

Crustal Deformation at the Okataina Volcanic Centre, New Zealand using GPS measurements from 1998 to 2011

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At large intra-rift calderas, measured ground deformation does not always indicate an impending eruption. Scientists attempting to forecast volcanic activity in these locations must also understand their relationship with regional tectonic processes, as well as the possible influence of local hydrothermal activity. In the Taupo Rift of New Zealand, rift structure is believed to influence and control volcanism at the Okataina Volcanic Centre (OVC). Here, we present crustal strain and GPS velocity models at the OVC and Taupo Rift. We use these models to show a local rotation of strain southwest of and within the OVC boundary. We note that this rotation coincides with a documented step in the rift axis and a proposed strain accommodation zone in previous literature. Within the OVC boundary, a volcanic source for this variation cannot be immediately accredited, as volcanic deposits cover rift faults and high levels of hydrothermal activity occur here. Further investigations and modelling are necessary to resolve this problem.