log(L)=0.5Mw-1.8
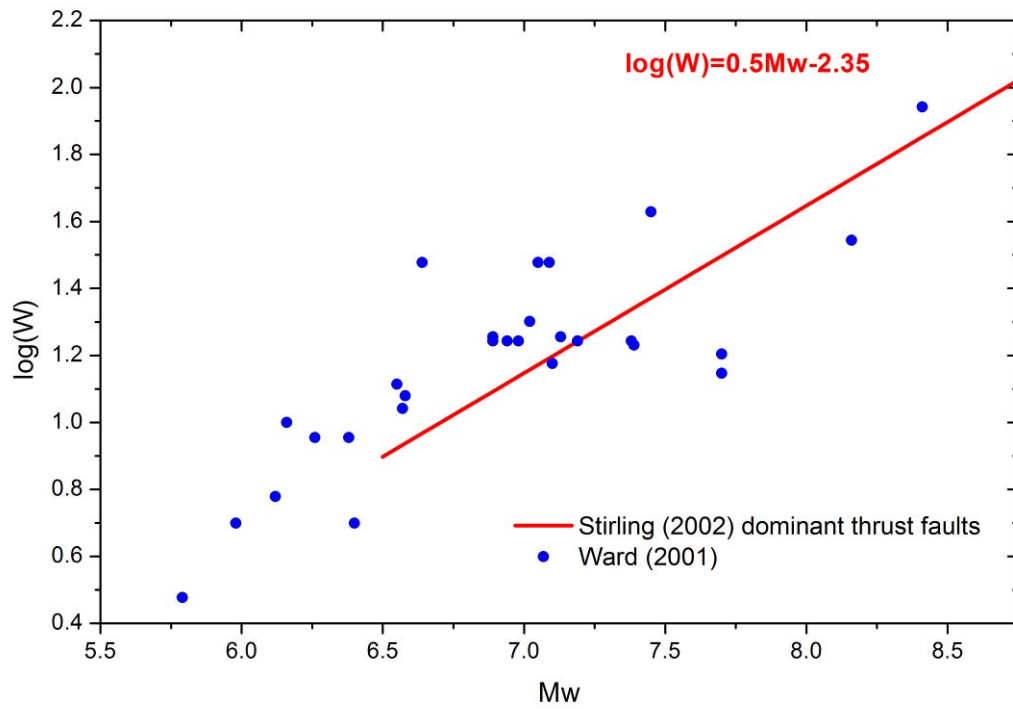
1
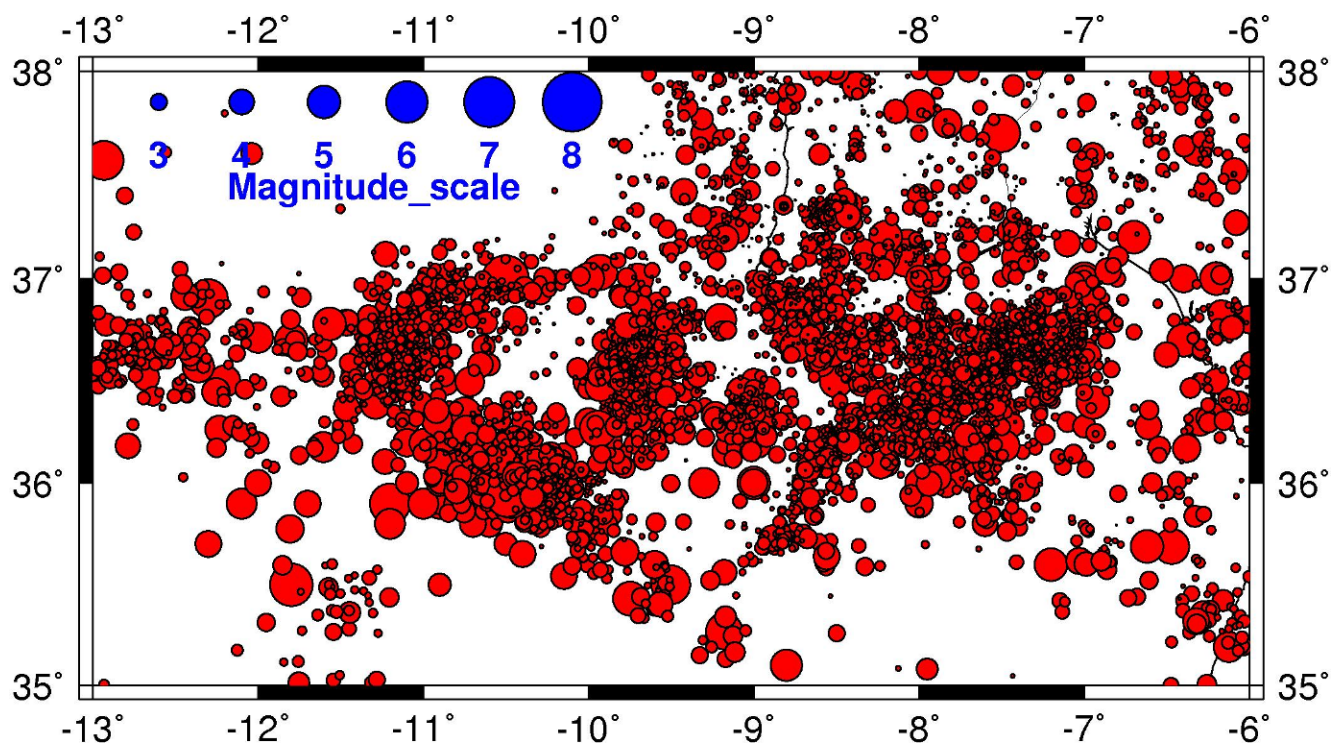
2

