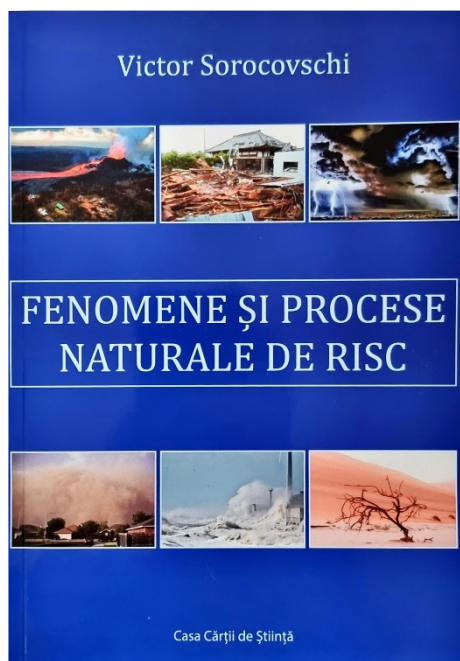


**Review**  
**Victor Sorocovschi - NATURAL RISK  
PHENOMENA AND PROCESSES,  
Casa Cărții de Știință, Cluj-Napoca, 2021.**



**Professor Victor Sorocovschi's** work, in an extension of 516 pages, includes, in addition to the text, 122 figures (maps, graphs), 72 tables and 511 bibliographic titles distributed on the chapters and subchapters of his work. The paper also includes five appendices in the form of tables with valuable data on the main chapters. The paper is based on a long and remarkable experience on a Romanian geographical region - *The Transylvanian Depression*, with a wide range of natural risk processes, also "*stimulated*" by human activity, associated with a significant literature in the literature, especially, foreign.

Going through the contents of this paper, the way they are analyzed and integrated, we

consider that this volume is a synthesis and a systematization of these phenomena and processes of natural risk facing our society and how to prevent/forecast them, when they take place and post process actions.

In the first chapter - *Introductory notions*, which presents the definition of the terms with which the paper will operate, are mentioned - *the wide range of natural phenomena and processes, the notions of risk and hazard* that have many interpretations and definitions and that create much confusion for less specialized authors in such concepts, be interested in using this terminology in the application of less "learned" activities.

In this so-called "*chaos*", I comment by paraphrasing **Professor Victor Sorocovschi** that "*natural phenomena/processes have been labeled since antiquity as the dualism between necessity and chance.*" And I was emphasizing then that "*the necessity could be compared to the accumulation of energy in the*

*evolution of a phenomenon, and the coincidence with exceeding its tolerability threshold."* We mentioned that *"risk is the core of the ongoing process and the hazard and further catastrophe/disaster means reaching and exceeding the threshold of endurance in the evolution of the process."* This dualism of *necessity and chance, process/phenomenon* is also related to man, so the confrontation with human society.

Referring to the notion of risk, the author mentions that in most given definitions that *"risk can be defined by danger, vulnerability and value/exposure" and ... risk expresses the number of life losses, injuries, economic ... damages, ... destruction of natural resources"*.

We believe that the risk should not be conditioned by human and economic losses because the risk is an accumulation of inconsistencies in the imbalance of territorial systems-natural or socio-human ecosystems possible without exceeding the tolerability threshold, so it is a *"possible risk"* and which may or may not lead to a *hazard / catastrophe / disaster* with loss of human and economic life.

**Professor Victor Sorocovschi** also presents some opinions on the notion / term of *vulnerability* in which he mentions some prestigious authors that *vulnerability* would be cited as *"the ability of a person or social group to anticipate, resist and recover from the impact of a natural hazard."* The opposite of this concept to which the author of the paper analyzed by us subscribes states that *"vulnerability is an indicator of a future state of a system / ecosystem, defining the degree of (in)ability to cope with the expected stress"*. According to this second concept, vulnerability is expressed / measured on a scale from 0% to 100% (*Internationally agreed glossary of basic terms related to disaster management – DHA, 1992*)

In accordance with the definition of the three terms *risk, hazard and vulnerability*, the author concludes this first chapter with the classification of hazards, effects and a brief history of their research.

