



Present and next year's running

- ◆ *LHC status and plans*
- ◆ *ATLAS Mx runs, TR runs, plans*

LHC status

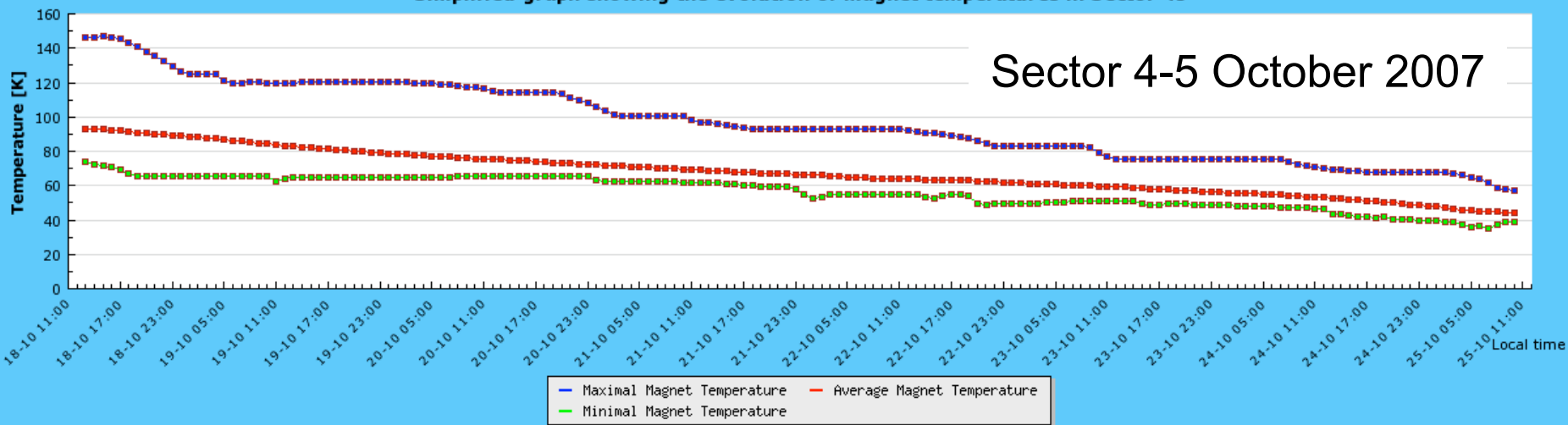
- Installation effectively complete
- Inner Triplet magnets all fixed
- Interconnect module repair doesn't cause delays

- First sector cooled down to nominal temperature and operated with superfluid helium
- Power tests went well
- Second sector in cool down
- Priority is to get the machine cold and leak tight

Cool down process & temperature stability

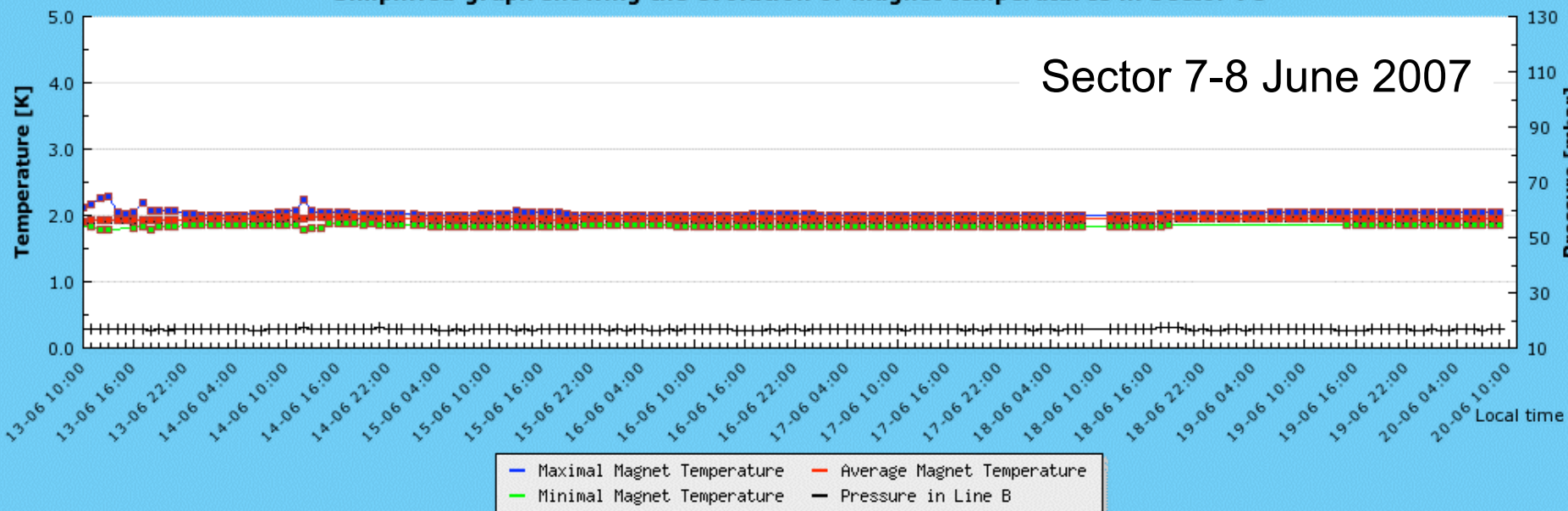
Simplified graph showing the evolution of magnet temperatures in Sector 45

