

Operational Weather Research and Forecasting (WRF) in ASTI

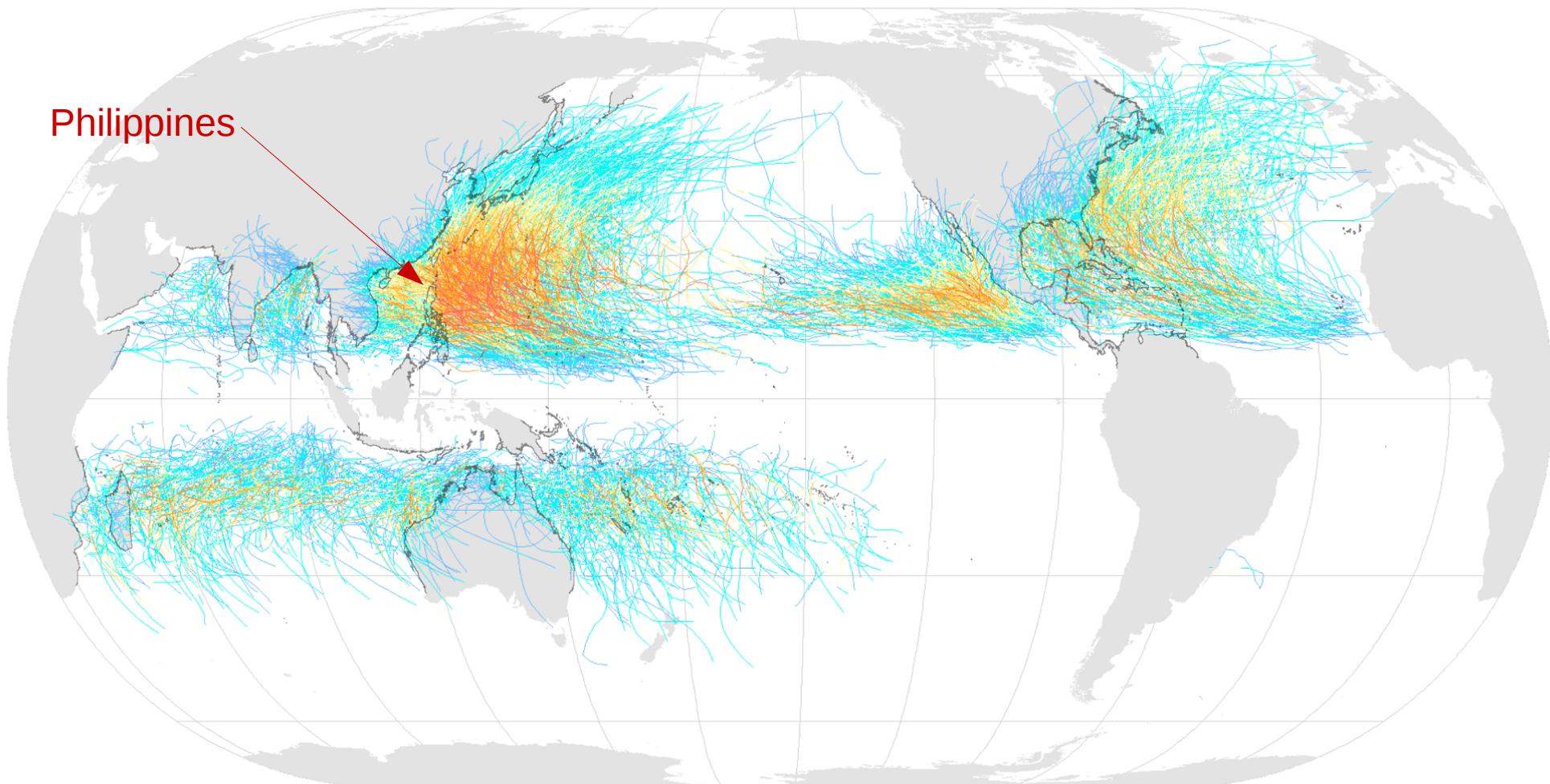
Making forecast data accessible for disaster risk reduction and scientific research

Jay Samuel Combinido^{1,2}, John Robert Mendoza¹

¹Research and Development Division, DOST-ASTI

²PEARS Laboratory, IESM, University of the Philippines Diliman

Tropical Cyclones, 1945–2006



Saffir-Simpson Hurricane Scale:

tropical depression

tropical storm

hurricane category 1

hurricane category 2

hurricane category 3

hurricane category 4

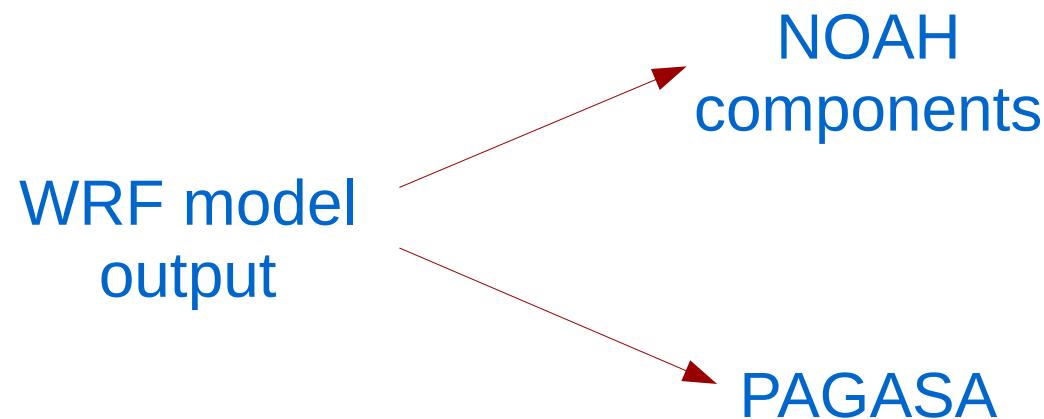
hurricane category 5

https://upload.wikimedia.org/wikipedia/commons/6/6f/Tropical_cyclones_1945_2006_wikicolor.png