Therefore, to specify, the analyzed problems, even if some are taken selectively / partially from the two mentioned volumes, they are developed and integrated in the structure of this paper on the two domains - *endogenous (Chapter II) and exogenous (Chapter III)*, and within them on specific *phenomena and processes*.

Thus, in *the endogenous phenomena and processes* are analyzed the two phenomena and processes - volcanic and seismic and in *the phenomena of exogenous processes, geomorphological and edaphic, atmospheric, hydric, in the latter those of the continental and coastal / oceanic spaces*.

*In Chapter II - Phenomena and risk processes of endogenous origin*, the role and consequences of tectonic plates with the reaction of the earth's crust

are briefly reviewed by breaking the balance with seismic, orogenic, epirogenic manifestations, eustatism, volcanism, etc.

**Volcanism**, respectively *volcanoes* with associated risks, are analyzed starting with a history of these manifestations from antiquity to the present, the types of magma, the morphology of volcanic apparatuses, the types of eruptions, their distribution on Earth and their consequences, mentioning here those from the Mediterranean area (see volcano Vesuvius and the city of Pompeii, 79 AD), volcanism in the Pacific Ocean Fire Circle. In this subchapter, special attention is paid to *active volcanoes* using a partially written material developed by M. Rosi et al. 2003. As the author of this paper mentions, we quote “*most of the globe’s active volcanoes are located on the ocean floor, along 70,000 km of ocean ridges .... they pose no danger (?) because submarine activity is, mainly effusive*”. Doesn't the recent volcanic activity (2022) in the Tonga Pit - Pacific Ocean refute this remark / conclusion? However, we emphasize that this subchapter is well argued by classifications with tables and illustrated with sketches and block diagrams, maps on continents and color photo images with the associated hazards that took place.

**The seismicity**, respectively *earthquakes* and this endogenous phenomenon is analyzed in detail with the factors / conditions that determine them, how they manifest with the whole procession of consequences/ hazards. This subchapter also presents, first, a history of these phenomena and the induced effects that are considered devastating for human society with material damage and, in particular, loss of life. Recall that in Romania there are earthquakes of varying degrees determined, most often, by the Vrancea seismogenic area (the worst earthquake and recession since 1977 with over 1000 victims).

After a brief review of the causes of earthquakes (see tectonic plate theory), the physical parameters, intensity, magnitude with scales of assessment / measurement, types and geographical spread on Earth that overlap with the limits of tectonic plates and, in mostly with those of volcanism (see map sketch).

Remarkable and useful for the issue of the paper is the characterization in a separate subchapter *Seismicity in Romania*. The seismogenic areas on the Romanian territory are mentioned, namely: *monokinetic earthquakes* with a single shock in the *Moldavian* areas - the most active Vrancea, *Transylvanian* areas – the south-eastern part of the Transylvanian Depression, *Banat* - Banat Plain, *pre-Balkan* - affecting the southern part of Romania; *polycinetic earthquakes* with several shocks – *Danubian area*, which affects, in particular, the Danube Gorge - Iron Gates and *Făgăraș area* - Făgăraș Depression, *Pontic areas* - Romanian Black Sea Coast. *The earthquakes in Vrancea, considered intermediate*, according to another classification, have a depth of hearth between 60 and 180 km in the earth's crust and mantle. There are tables of earthquakes in Vrancea, one with a magnitude greater than 6° on the Richter scale and the depth of the outbreak since 1471 and another table of earthquakes over 7° but for a

longer period, between 1000 and 2000, maps with the National Seismic Network Stations, victims earthquakes of 1940 and 1977.

**Chapter III - Risk phenomena and processes of exogenous origin** has the largest extension (362 pages), justified by the multitude of processes on the relief of the earth's crust including the soil cover, the atmosphere, with a detail of the role of running water on land/continental land and sea/ocean waters on their shores.