Sector 4-5 October 2007

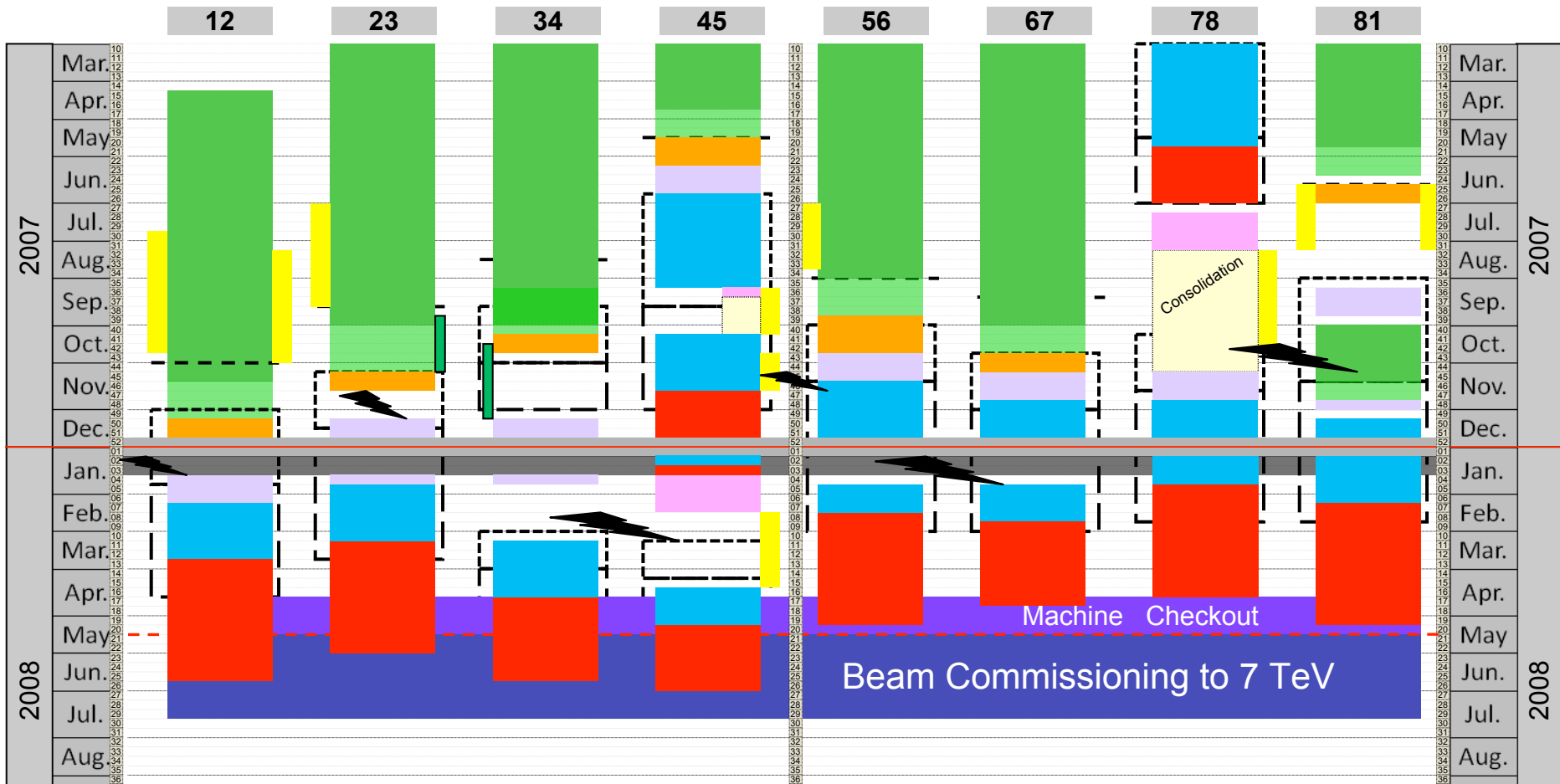


Simplified graph showing the evolution of magnet temperatures in Sector 78

Sector 7-8 June 2007



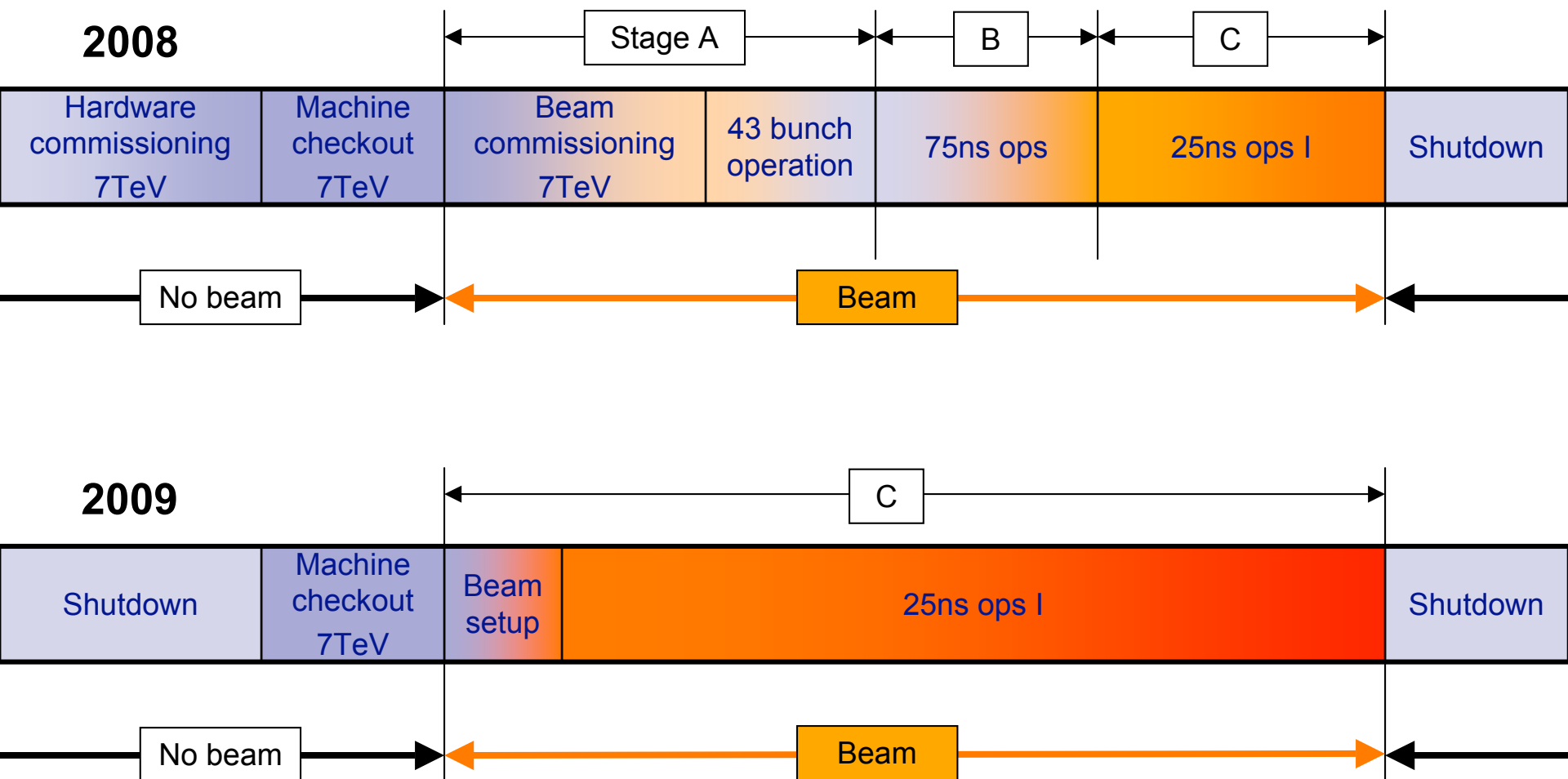
Schedule by LHC sectors (as of October 9th)



General schedule Baseline rev. 4.0

- Global pressure test & Consolidation
- Cool-down
- Powering Tests
- Interconnection of the continuous cryostat
- Leak tests of the last sub-sectors
- Inner Triplets repairs & interconnections
- Global pressure test & Consolidation
- Flushing
- Cool-down
- Warm up
- Powering Tests

