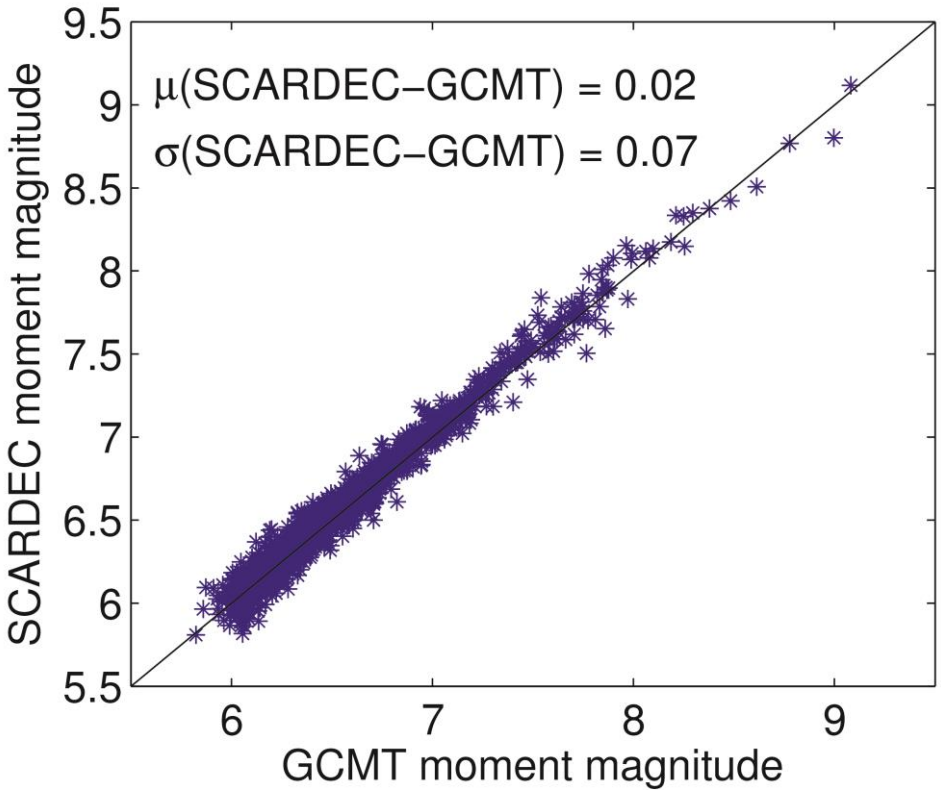
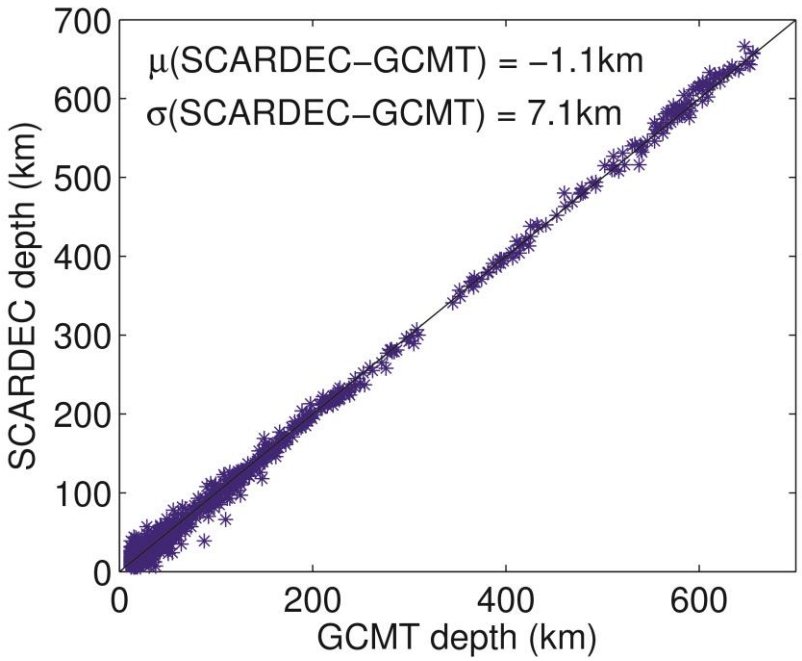
