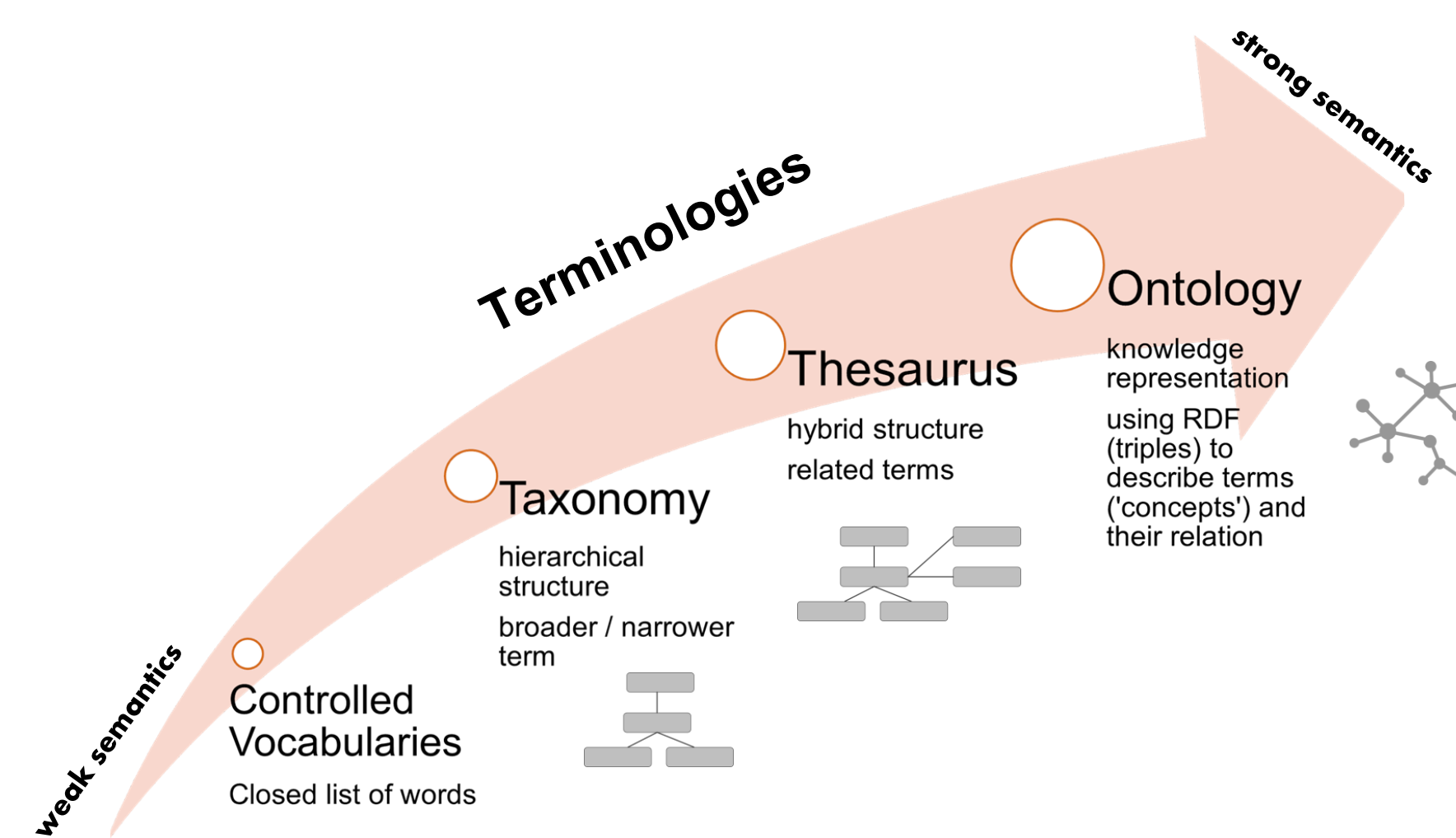


(Scientific) communication gets ever more important ...

what

An ontology is a formal description of knowledge of a subject domain. It defines a set of terms or concepts of the domain and the relationships between them. Ontologies are descriptions of data structure - of classes, properties, and relationships in a specific domain. There are, of course, further methods that formally specify knowledge - such as vocabularies, taxonomies, or thesauri. However, ontologies are a strong tool for enabling semantic interoperability.



why

(Cross-disciplinary) understanding, cooperation, and reuse of scientific information is increasingly challenging:

- Research data grows in size, complexity, and quantity, due to technical developments and recognition as relevant research output.
- Research data can be quite heterogeneous (e.g. observation and simulation data, interview recordings, physical samples).

