LROSE Kick-off Workshop

Meeting agenda

April 11 -12, 2017, NCAR Foothills Laboratory

FL2 1022 - Large Seminar room (#4978678)

ReadyTalk remote access: 866-740-1260

Time	Day One (April 11)
8:00 AM	Registration with continental breakfast, coffee, and tea provided*
8:30 AM	Welcome address & Housekeeping (Michael Bell and Wen-Chau Lee)
8:40 AM	LROSE Overview and Workshop Goals (Michael Bell, CSU)
9:00 AM	Current status of LROSE software (Michael Dixon, NCAR/EOL)
9:30 AM	The Python ARM Radar Toolkit: A community based architecture for interacting with weather radar data (Scott Collis, DOE/ANL)
10:00 AM	Coffee Break
10:20 AM	WMO and international collaboration (Daniel Michelson, Environment Canada)
10:40 AM	Compute Pipelines using Pegasus Workflows: An Introduction (Karan Vahi, ISI)

11:10 AM	Breakout session #1
12:10 AM	Breakout group present backs
12:30 AM	Lunch at NCAR cafeteria
1:30 PM	Defining the spatial properties of precipitation features using data from the WSR-88D network (Corene Matyas and Jingyin Tang, U. Florida)
2:00 PM	Breakout session #2
3:00 PM	Coffee Break
3:20 PM	Breakout group present backs & Plenary discussion
4:45 PM	Day one adjourn

Time and Date	**Day Two (April 12)**
8:00 AM	Continental breakfast, coffee, and tea provided*
8:30 AM	Private industry collaboration and Artview (Nick Guy, Climate Corporation)
9:00 AM	Breakout session #3
10:00 AM	Breakout group present backs
10:30 AM	Coffee Break
10:50 AM	Plenary discussion & wrap-up
12:20 PM	Day two adjourn

Breakout discussions

Breakout rooms and ReadyTalk lines:

#1 FL2 1002 (#6759135)

#2 FL2 1003 (#5448571)

#3 FL2 2133 (Tuesday) and 3107 (Wednesday) (#9417983)

Breakout 1

1. *Working Together*: LROSE, PyART, and BALTRAD
2. *Defining Workflows*: Common tasks for common goals and reproducibility
3. TBD

Breakout 2

1. *Tech talk*: LROSE internals and design principles
2. *Science priorities*: Meeting the needs of scientists across disciplines
3. TBD

Breakout 3

1. *Building community*: Mechanisms for including externally maintained code
2. *Big ideas*: Leveraging LROSE for high-risk high-reward science
3. TBD

Abstracts

Scott Collis

Argonne National Laboratory

Title:The Python ARM Radar Toolkit: A community based architecture for interacting with weather radar data.

Abstract: Py-ART is a midsize (100+ users) community (19 contributors) Python toolkit for interacting with data produced by meteorological radars. The original aim was to facilitate the dissemination of algorithm research funded by the Department of Energy's ARM program. Since its public release, approximately four years ago, through careful package management Py-ART has grown in use while maintaining a narrow, maintainable scope. This presentation will outline the philosophy of the package, various techniques to keep the project tractable and a new five year road-map for the future of the project.

Karan Vahi

USC Information Sciences Institute - Pegasus Team

Title: Compute Pipelines using Pegasus Workflows: An Introduction

Abstract: Workflows are a key technology for enabling complex scientific applications. They capture the interdependencies between processing steps in data analysis and simulation pipelines, as well as the mechanisms to execute those steps reliably and efficiently in a distributed computing environment. They also enable scientists to capture complex processes to promote sharing and reuse, and provide provenance information necessary for the verification of scientific results

and scientific reproducibility. The talk will give an introductory overview of Pegasus Workflow Management System (Pegasus WMS http://pegasus.isi.edu). Pegasus allows users to design workflows at a high-level of abstraction, which is independent of the resources available to execute them and the location of data and executables. It compiles these abstract workflows to executable workflows that can be deployed onto distributed resources such local campus clusters, computational clouds and grids such as XSEDE and Open Science Grid. During the compilation process, Pegasus does data discovery, whereby it determines the locations of input data files and executables. Data transfer tasks are added to the executable workflow that are responsible for staging in the input files to the cluster, and the generated output files back to a user specified location. In addition to the data transfers tasks, data cleanup (cleanup data that is no longer required) and data registration tasks are also added. Pegasus also captures all the provenance of the pipeline lifecycle from the planning stage, through execution, to the final output data, helping scientists to accurately measure the performance of their pipelines and reconstruct the history of data products. Pegasus provides both command line tools and a web dashboard for debugging and monitoring that allow users to easily detect and debug failures in their pipelines. Pegasus has been used in a number of scientific domains including astronomy, bioinformatics, earthquake science, gravitational wave physics, ocean science, limnology, and others. Pegasus workflows are also used for automatic quality control analysis of phenotypic data submissions to NRGR a large NIH funded repository.

Corene Matyas and Jingyin Tang

University of Florida

Title: Defining the spatial properties of precipitation features using data from the WSR-88D network

Abstract: Geographers specialize in the analysis of spatial patterns. To examine rainfall patterns, climatologists may rely on data interpolated from rain gauges. However, these data do not permit the exploration of features such as convective cells inside of the rainband of a tropical cyclone. These features can be resolved through an analysis of the high spatial and temporal resolution data produced by the WSR-88D network. Although its capabilities to analyze temporal data are somewhat limited, the use of Geographical Information Systems (GIS) by nongeographers including meteorologists is growing. This suggests that the collaboration of geographers specializing in geospatial techniques with those pursuing research in climatology could develop new GIS-based methods for the spatial analysis of radar data that facilitate climate-scale research of precipitation features. This presentation features techniques our research group has developed to quantify the spatial patterns of radar reflectivity values through the calculation of shape metrics for the rain fields of landfalling tropical cyclones.

*Free continental breakfast is provided. Hot breakfast is optionally available starting at 7:30 am in the NCAR cafeteria (cash only).