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## Supporting open data: the key role of data managers

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Open data is not a new concept. Over sixty years ago in 1959, knowledge sharing was at the heart of the Antarctic Treaty which included in article III 1c the statement: “scientific observations and results from Antarctica shall be exchanged and made freely available”. At a similar time, the World Data Centre (WDC) system was created to manage and distribute the data collected from the International Geophysical Year (1957-1958) led by the International Council of Science (ICSU) building the foundations of today’s research data management practices.

What about now? The WDC system still exists through the World Data System (WDS). Open data has been endorsed by a majority of funders and stakeholders. Technology has dramatically evolved. And the profession of data manager/curator has emerged. Utilising their professional expertise means that their role is far wider than the long-term curation and publication of data sets.

Data managers are involved in all stages of the data life cycle: from data management planning, data accessioning to data publication and re-use. They implement open data policies; help write data management plans and provide advice on how to manage data during, and beyond the life of, a science project. In liaison with software developers as well as scientists, they are developing new strategies to publish data either via data catalogues, via more sophisticated map-based viewer services or in machine-readable form via APIs. Often, they bring the expertise of the field they are working in to better assist scientists satisfy Findable, Accessible, Interoperable and Re-usable (FAIR) principles. Recent years have seen the development of a large community of experts that are essential to share, discuss and set new standards and procedures. The data are published to be re-used, and data managers are key to promoting high-quality datasets and participation in large data compilations.

To date, there is no magical formula for FAIR data. The Research Data Alliance is a great platform allowing data managers and researchers to work together, develop and adopt infrastructure that promotes data-sharing and data-driven research. However, the challenge to properly describe each data set remains. Today, scientists are expecting more and more from their data publication or data requests: they want interactive maps, they want more complex data systems, they want to query data, combine data from different sources and publish them rapidly. By developing new procedures and standards, and looking at new technologies, data managers help set the foundations to data science.

