An Overview of the Open Radar Science Community

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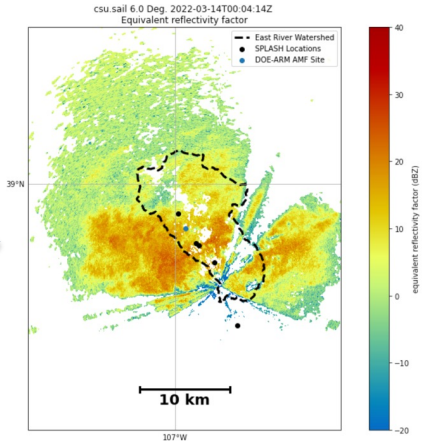
Software Developer

ARM/ASR Open Science Workshop 2022

What is this “traditional” radar workflow?

Observations



Analysis +
Insight

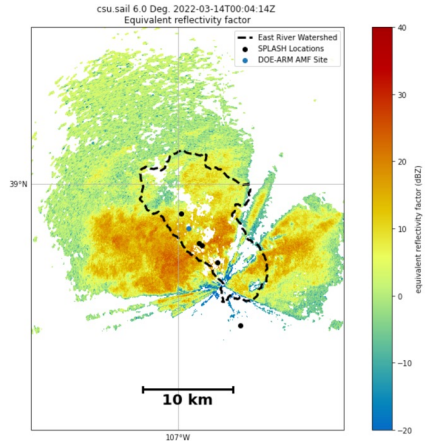
Limitations of this approach

- Costly (licensing fees, data, etc.)
- Encourages siloing, not-invented here
- Exclusive

What is the Open Radar Science Community?

Observations

Community Open-Source Software



Analysis + Insight

Advantages of this Approach

- Free, open source, cross-organizational
- Leverage existing organizational funding mechanisms (ex. ARM)
- Inclusive

How do we collaborate?

GitHub

openradar

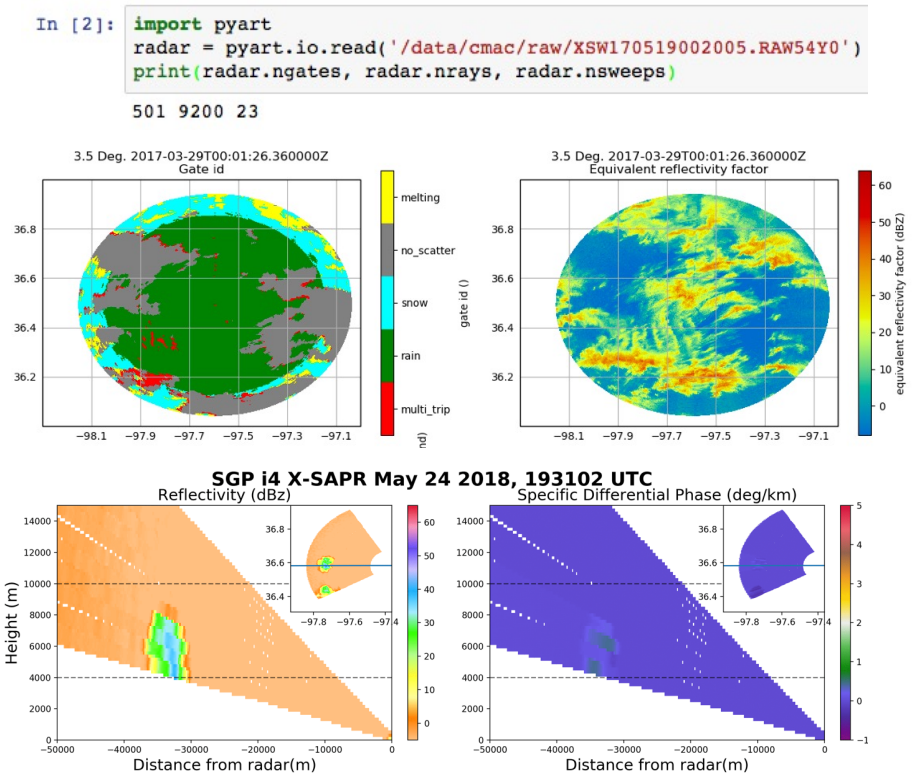
Unwritten understanding all code addition to be done by PR and everything to be collaborative. No unexpected actions.

