Ottemoller, L.; Baptie, B.. 2009 Source parameters for the 28 April 2007 Mw 4.0 earthquake in Folkestone, United Kingdom. *Bulletin of the Seismological Society of America*, 99 (3). 1853-1867. 10.1785/0120080244

A moderate size earthquake (ML 4.3, Mw 4.0) occurred in southeastern England on 28 April 2007. The earthquake was of some significance as it caused damage in the town of Folkestone and produced the largest peak horizontal ground acceleration (PGA, 0.1g) measured in the United Kingdom to date. It was followed by 12 aftershocks between ML 0.8 and 1.7. The earthquake was the first of this size recorded by a significant number of newly installed broadband stations in the United Kingdom. The hypocenter of the event was at a depth of about 5 km beneath Folkestone, with an error ellipse indicating horizontal errors in a location of about 5 km. The depth was well constrained using a number of techniques, of which local travel-time inversion and teleseismic depth phase modelling are most reliable. A stress drop of 28.6 bars and a source radius of 0.5 km were determined from the analysis of displacement source spectra. We derived a near-surface attenuation factor =0.02 from the aftershock data that were used in the spectral analysis of the mainshock. Applying the horizontal to vertical (H/V) spectral ratio technique to microtremor data recorded at a station 2 km from the epicenter revealed site amplification at frequencies of 0.4 and 3.9 Hz. This amplification is likely to have contributed to the mainshock PGA of 0.1g measured at the same site. Similar site conditions may have been responsible for the damage in parts of Folkestone. The moment tensor computed from regional broadband data showed a strike-slip mechanism with a normal component and either right-lateral movement on a west-southwest–east-northeast-striking or left-lateral movement on a north-northwest–south-southeast-striking nodal plane. The north-northwest–south-southeast-striking nodal plane matches the trend of the main faults affecting the Kent coalfield and also possibly the Variscan front. It is thus possible that the causative fault was associated with the Variscan front, a major structural boundary at the northern limit of late Carboniferous folding and thrusting.