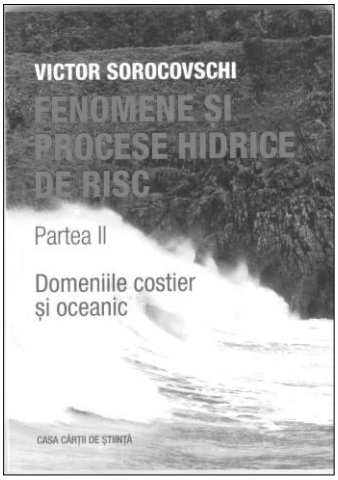
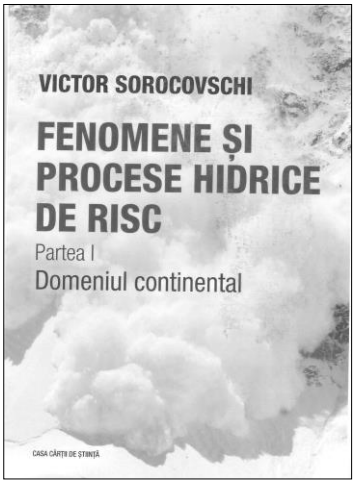
REVIEWS

VICTOR SOROCOVSCHI – HYDRIC RISK PHENOMENA AND PROCESSES, PART I - CONTINENTAL DOMAIN (2017, 364 P.). HYDRIC RISK PHENOMENA AND PROCESSES, PART II - COASTAL AND OCEANIC DOMAIN (2018, 225 P.)
Both volumes published at the C*asa cărţii de Ştiinţă publishing house*, Cluj-Napoca.





Professor Victor Sorocovschi mentions in the introduction of the volume **"Natural Risks - Theoretical Aspects" (2016)** that the phenomena / processes in nature have been "*labeled*" since antiquity as *the dualism between necessity and chance*.

Reflecting on this dualism, the necessity could be compared to the *energy storage* in the evolution of a phenomenon and the *chance* of exceeding its *threshold of affordability*. Comparing the content and the succession of the problems analysed by **Professor Victor Sorocovschi**, we consider that the *risk is the core of an* ongoing *process* and, *hazard* and further *catastrophe / disaster* would be reaching and overcoming *the supportability threshold in the evolution of the process*.

This dualism has been successfully identified and analyzed in all its complexity, all the more so, that these phenomena are related *to man*, to society, and thus to the confrontation with *human society*.

The approach of **Professor Victor Sorocovschi** is actually "*exceeding the threshold*" accumulation of work, experience, capacity for analysis and synthesis of the results of decades of study, especially of *phenomena / processes* of water covered the two volumes, forming a **trilogy of risks** and which we will continue to refer to.

In the volume **Hydric risk phenomena and processes, Part I - Continental Domain (2017)**, in the introduction stating that from the dangerous processes / phenomena, 64% of them are natural, while 36% are anthropic, the references are not only on processes that are *hydric-continental, coastal and marine (floods and flooding, waves/tsunamis), but also on risk phenomena caused by earthquakes*, *volcanism, tropical cyclones, storms, tornadoes, torrential rains, droughts.* Also in the introduction are researches and studies on risk phenomena through programs undertaken by specialized institutes and international bodies under the auspices of the UN, through scientific events such as symposia, conferences, summits such as 1992 Rio de Janeiro that elaborated Agenda 21, with objectives / sections also for the continental and oceanic water environment.

The diversity of potentially hazardous ***hydric continental phenomena*** is well structured on ***extreme, hydrodynamic, stationary, interference*** risks, with attributes that define them - ***spatial, temporal, qualitative, quantitative, dynamic and energetic***, and are characterized from the beginning of the paper and illustrated with models.

Another problem briefly presented is that of the ***classification*** of ***hydrological hazards***, because it was analysed in the first volume of risk trilogy. The table accompanying this classification includes ***criteria (spatial, temporal, genetic, nature of phenomena and processes, degree of perception, damages produced)*** and the ***characteristics*** of each criterion.

The characteristics of extreme hydrologic phenomena and processes with the greatest expansion, in which ***high waters***, ***floods*** and ***flooding,*** defining them in genetic terms and with the appropriate attributes. Obviously these two manifestations of extreme hydric phenomena are defined, classified with territorial examples in Europe and Romania with the induced effects. **Professor Victor Sorocovschi** rightly differentiates the ***high waters*** from the two extreme water events, the ***floods*** and the ***flooding***, ie ***high waters*** occur within the boundaries of the ***minor bed*** with ***daily flows*** higher than the ***average annual flows***, while the ***floods*** and ***flooding*** overtake the minor bed by recovering that ***free space*** dimensioned by the phases of the water regime during river runtime, if that space of freedom was not restricted / disappeared through anthropogenic interventions (mainly dams). The two hydric phases / events - ***floods*** and ***flooding*** are presented, analysed and interpreted / commented as a basal / regional analysis model.

A special position in this chapter is the inclusion of the ***drought***, which is usually treated as a meteorological / climatological hazard. Of course, the drought in an area / region is determined by the ratio between two meteorological parameters, namely ***precipitation and evapotranspiration***, resulting in a water ***deficit / surplus***, the first resulting in drought conditions.

