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A model of data processing pipeline for space weather analysis and forecast

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Space weather is a branch of space physics that studies various factors in the near-Earth space such as solar wind, magnetosphere disturbance, solar proton events, and others, which make a massive impact on the Earth. In practice, data measured by different satellite instruments need to be gathered and appropriately transformed before use in space weather analysis and forecast. The data processing pipeline involves a large number of various programs. It also requires in-depth technical knowledge of both satellite instruments and programming tools so that data will be processed correctly. Building such a data pipeline is time-consuming and error-prone. The correctness of the output data produced by the processing pipeline is one of the critical factors

that define the success of an analysis or a forecast model. This work proposes a model that describes how the data processing pipeline might be organized and how to build a distributed data processing system based on the proposed model.

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