Environmental extremes often take individuals and communities by surprise and have huge impact, thereby undermining resilience of modern society. Complexity is often related to unexpected events, in particular of extremes, but the dynamics of the above relationship are not yet clear, thereby implying that the reasons for limited predictability are still unknown. The talk will present an interpretation of the links between complexity and predictability focusing on the random dynamics that complexity may generate. It will be shown that randomness can be explained with physical reasoning and predicted, thus leading to an improvement of resilience against extreme events.