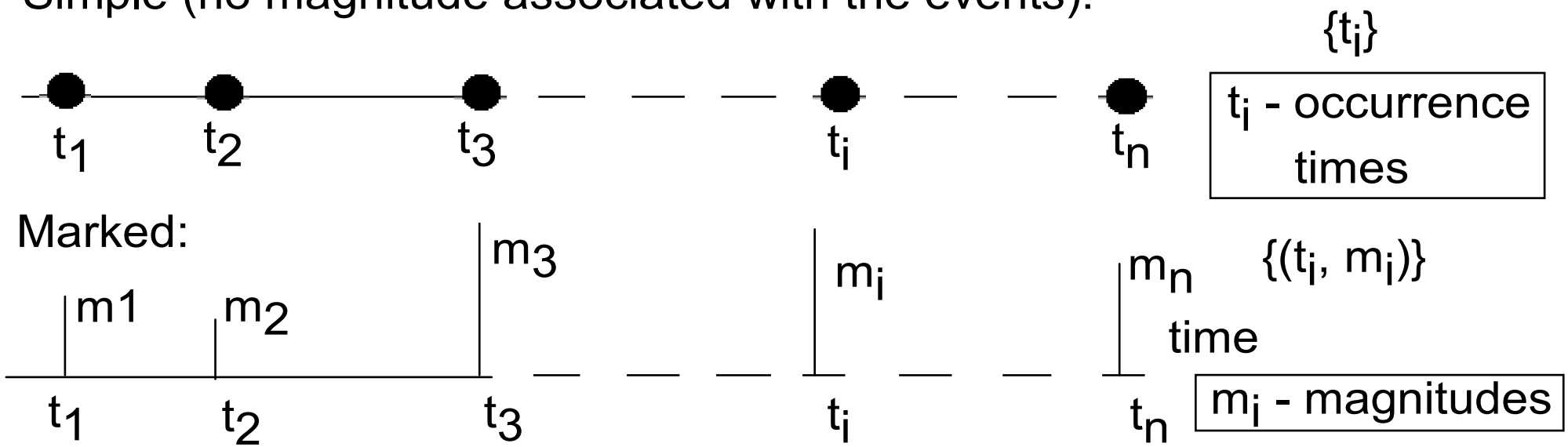
Earthquakes as (marked) point processes. <u>What is a point process:</u>

Simple (no magnitude associated with the events):




Characterization of a point process (one possibility): by the inter-event times between successive events, i.e., $t_2$-$t_1$, ...$t_i$-$t_{i-1}$, .... → distribution of inter-event times (d.i.t)

if d.i.t. is exponential → the events are randomly distrib. (Poisson) (e.g., background seismicity)

if d.i.t is log-normal, Gauss etc... → quasi-periodicity (Nishenko and Bullard, 1987) (main-shocks, large events)

if d.i.t is power-law → tendency to clustering, fractality: applies to aftershocks, foreshocks, also mainshocks.

Fig. 1.1 Temporal characteristics of earthquakes occurrence from a statistical point of view.