**In subchapter 3.1. - Geomorphic and edaphic risk phenomena and processes** are first made a very consistent presentation and analysis of **landslides / landslides with their origin, definition and typification and spread**. Thus are presented the gravitational processes – **"pornituri uscate"** (rolls and falls of stones, collapses and collapses), **"pornituri umede" with insistence on frequent chemical and mechanical suffusion processes and in the Romanian Plain with the formation of crows** (see also the work **Excess moisture in the Plain Română de nord-est, 1969-1973, Edit. Academia Română, 1979, with the map of the flooded ravines**). Also here are presented the disasters caused by landslides, combating, preventing and managing them with a special scientific-didactic illustration.

**In subchapter 3.2. - Atmospheric risk phenomena** are systematically presented starting with **the wind ones - tornadoes** with the factors that determine them and their spread and frequency especially in North America (**hurricanes**) and Asia (**typhoon**) and I do not think that those manifestations in Romania can be compared to those in the US. Also, attention and characterization is made on **tropical cyclones**, especially on genetic factors, classification, production areas, effects, prevention, development monitoring and induced effects. Extratropical cyclones are also shown with a map sketch after E. Bryant 2005 in which the areas of their manifestation are marked, example from February 1953 on the shores of the North Sea, with an exact copy of the cyclone from the beginning of 2022, which affected the south of England and the western parts of Belgium, the Netherlands, Germany and Denmark. Also here are analyzed the frequent **storms, blizzards and sandstorms** in the desert areas and **dust storms** that come from North Africa and affect us in the south of Romania in the warm season. **The winter and summer monsoon circulation** that affect both hemispheres, in particular, in the marginal perimeter of the Indian Ocean produce the highest amounts of precipitation on Earth (eg. **Cerapunji Assam India, 11550 mm/year and at Mawsynram nearby 12700 mm/year**).

Particular attention is also paid to **thermal hazards (heat and cold waves)**, **pluviometric hazards (excess and rainfall deficient periods)** and those associated with **electrical atmospheric phenomena (thunderstorms)**, **condensation processes (fog) and frost (solid deposits)**.

***Hydric risk phenomena and processes (Subchapter 3.3.), are analyzed differently in the continental and coastal oceanic field.***

In the continental field are analyzed ***the potential continental water phenomena*** with risks well structured on ***extreme hydrodynamic phenomena, stationary, interference with the attributes that define them - spatial, temporal, qualitative, quantitative, dynamic and energetic***, and are characterized and illustrated with models.

The ***Extreme water phenomena and processes with the greatest extent are high waters – floods, analyzed genetically and with the appropriate attributes***. Obviously, these manifestations of extreme water phenomena are defined, classified with the territorial examples from Europe and Romania with the induced effects. ***Professor Victor Sorocovski*** rightly differentiates the ***high waters*** from the ***floods***, ie the high waters occur within the limits of the ***minor riverbed with higher daily flows than the average annual flows***, while the floods exceed the minor riverbed recovering that dimensioned free space. of the phases of the hydric regime during the time of operation of the river if that space of freedom has not been restricted / disappeared by anthropic interventions (mainly dams). ***Floods*** are presented, analyzed and interpreted as a model of basin / regional analysis.

A special position in this chapter is the ***hydrological drought*** which is determined by the ratio between two meteorological parameters, namely ***precipitation and evapotranspiration***, resulting in their values a water deficit / surplus, the first resulting in certain conditions, ***drought***.

Obviously, the drought affects the liquid runoff from the surface of the drainage basins (***sheet runoff***) and further on the liquid runoff from the river bed (***liquid runoff***). Indirectly, the liquid runoff from the riverbed is also influenced by the groundwater supply. From the model included in the drought can be seen the succession of the evolution of the phenomenon from the genetic factor, to its development with the consequences and ***types of drought-meteorological, pedological, hydrological and socio-economic***, we add.

