Surprisingly, but in the treatment of weather/climate “anomalies”, the extremely important and easily accessible information on the state of the ozonosphere seems to be ignored. Indeed, the atmospheric ozone layer regulates the thermal parameters of the lower atmosphere. Statistical data demonstrate the interrelationship of the ozonosphere state, weather anomalies, and the Earth’s climate system. Developing the weather/climate modeling demands to understand, conceptualize, and relevantly formalize this fact.

Here, we would like to propose a new advanced meteo-climatologic paradigm that accounts dynamic processes in Earth’s geo-spheres. It introduces the mechanism of self-regulating Earth’s ozonosphere as an additional geo-climatologic sub-system. In the frameworks of this paradigm, we can rationally explain abrupt climate change, weather “anomalies” and origin of natural disasters. For interpreting the phenomenon of El Nino (ENSO), we propose the basic phenomenological model of interaction of Earth’s Core, Ocean, and Atmosphere. Our concept explains the global synchronizing of weather processes and natural disasters. In part, it helps to clarify causes of recent immense flooding rains in Australia, South Africa and South America initiated globally around 30° from December 2010.

Additionally, we would review effective novel strategies, methods and technology for minimizing/mitigating various weather/climate/environment hazards (such as massive forest fires, droughts, floods, soil erosion and desertification, and “freezing rains”) and the adequate protection of eco-techno-infrastructures at local and regional scales.