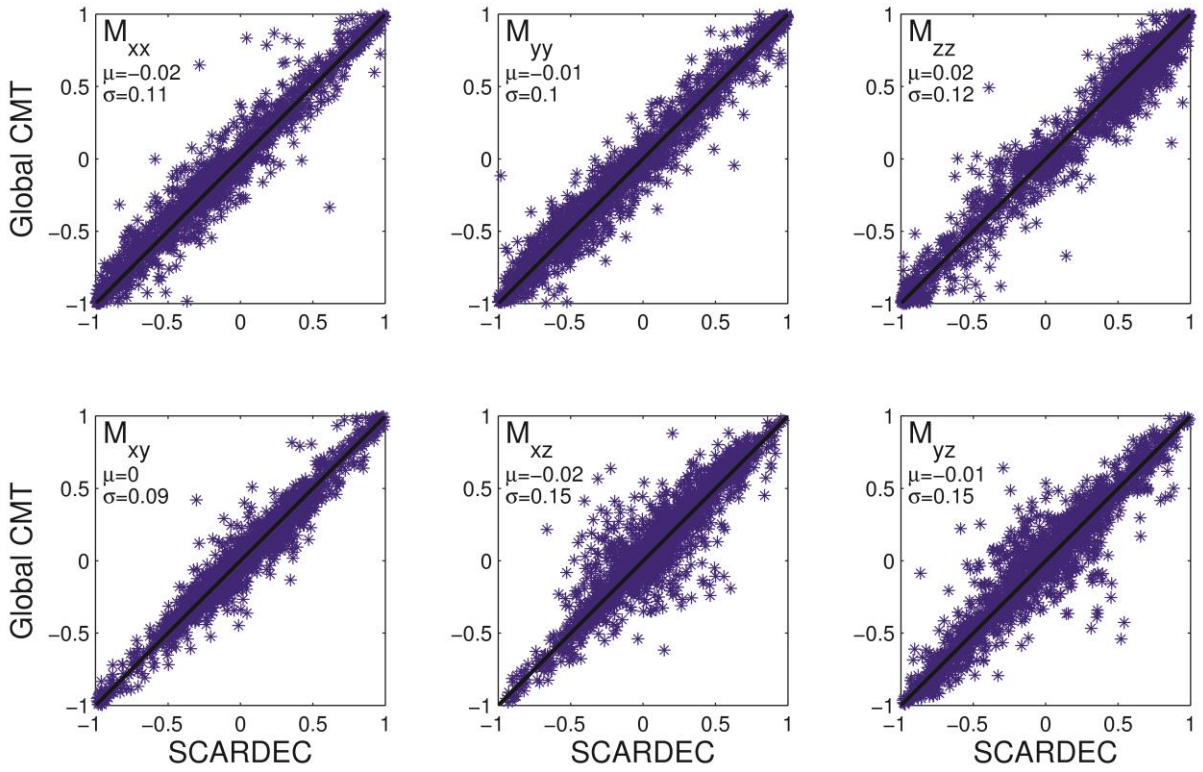
## Supplementary Information