Staged commissioning plan for protons

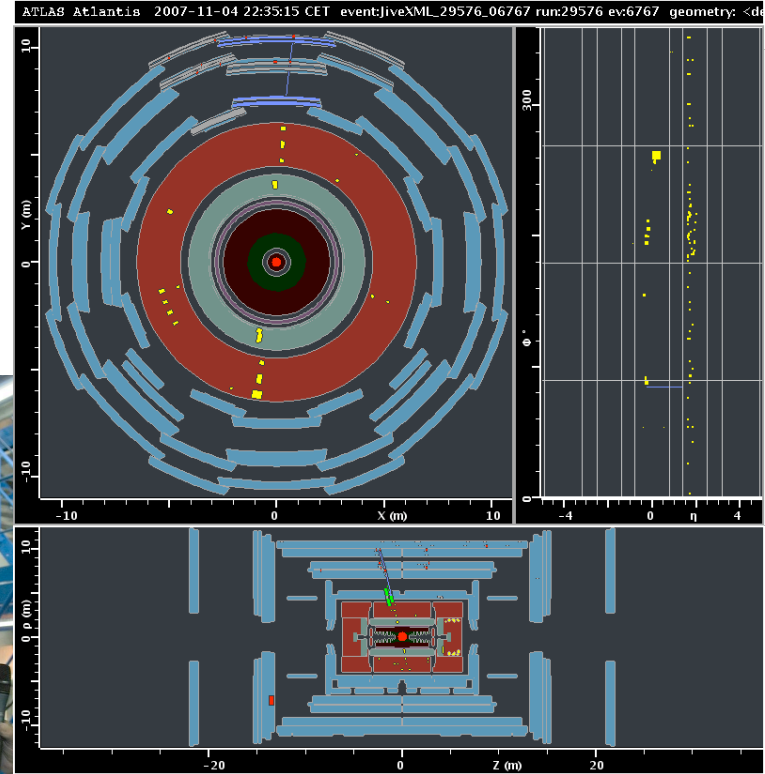


Pilot physics

Sub-phase	Bunches	Bun. Int.	β^*	Luminosity	Time	Int lumi
First Collisions	1 x 1	4×10^{10}	17 m	1.6×10^{28}	12 hours	0.6 nb^{-1}
Repeat ramp	-	-	-	-	2 days @ 50%	1.2 nb^{-1}
Multi-bunch at injection & through ramp -collimation	-	-	-	-	2 days	-
Physics	12 x 12	3×10^{10}	17 m	1.1×10^{29}	2 days @ 50% in physics	6 nb^{-1}
Physics	43 x 43	3×10^{10}	17 m	4.0×10^{29}	2 days @ 50% in physics	30 nb^{-1}
Commission squeeze	-	-	-	-	2 days	-
Measurements squeezed	-	-	-	-	1 day	-
Physics	43 x 43	3×10^{10}	10 m	7×10^{29}	3 days - 6 hr t.a. - 70% eff.	75 nb^{-1}
Squeeze to 2m.	-	-	-	-	3 days	-
Physics	43 x 43	3×10^{10}	2 m	3.4×10^{30}	3 days - 6 hr t.a. - 70% eff.	0.36 pb^{-1}
Commission 156 x 156	-	-	-	-	1 day	
Physics	156 x 156	2×10^{10}	2 m	5.5×10^{30}	2 days - 6 hr t.a. - 70% eff.	0.39 pb^{-1}
Physics	156 x 156	3×10^{10}	2 m	1.2×10^{31}	5 days - 5 hr t.a. - 70% eff.	2.3 pb^{-1}
					28 days total	

ATLAS

- Construction and assembly at the surface come to an end
- Installation in the cavern is also nearing completion
- Commissioning ...



