1) *Summarize 3-4 big ideas in your field in the last few years that you think may have an impact in geosciences research:*

   I. **Spatio-temporal analysis and visualization of geo-processes**. Apply technologies such as GIS, cartography, remote sensing, and process ontologies to more meaningfully analyze and visualize data related to different Earth processes in the geosphere (e.g., seismic and magmatic activity) and hydrosphere (e.g., movement of water and contaminants) over time and space at different scales.

   II. **Analysis of geologic phenomena with Sensor web**. Apply Sensor Web to collect and visualize geological data from natural (e.g., volcanic, seismic, landslide) and anthropogenic (e.g., pollution) sources in urban and natural environments. The sensor web data can be located on the Linked Open Data Cloud.

   III. **Linked open cloud of geologic data**. Upload and link diverse location-based Earth data to the Linked Open Data Cloud (LODC) based on the Semantic Web technologies and spatial semantics such as ontologies. This allows visualizing diverse, but related data in different forms (e.g., from databases and knowledge bases) in a given area based on location.

   IV. **View geological maps accurately in the 3rd dimension along digital cross sections**. Extending surficial stratigraphy and structural geology to deep levels by geometric projection, based on rules. This will help geologists to visualize structures at all scales below the surface, and allows finding deeply seated structures (e.g., folds, blind faults, detachment faults) and resources (e.g., deep aquifers and fossil fuel reservoirs). Giving semantics to the map elements (points, lines, and polygons) will make the map and its cross section more intelligent and searchable.

2) *Highlight 2-3 important research trends in your area that can be relevant to the workshop goals.*

   I. Adding semantics to the geological map elements (points, contacts, areas) by building ontologies in different geological fields to improve the interoperability and reusability of data. This can apply GIS, remote sensing, and the Semantic Web technologies. Currently, the elements on maps are static and incognizant of their identity and meaning. Although a geological contact such as a fault or unconformity 'knows' that it is a line in the geodatabase of a GIS, it does not know that it is a fault or unconformity or what these terms mean.

   II. Integrating location-based data related to the Earth system components related to the atmosphere, water bodies, geology, and people, to better manage Earth's natural resources and hazards. This can use technologies such as Semantic Web and linked open

data cloud, and will allow analyzing the impact of the Earth system components on each other.