The Python ARM Radar Toolkit (Py-ART)

THE LATEST AND GREATEST WITH PY-ART

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ARM Open Science Team

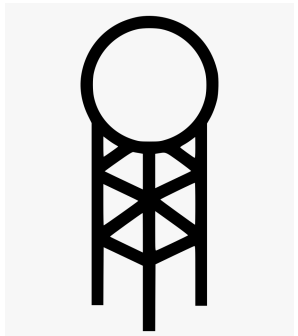
A Decade of Open Radar Science with the Python ARM Radar Toolkit (Py-ART)!

- Initially created by Scott Collis and Jonathan Helmus (2013), funded by ARM, built to work with weather radar data
- Over 340 citations of the package (peer-reviewed publications), 1000 monthly users
- >600,000 package downloads
- Recent development with array integration, moving to a standard IO library maintained by the broader community

ARM research radars

NEXRAD network

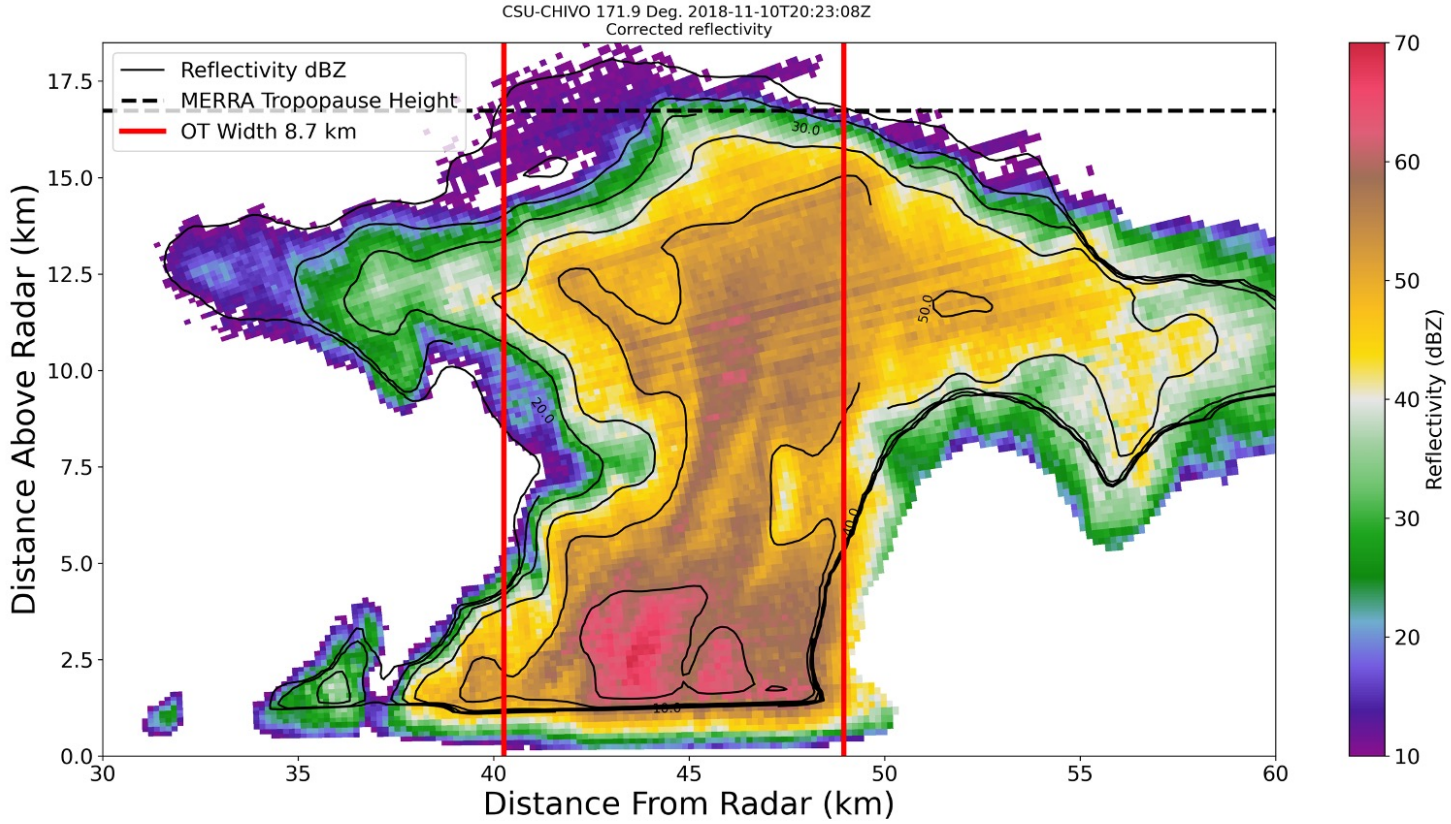
~13 other radar formats



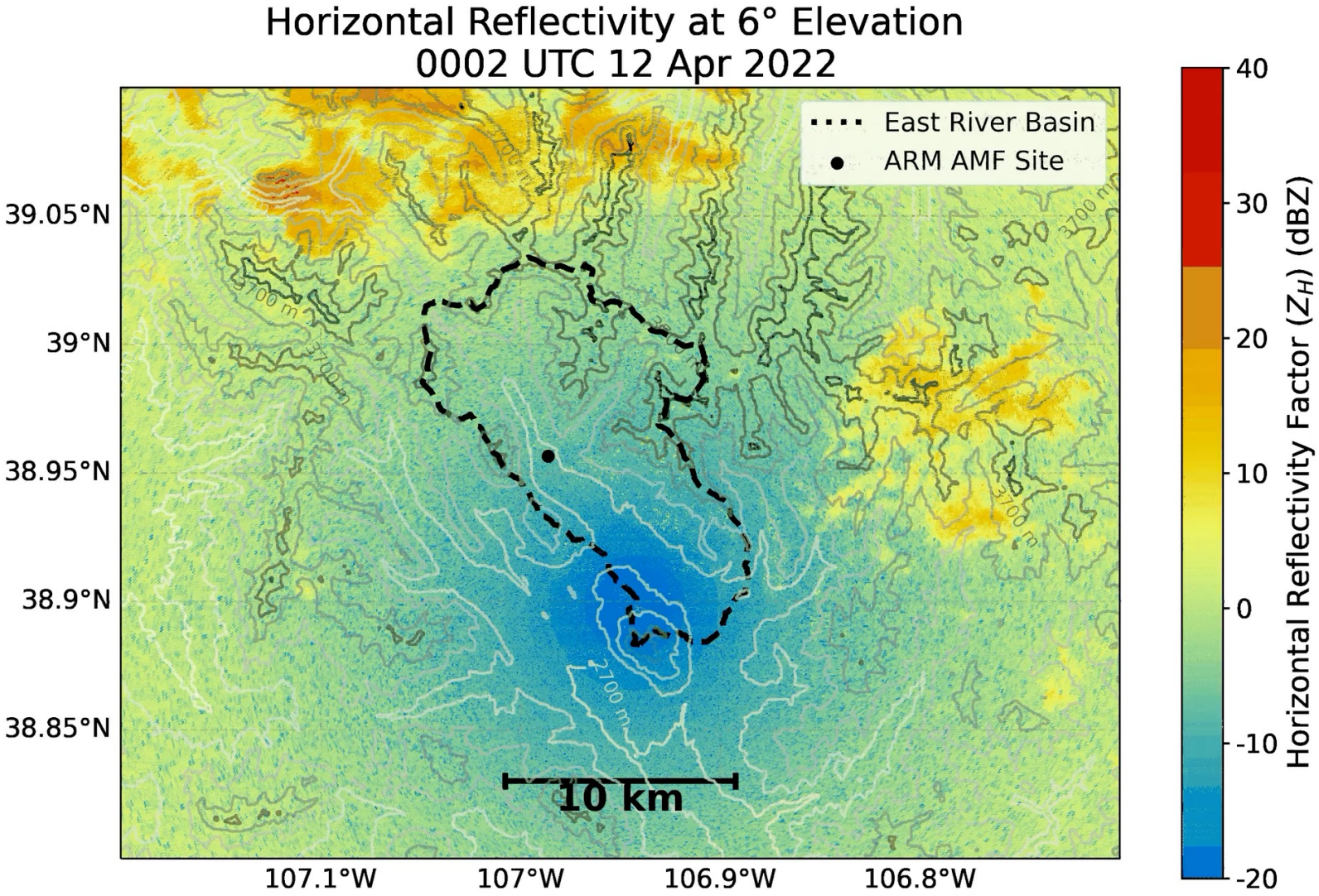
pyart.Radar()

