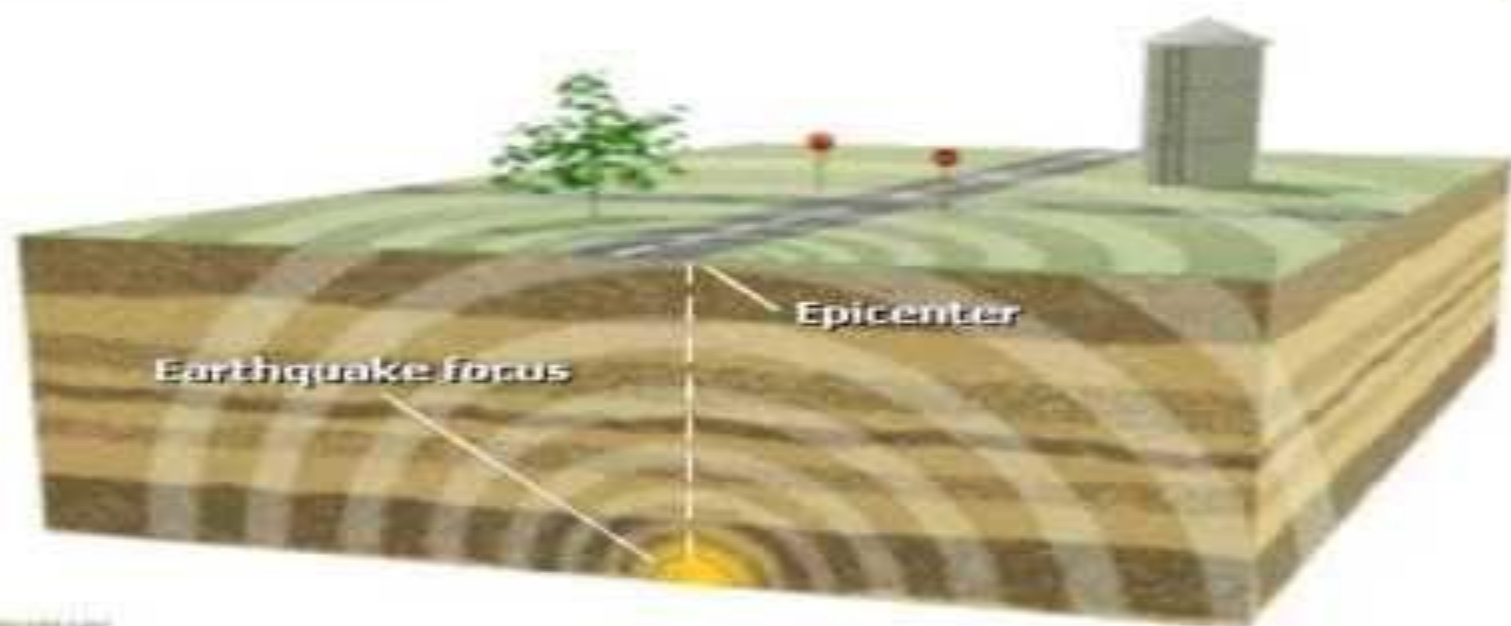


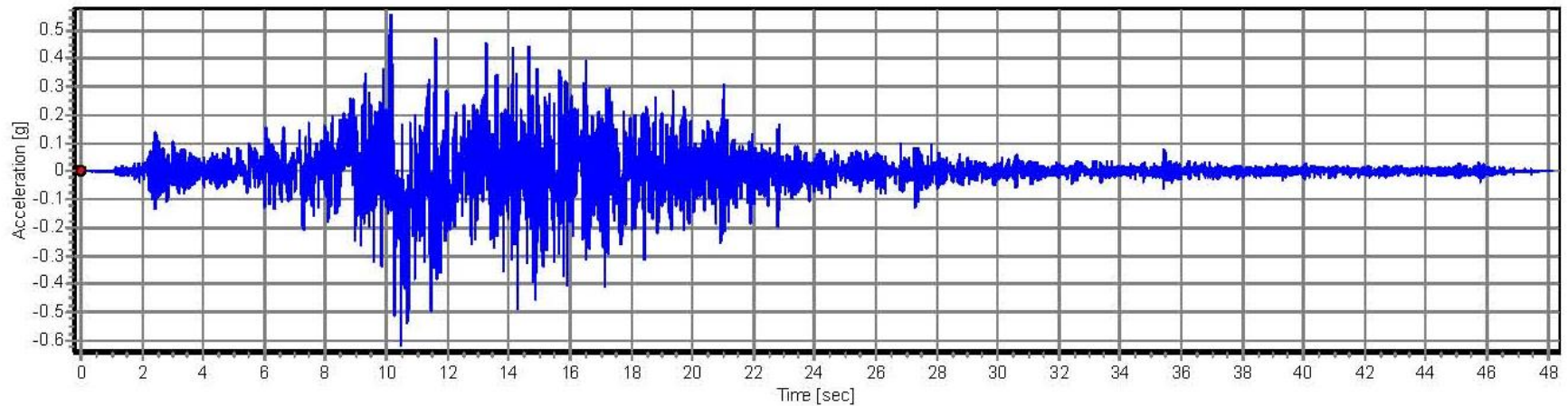
LIQUEFACTION & CPT IN COASTAL AREAS

Jorge L. Macedo, Ph.D., P.E.
Georgia Institute of Technology

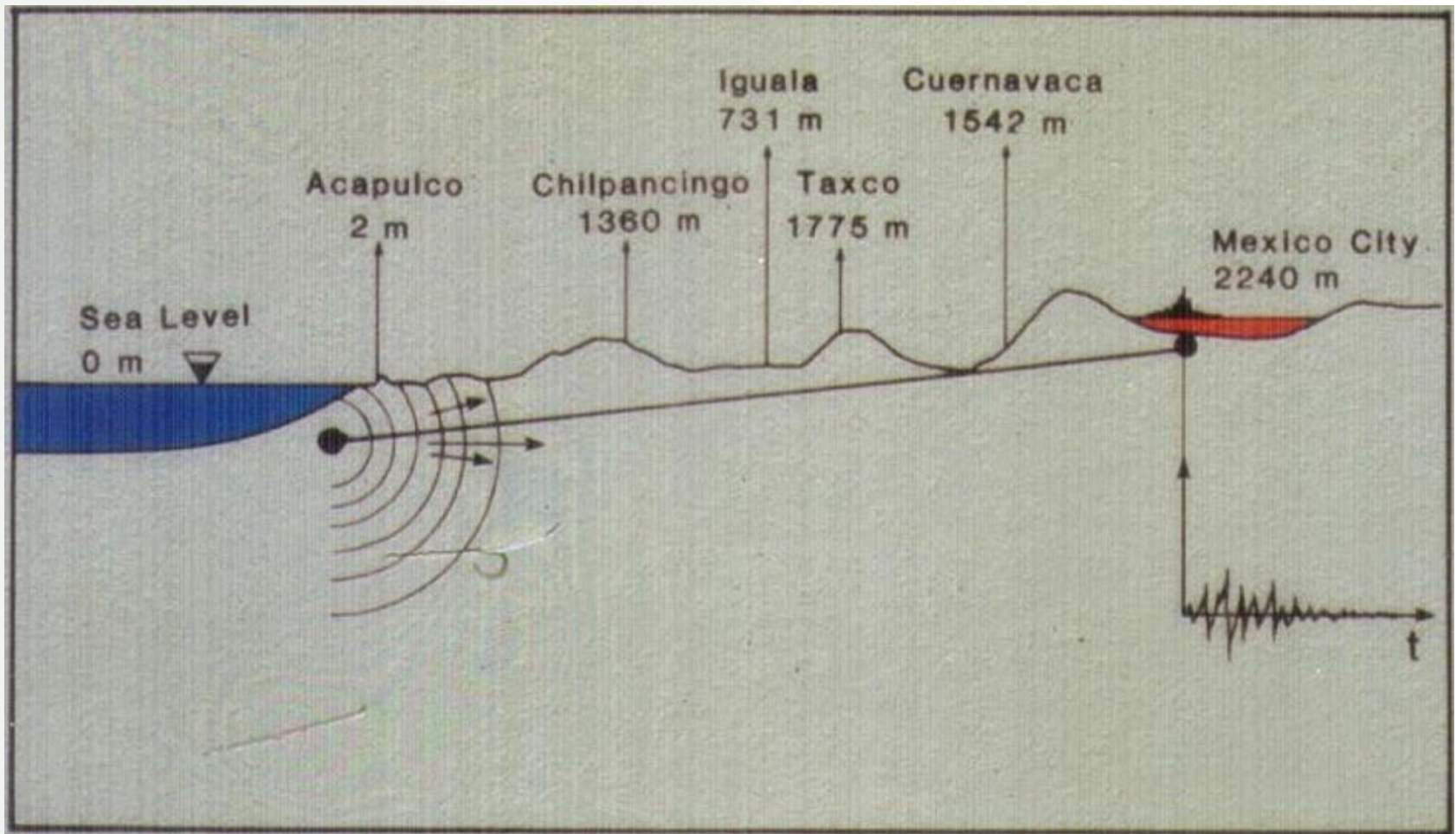
