Data Repository

*******: *Geology*, 200X, Vol. XX, p. X; ***Stress-forecasting (not predicting) earthquakes: a paradigm shift?*** Senior author: **Crampin**

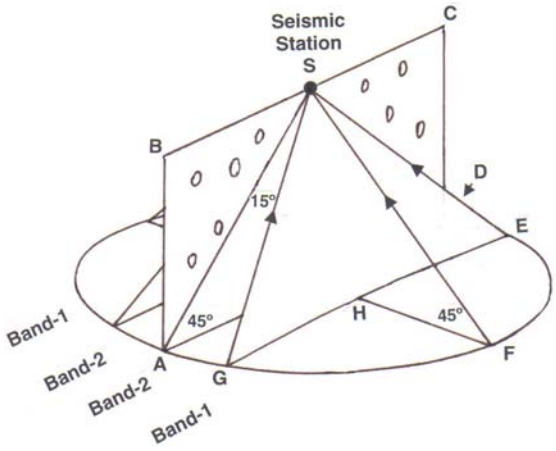

Figure DR1

Figure DR1. Ray-path geometry for Band-1 and Band-2 directions. ABCD is the crack plane of parallel vertical cracks. S is the recorder position on a horizontal free-surface.
Band-1 directions to the horizontal free-surface, where time-delays are sensitive to crack aspect-ratios. are those within the solid angle EFGHS subtending 15º to 45º to the crack plane (within the effective shear-wave window at 45º, Booth and Crampin, 1985).
Band-2 directions to the horizontal free-surface, where time-delays are dominated by crack densities, are those within the solid angle ADEHGS subtending 0º to 15º to the crack plane.
Both Band-1 and Band-2 directions include the equivalent solid angles reflected on the other side of the imaged crack plane.