26 November 2007 /
HvdS

LHC + ATLAS plans

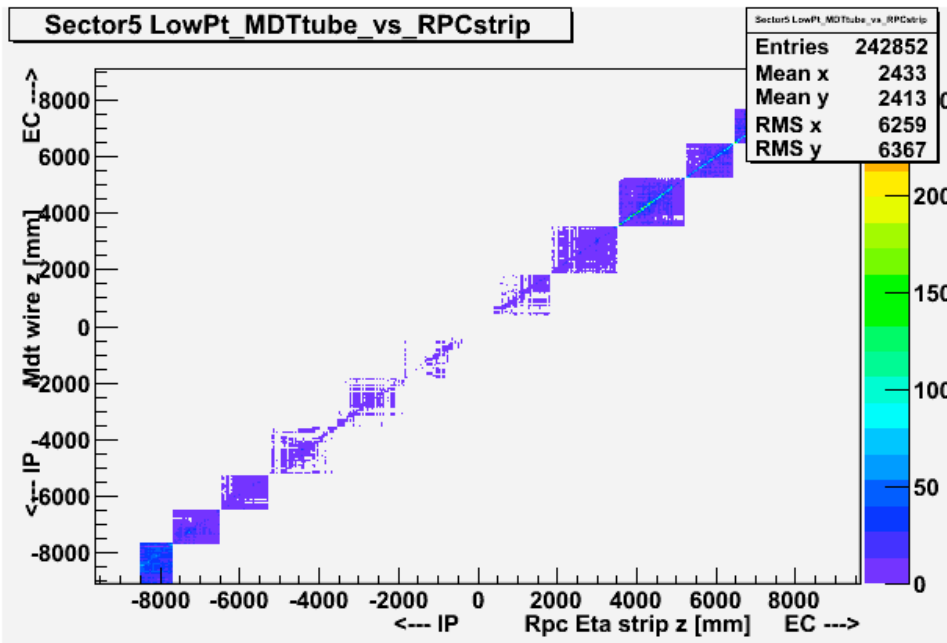


Integration weeks schedule

Dates	Systems Integration	Detector configuration	Operations	Cosmic run	Training	ACR
<ul style="list-style-type: none"> <i>Parallel integration activities:</i> <i>Mx cosmics weeks - detector integration & cosmics datataking</i> <i>TDAQ technical runs - throughput & reliability</i> <i>FDR (Full Dress Rehearsal) runs - exercising SFO to analysis with MC</i> <i>CCRC (multi-experiment Computing Readyness Challenge)</i> 						
M4 23/8 to 3/9 2 day setup 2 week ends	Level-1 Calo HLT DAQ 1.8 Offline 13	Barrel & EC calos Barrel & EC muon Barrel TRT SCT R/O Level-1 Mu, Calo	ATLAS-like operations Use of DQ assessment	1 week Try also calorimeter trigger	Whole week	Final setup
M5 22/10 to 5/11	Pixel (R/O only) SCT quadrant or R/O only	M4 + Pixel (R/O only, no detector)	Week 1 system assessment Week 2 ATLAS-like operations	1 week	1 week	
Recovery exercise 22/01/08	N/A	All	Restart from "All off" condition Include demo run	N/A	Recovery procedures	
M6 February/March	CSC	+ SCT and Pixel detectors	ATLAS-like Operations	Whole week		

Offline monitoring

- Didn't work very well for M4 due to
 - Memory problems
 - Not enough time to fully test code
- High priority for M5
- Some teething problems
 - Too many histograms is a problem
 - By the end had histograms being produced by tier0, merged across run by tier0 job
 - Displayed on the web at:
<http://atlasdqm.web.cern.ch/atlasdqm/>



Correlation between the hits in RPC and MDTs
For run 28997
Shows MDT & RPC synchronized

Amount of data taken so far

- M3:
 - Raw Data: 9 TBytes
 - Processed Data: 300 GB ESD, 400 GB CBNT
 - Nevts: ~2 Million events (tier0 only processed 0.7 Million)
- M4:
 - Raw Data: 18 TBytes
 - Processed Data: 900 GB ESD, 1 TB CBNT
 - Reprocessed Data: 2 TB ESD, 1 TB CBNT, 160GB filtered ESD
 - Nevts: 3 Million
 - Only a small fraction of M4 data is good (MDT desynchronized for nearly all runs, and trigger timing bad for Calo's for ~ half the runs)
- M5:
 - Raw Data: 86 TBytes
 - Processed Data: 5 TB ESD, 6 TB CBNT, 30 GB Hists
 - Nevts : 12 Million so far...
- Numbers increasing at quite a rate!