WIE Weather Information Integration for System Enhancement

Objectives:

- Improve numerical weather prediction model performance
 - Sensitivity testing, data assimilation, forecast verification
- Demonstrate proof-of-concept infrastructure and automation



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ASTI system → weak coding

IBM BlueGene/P system → weak coding
+
complex workflow



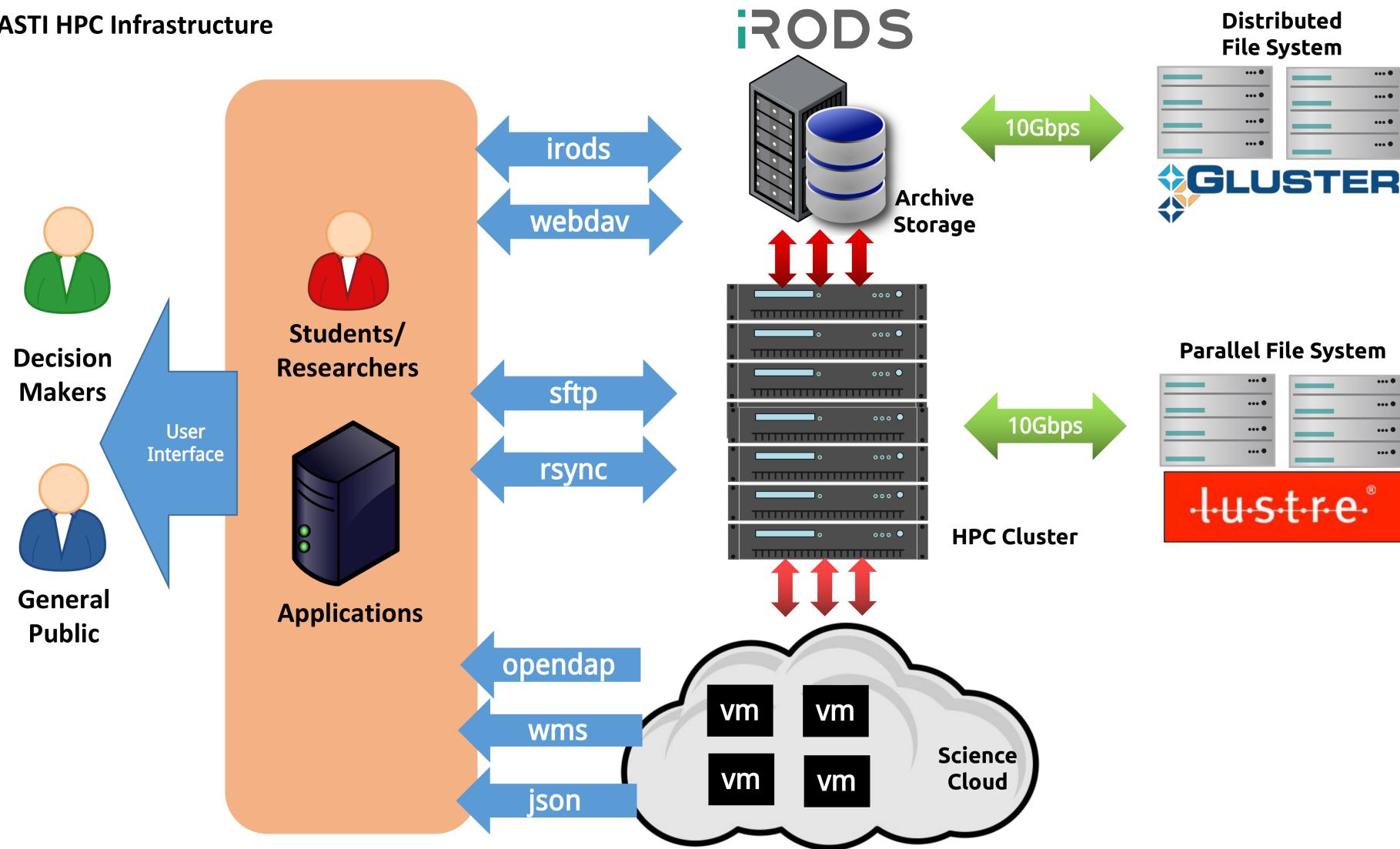
Computing and Archiving Research Environment

Objective:

- To foster collaboration by providing a platform for easy storage, analysis and sharing of environmental and geospatial data, as well as provide **better access to high performance computing resource**



