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A Data Quality Information Model for Earth Observation

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The question of data quality is a prominent topic of current research in Earth observation. However, different users have different views and visions on data quality. There exists a set of standards and specifications in relation to data quality for Earth observation (e.g. ISO standards, W3C standards, QA4EO), and how to choose appropriate one for quality information representation also present a challenge.

In order to address the need, we carried out interviews with environmental scientists to elicit their views on matters such as how they choose data for their studies, and what encourages them to trust the accuracy and validity of the data. Interviews were structured around a carefully-designed questionnaire. Face-to-face and telephone interviews were performed in order to gain maximum value from the consultation process. An array of views and visions on Earth observation data have been gathered, which will provide valuable input to the community and other data providers.

Informed by the interview findings, we critically review the existing standards and specifications and propose a new, integrated quality information model for Earth observation. This builds upon existing models, notably the ISO standards suite, filling gaps that we have identified in order to encompass other important aspects of data quality.

This work has been performed in the context of the EU FP7 GeoViQua project, which aims to augment the Global Earth Observation System of Systems (GEOSS) with information about the quality of data holdings, and to provide visualization capabilities for users to view data together with associated quality information.