

Drawing Storylines of Extraordinary Weather Phenomena around Japan in Changing Climate

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Frequent occurrences of extraordinary weather events in recent years have disclosed the vulnerability of our society to unexperienced kinds of extreme events. Increase of such extreme weather events are attributed to the global warming. Since we expect to face even further increases of extreme events in future, it is necessary to help policy makers for making adequate adaptation plans. To this end, an essential point is to estimate the range of uncertainty for future changes of phenomena, and to adequately convey such information to the policy makers.

In this talk, we will introduce our project supported by the Environment Research and Technology Development Fund (2-1904). In this research, we employ the Storyline method, which is introduced to make physical explanations why and how extraordinary weather phenomena are affected by the global climate change. We especially focus on local phenomena around Japan, such as extreme rainfall, extreme droughts, heat waves, etc.

In our project, we study how extraordinary weather phenomena are linked to large-scale dynamics. We also discuss how to choose climate models from the CMIP5 and CMIP6 model ensembles, in order to represent a wide range of uncertainty in future change. Finally, we aim to extract small numbers of climate storylines which represent the possible range in future changes of extreme weather phenomena around Japan and their connections to changes in large-scale atmospheric condition.

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