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Developing state of the art geoinformation tools to enable an improved understanding of land surface interactions: the input of LISTEN-EO project

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Abstract:

Accurate information on spatially explicit, distributed estimates of land-atmosphere fluxes and soil surface moisture is essential for understanding land-surface interactions and feedback between different components of the Earth system. Such information is also essential in a wide range of disciplines, including hydrology, meteorology, agriculture and ecology. Earth observation (EO), simulation process models and ground-based instrumentation, as well as advances in other areas of geo-information such as cloud computing and software tool development, have shown great promise in paving the way for addressing today's challenges associated with the study of land-atmosphere interactions.

The LISTEN-EO research project, funded by the Hellenic Foundation for Research and Innovation, seeks to harness cutting-edge technologies to significantly advance our understanding of land surface interactions. This project aims to develop innovative methodologies, software platforms, and modelling tools that will both push the boundaries of scientific research and enhance practical applications in this field. This presentation aims at providing an overview of the project's objectives and scientific contributions so far.

In addition, is introduced a software toolkit derived from the project which aims at streamlining the use of temperature/vegetation index-based methods derived from remote sensing data for key land surface parameters such as soil surface moisture, Water Use Efficiency (WUE), CO_2 fluxes and [CO_2] as well as. This toolkit represents a major step forward by automating previously manual processes, allowing for more efficient data analysis. We have also rigorously updated the model code to ensure reliability, while introducing new functionalities that enhance its capability. These enhancements make the toolkit more robust, adaptable, and ready for deployment in a variety of research and application contexts. By incorporating these advancements, the LISTEN-EO project is poised to make a significant impact on both research and practical implementations related to land surface interactions.

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