Surface waves



EARTHQUAKE GROUND MOTIONS



SEISMIC SITE RESPONSE - 1985 Mexico City EQ



LIQUEFACTION



1989 Loma Prieta EQ



1964 Niigata, Japan EQ (from H.B. Seed)



1989 Loma Prieta EQ



LIQUEFACTION EFFECTS

Heavy Things Sink

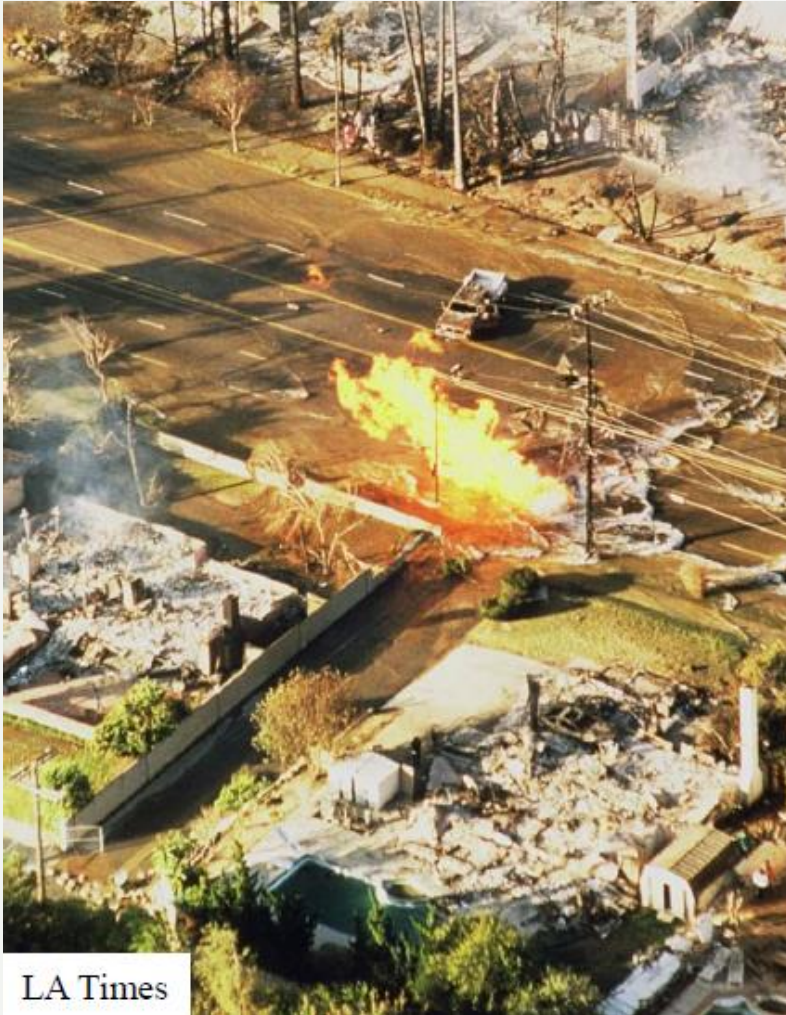


Light Things Rise



1964 Niigata, Japan EQ (from H.B. Seed)

Liquefaction can lead to fires & loss of fire suppression capabilities



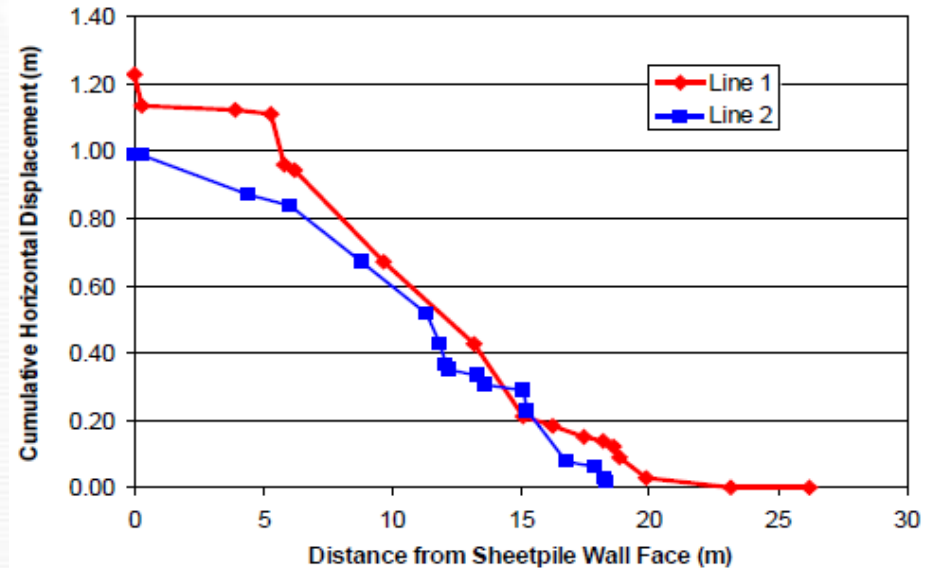