corrections
retrievals
gridding
graph (viz)
pointers to other libraries

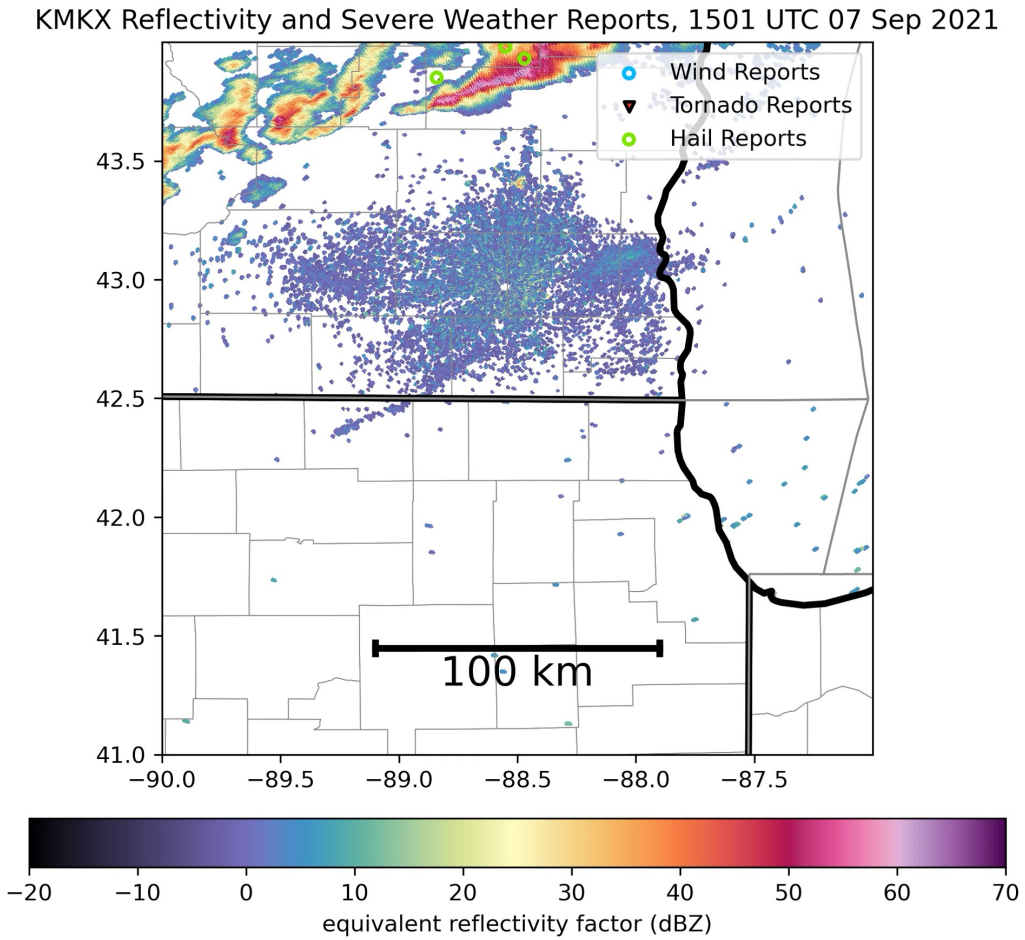
An Overshooting Top: Deep Convection in Argentina