Figure SUP1. Comparison of the Ward (2001) relationship between fault length and magnitude and the data compiled by Stirling (2002) for reverse and reverse-strike-slip faults.

The figure shows a scatter plot with $log(W)$ on the y-axis (ranging from 0.4 to 2.2) and Mw on the x-axis (ranging from 5.5 to 8.5). A red line is labeled $log(W)=0.5Mw-2.35$. The legend indicates: "Stirling (2002) dominant thrust faults" (red line) and "Ward (2001)" (blue dots).

1

2

3 Figure SUP2. Comparison of the Ward (2001) relationship between fault width and
4 magnitude and the data compiled by Stirling (2002) for reverse and reverse-strike-slip faults.
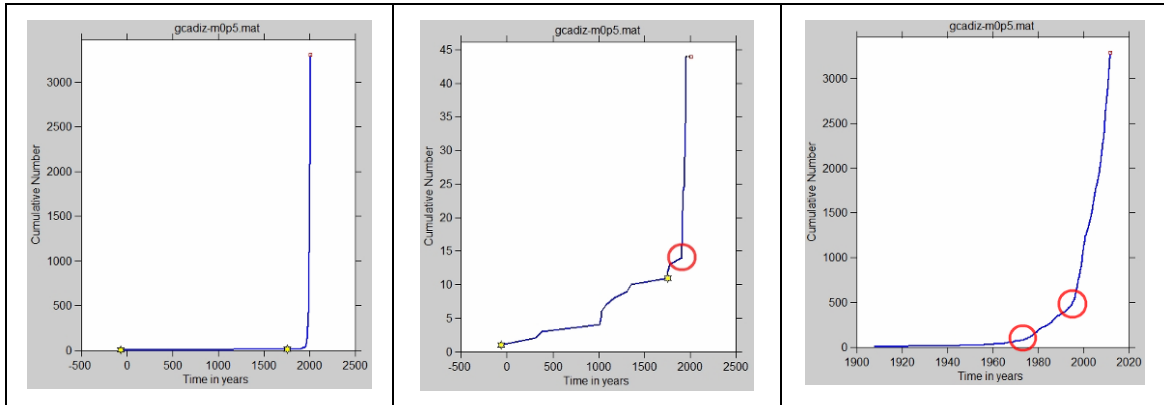
Figure SUP3. Epicentres from the historical and instrumental seismic catalogue updated to October/2011.
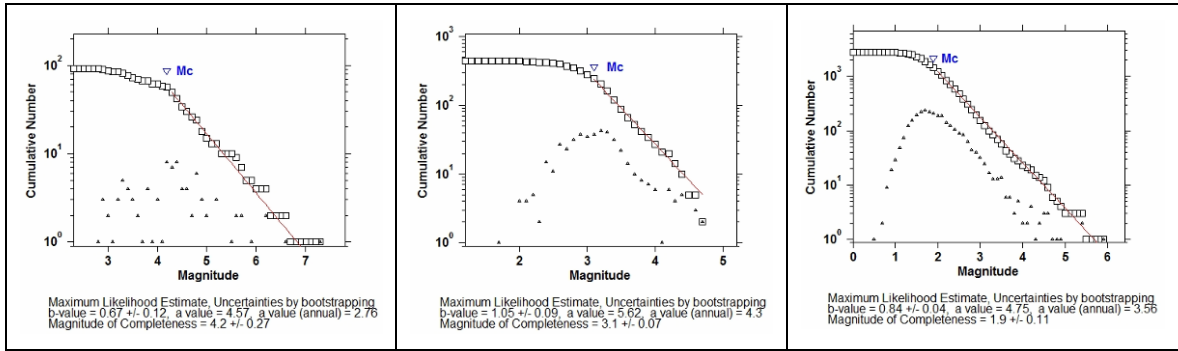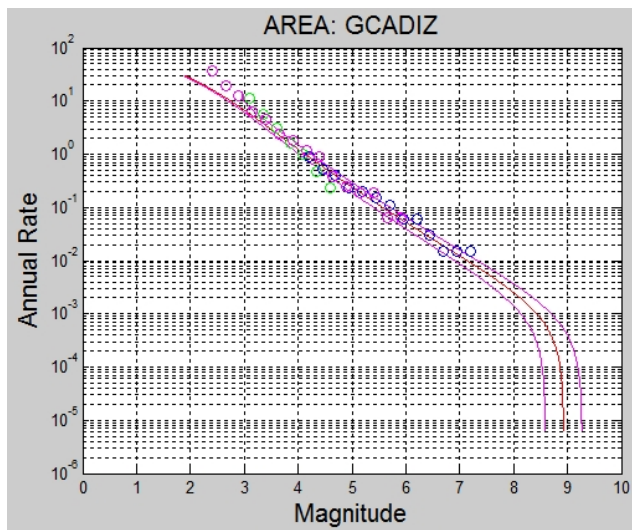
1