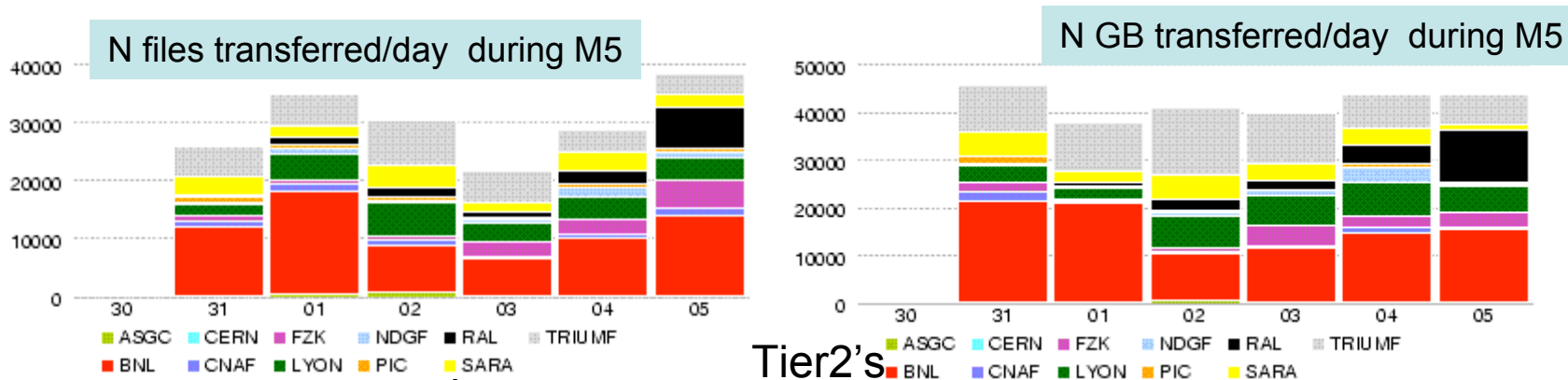
M5 reprocessing

- Plan to reprocess the M5 data
 - Using best available tags
 - Using updated conditions & calibration constants
- Will create a 13.0.35 release with all tags currently in AtlasPoint1
- Some new tags for improved muon track finding
- Maybe some reprocessing to be done at Tier-1's
 - BNL, Triumf ??
- Need to balance memory consumption
 - How many samples to use for LAr reco??
 - Ongoing discussion
- Should start in ~3 weeks

- We did reprocess the 'good' M4 data with release 13.0.26 and updated calibrations

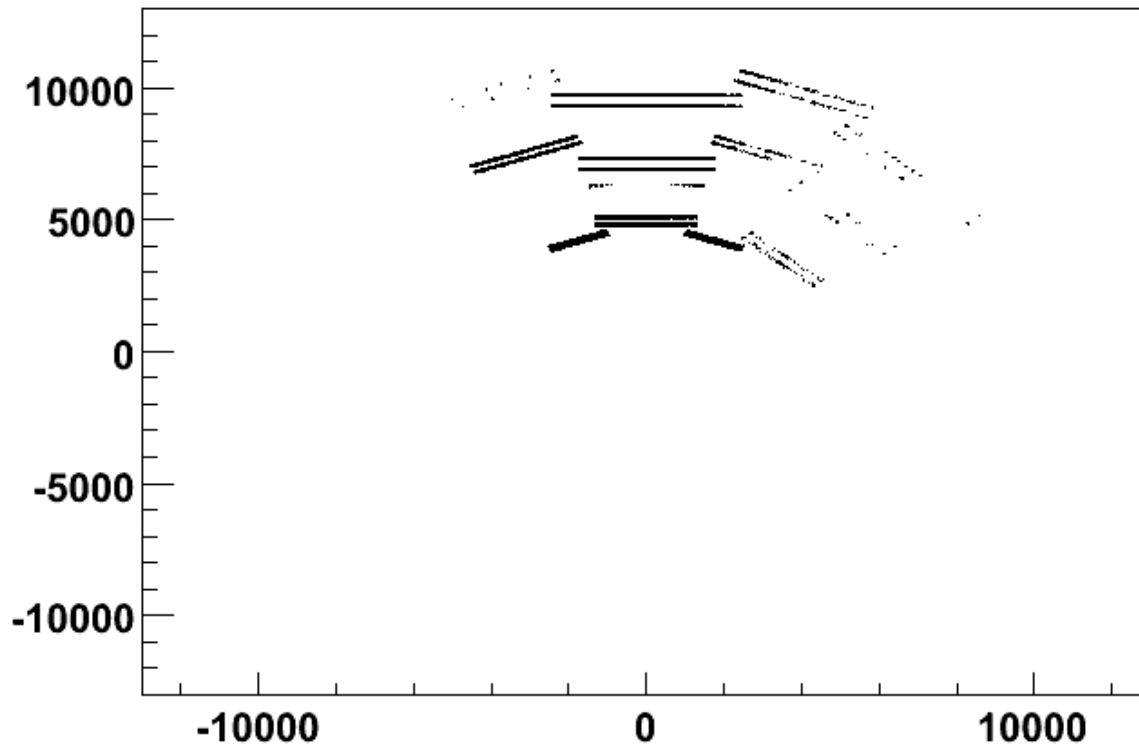
Running at remote sites

- During M4 we had for the first time real-time replication of data to the Tier1's, ongoing for M5 data



- Problems encountered when running remotely:
 - Replication of Conditions Dataset unreliable
 - Need 100% of conditions to be able to run!
 - No jobTransform for RecExCommission
 - Recently added, thanks to Pavel Nevski
 - Not fully tested yet
- Commissioning-Reconstruction doesn't match exactly the planned computing model
 - Main focus is detector commissioning

1 more M5 plot...



