

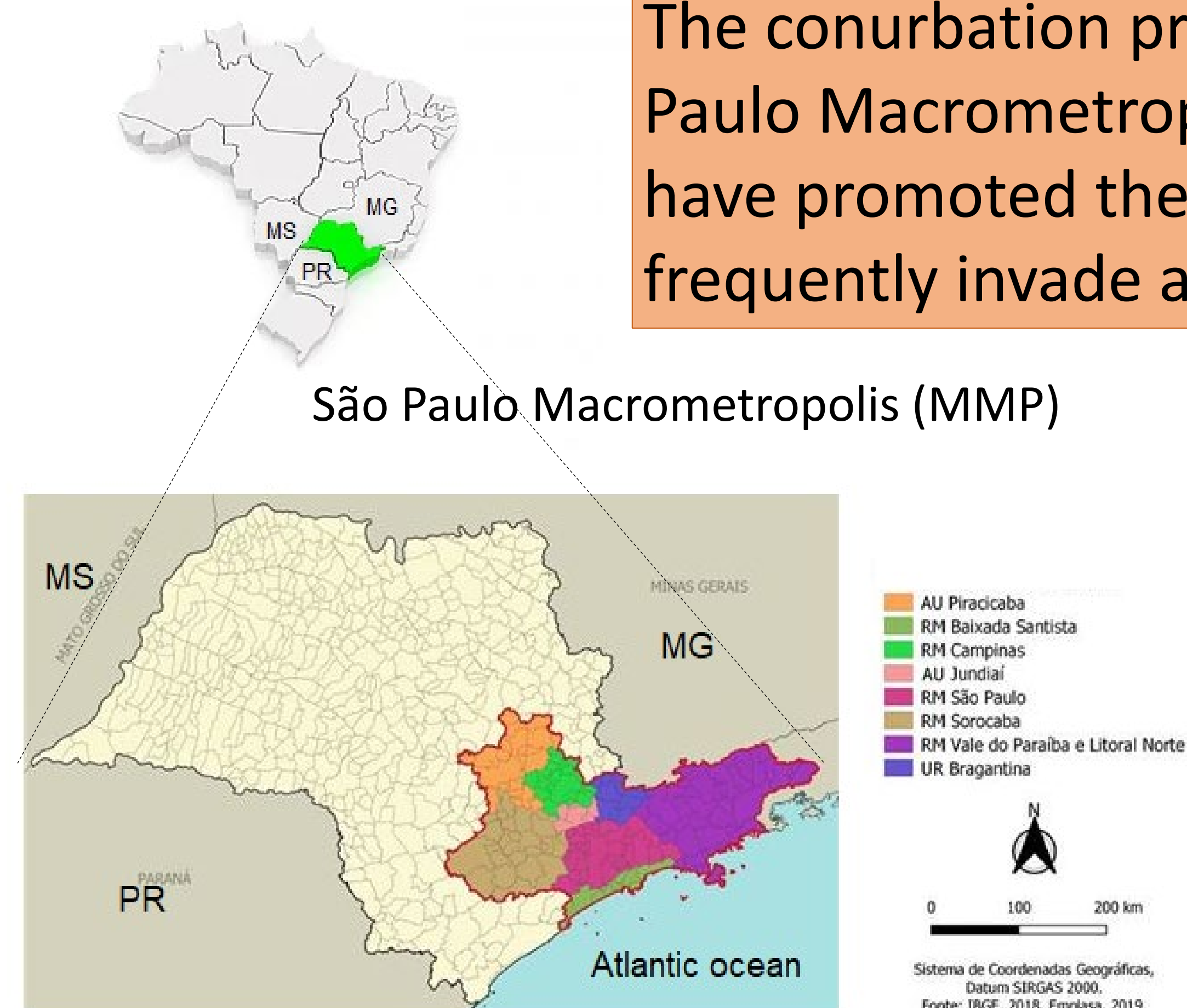
Critical zones observatory in São Paulo megacity, Brazil