ASTI HPC Infrastructure



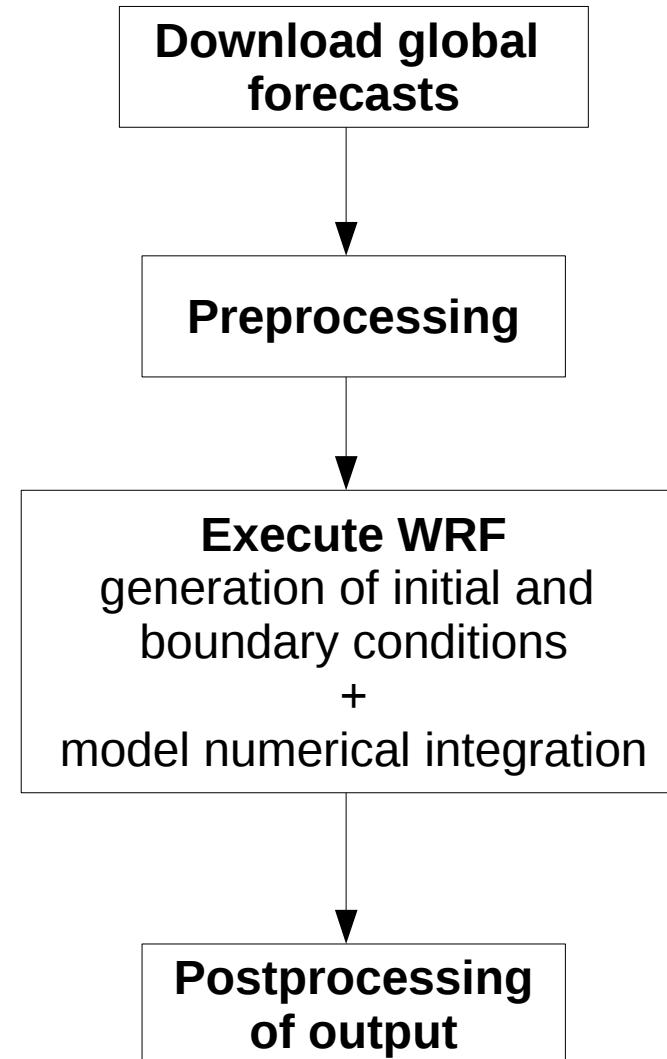
Workflow in a shared environment – error management, coding, configurability, portability, sustainability

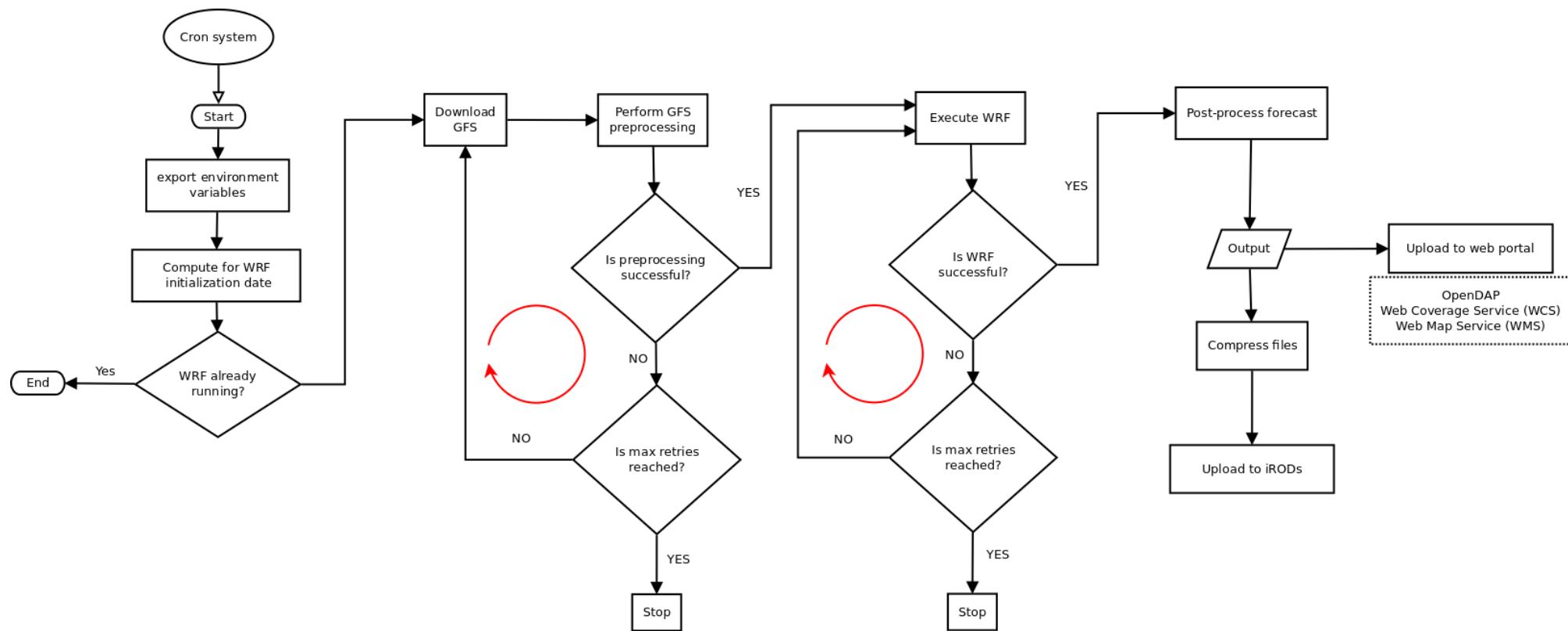
Optimization of run times – benchmarking, HPC computing allocation and prioritization

End-user data requirements – forecasters/researchers data requirements (What do they need?)

Archiving and data distribution – storage, data management of large data, web portal

HOW TO RUN WRF





Features:

- assumes the HPC environment is imperfect
- cron scheduling
- status logging at every step
- automated notification to end-users



[Important] WRF run status initialized on 2016012012Z

Inbox

project.noah.wise@gmail.com 6:31 AM (4 hours ago) to me, gpperez1

Dear Users,

No forecast initialized on 2016012012Z is available because it took too long to download global forecasts.

