



Running WRF Operationally: Experiences at AWS and with OBSGRID

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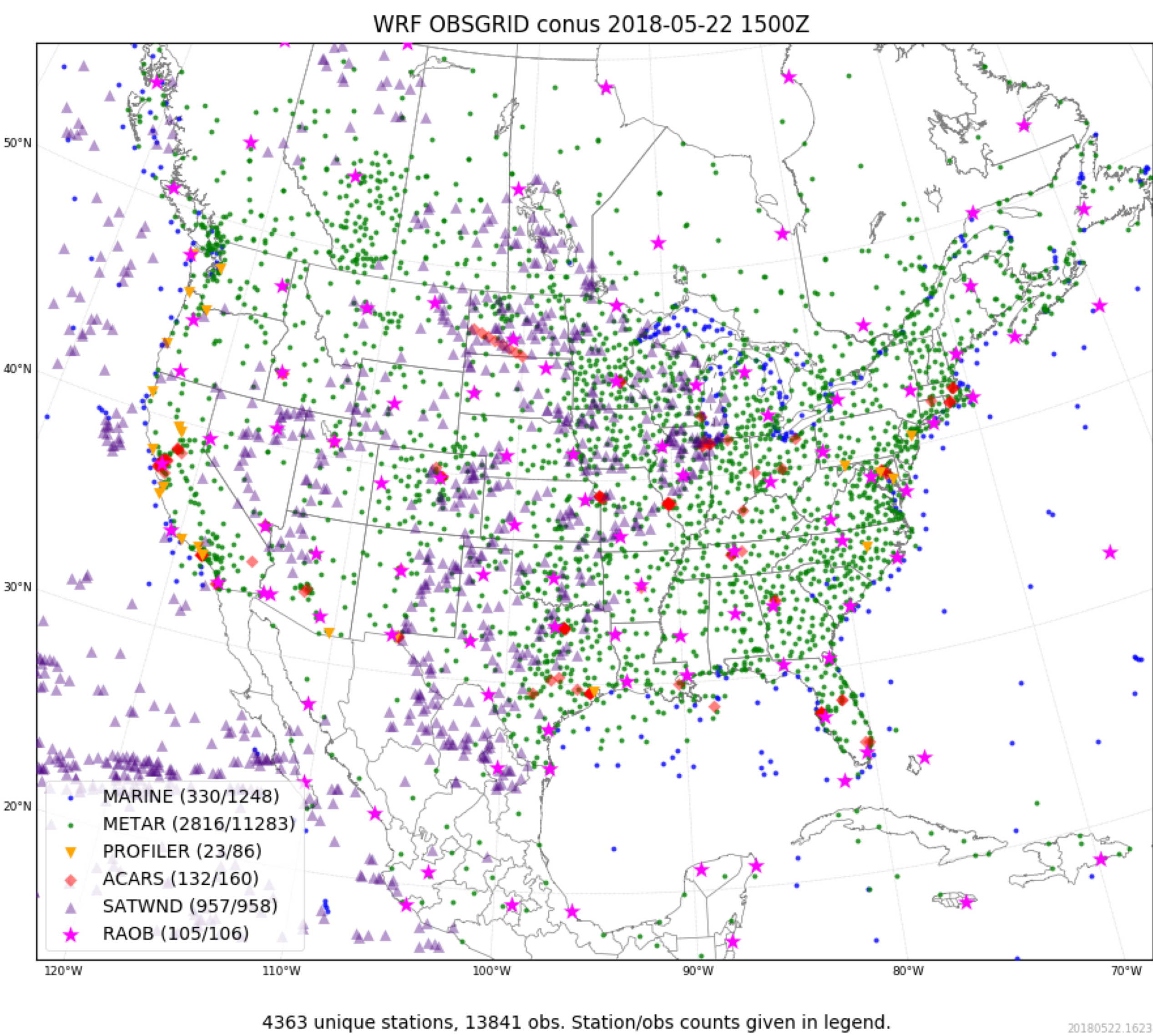
Weather Decision Technologies, Norman, OK

WDT performs hundreds of WRF runs daily in support of applications including aviation, marine exploration and shipping, renewable energy, and winter weather forecasting.

Operations are performed at the University of Oklahoma (OSCER) and at AWS.

OBSGRID/FDDA

- OBSGRID is used to QC obs for FDDA and for initial analyses
- MADIS input: METAR/MARINE, RAOB, ACARS, Profiler, SATWND



