

# Attempt for Research Data Sharing and Citation in context of Open Science - Sharing Atmospheric MF Radar Observation Database as a Case Study

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Research Data Sharing is one element that constitutes Open Science. In recent discussion, it is said that scientists should share data that they collect and/or generate, to allow free and open access <sup>1</sup>.

Scientific data sharing are often carried out for responding to requests by funding agencies to open research data, for raising the transparency and fairness of research, for validation of research results, for increasing new research opportunities using shared data from multi-domains and interdisciplinary fields, and for increasing recognition of and rewarding achievement of scientists and experts of data management and publication <sup>2</sup>.

It is being promoted to cite research data like citing other articles in a research paper<sup>3</sup>. When the data is cited, the DOI (Digital Object Identifier) is becoming to be used widely<sup>4</sup>. Minting DOIs to a research paper or document is prevailing already. In the examples of data citations, the data is increasingly often cited with its DOI in the acknowledgement or the reference of a paper<sup>5</sup>. It is expected that recognition of data creators, providers, curators, and managers will increase with help of data DOI through automatic surveillance of cited data DOIs on Internet <sup>6</sup>.

We are preparing sharing on a Web site of the neutral wind data observed with MF (Medium Frequency) radars at Wakkanai (45.36N, 141.81E) and Yamawaga (31.20N, 130.62E) of Japan. The 30 min. averaged data will be provided which is useful with increased confidence to analyze atmospheric dynamical phenomena (Original time interval of the observation are 3-4 min.). Currently FAIR data principle (Findable, Accessible, Interoperable and Re-usable) <sup>7</sup> is being discussed to be a preferable condition for research data sharing. We are trying to increase FAIR-principle compliance level of the MF Radar data. Currently the data is: described in ASCII text format (difficult to lose readability if a human reads the data file), including the simple description in each data field in the file (although technical terms need to be improved since some are not very intelligible like "AVERAGED VELOCITY" "DATA COUNT" are to be , simpler HTML page having static URLs (dynamic data/web page generation can be a barrier for citability of online data objects). Minting the DOI is being planned.

In future, of open science activity, it is thought that research data sharing will become an important "building block" for researchers and stakeholders. This experiment in the present paper is a case study of simple data sharing, which is expected to lead to a case study for helping development of a research data sharing framework, our target is that what we will learn from this study will contribute to knowledge and techniques more universally adaptable to other data sharing practices in future.

Keywords: Research Data Sharing, Digital Object Identifier, Mesosphere and Lower Thermosphere