Snow in the Rockies: A SAIL Perspective

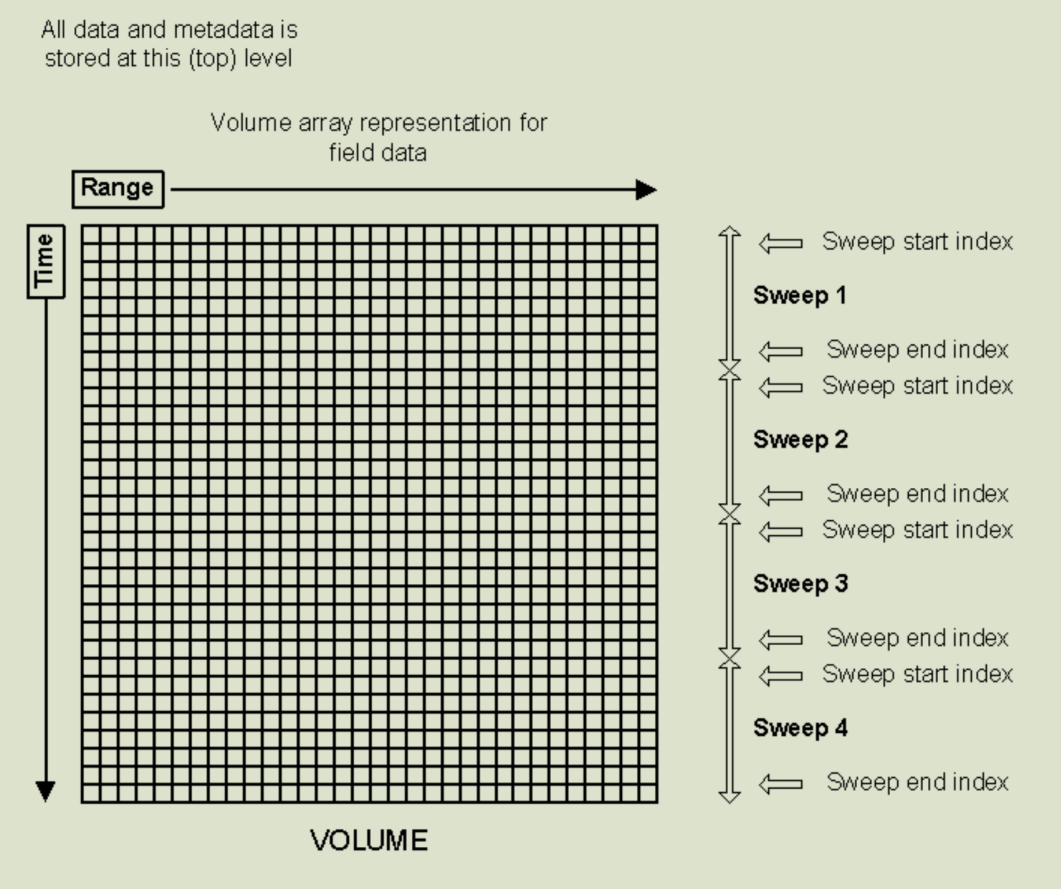


Tracking Severe Storms in the Midwest

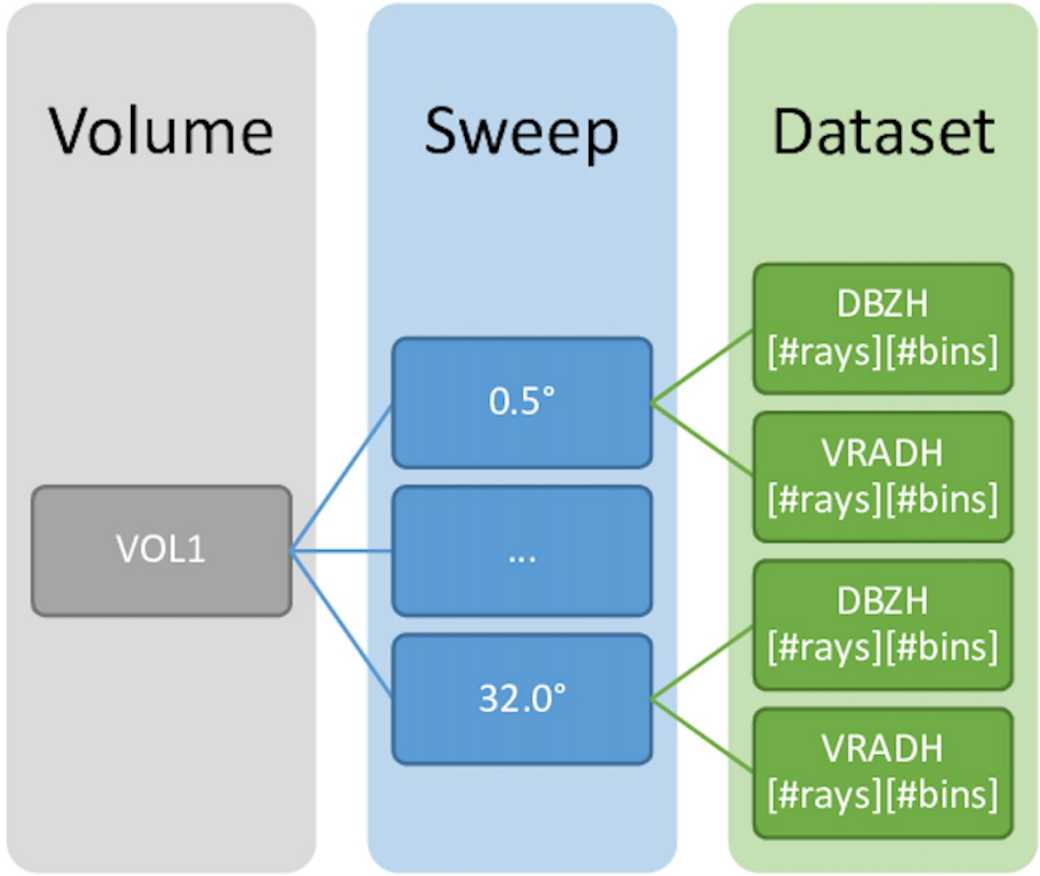


Next in the Roadmap: Supporting FM-301/Cfradial2

cfradial1



cfradial1



Xradar as the Core IO Library

Xradar Installation User Guide Contributing Credits History More