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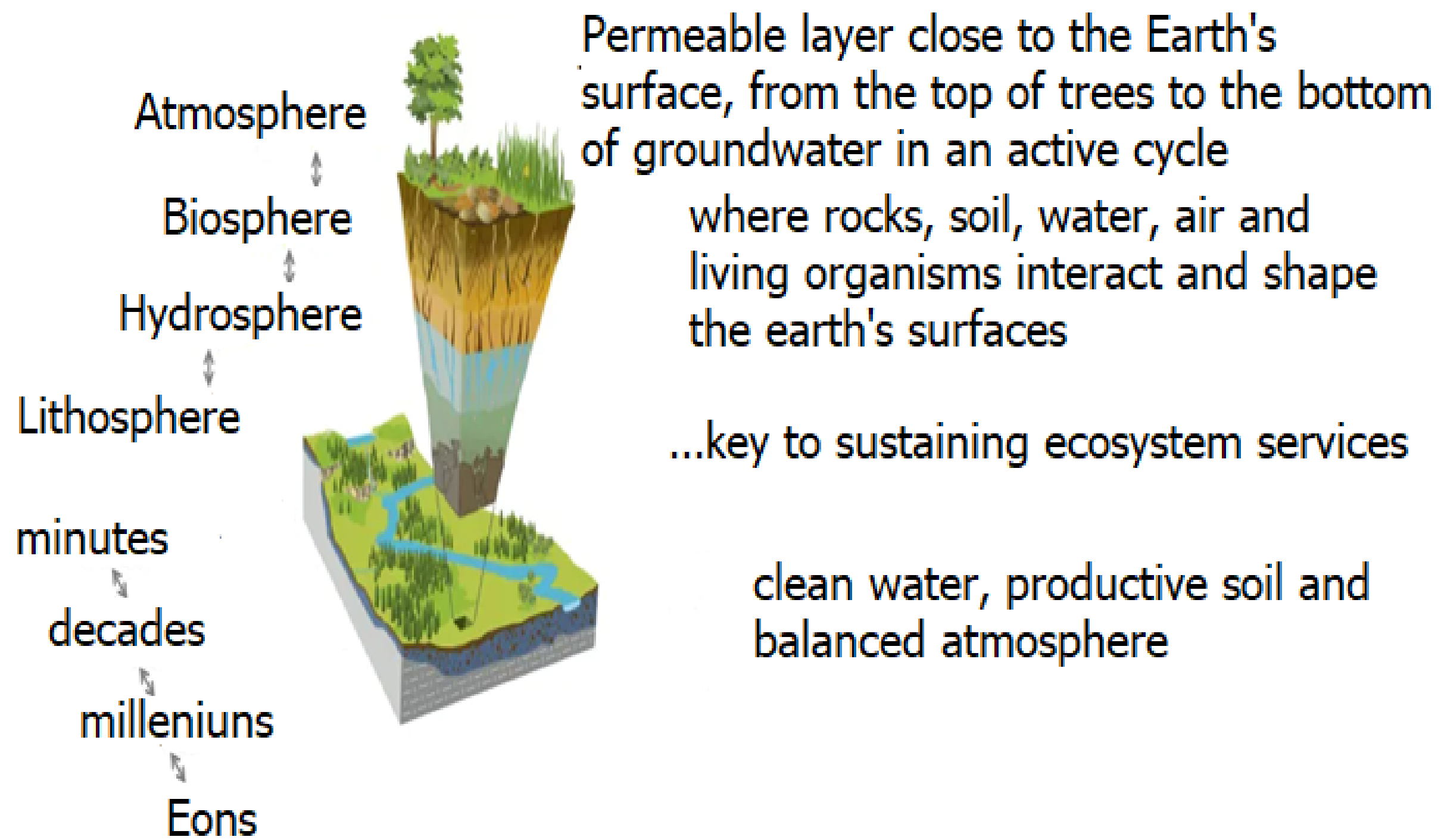
Introduction: The expansion of the urban limits does not only represent impacts related to land use and occupation, but promote changes in several other elements of the Earth system, promoting a synergy of environmental problems that should be the object of evaluation, magnification, monitoring etc. When considering the assessment from the perspective of critical zones, where rock, soil, water, air and living organisms interact, negative externalities are reflected in the provision of ecosystem services and are often not perceived by the local and surrounding community.