Key Features

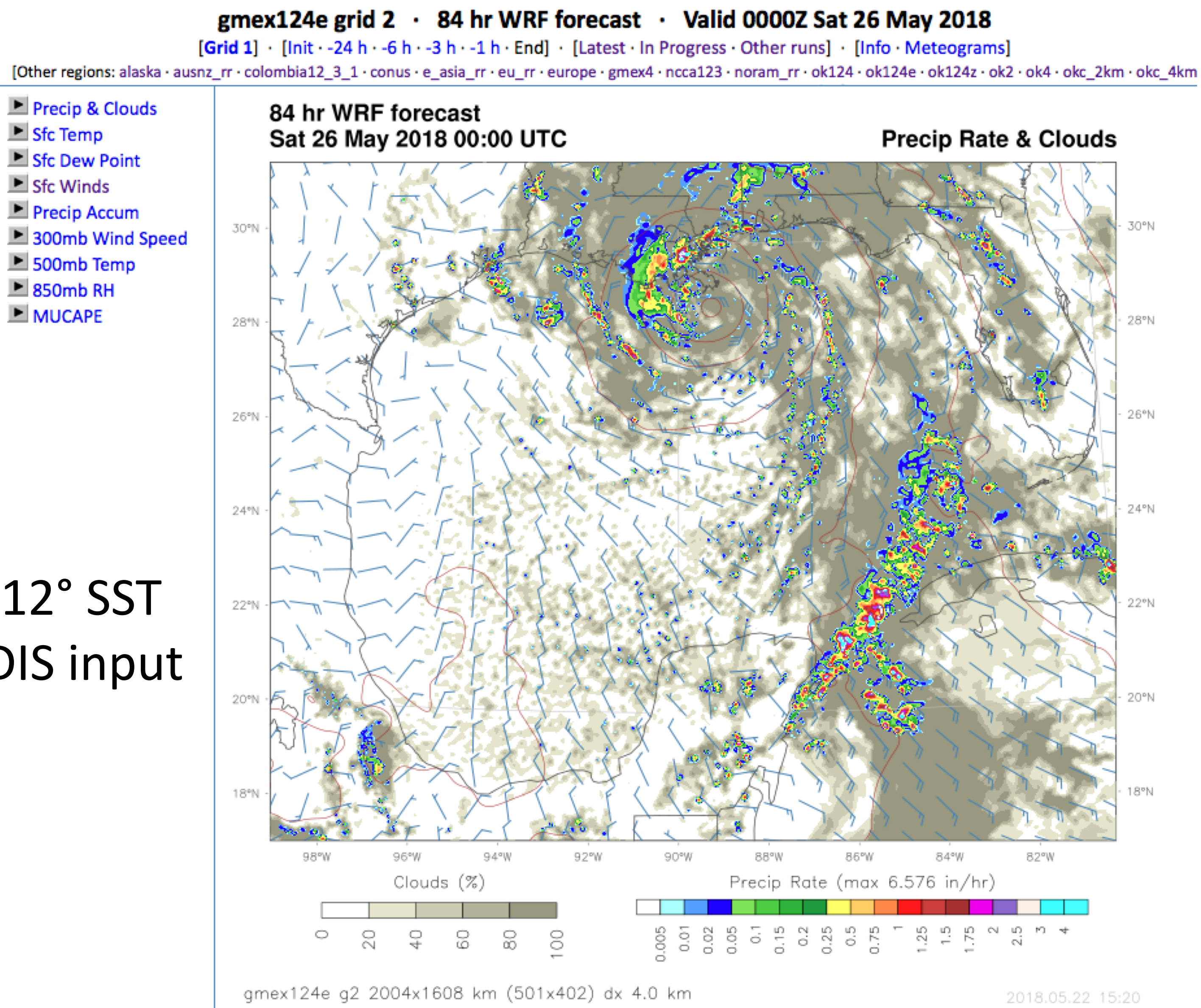
- WRF 3.9.1
- ¼° GFS or ⅛° ECMWF + 1/12° SST
- OBSGRID/FDDA with MADIS input

Typical Workflow

- Run METGRID for the duration of the run on every third hour
- Run METGRID on every hour of the FDDA period
- Run OBSGRID on every hour of the FDDA period
- Replace the METGRID analyses with the OBSGRID analyses
- Concatenate and time-sort the OBSGRID output
- Run REAL
- Run WRF
- Concurrent post-processing

Operations at AWS

- 18-core Haswell *c4.8xlarge* nodes
- Use *CfnCluster* to build the cluster
- Slurm scheduler (*CR_Core_Memory*)
- I/O quilting
- NetCDF-4 compression reduces file sizes by 60-70% but increases run time by 10-20%



WRF Status

Past 24 hours

Updated Tue 10 Apr 2018 14:12 UTC

		Mon 9 Apr												Tue 10 Apr													
		14Z	15Z	16Z	17Z	18Z	19Z	20Z	21Z	22Z	23Z	00Z	01Z	02Z	03Z	04Z	05Z	06Z	07Z	08Z	09Z	10Z	11Z	12Z	13Z	14Z	
noram_rr	18h 36+2p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	m	
conus*	120h 36+2p		A						A						A						A						
europa*	84h 36+2p					A						A						A						40%			
eu_rr	18h 36+2p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	m	
us_ca_3km*	84h 36+2p					A						A						A						49%			
colombia12_3_1	72h 36+2p					A						A						A						68%			
RHSsj6_1	36h 20p		A						A						A						A						
RHS_6_1a	36h 20p					A						A						A						A			
e_asia_rr	12h 18+2p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	m	
ausnz_rr	12h 18+2p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Q	
alaska	3h 1p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S	
gmex4	84h 156+2p					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
stnaz12_4	84h 117+2p					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	94%		
ok124	84h 117+2p					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	92%		
okc_2km	36h 117+2p					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
okc_4km	84h 36+2p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S	

Workflow Management

- WRFControl – Manages all aspects of forecast execution, including data ingest, job scheduling and submission, post-processing, plotting, dissemination, monitoring, and alerting
- PostWRF – Custom post-processor
- Plotting – NCL, Matplotlib (Python)
- Storage/Web – AWS S3