Open Science in radioastronomy:
The MASER toolbox

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1 Abstract

The Open Science paradigm and the FAIR principles (Findable, Accessible, Interoperable, Reusable) is aiming to foster scientific return, and reinforce the trust in science production. We present how the *Service National d'Observation* MASER implements Open Science through a series of existing solutions that have been put together, only adding new pieces where needed.

The MASER service is a "science ready" and "open science" toolbox dedicated to time-domain low frequency radioastronomy. The principal data product in this domain is a "dynamic spectrum", i.e., a series of consecutive spectra with the same observing configuration. The observed physical phenomena are related to plasma instabilities and energetic particles in magnetized plasma. Hence low frequency radio astronomy is a remote sensing tool for plasma diagnostics.

MASER covers four community needs:

1. *Discovering* data products,

2. *Exploring* data collections before downloading TB's of files,

3. *Annotating* and then *storing* and *sharing* annotations on radio dynamic spectra,

4. *Accessing* data in Python.

MASER solutions are based on IVOA protocols for data discovery, on IHDEA tools for data exploration, and on a dedicated format developed by MASER for the annotations. The service also proposes a data repository for sharing data collections, catalogues and associated documentation, as well as supplementary materials associated to papers. Each product of the repository if citable with a DOI, and the landing page contains web semantics annotations (using schema.org).