Release: 0.3.0

Date: 2023-07-11

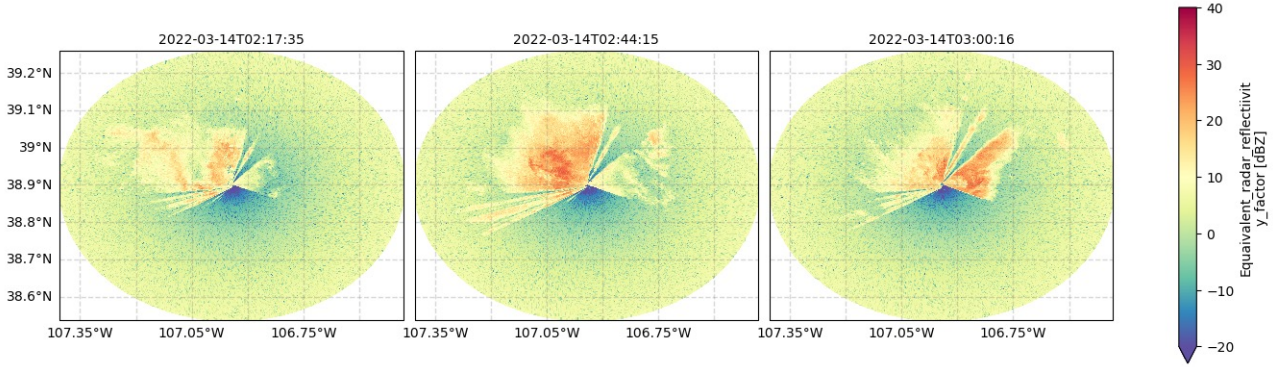
xradar

pypi v0.3.0 | conda-forge v0.3.0 | DOI 10.5281/zenodo.7767521

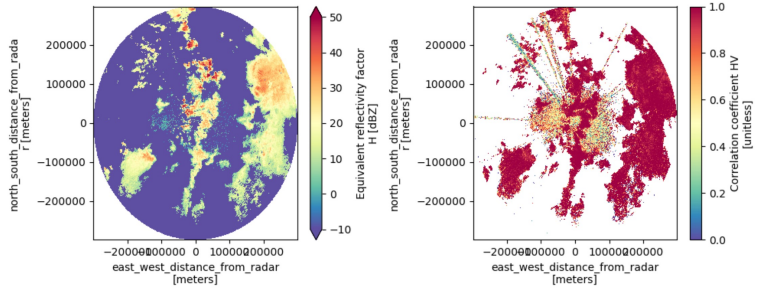
CI passing | Build distribution passing | docs passing

Xradar includes all the tools to get your weather radar into the xarray data model.