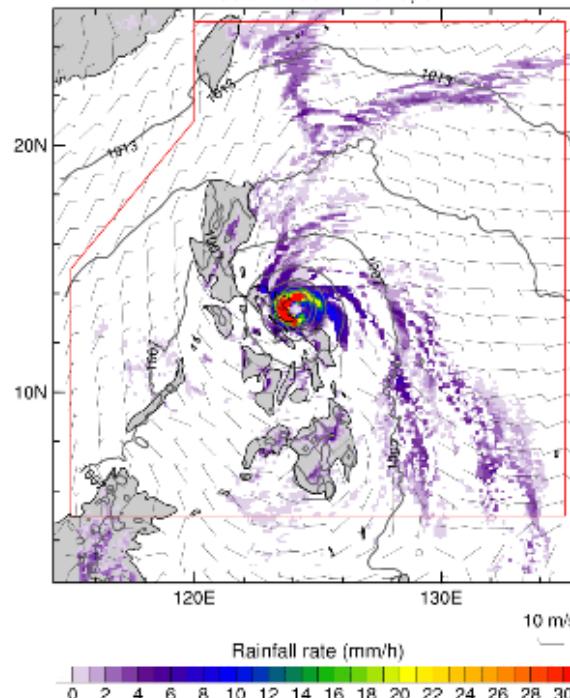
Note: This notification is sent after a failed WRF run. If you are not able to receive this email, it's either the simulations are running successfully or the server where the WRF simulations are executed is undergoing updates/upgrades/downtime. As with the former, you can confirm by checking <http://202.90.159.150/pub/wrf>. If no emails are received and no data are uploaded to <http://202.90.159.150/pub/wrf> after 3 days, please send an email to combinido@gmail.com immediately to help us address the problem as soon as possible.

Sincerely,
NOAH-WISE

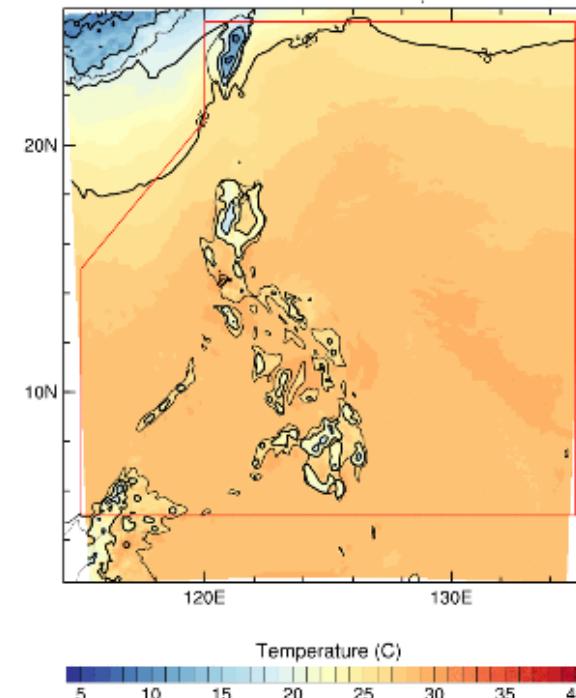
[This is an automated email. If you want to unsubscribe to the mailing list, kindly send an email to combinido@gmail.com.]

Dec 14 2015, 06 PM (WRF)