- Python
  - ARM-DOE / pyart Public
  - wradlib / wradlib Public
  - openradar / PyDDA Public
- C++
  - NCAR / lrose-core Public
- Java
  - baltrad / BaltradDex

Who is collaborating on this?

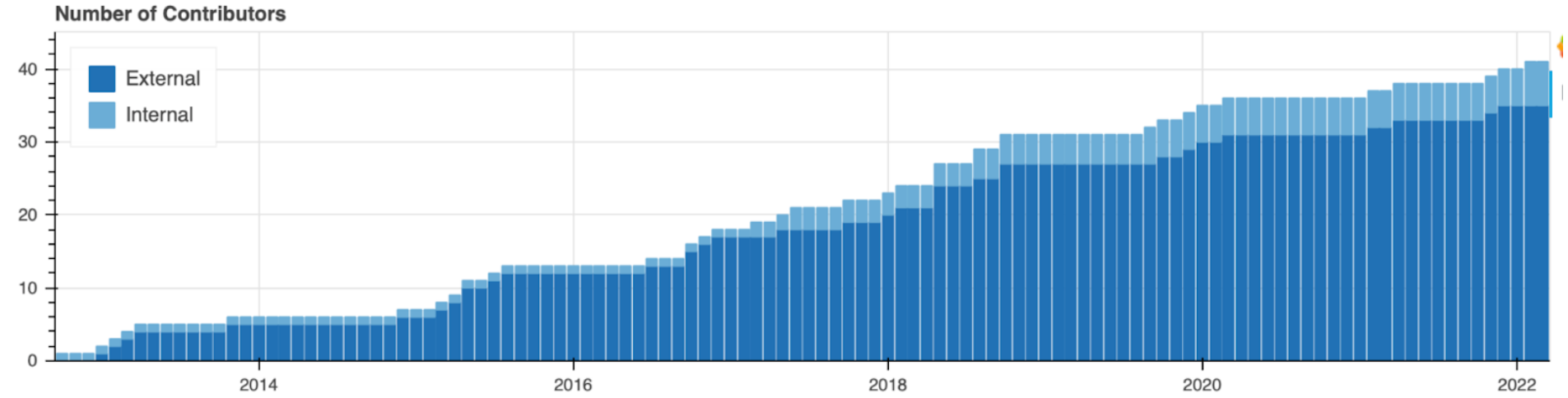
An Overview of Py-ART, One Component of the Open Radar Ecosystem

- Funded by ARM
- Py-ART's central core is a data model for gated data with pointing information.
- Py-ART created a way of representing radar data in the Python programming language that mirrors the CF-Radial standard.
- Py-ART has a cloud functions to correct, retrieve and grid radar data.
- By keeping a limited scope Py-ART aims to "do less better".

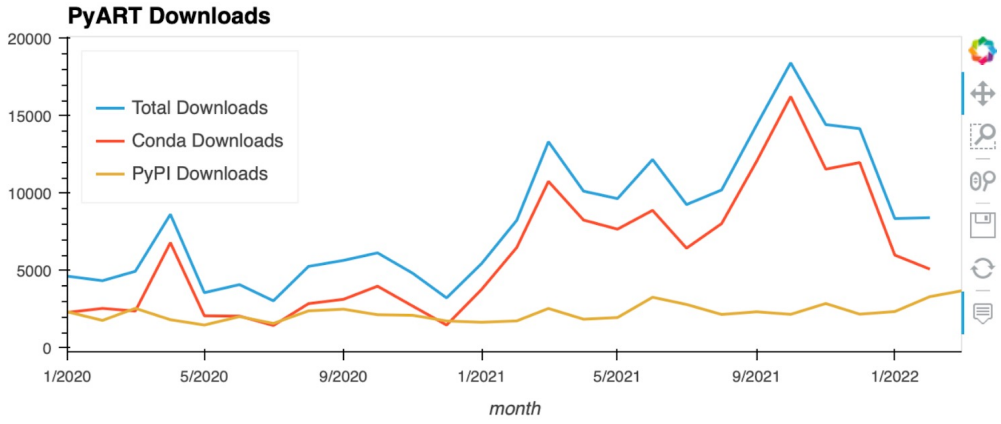


Animation courtesy of users Marcus van Lier-Walqui
and Sara E. Lytle
Data: Andrei Lindenmaeir – ARM Mentor

How has Py-ART Grown?



Funded by ARM, Developed by the Community



How has Py-ART enabled open science?

