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Users of Big Earth Data in the spotlight - A user perspective on current and future cloud-based data systems

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Big Earth Data refer to large volumes of multi-dimensional environmental data, e.g. satellite imagery or outputs produced by numerical-weather prediction models. Two major trends of Big Earth Data bring new possibilities to data users: (i) an increased open data policy, e.g. through the European Commission's satellite programme Copernicus, allows users to make analyses that have not been possible before due to financial limitations, and (ii) new satellite technologies and processing capacities allow for more detailed analyses due to a better spatial and temporal resolution of the datasets.
These trends come along with new challenges. Data users face difficulties in downloading and processing these growing data volumes. On data services / providers side, many attempts are undertaken to make Big Earth Data better accessible for users, e.g. virtual research infrastructures, data cube technologies, standardised web services or cloud services, such as the Google Earth Engine or the Copernicus Climate Data Store. All services serve the general paradigm of "bringing users to the data" and aim to reduce the overall data download. However, data accessibility is still one of the biggest obstacles for users of Big Earth Data. Future data services will most likely be based on cloud services. There are still open questions on how a reliable and scalable data service based on cloud services can be established How much processing capacity would users need, is the geographic location of the cloud servers important for users and do users care whether the cloud is publicly-funded or the services are offered by a commercial provider?

A user requirements survey on Big Earth Data put users into the spotlight between November 2018 and January 2019. We were interested how users of large volumes of environmental data interact with the data and what challenges they currently face. One part aimed at finding out how users would like to work with future data services and what aspects of cloud services, e.g. geographic location or publicly-funded cloud vs. commercial cloud provider, play an important role for users.

The presentation will provide a perspective on how users of Big Earth Data currently work with the data and what challenges they face. A specific focus will be put on user's expectation of future data services and cloud services. An attempt will be made to draw recommendations how present data services may evolve, based on user needs in order to make Big Earth Data better accessible to everyone.