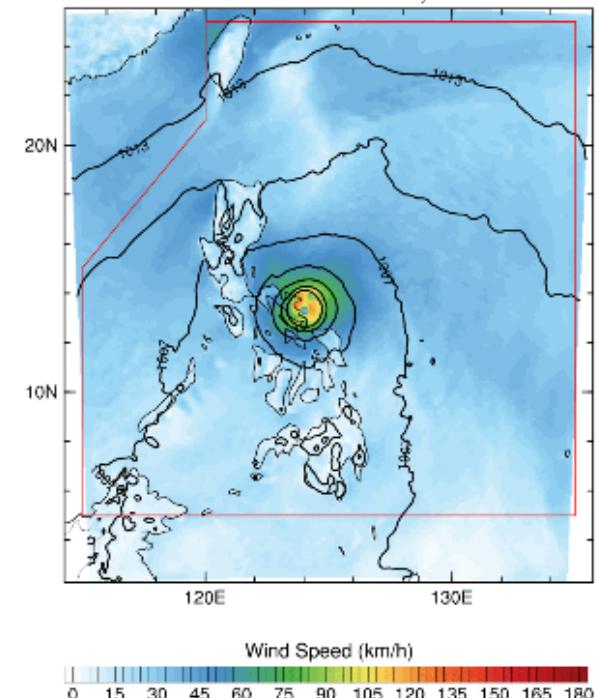
Initialized on Dec 14 2015, 02 AM

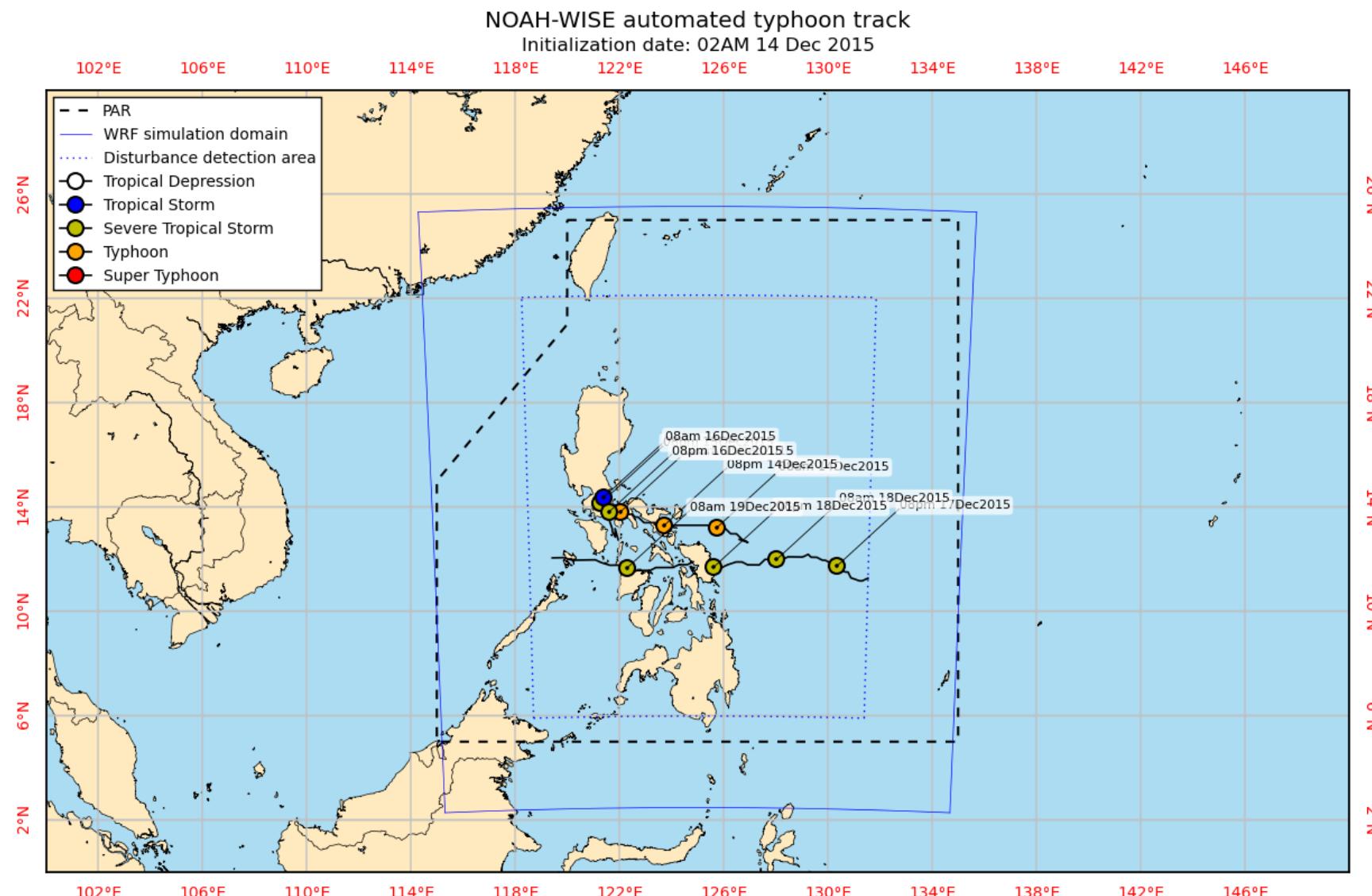
**Dec 14 2015, 06 PM (WRF)**

Initialized on Dec 14 2015, 02 AM

**Dec 14 2015, 06 PM (WRF)**

Initialized on Dec 14 2015, 02 AM



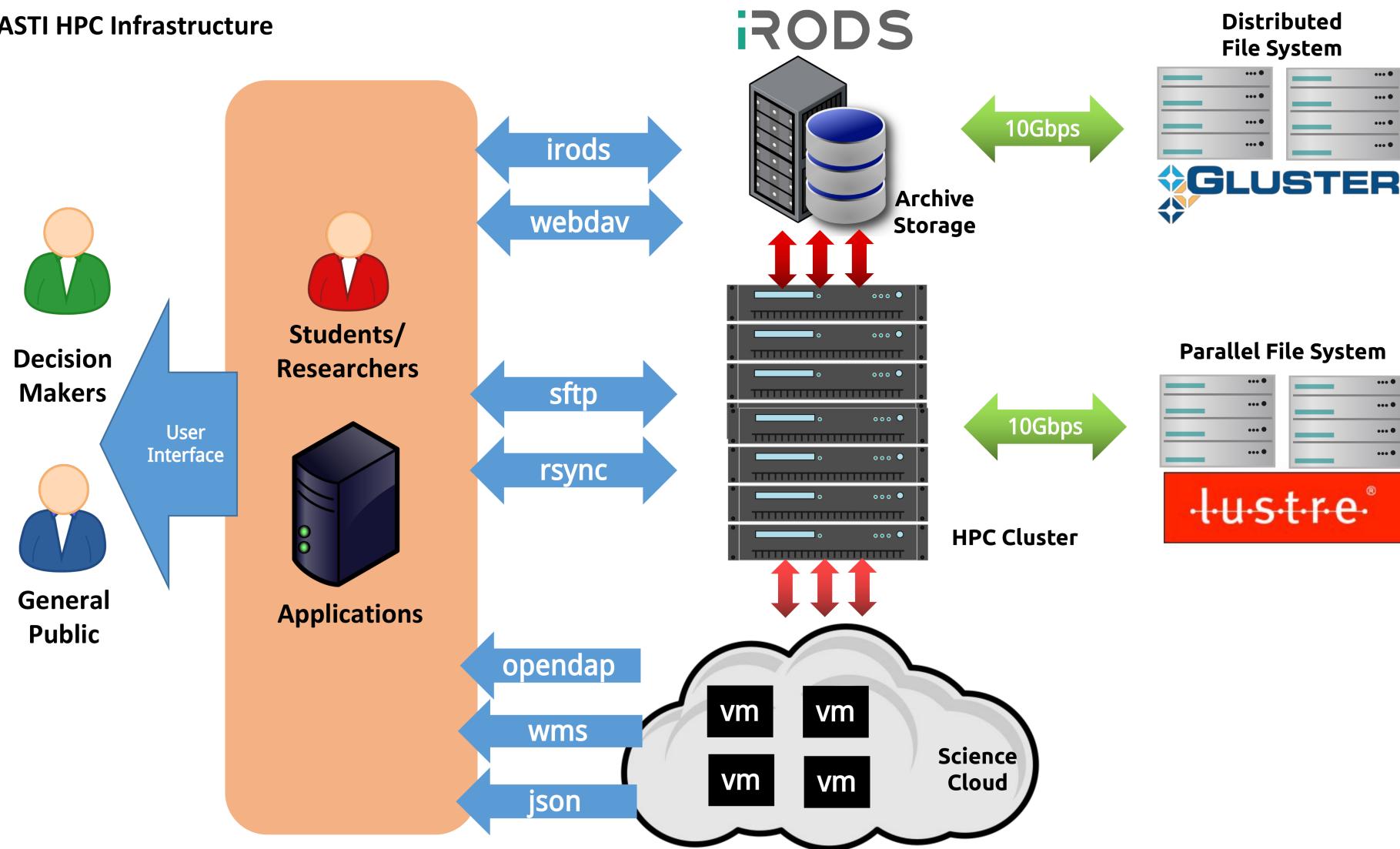


Use case	Data requirements
Flood models	Rainfall values
Storm surge models	Storm track, pressure, radius of maximum winds
Operational forecasting	Forecast maps, typhoon track
GIS applications	csv, NetCDF with WMS and WCS support
Online visualization	json, png
Station monitoring	csv, png
Research purposes	NetCDF with OpenDAP support

Current WISE Products

- Raw output in NetCDF format
- Weather maps
- Typhoon track
- ArcGIS-compatible CSV (rainfall, MSLP, winds, temperature, RH)
- Weather outlook in JSON and CSV format
- Watershed rainfall forecast
- Rainfall forecast at the ground sensors

ASTI HPC Infrastructure



URL: <http://202.90.159.150/pub/>

Index of /pub/wrf/2016/01/22/08/d01/ - Mozilla Firefox
Google Drive - Acces... Index of /pub/wrf/2016... +
20.90.159.150/pub/wrf/2016/01/22/08/d01/ Search 4:39 PM

Index of /pub/wrf/2016/01/22/08/d01/

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TC_track_d01_2016012208_PST/	22-Jan-2016 14:54
earth_d01_2016012208_PST/	22-Jan-2016 05:56
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noahmunicipal_d01_2016012208_PST/	22-Jan-2016 06:45
rainmap_d01_2016012208_PST/	22-Jan-2016 05:56
