Random Telegraph Noise (RTN) typically appears in fluctuations of the conductivity of mesoscopic systems, when the size of the system is reduced to such extend that it contains only few, or just a single active two-level fluctuator (TLF). An elementary two-level fluctuator randomly switches the conductivity of the entire system between two, or more, fixed values. With increasing system size, the number of TLFs in the system volume increases and their incoherent superposition leads to appearance of $1/f$-like conductivity noise. Therefore, in macroscopic systems the individual elementary TLF switchers should not be visible. Nevertheless, in strongly correlated electron systems, RTN shows out also in macroscopically large samples. Macroscopic random telegraph fluctuations in different strongly correlated systems have profoundly different physical origin. However, the common denominator to all of them is the phase separation and dynamic coexistence of phases with markedly different properties. In the talk we shall discuss macroscopic telegraph events in single crystalline superconductors NbSe2 and BSCCO and low Ca-doped LaCaMnO3 mangnaite single crystals.