Faulting Mechanism for the Ramsgate Earthquake

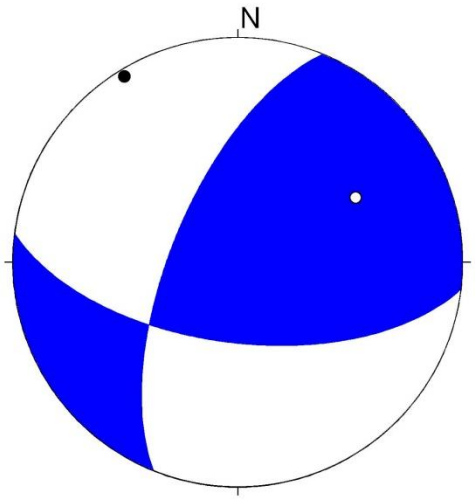

Figure 1. Fault plane solution (lower hemisphere projection)

A fault mechanism was determined from the Ramsgate earthquake of 22/05/2015 using data recorded from across the UK and northern Europe. Our solution shows oblique strike slip faulting along either a north-northeast south southwest striking fault, dipping steeply in a westerly direction, or east southeast west north west striking fault plane, dipping to the south. The latter orientation is reasonably consistent with the observed trend of major Variscan fault structures that are observed in southern Britian. However, given the small extent of the ruptured area (~1 km^2), it is difficult to accurately map earthquakes to specific faults, particularly at depth, where the fault distributions and orientations are unclear.

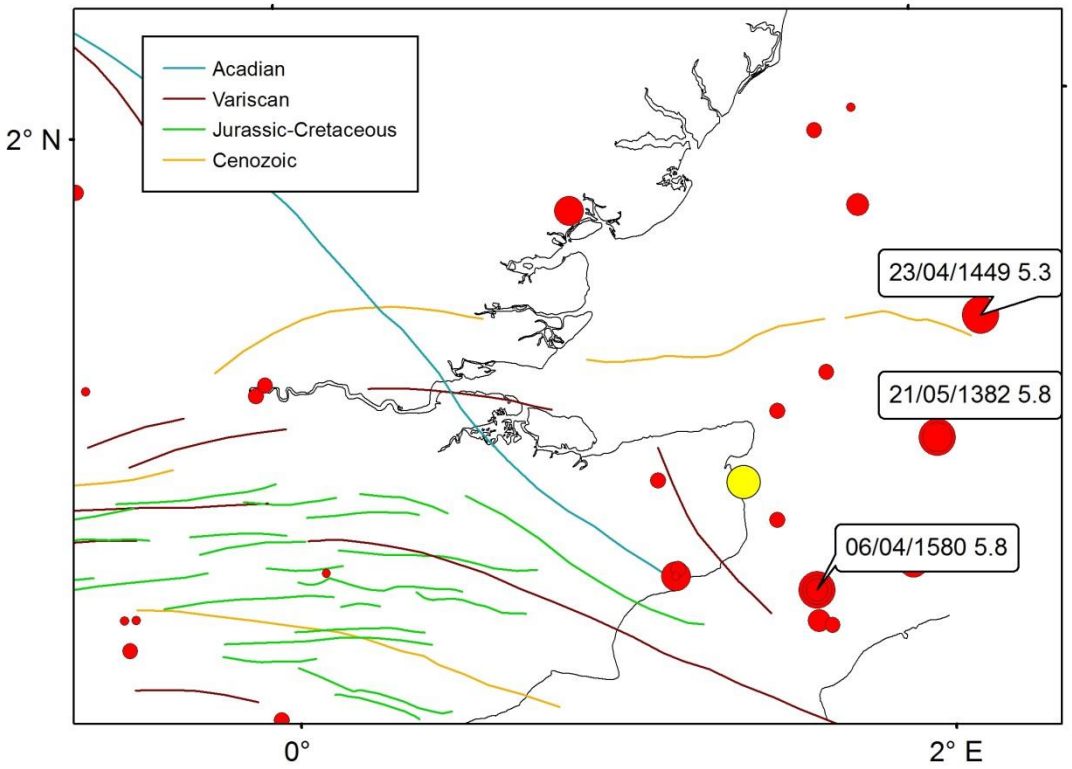

Figure 2. Mapped faults in southeast England (coloured by age). The yellow circle shows the epicentre of the Ramsgate earthquake.

The calculated direction of maximum compression is northwest-southeast, consistent with focal mechanisms for other earthquakes in the UK, which are dominantly strike-slip with northwest-southeast compression and northeast-southwest tension, or reverse, with northwest-southeast compression. These directions are expected from first order plate motions, with compression from the south due to the ongoing collision of Africa and Europe along the plate boundary that runs through the Mediterranean Sea, and also from the continued opening of the Atlantic Ocean at the mid-Atlantic Ridge.