Obviously, the drought affects the surface runoff of the drainage basin (***sheet runoff***) and further on ***the liquid runoff*** in the riverbed. Indirectly, liquid runoff is influenced by groundwater and springs. From the model included in the drought subchapter (Fig. 27) we can see the phenomenon's evolution sequence from the genetic factor, to its development with the consequences and the ***types of meteorological, pedological, hydrological and socio-economic drought***, we add.

Professor Victor Sorocovschi has made a complete and complex analysis of drought, and we think it would have been better to include it in ***Chapter V – Interference hydric phenomena and processes***.

Equally, the water flow in the whole is analysed entirely in the chapter ***Phenomena and hydrodynamic processes,*** in the subchapters being analysed the water movement in ***liquid and solid phase***, the last aspect referring to ***snow and glaciers***. On the water movement in liquid phase, the main attention is on erosion processes, slope degradation and bed mobility, with consequences on the processes of clogging, first of all, of river beds from plain regions, but where there are lakes, their clogging, especially the anthropic ones significant.

A chapter of this volume refers to ***Stationary hydric phenomena and processes***, in which are examined the ***humidity excess and wetlands***, this second aspect being a consequence of the first. Here are made considerations over the term, invoking the Romanian literature with their definitions, classification, and identification. Based on the ***K = X / Z ratio***, respectively rainfall and potential evapotranspiration, ***three units / areas with rich / surplus, variable and deficient humidity*** have been delineated, these being analysed and characterized also on the hydrogeographic map from the Atlas of Romania, 1976. The author mentions the estimation methods of humidity excess based on water balance equation, consequences, prevention and combat of this stationary hydraulic process.

Hydrological phenomena and hydrological processes, Part II - Coastal and oceanic domains (2018). Although the processes are numerous and varied, if we refer to those conducted in the ***neritic / coastal domain*** and in the ***oceanic domain***, however, they are more limited compared to those in the continental domain. In ***Chapter I - Introduction***, **Professor Victor Sorocovschi** considered it useful to present synthetically notions regarding the size and structure of the ocean in relation to the coastline, at the latter with details on the types of shores / delta and the more diverse and complex morphological and hydrological processes.

In ***Chapter II - Hydrological risk phenomena and processes from coastal and oceanic domains,*** whether it is made a reference to ***marine / oceanic domain (coastal or offshore),*** risk processes are analysed under ***dynamic*** aspect, including ***non-periodic*** phenomena (*waves*), ***periodic*** (*tides, currents*), the ENSO phenomenon, fluctuations of the sea level but also the slow lifting with consequences on the heavily populated coastal space, ***mechanic*** (*abrasion processes, accumulation of alluviums / sediments)* and of ***interference*** (of *physical, chemical, hydric and why not anthropic*).

Among the water-related risk processes in the marine environment, the wind driven waves are presented under genetic aspect, way of manifestation, the stored energy and the effect of their actions on the shores with a cliff, especially with examples from Terra and from the Romanian coast of the Sea Black.

Also, ***tsunamis*** caused by earthquakes, frequent in the Pacific Ocean, are analysed under the aspects of evolution, dimensional parameters, warning systems and, above all, the induced effects. An important part of the work concerns ***marine currents***, their genesis, current systems, especially surface currents, warm and cold, the importance in navigation, but also climate influences (eg. the Gulf Stream for the Norwegian shoreline).

Equally is analysed the ***El Ninó / ENSO phenomenon*** as one of the complex phenomena resulting from the hydro-atmosphere interaction and has an area of manifestation in the inter-tropical space, especially on the Pacific Ocean shore in South America. This phenomenon is analysed in all aspects-genetic, way of manifestation, periods of the year, consequences, etc.

We could not miss out on oceanic risk analysis from ***Planetary Ocean Level Fluctuations*** but if we refer to closer periods it would be more appropriate to refer to this subchapter as *Lifting of the Planetary Ocean level* correlated with changes in the *planetary climate* as the current trend is the increase of the marine level the melting of the Arctic and Antarctic glacial caps to which it is associated, less significantly due to thermal expansion of the marine water by increasing the temperature. In this planetary issue, there are several models of simulation on the elevation of the marine / oceanic level, but the reality is that this phenomenon is still affecting the smaller shores of the coral islands in the Indian and Pacific oceans.

And in this volume of ***oceanic and coastal hydric phenomena and processes***, the author concludes the analysis by ***interfering*** with the ***physical, chemical*** impacts of ***the marine water*** on the marine environment. We appreciate, as is also clear from the examples given, that the intense interference is in the coastal space, between continental fresh and salty oceanic waters. The most important thermal interference phenomenon, also under biological aspect, is ***upwelling and downwelling,*** strongly influenced by the interference between hot and cold currents, roughly in coastal space (the map sketch with Fig. 76), plays an important role. Also, a phenomenon of coastal interference, with negative effects

on marine life, is the ***eutrophication*** caused by overburdening of nutrients on the shores, in particular, from the volumes of riparian rivers. These two phenomena / processes in coastal space are analysed and exemplified in detail.

In conclusion, if we refer not only to the two volumes on the *continental and oceanic / marine hydric risk phenomena and processes,* but also to the first volume - *natural risks with theoretical and applicative aspects*, *which we have called the risk trilogy,* we consider it a ***work***, a ***synthesis of natural events***, which is increasingly affecting the human society, based on experience in this field, on the consultation of the most significant works in Romania and by the Terra, useful volumes in the documentation of generations of students and many researchers. ***Congratulations to Professor Victor Sorocovschi!***

Prof. Univ. Dr. Docent Petre Gâştescu