The conurbation promoted by the urban expansion between the municipalities in the São Paulo Macrometropolis (MMP), where the largest city in South America, São Paulo, is located, have promoted the reduction, sometimes the disappear, the zones bordering rural areas, and frequently invade areas that should be protected.



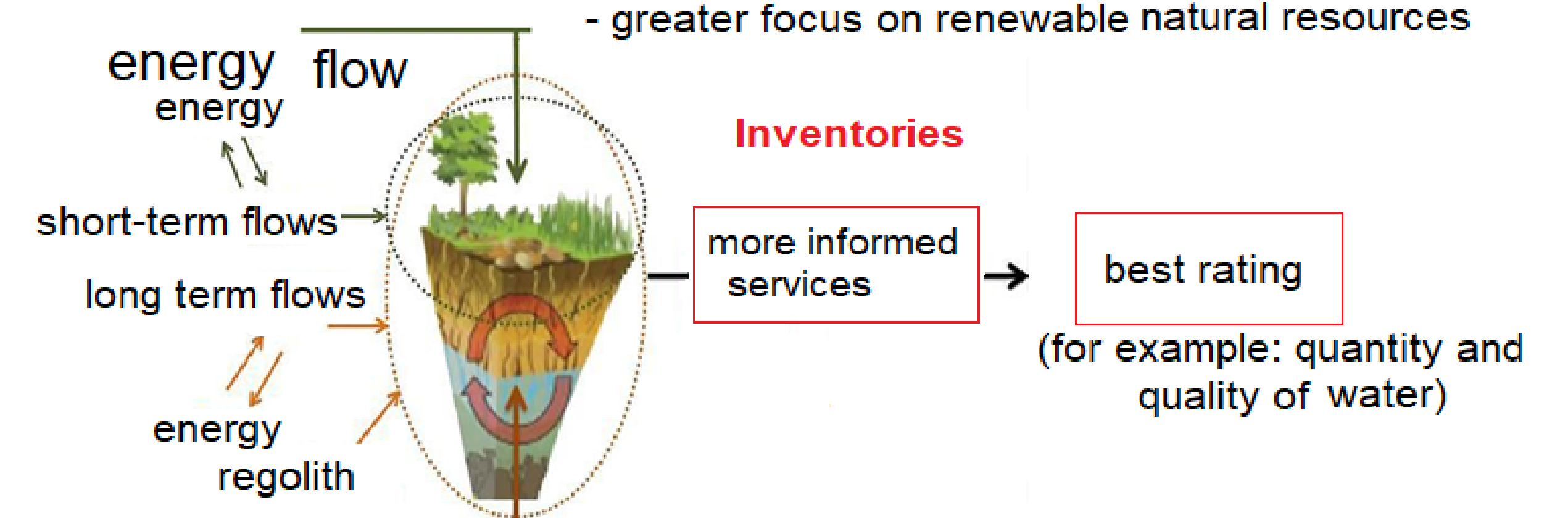
The complex interactions and connectivity in critical zones require studies in an interdisciplinary approach in assessing and monitoring for long periods, in order to understand the dynamics of processes and variables, in temporal and spatial scales. In this project we integrate different approaches to establish biogeochemical coefficients, based on the plant-soil-water interaction in the critical zone, and to understand the patterns of seasonal evolution and ecosystem services of vegetation in the critical zone.

Critical Zone



Ecosystemic services

biofocus- especially including biodiversity
- time scale: days, years
- greater focus on renewable natural resources



Critical zone services

geofocus- especially including soil, regolith
- time scale: from minutes to millennia
- more on non-renewable natural resources

Critical Zone Observatory (OZC) location:

Temporal evolution of the use and occupation of the study area from aerial images: the East campus of EACH-University of São Paulo. The area has been the subject of studies and monitoring over the last few years, due to the presence of methane gas in the subsoil, which is associated with natural organic clays, which serve as sources and transport for soil biogas. The observatory was installed in 2022 and will be part of the global network of critical zone observatories

