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SimEnvVis: A Climate Data Visualization Wizard

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To efficiently make sense of complex climate data, climate scientists need to choose and utilize appropriate analysis tools in respect to specific sets of tasks. Among these, visual analysis tools, like those originating from the field of visual analytics, efficiently support to communicate such information by directly addressing human visual perception. However, climate scientists often are not aware of or not familiar with the large variety of available visual analysis tools or are underestimating their potential benefit for common research tasks and thus reducing the probability to use most suitable ones and therefore impairing the knowledge discovery process.
To address this problem, SimEnvVis was developed as an easy-to-use wizard-based software system guiding the user step-by-step in choosing most appropriate visualization and visual analytics tools from a large and easily extendable repository consisting of script-based and interactive tools with different application foci (spatial, temporal or abstract data) and supported techniques (e.g. glyphs, isocontours, stream visualization). Considering the analysis context (e.g. data characteristics, user preferences and analysis tasks) SimEnvVis automatically evaluates the attached tools using a combination of a vector-based and a rule-based mechanism. Based on the users decision, the selected visual analysis tool is launched using a template which is dynamically parameterized by taking into account the analysis context. By displaying the session history in different modes as well as providing the possibility to start SimEnvVis in first-time-user mode to reduce GUI complexity and hide tools which are under development the wizard is in particular useful for novice users.
This way, SimEnvVis increases the probability for the usage of appropriate visual analysis tools, lowers the obstacles of familiarization with them and therefore accelerates the knowledge discovery process as well as positively contributes to the quality of its results. With this contribution, we provide a description of the wizard as well as visual analysis use cases to illustrate its application.