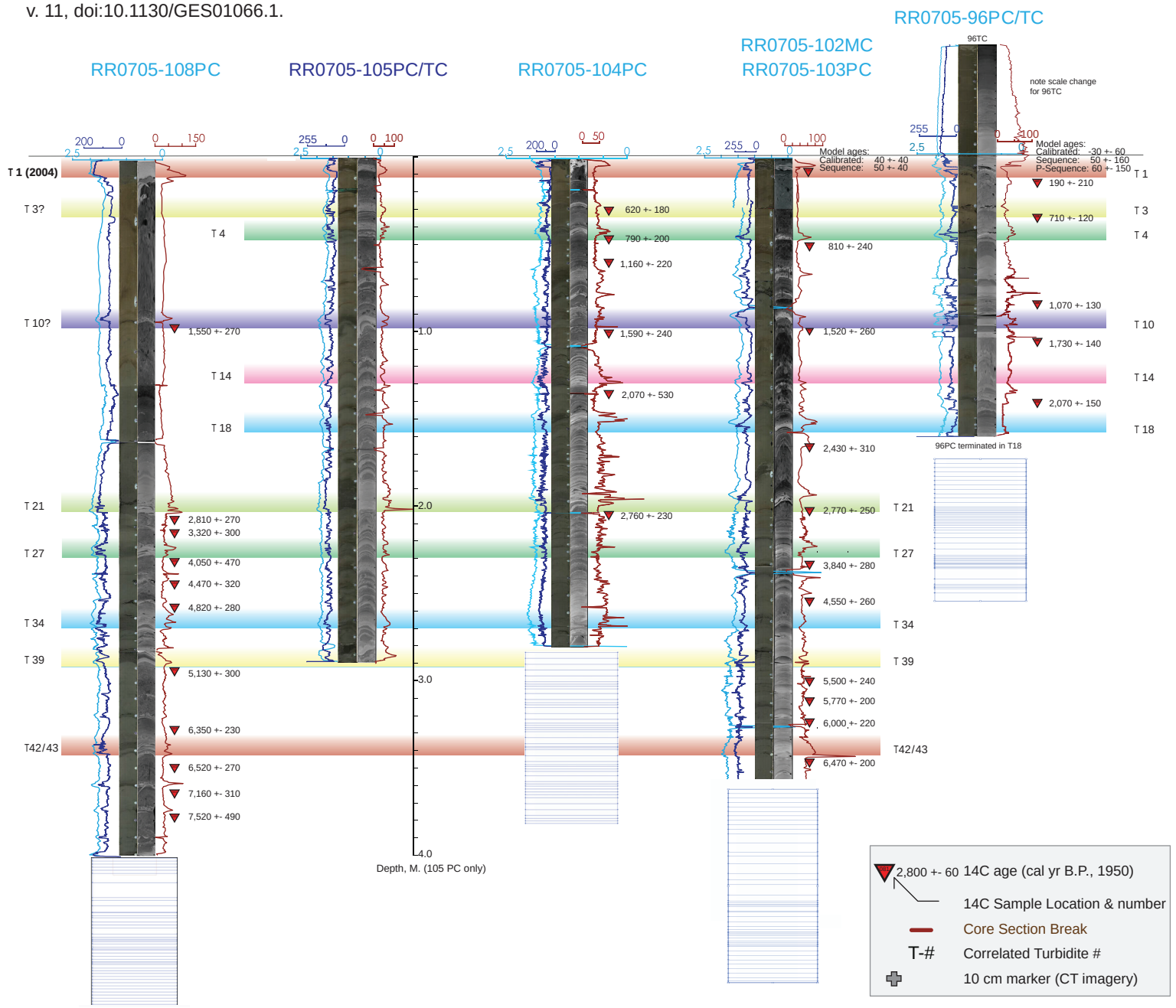
Supplemental File S4. Turbidite Flattening Summary

Citation:
Patton, J.R., Goldfinger, C., Morey, A.E., Ikehara, K., Romsos, C., Stoner, J., Djadjadihardja, Y., Udrekh, Ardhyastuti, S., Gaffar, E.Z., and Viscaino, A., 2015, A 6500 year earthquake history in the region of the 2004 Sumatra-Andaman subduction zone earthquake: Geosphere, v. 11, doi:10.1130/GES01066.1.



Supplemental File S4. Turbidite Flattening Summary. Core data (geophysical data, imagery data) are flattened to stratigraphic horizons as in Figures 9 and 10 using symbology as in Figure 8. This effectively renders the stratigraphy on a time basis across the area, thus each turbidite represents a time horizon. The vertical scales are non-linear except for 105PC which is the reference core and is plotted at the true vertical scale. Grid below cores except 105 is the flattening matrix, and shows the vertical scale changes required, bars were originally evenly spaced. 102MC and 103PC are composited together, as are 96PC and 96TC. Local variability is quite high in this core set, best illustrated by the ~ 3m thickness of the 2004 bed in 96PC, while this bed is more typically 10-15 cm thick at other sites. The anomalous depositional style at the site of 104PC is also illustrated well. Many turbidites that have low structural complexity at other sites, are interpreted as the same events in 104, but with a common depositional mode with numerous laminae composing a single bed. We interpret this depositional style as potentially the result of amalgamation of numerous small local failures or possible headward progressive failures following the initial ground failure. Similar site effects are apparent at the site of 96PC/TC, which for all events, shows an expanded, sandier version of what we interpret to be correlative beds seen elsewhere. The 2004 bed is the most extreme of these, but all other beds at this site show a similar expanded structure. Also illustrated are periods of low rates of turbidite emplacement at some sites in restricted time periods. For example, in 108PC, few turbidites are deposited post T-21 time, about 2800 years ago. While the likely 2004 bed is present, only ~ 4 beds were emplaced between these times. That time interval may contain other events too diffuse for robust interpretation. The turbidite sequence is older than ~2800 yr, well represented, and correlated to other sites. This site either became a poor recorder of events after 2800 yr ago, our preferred interpretation, or the site could alternatively have been a site of lower ground motions after 2800 yr ago. Please visit http://dx.doi.org/10.1130/GES01066.S4 or the full-text article on www.gsapubs.org to view Supplemental File S4.