The study of storm and tsunami deposits in the geological record: Are we going in circles?

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Studies on recent tsunami and tropical cyclone events have provided the research community with new insights on the utility of their deposits. In addition, they also provide for the evaluation of some criticisms and knowledge gaps for future studies. There remain no globally applicable sedimentological criteria for differentiating between tsunami and storms deposits in either washover sandsheets or boulder deposits. What has been compiled for the many deposits attributed to tsunamis and storms is a suite of geomorphological or sedimentary features or commonalities, often referred to as signatures. All deposits regardless of type must be considered in terms of the local setting, and be carefully analysed for spatial relationships. Geomorphological characteristics and sedimentary features must also be considered in the context of the local environment. When considered alone many of the reported signatures for storms and tsunamis are equivocal. In fact, many of the signatures from the literature for tsunami or storm deposition, including the presence of marine microfauna or increases in particular elemental concentrations merely indicate the marine source of the material. Hence, storm surges, sea level change or co-seismic subsidence may show similar sedimentological characteristics. Efforts to differentiating between tsunami and storm deposits have stagnated and new approaches are needed. Addressing this need I will discuss my views on where the coastal geohazard community can go from here.