LA Times



1944 Northridge, LA EQ

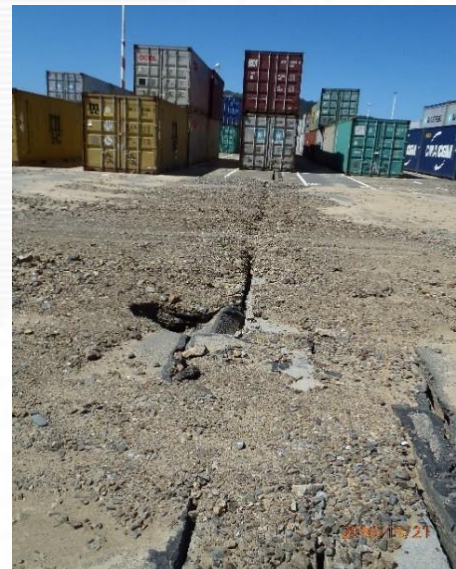
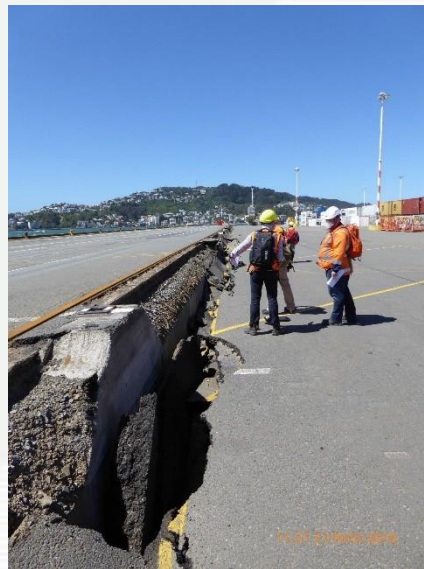
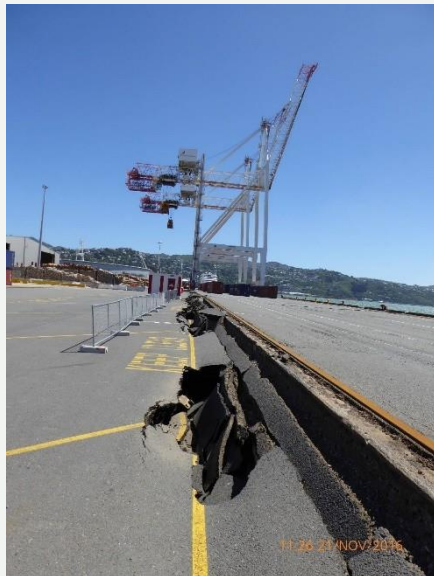
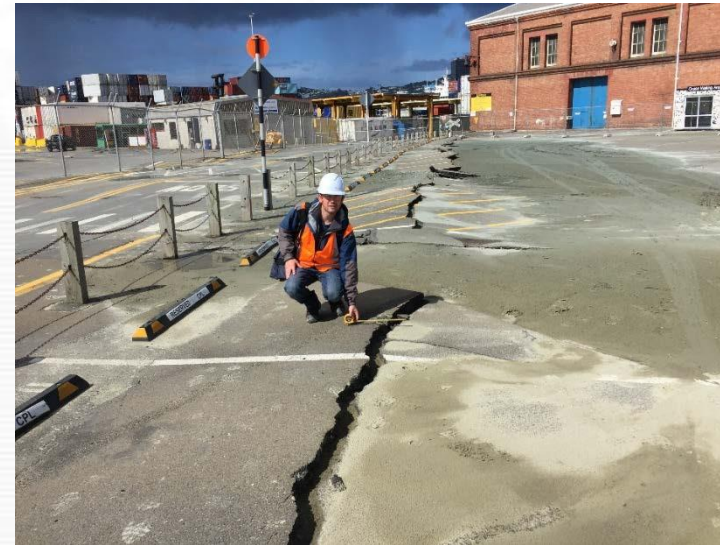
DAMAGED TO PORTS: CORONEL