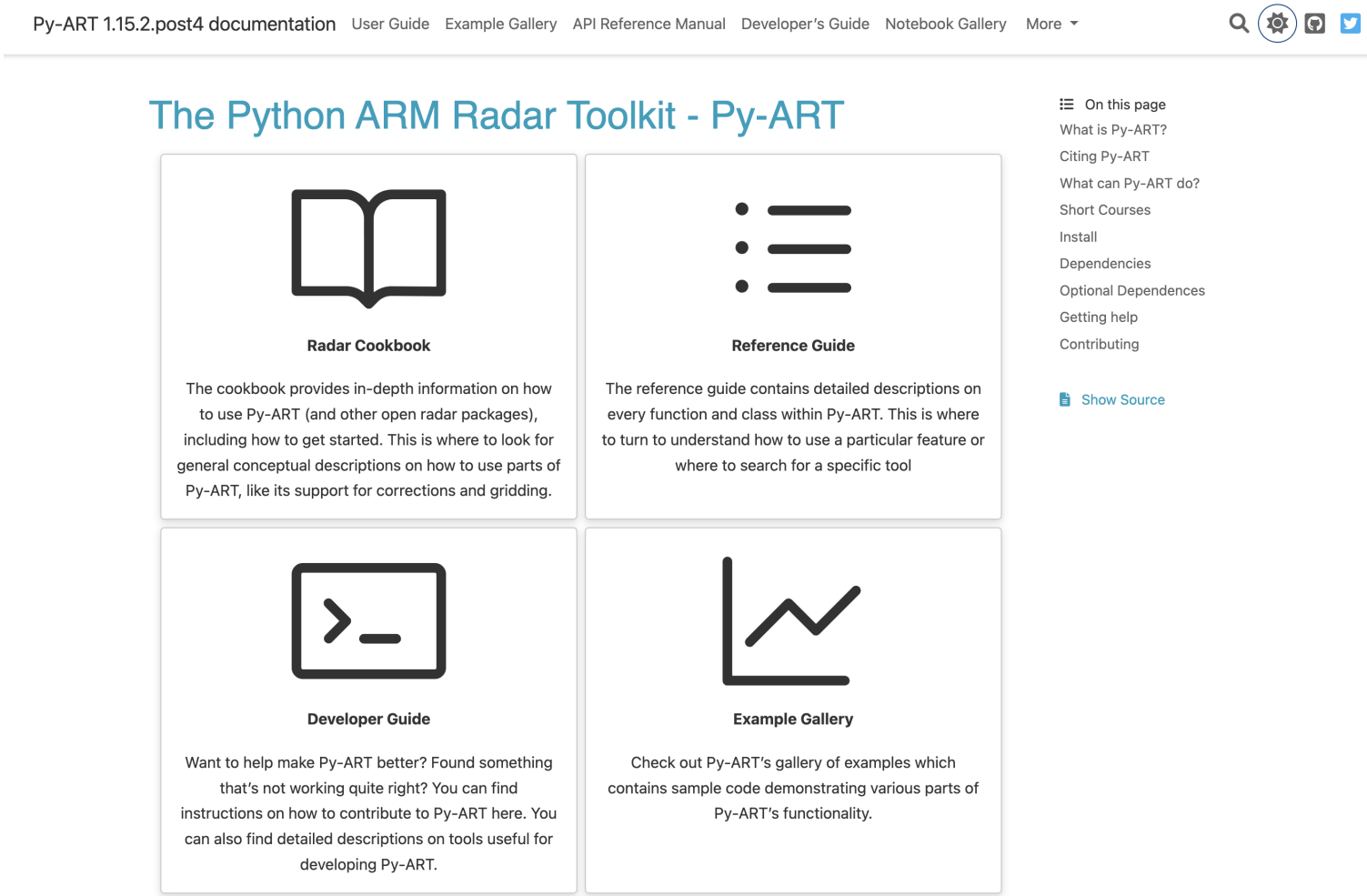
- Free software: MIT license
- Documentation: https://docs.openradarscience.org/projects/xradar




```
[10]: fig, (ax, ax1) = plt.subplots(1, 2, figsize=(10, 4))
ds.DBZH.plot(x="x", y="y", cmap="Spectral_r", vmin=-10, vmax=50, ax=ax)
ds.RHOHV.plot(x="x", y="y", cmap="Spectral_r", vmin=0, vmax=1, ax=ax1)
ax.set_title("")
ax1.set_title("")
fig.tight_layout()
```