stationforecasts_d01_2016012208_PST/	22-Jan-2016 06:45
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watershed_d01_2016012208_PST/	22-Jan-2016 14:54
windmap_d01_2016012208_PST/	22-Jan-2016 05:56
animation_rain_d01.gif	22-Jan-2016 05:59
animation_temp_d01.gif	22-Jan-2016 06:02

URL: <http://202.90.159.150/thredds>

Catalog Services - Mozilla Firefox

Inbox (5,598) - com... | Zimbra: Inbox (60) | iGovPhil FileSender ... | iGovPhil FileSender ... | Facebook | Catalog Services

202.90.159.150/thredds/catalog/noah-wise/2016/01/27/02/catalog.html?dataset=noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc

repo.asti.dost.gov.ph

[**repo.asti.dost.gov.ph**](#)

[**THREDDSS Data Server**](#)

Catalog <http://202.90.159.150:8080/thredds/catalog/noah-wise/2016/01/27/02/catalog.html>

Dataset: 02/wrfout_d01_2016-01-26_18:00:00.nc

- *Data size:* 1.380 Gbytes
- *ID:* noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc

Access:

1. **OPENDAP:** /thredds/dodsC/noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc
2. **HTTPServer:** /thredds/fileServer/noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc
3. **WCS:** /thredds/wcs/noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc
4. **WMS:** /thredds/wms/noah-wise/2016/01/27/02/wrfout_d01_2016-01-26_18:00:00.nc

Dates:

URL: <http://202.90.159.150/pub/>

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Google Drive - Acces... Index of /pub/wrf/2016... +

