the entrainment of ambient fluid. When there is no internal heating the centre-line velocity of the jet decreases substantially but in the presence of internal heating there is almost no change in the centre-line velocity. These results will stimulate modellers to come up with better representation of clouds in General Circulation Models of the atmosphere.