Extract from :

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From Haast, the road follows the coastal plain as far as Ship Creek, crossing a series of prominent shore-parallel dune ridges and alternating interdune hollows clothed in unmodified lowland rainforest. These coastal progradation plains extend up to 3 km inland and have developed close to the mouths of all the major south Westland rivers (Haast, Okuru, Waiatoto, Arawhata and Awarua). Wells and Goff (2007) mapped the dune sequences at five river mouth sites and dated the time of progradation and dune building using the ages of colonizing conifer trees. On the basis of 960 tree ages, they showed that dune formation has taken place in distinct and synchronous episodes, separated by long periods without lasting progradation. Six regional episodes are evident since A.D. 1200. The oldest trees on each dune set indicates dune deposition was complete as early as the decades of A.D. 1830, 1720, 1620, 1500, 1430 and 1280, each episode differing by no more than 20-53 years regionally, and therefore inferred to represent the regional response to the same causal mechanism. Wells and Goff (2007) interpret each dune system as reflecting rapid fluvial transport of large post-seismic sediment pulses from mountain catchments to the coast. The formation of each dune therefore relates to major Alpine Fault earthquakes. Four of the six regional dune-building episodes can be correlated to previously identified earthquakes on the Alpine Fault at A.D. 1826, 1717 and ca 1615. Another earthquake at ca A.D. 1460 has been resolved into two possibly separate events at A.D. 1500 and 1430, while the timing of the A.D. 1220 earthquake has been bracketed between A.D. 1280 and 1230.