Updated Documentation



Radar Cookbooks: Educating the Open Radar Community

PROJECT PYTHIA Home Foundations Cookbooks Resources Community

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Radar Cookbook

PREAMBLE

How to Cite This Cookbook

WEATHER RADAR FOUNDATIONS

The Basics of Weather Radar

RADAR SOFTWARE FOUNDATIONS

Py-ART Basics
Py-ART Corrections
Py-ART Gridding
Interactive Radar Visualization

EXAMPLE WORKFLOWS

Looking at NEXRAD Data from Moore, Oklahoma
Plotting Data from a Field Campaign (TRACER)
Specific Differential Phase (\ (K_{DP}\)) retrieval methods comparison

On this page

Motivation
Authors
Structure
Running the Notebooks

Radar Cookbook

nightly-build passing | launch binder | DOI 10.5281/zenodo.8075855

This Project Pythia Cookbook covers the basics of working with weather radar data in Python.

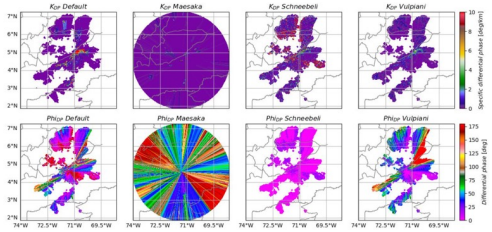
Motivation

This cookbook provides the essential materials to learning how to work with weather radar data using Python.

Most of the curriculum is focused around the Python ARM Toolkit, which is defined as:

“a Python module containing a collection of weather radar algorithms and utilities. Py-ART is used by the Atmospheric Radiation Measurement (ARM) user facility for working with data from a number of its precipitation and cloud radars, but has been designed so that it can be used by others in the radar and atmospheric communities to examine, processes, and analyze data from many types of weather radars.”

Once you go through this material, you will have the skills to read in radar data, apply data corrections,

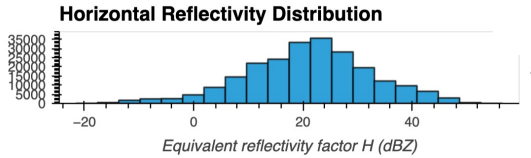


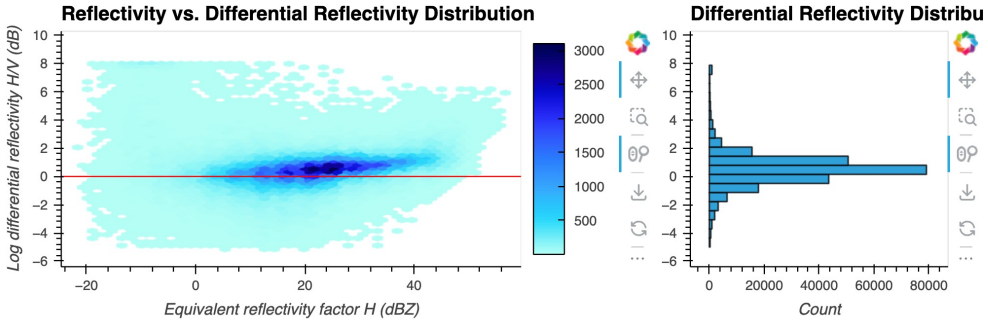
Specific Differential Phase (K_{DP}) retrieval methods comparison