Plot of x,y position of MDT hits on segments. Shows which sectors were read out. For run 29118 (300K events).

TR scope

Rates,
decision times,
bandwidth

40 MHz

2.5 μ s

75 kHz

120 GB/s

10 ms

2500 Hz

3 GB/s

2 s

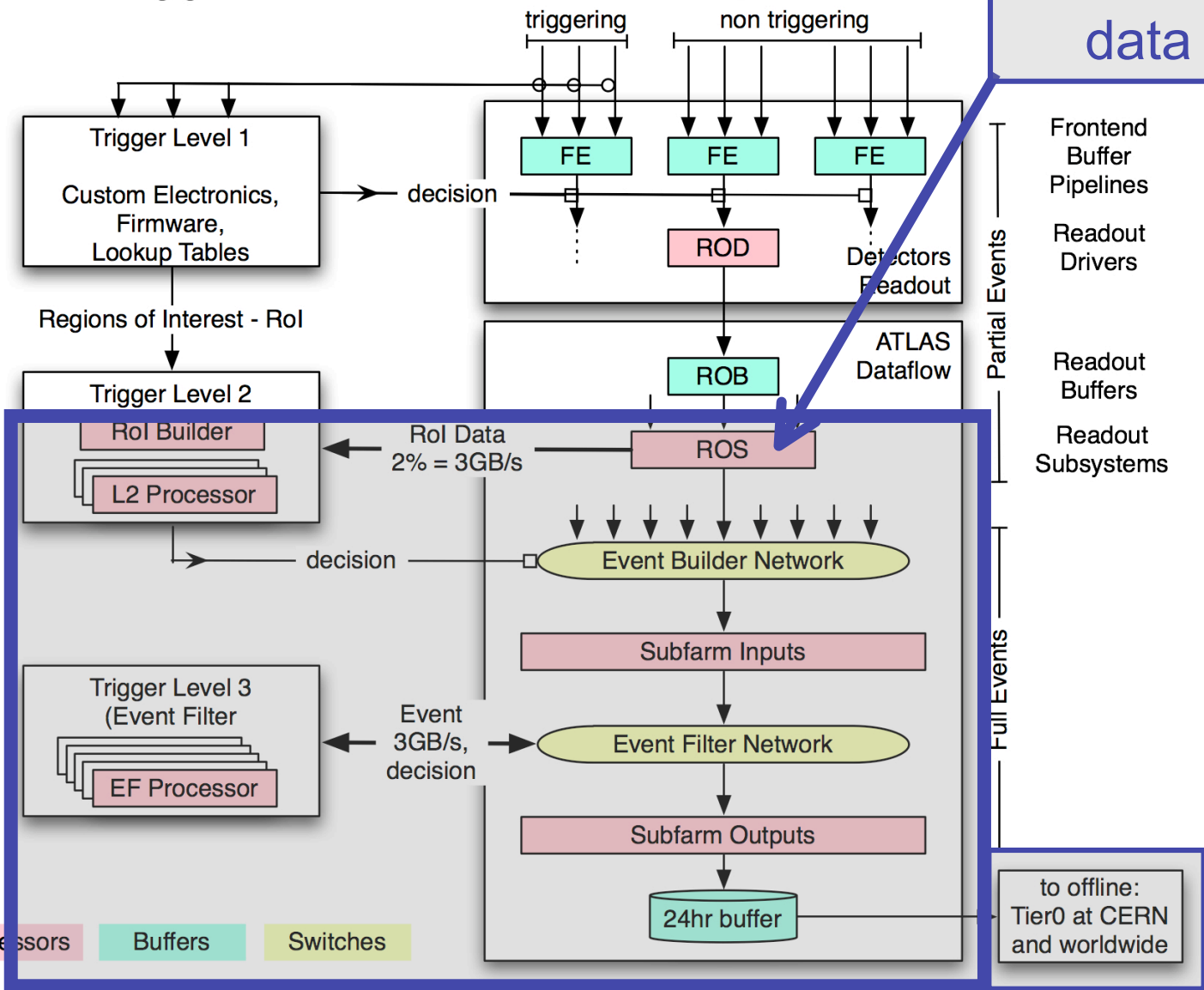
200 Hz

300 MB/s

Trigger

Data Acquisition

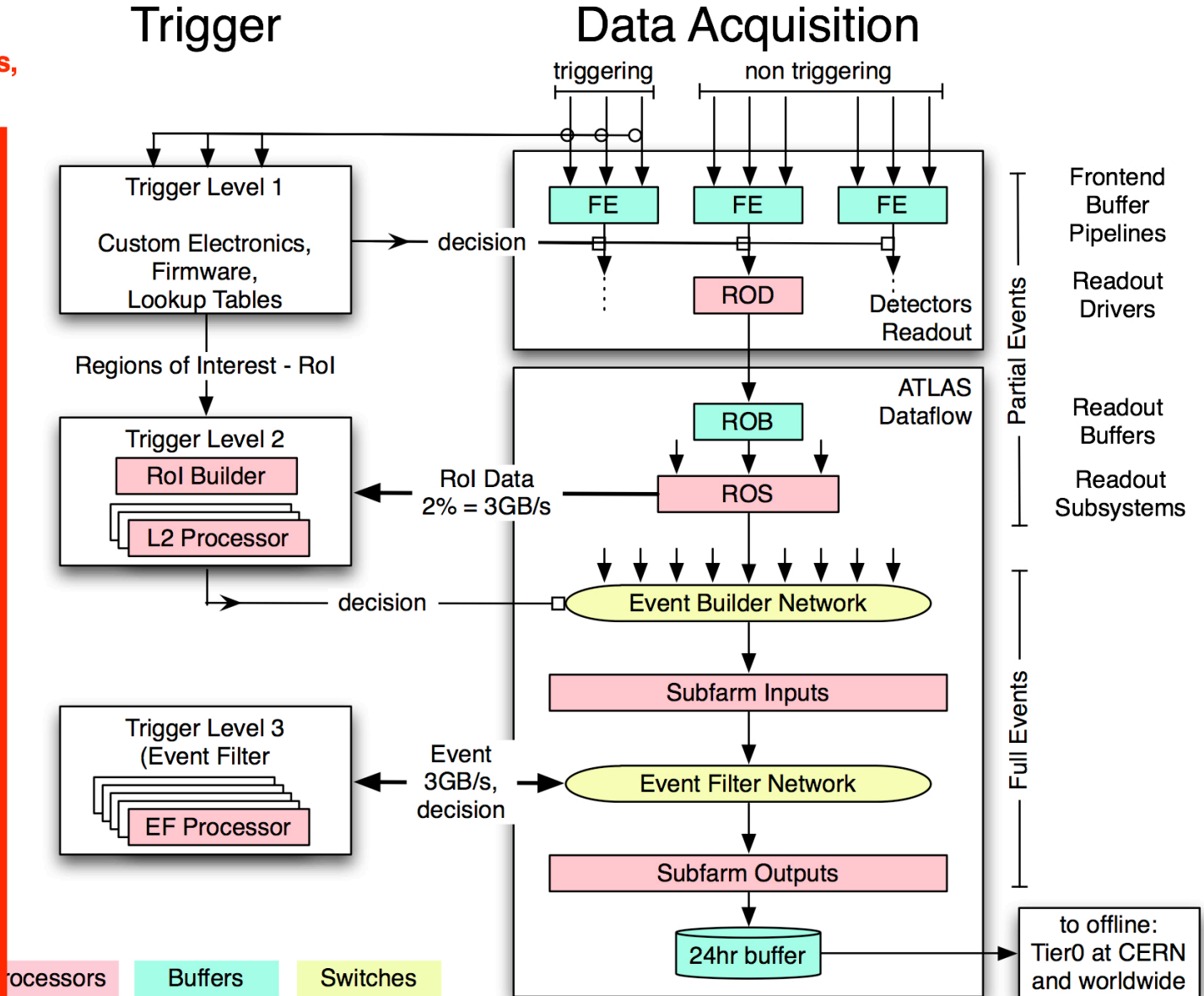
simulated
data



Mx scope

Rates,
decision times,
bandwidth

RPC/TGC trigger: ~100 Hz
Tiles trigger rate: ~0.1 Hz



Common Computing Readiness Challenge CCRC08

Distributed Computing Commissioning & Operation

Common throughput test with CMS

Detector paper →

Preliminary

CCRC08 functional tests (in series)

CCRC08 full functional tests



Rel
T0-T1 Throug
M5
Detect

FDR1: 10^{31}

FDR2: 10^{33}