2010 Maule, Chile EQ



LIQUEFACTION EFFECTS ON PORTS

2016 Kaikoura EQ –CentrePort Wellington



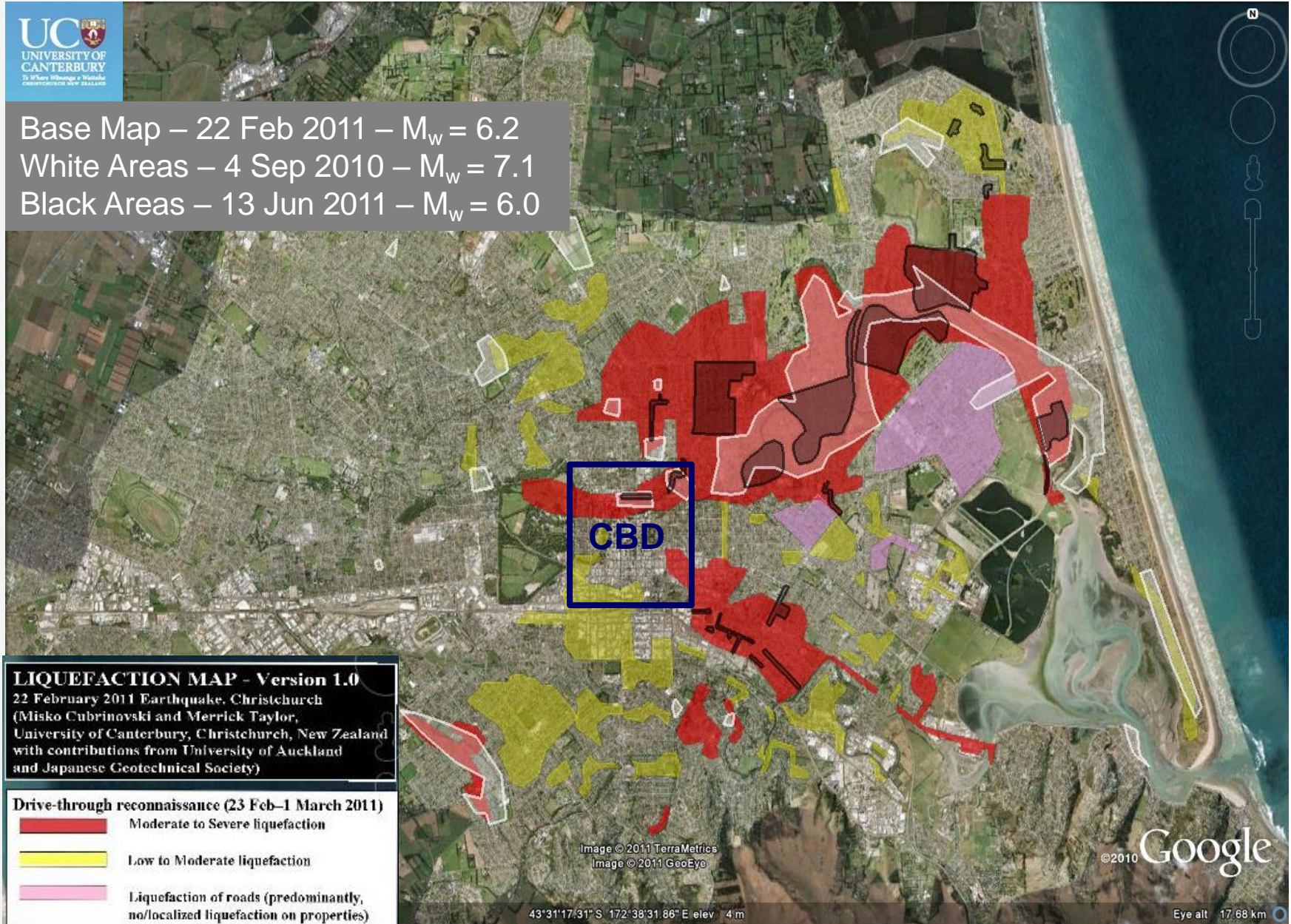
2010-2011 CANTERBURY NZ EQS:

Widespread Liquefaction



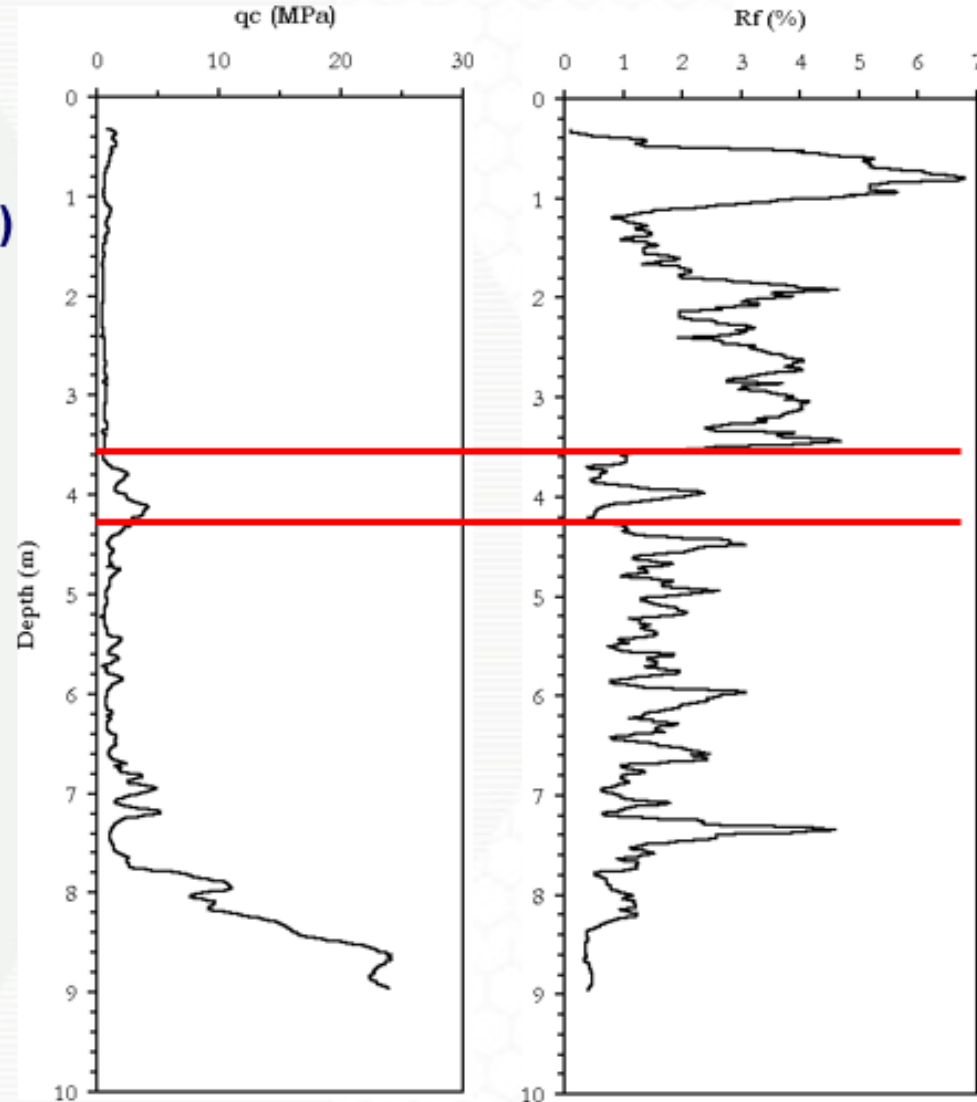
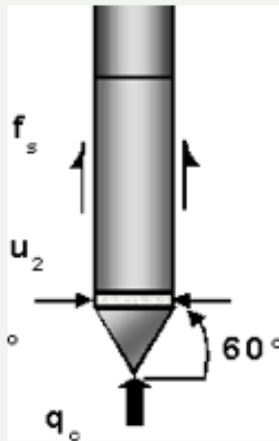
Liquefaction from 3+ EQs

(Cubrinovski 2011)



LIQUEFACTION DATABASE 1999 Kocaeli EQ

CPT (ASTM D1557)



<http://peer.berkeley.edu/publications/turkey/adapazari/index.html>