

AI in Climate Research - How LLMs and its Platforms make a Difference

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Climate research often requires substantial technical expertise. This involves managing data standards, various file formats, software engineering, and high-performance computing. Translating scientific questions into code that can answer them demands significant effort. The question is, why? Data analysis platforms like Freva (Kadow et al. 2021, e.g., gems.dkrz.de) aim to enhance user convenience, yet programming expertise is still required. In this context, we introduce a large language model setup and chat bot interface for different core e.g. based on GPT-4/ChatGPT or DeepSeek, which enables climate analysis without technical obstacles, including language barriers. Not yet, we are dealing with climate LLMs for this purpose. Dedicated natural language processing methodologies could bring this to a next level. This approach is tailored to the needs of the broader climate community, which deals with small and fast analysis to massive data sets from kilometer-scale modeling and requires a processing environment utilizing modern technologies, but addressing still society after all, such as those in the Earth Virtualization Engines (EVE - eve4climate.org). Our interface runs on an High Performance Computer with access to PetaBytes of data - everything just a chat away.

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