2

Figure SUP4. Evolution of the cumulated number of events in the work catalogue (after removal of precursors and aftershocks) that justifies the choice of 4 time periods for further analysis, one historical and three instrumental: left - all catalogue; centre - last year limited to 1990; right - time window between 1909 and 2005.
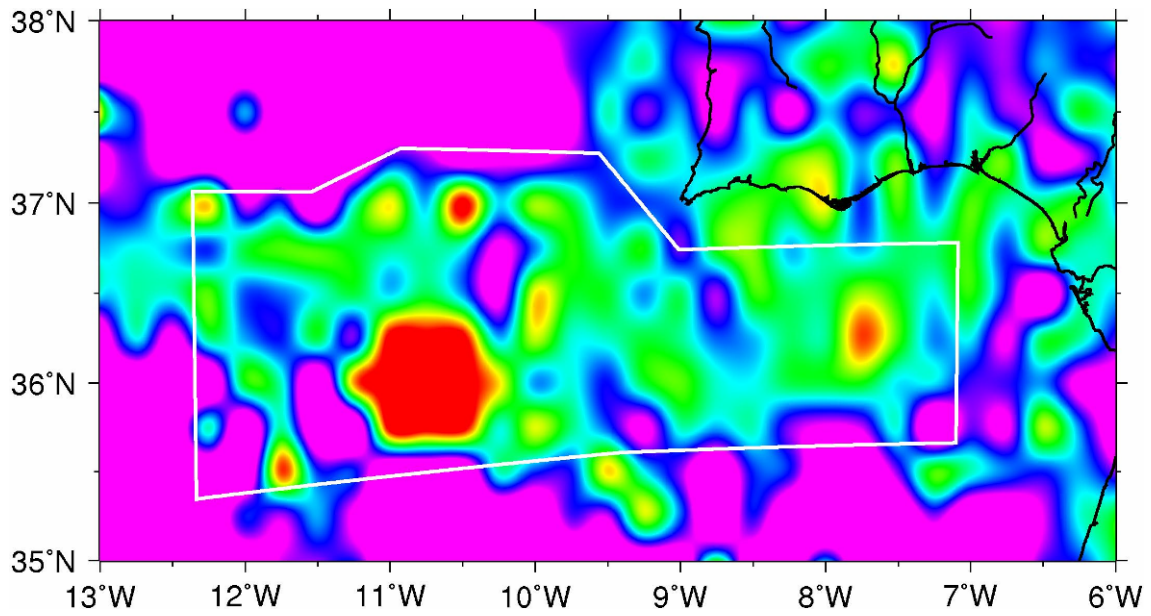
1

2

3   Figure SUP5. Definition of the completeness magnitude and the Gutenberg-Richter

4   parameters for each of the 3 periods defined in the instrumental seismic catalogue.

Figure SUP6. Derivation of the earthquake frequency as a function of magnitude as derived by the Bayesian method of Kijko & Sellevoll (1992) that integrates the information from the historical and the 3 instrumental catalogues.

Figure SUP7. Definition of the seismic source area in the Gulf of Cadiz used for the computation of the earthquake recurrence and the seismic velocity (in white). On the background we show the seismic strain release computed from the work catalogue (instrumental periods only).