Chris Grose

On November 18, 1929, the New England and Maritime Provinces of Canada were hit by an earthquake which was centered off the edge of the Grand Banks, Nova Scotia. As a result of the earthquake, during and after thirteen transatlantic telegraph cables were broken: ten of which parted in two places and three which broke in three places. The broken cables lay along the steep continental slope that descends southward off the edge of the Grand Banks and on the gently sloped ocean floor more distally. No cables which lay on the continental shelf were broken. As Brown briefly explains, each break was timed accurately by the automatic machines which recorded transmissions, whose locations were determined by measurements of electrical resistance of the cables.

An interesting correlation was discovered after this data was studied. Eight cables high on the continental slope were broken instantly during the earthquake and the remaining five snapped successively in order of position downslope [Fig 1.1].

Figure 1.1

Profile of the sea floor south of the Grand Banks showing the position of transatlantic cables broken by the landslide and turbidity current began by the Earthquake. Times are labeled in accordance with the format, Hrs:Min. [After Heezen & Ewing, 1952]

Heezen and Ewing suggested that a good portion of the poorly consolidated sediments of the continental slope gave way resulting in a landslide which broke the first eight cables. The motion loosened the weak cement binding the minerals together and threw the unconsolidated material on the bottom violently into suspension. This created a turbidity current which began to flow as a heavy turbulent liquid. The current was forced forth on the base of the gently sloping ocean floor, the action of which broke the cables as they violently engulfed them.

Because the timing of the breaks were calculated accurately, we could then deduce the speed of the current. The calculations reveal that the current was traveling at about 58mph near the base of the continental slope, but as time passed, it had slowed to less than 14mph when it snapped the last cable, 295 miles downslope.

This data[Fig 1.2] was then used for comparisons with artificially induced turbidity currents in experimental tanks [Kuenen, 1950]. From the calculations he deduced that the with the velocity it mush have proceeded far beyond the last cable break, even on the significantly flat ocean floor. Kuenen suggested, as a tentative estimate that it may have transported fine sands 500 miles from the toe of the landslide, and spread it at great depths over about $\sim 100,000^2$ miles. The hypothesis has been partially confirmed by the dredging of "clean sharp sand" from many points within the area.

Figure 1.2

A powerful earthquake off Newfoundland in 1929 caused a submarine landslide on the edge of the continental shelf. Submarine cables in the slump area broke immediately but cables downslope broke up to several hours later. Apparently a dense current of suspended sediment traveled several hundred kilometers across the sea floor. {Recreated - [5]}

The flawed logic with inferring a tsunami

While inferring a tsunami may at first be thought a tenable explanation for the 1929 cable breaks, delving further into the implications of such a notion reveals its veracity. As explained earlier, the cable breaks were timed accurately and so the velocity of the tsunami/turbidity can be calculated. The data show a relative exponential decay in velocity as depth and ocean floor declination begins to diminish. The problem arises when we consider the dynamics of tsunamis, in doing so we find that the exact opposite is predicted.

At oceanic depths of over 20,000 ft, unnoticed tsunami waves can travel at nearly 600 mph, 10 times that observed at Grand Banks. Scientists can predict when a tsunami will arrive at a given destination because wave velocity varies with the square root of water depth. Tsunamis will increase in speed at increased depths and inversely will decrease in the advent of decreased depths. Brown vaguely describes the event in his book as a current of muddy water traveling at 60 mph down the slope away from the epicenter of the earthquake, and makes his deductions from that information. Despite the format in which he describes the data regarding the event, it is clear that the 1929 cable breaks have no room to cope with the dynamics of tsunamis as the responsible cause.

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