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**Title of the Session:** Disaster Risk Management, GIS and Mapping

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## **Summary**

I am an Earth scientist. Natural disasters and especially earthquakes is my area of expertise to which I have a scientific and risk management approach. In terms of this approach, not only our country but also any other could apply such approach. Unfortunately, we are exposed to many disasters and are at risk of losing our premises and lives. So, disaster risk management has become a priority. To better understand the intricacies and mechanisms of how and why earthquakes occur, how energies is released and how damage is caused are the main subjects of work. The Prime Ministry of Disaster and Emergency Management Authority is the responsible part of government in all level of disaster and emergency events. We are working in many issues to do this well.

## **Context**

I can categorize my theme as follows:

- 1) The mechanism of an earthquake

Many of the earthquakes originate from the sudden motion of the plates which have zones of weaknesses called faults. They can be close to the surface or in deeper parts of the Earth. Depending on the tectonic regime and types of the faults, earthquakes have different occurrence styles. Thus, this style may be influenced by geological, geophysical and geomorphological conditions. All these features can be observed by field studies. I am dealing with the tectonic process, the evolution of tectonic regime, investigation of faults, and determination of data from the field and the subsequent analyses of these collected data. One of the important tools to get such data is paleo-seismological applications. Paleo-seismology has seen a positive trend during the last two decades all around the world to investigate the active faults. Magnitude and recurrence interval of large earthquakes are evaluated in paleo-seismology to assess seismic hazard and risk studies. I applied paleo-seismological approaches in my Master and PhD studies.

Active fault determination is the main issue in paleo-seismology. One of the most important applications in paleo-seismology is trenching. Fault trenching investigations are critical to paleo-seismic analysis because they have a potential to provide a direct assessment of the amount and timing of fault movement. Therefore, identification and dating of layers within a stratigraphic succession contain information about the faulting and displacement history. In terms of the data about the historical event, recurrence interval of huge earthquake could be defined. The data is crucial for the risk assessment.

## 2) Disaster Risk Management

Disaster Risk Management is the significant goal for many countries to overcome the worst effects of disasters and decrease losses. Because Turkey has many types of disasters, there are a number of applications and activities that have been implemented. One of them is the preparation of a risk map of Turkey. I am acting in this project as a project manager. Different natural disasters and industrial accidents have been studied by the practitioners and scholars and they prepared algorithms to calculate economic, physical and social risk. In this context, I have managed the preparation of all steps for earthquake, including statistical approaches for the evaluation of risk value by using geological data, number of building, highway, industrial areas, population, and meteorological information etc. At the end of the project, risk value of Turkey has been assessed on city scale. My scope of work relates to the process before a disaster occurs. Another department of our authority is concerned with the what happens after a disaster occurs.