While at the same time, it gets more and more important:

- Research data can be of immense size and costs, or not reproducible.
- Topics like climate change or pandemics globally impact literally all aspects of everyday life, so diverse scientific domains have to be set in interrelation.

Quite divergent habits, languages, and means have evolved for documentation, communication and recherche within different scientific domains. There is thus a need to harmonise or at least to bridge practices around indexing, cataloguing, describing, and finding scientific data. Leveraging the potential of existing terminologies (controlled vocabularies, taxonomies, thesauri, or ontologies) can help to address this issue.



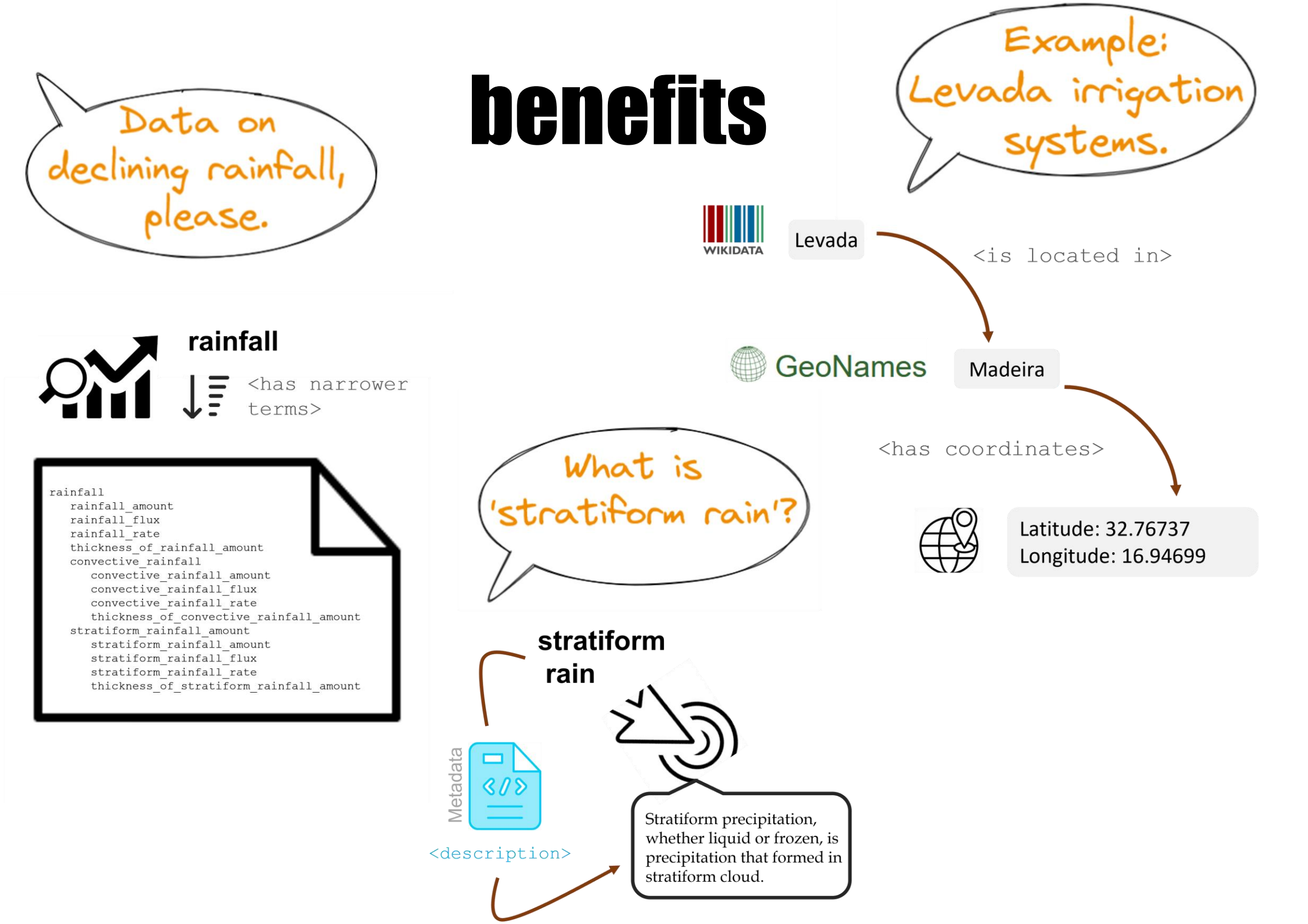
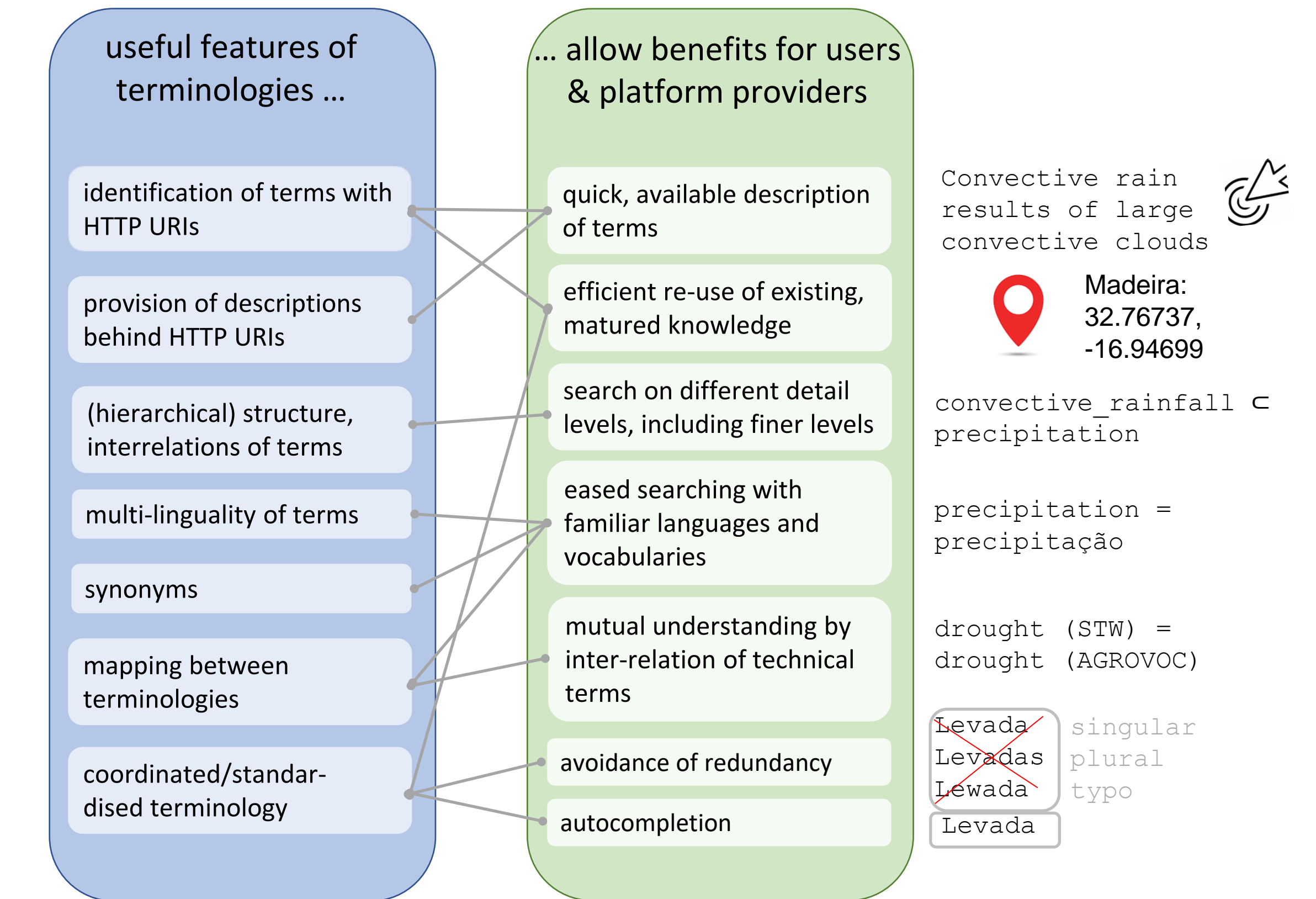
Being cross-disciplinary at its core, Earth System Science comprises divergent domains such as Paleontology, Marine Science, Atmospheric Sciences, and Molecular Biology.

... but pitfalls and misapprehension lurk and loom everywhere ...

A social scientist wants to investigate the correlation between climate change and the increase of social conflicts in peasant subsistence farming, using Levada irrigation systems on Madeira as an example.

... however, ontologies (or other terminologies) can ease and streamline.

how



Terminologies can be utilized at different steps in the research output provision workflow

- description, i.e. metadata input
- indexing
- searching