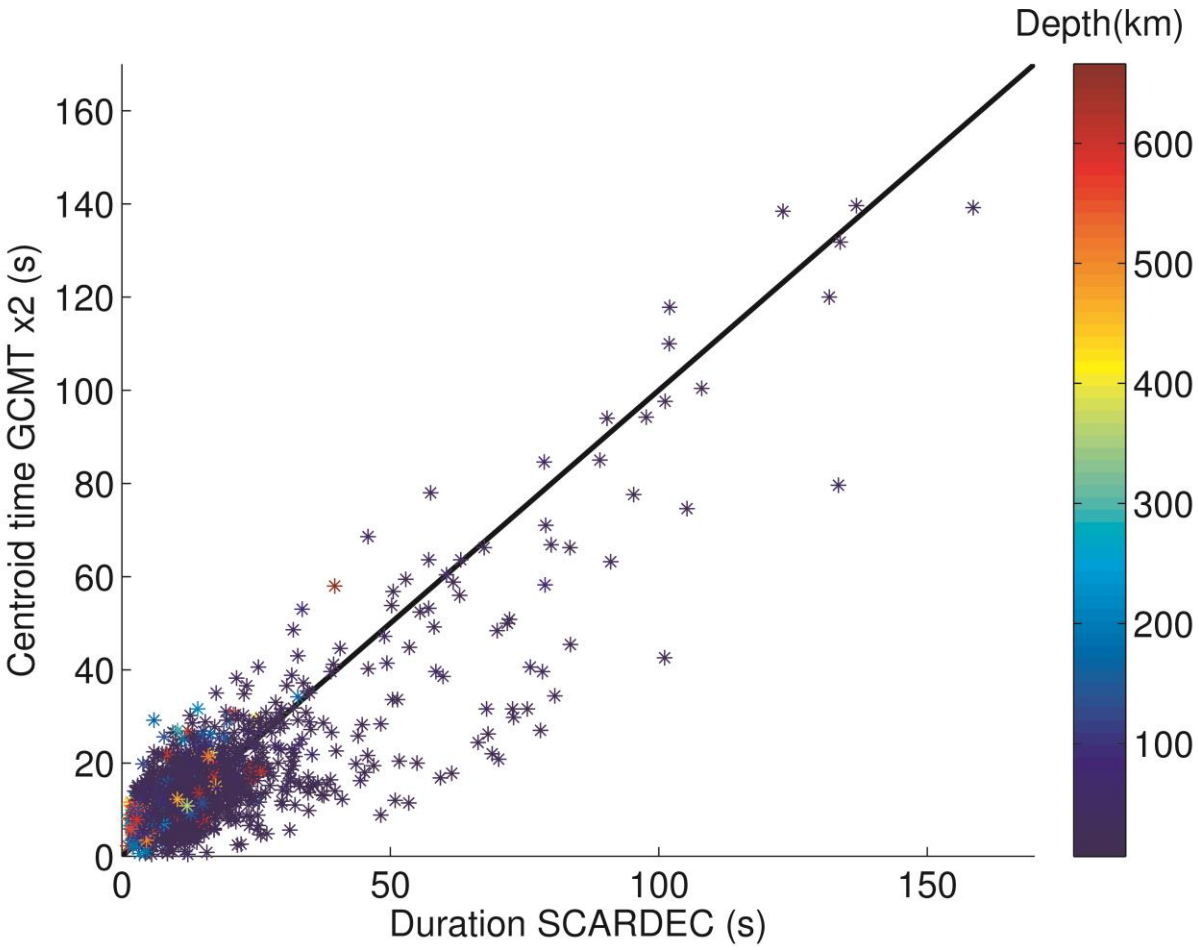

**Supplementary Figure S1: Comparison between SCARDEC and Global CMT moment magnitudes.** The average difference (μ) and standard error (σ) are shown on the figure. As already emphasized in the article describing the SCARDEC method[21], there is no underestimation at very large magnitudes. This is an advantage compared to previous STF catalogs[17,24].




**Supplementary Figure S2: Comparison between SCARDEC and Global CMT depths.** The average difference (μ) and standard error (σ) are shown on the figure.




**Supplementary Figure S3: Comparison between SCARDEC and Global CMT moment tensor.** The Global CMT[26,27] moment tensor related to the best double couple solution is considered here. The average differences (μ) and standard errors (σ) of each component of the moment tensor are shown on the figure.




**Supplementary Figure S4: Comparison between SCARDEC duration and the double of centroid time determined by Global CMT[26,27].** The colours of the points are related to earthquake depth (see colour scale on the right of the figure). GCMT[26,27] determines the centroid time of earthquakes, which should have a relation with the STF duration *T* extracted from the SCARDEC[21] catalogue: when the STFs are well modelled by an isosceles triangle with standard duration (this shape is assumed by GCMT), *T* should be equal to the double of the centroid time. This figure shows that this trend is present, but also that a number of earthquakes are away from the *x=y* line; in particular, there is a tendency of earthquakes with longer duration than what would be inferred from the centroid time; this is an indication of non-symmetrical STFs, where a large part of the seismic moment is released in the early stage of the earthquake. For some earthquakes, it can be also related to the difficulty of determining the actual end of the STF.