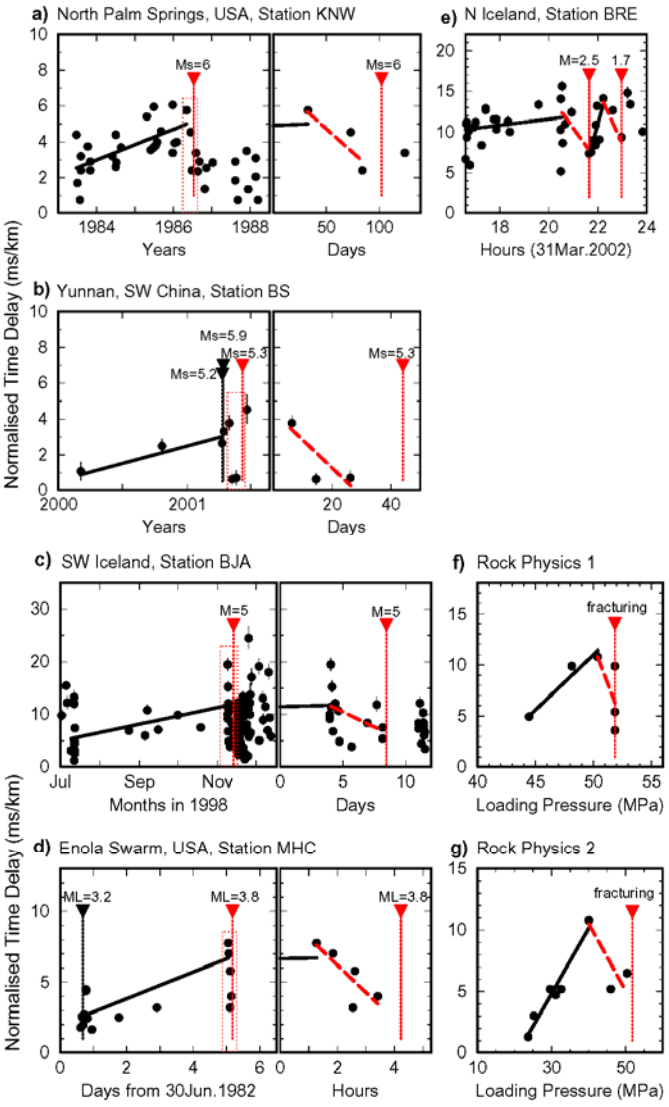

Figure DR2a, b, c, d, e, f, g

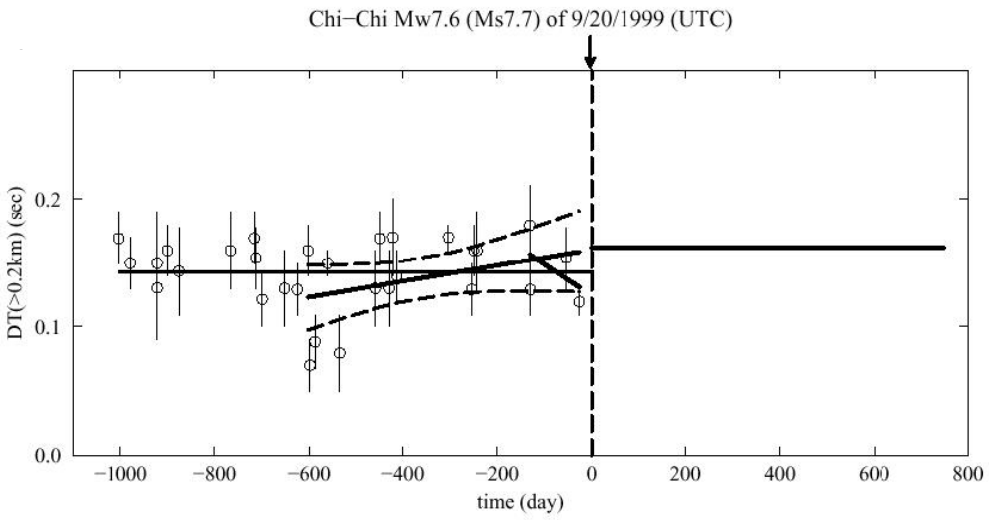

Figure DR2h

Figure DR2a)-DR2g). Characteristic temporal variations of time-delays in field and laboratory (after Gao and Crampin, 2004). Shear-wave time-delays normalised to ms/km before earthquakes and experiments listed in Table 1 (main text) plotted against time for earthquakes and for increments of applied stress in the laboratory.
DRa) 1998, *Ms*=6, North Palm Springs Earthquake (Peacock et al., 1988; Gao and Crampin, 2004). Left-hand-side: time-delays with a least-squares line showing increase for three years before the (red) earthquake. Right-hand-side: enlarged time scale for red dotted box in left-hand-side, with red dashed line showing precursory decrease in time-delays starting 68 days before the earthquake.
DRb) 2001, *Ms*=5.3, earthquake (marked in red, the last of three closely-spaced Ms 5+ earthquakes) in Shidian, Yunnan, China. Notation as above with poorly resolved increase before the black *Ms*=5.2 and *Ms*=5.9 earthquakes, but precursory decrease of 38 days before the red *Ms*=5.3 earthquake.
DRc) 1998, *M*=5, earthquake in SW Iceland (Crampin et al., 1999) with increase for 5 months and precursory decrease of 4.4 days.
DRd) 1982, M_L=3.8, Enola Swarm earthquake, Arkansas (Booth et al., 1990): Notation as in (a) with increase for 4.1 days and precursory decrease of 3.5 hours.
DRe) 2002, M=2.5 and 1.7 earthquakes in a swarm beneath Flatey Island in Northern Iceland (Gao and Crampin, 2004) with increases for 5.0 and 1.3 hours, respectively, and precursory decreases of 1.12 and 0.73 hours, respectively.
DRf) and DRg) Variation in time-delays in two marble samples, subjected to uniaxial stress increments until fracturing and fragmentation, for ray paths perpendicular to uniaxial stress (Gao and Crampin, 2004). At the final stress increment in Rock Physics 1, the time-delays varied with time before spontaneous fracturing.

Figure DR2h) 1999, *Ms*=7.7, Chi-Chi Earthquake, Taiwan (after Crampin and Gao, 2005) showing increase for ~602 days and precursory decrease of 131 days. Following the earthquake (vertical dashed line) there was a very intensive aftershock sequence (left blank in diagram) which did not show temporal variations in time-delays. 95% confidence limits are shown for least-squares increase. Note unnormalised time-delays.