Vertical air motion retrievals in deep convective clouds using the ARM scanning radar network in Oklahoma during MC3E

Kirk W. North[1], Mariko Oue[2], Pavlos Kollias[2,3], Scott E. Giangrande[3], Scott M. Collis[4], and Corey K. Potvin[5,6]

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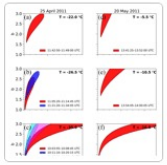
A novel approach for characterizing the variability in mass–dimension relationships: results from MC3E



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Correspondence: Greg M. McFarquhar (mcfarq@ou.edu)

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Convective Storm Life Cycle and Environments near the Sierras de Córdoba, Argentina

Jake P. Mulholland[1], Stephen W. Nesbitt[1], Robert J. Trapp[1], Kristen L. Rasmussen[2], and Paola V. Salio[3]

Print Publication: 01 Aug 2018

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8405	1055	146	7
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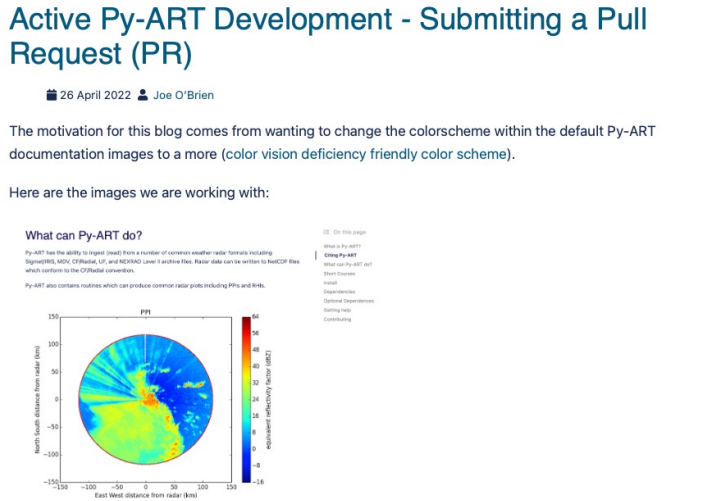
Published on 18 Jul 2016 | Peer Reviewed | CC BY 4.0

Accepted on 01 Jul 2016 | Submitted on 15 Feb 2016

How do we continue grow our community?

- Support of existing users
  - Continue to improve outreach + examples
  - Encourage contributions
- New features
  - Support of xarray data model – aligning with Pangeo ecosystem
  - New cookbooks focused on working with ARM + other data
- Outreach opportunities
  - Conferences (ERAD, AMS Radar, AMS Annual)
  - Regional workshops
  - SciPy

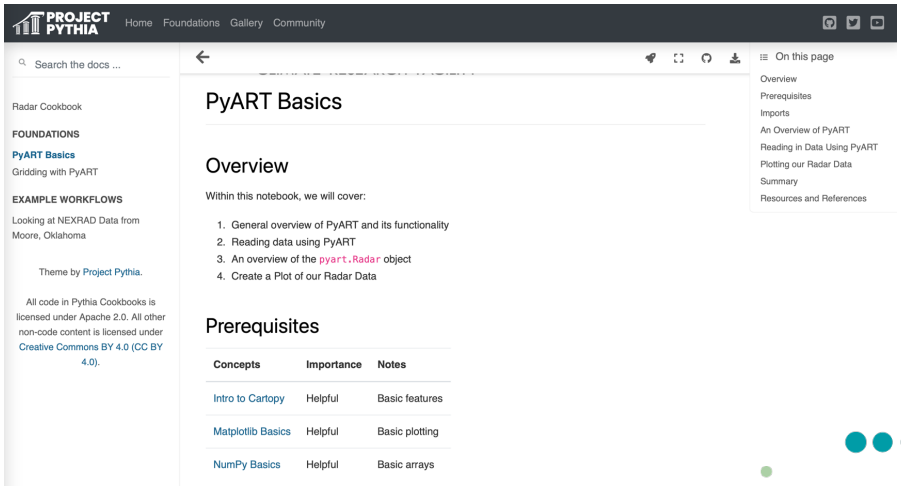


PANGEO

PROJECT PYTHIA

What are we currently working on? What's next?

Radar Cookbooks



Workshops!

2022 ERAD

AMS 2023

103rd ANNUAL MEETING JANUARY 8–12 DENVER & ONLINE

AMERICAN METEOROLOGICAL SOCIETY

Demo time! Radar cookbook!

- Let's start with the Py-ART basics!
  - Link to content