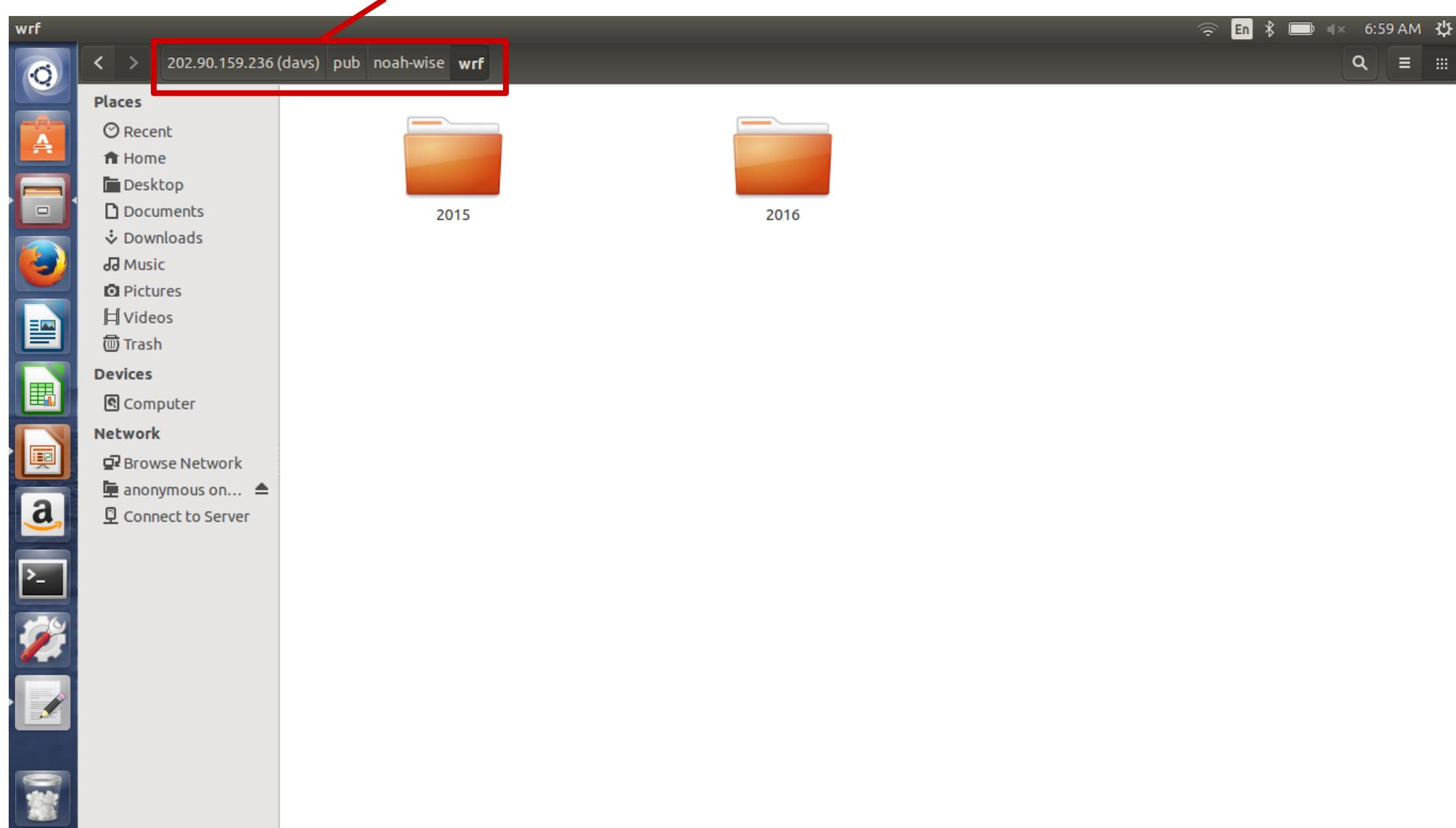
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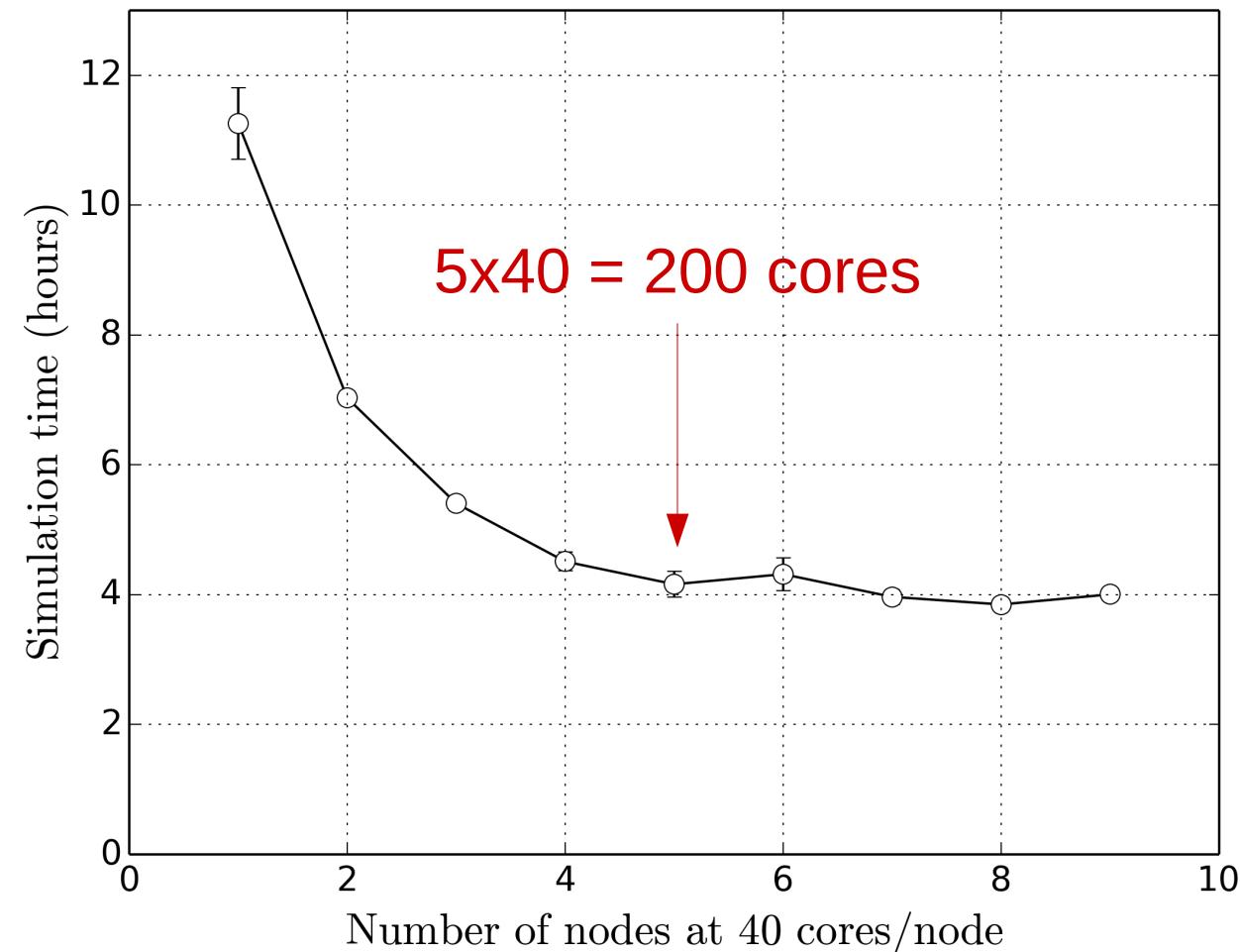
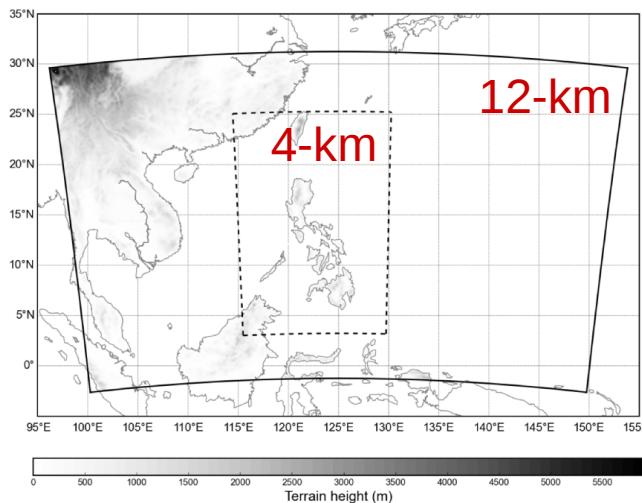
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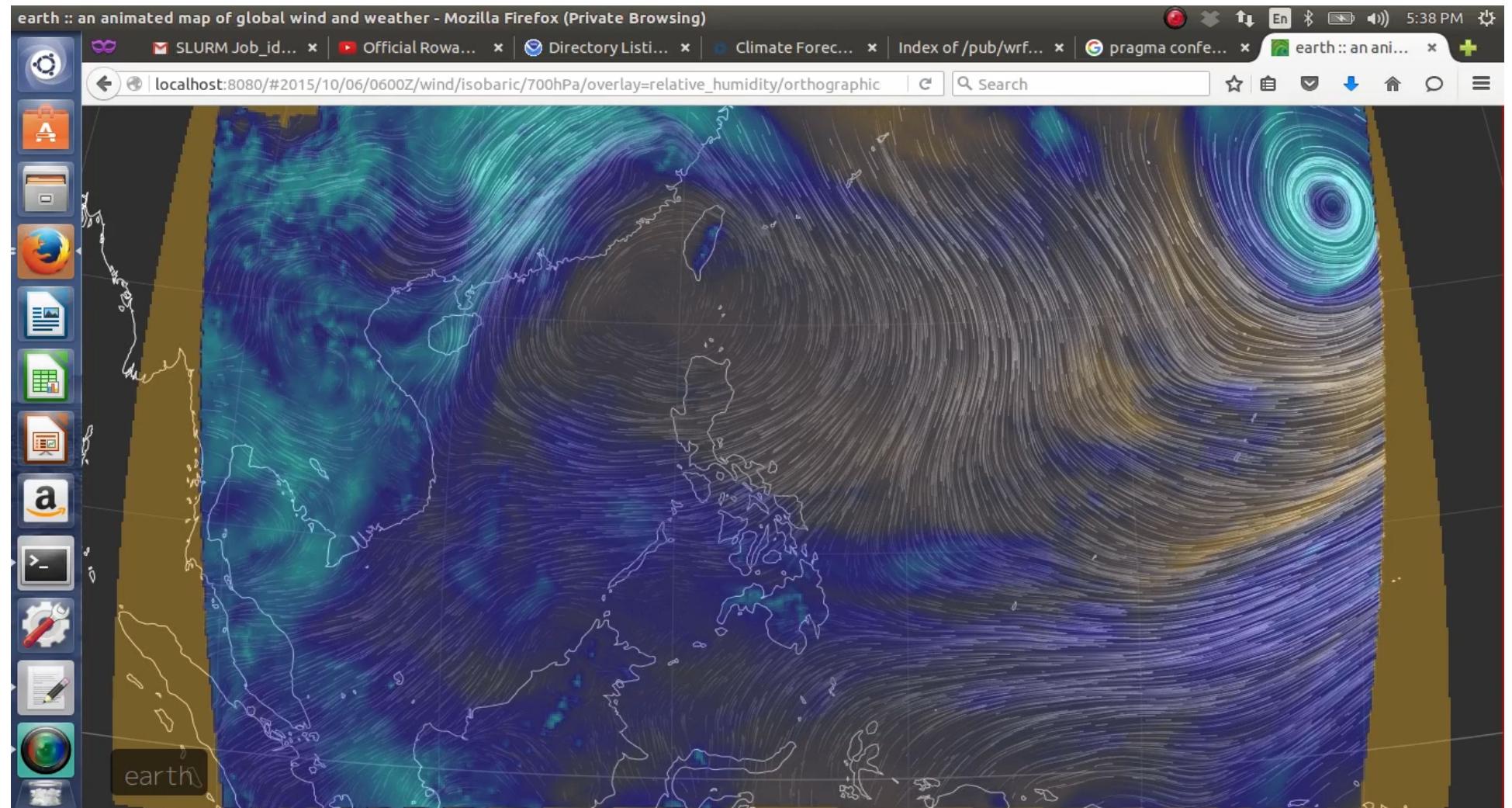
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earth_d01_2016012208_PST/	22-Jan-2016 05:56	-
gis_d01_2016012208_PST/	22-Jan-2016 06:45	-
noahmunicipal_d01_2016012208_PST/	22-Jan-2016 06:45	-
rainmap_d01_2016012208_PST/	22-Jan-2016 05:56	-
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animation_temp_d01.gif	22-Jan-2016 06:02	23791426

davs://anonymous@202.90.159.236/pub/noah-wise/wrf







Operational data assimilation

- data quality assurance
- potential increase in computing demand
 - needs shorter boundary condition interval (from 3 hours to 30 minutes)
 - 4DVAR data assimilation of rainfall

Thank you for listening.