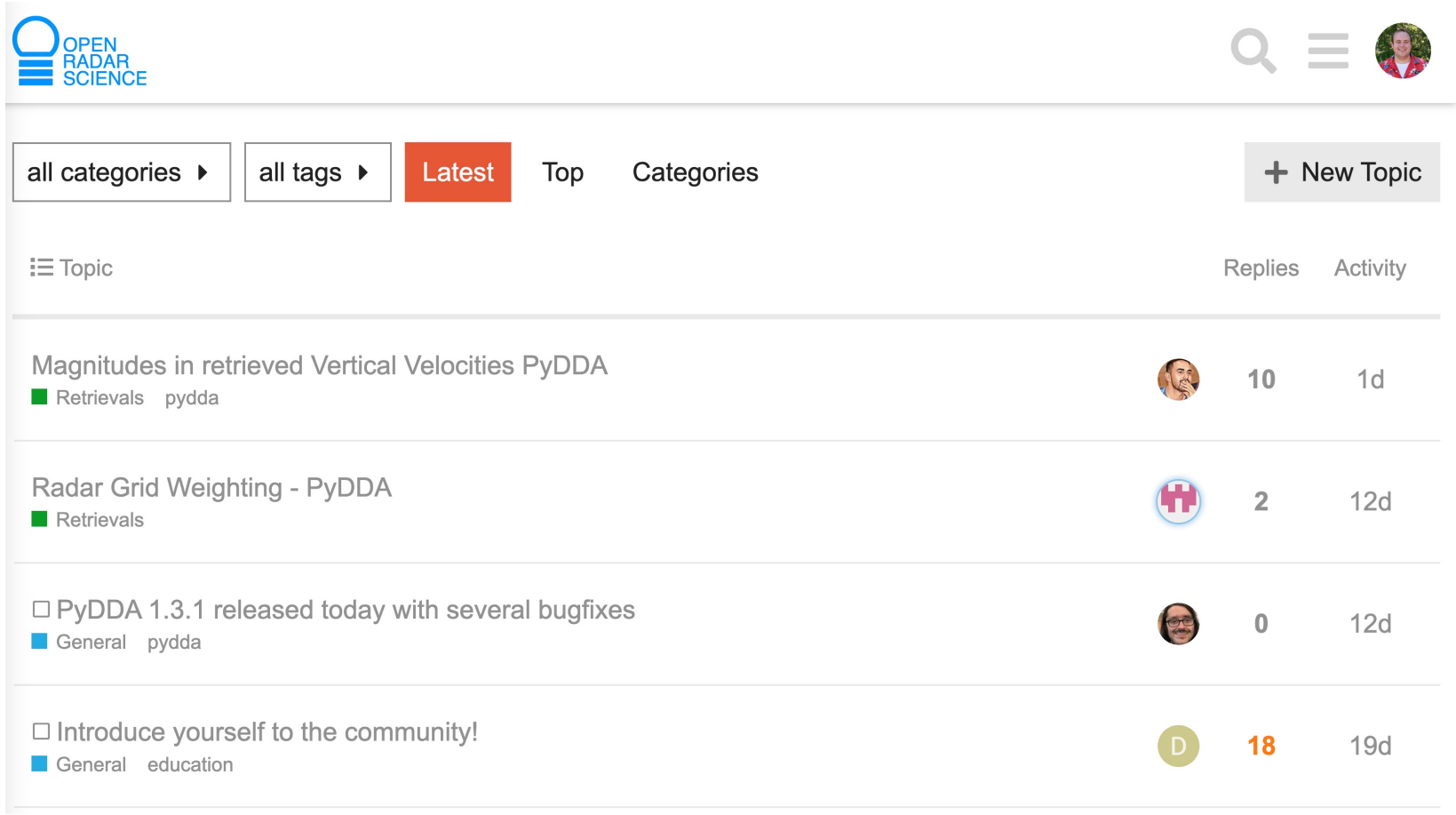
Overview

Within this notebook, we will cover:

1. How to access Colombian national weather radar network data from AWS
2. How to read and create a multipanel plot
3. How to retrieve and compare three different methods





Join the Commuity!

- https://openradar.discourse.group/