Equally / dimension is analyzed the flow of water in the whole of this process entitled by the author ***-Phenomena and hydrodynamic processes*** with subchapters the movement of water in ***liquid and solid state***, the last aspect referring to ***snow and glaciers***. When moving water in the liquid state, the main attention is paid to erosion processes, slope degradation and riverbed mobility with consequences on the processes of clogging, first of all, of the riverbed in the plain regions but, where there are lakes clogging them, especially anthropogenic ones (significant accumulation lakes).

***Stationary water phenomena and processes*** are analyzing ***excess moisture and wetlands***, this second aspect being a consequence of the first. Here we consider the term aridity index, defined by ***Emm. de Martonne*** as the ratio  **$K = P / (T + 10)$** , where ***P = precipitation, T = average temperature***. In the

Romanian literature, this index was determined based on the ratio  $K = X / Z$ , respectively precipitation and potential evapotranspiration, delimiting on the territory *three units / areas* with *rich / excess humidity, variable and deficient*, these being analyzed and characterized on the map hydrogeographic from Atlas Romania, 1976.

***Phenomena and water risk processes in the coastal and oceanic areas***, although numerous and varied, if we refer to those carried out in the *non-coastal / coastal province and the oceanic province* itself, however, they are more restricted compared to those *in the continental field*.

***Risk phenomena and water processes in the coastal and oceanic fields***, whether they refer to *the marine / oceanic (coastal or offshore) domain*, the analysis of risk processes is done *dynamically* here, including *non-periodic phenomena (waves), periodic (tides, currents)*. Sea level fluctuations but also the slow rise with the consequences on the intense coastal space populated by man, *mechanical (abrasion processes, accumulation of alluvium / sediment) and interference (physical, chemical, water and why not anthropogenic)*.

Among the risk water processes in the marine field, *the waves caused by the wind* are presented in terms of genetics, mode of manifestation, stored energy and the effect of their action on the shore shores, especially with examples from Earth but also from the Romanian shore of the Sea. Black.

Also, *tsunamis* caused by earthquakes, frequent in the Pacific Ocean, are analyzed in terms of evolution, dimensional parameters, warning systems and, above all, on the induced effects. An important space in the work is given to *marine currents*, with its genesis, current systems, especially surface currents, hot and cold, the importance of navigation but also climatic influences (eg Gulf Stream current for the Norwegian shoreline).

***Fluctuations in the level of the Planetary Ocean - the rise in the level of the Planetary Ocean*** correlated with the changes of the planetary climate, are attributed to the melting of the Arctic and Antarctic ice caps associated with it, less significant to the thermal expansion of seawater by increasing temperature. In this matter of global importance, regarding the rise of the sea / ocean level, there are several simulation models that affect, in particular, the sea shores of the *coral islands in the Indian and Pacific oceans*.

***Water phenomena and processes of ocean and coastal risks*** are also analyzed in terms of *interference* that takes place in *marine water* in terms of *physical and chemical*. A significant interference is in the coastal space, between continental freshwater and ocean saltwater. The most important thermal and biological interference phenomenon is the *upwelling and downwelling* in which an important role is played by the interference between hot and cold currents that occur, approximately in the coastal space. Also, a phenomenon of interference in the coastal space, with negative effects on marine life is *the eutrophication*

produced by the excessive discharges of nutrients from the shores, especially from the water volumes of the riparian rivers. These two phenomena / processes in the coastal area are analyzed and exemplified in detail.

Chapter IV entitled *Environmental hazards* deals in detail (genesis, characteristics, spread, effects, prevention and control measures) only the phenomena that are mostly caused by natural factors. Some phenomena and processes are *regional* in nature (drought, fires), and others of a *global* nature (desertification, global warming).

In conclusion, we consider the briefly analyzed work to be *a work, a synthesis of natural events*, which increasingly affects human society, based on a long experience in this field, on consulting the most significant works in Romania and abroad, useful work in the documentation of generations of students and many researchers in many fields and *we address Professor Victor Sorocovschi congratulations and success in writing more other works still necessary for geographical literature and beyond.*

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