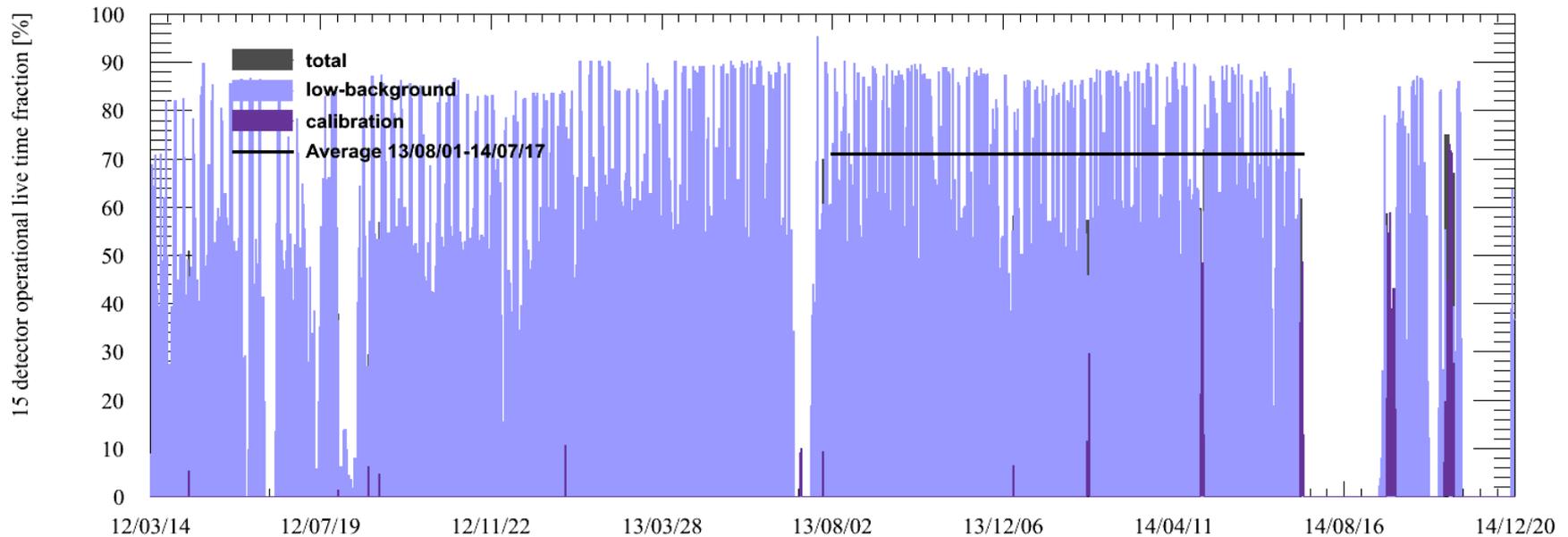


Cosmic Frontier Experiment Status

Jan 5, 2015

Experiment	Location	Status	Start of operations	Nominal end of operations	Physics
SuperCDMS	Soudan	Operating	Mar 2012	Sep 2015	Dark Matter
COUPP/PICO 2L	SNOLAB	Operating	Dec 2013	Sep 2017	Dark Matter
COUPP/PICO 60	SNOLAB	Operating	June 2013	Sep 2017	Dark Matter
Darkside 50	LNGS (Gran Sasso)	Operating/Calibrating	Jan 2014	Sep 2017	Dark Matter
DAMIC	SNOLAB	Operating	Dec 2012	Sep 2016	Dark Matter
Dark Energy Survey	CTIO, Chile	Operating	Sep 2013	Feb 2018	Dark Energy
Pierre Auger	Argentina	Operating	2008	Sep 2015 (for FNAL)	High Energy Cosmic Rays
Holometer	Meson Lab	Operating	Sep 2014	Sep 2016	Spacetime

SuperCDMS Soudan

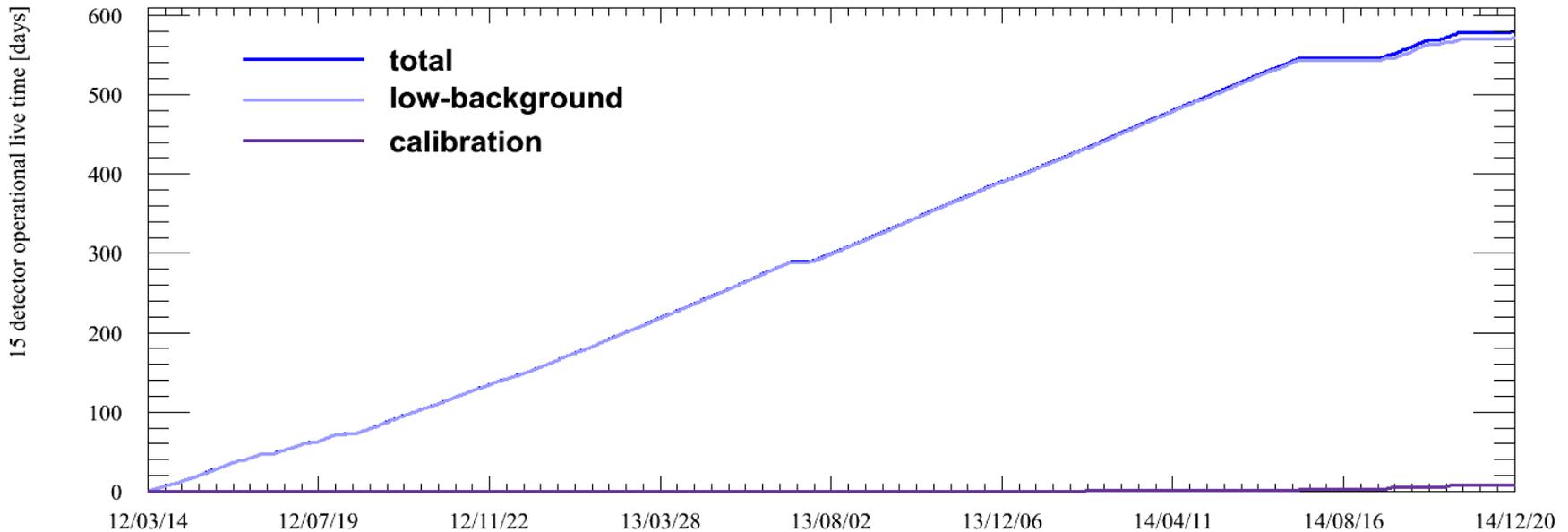


Cryogenic maintenance (warm to room temperature, fix cryocooler, cool down to 50 mK) during summer

Since then, systematic studies of noise, vibration and detector issues

Also, studies of shielding effectiveness using radioactive sources at various positions

SuperCDMS Soudan



Currently taking a month of gamma calibration (^{133}Ba sources) to study systematic effects

During January/February, study new mode of high-bias, low-threshold operation (CDMSlite3)

Special neutron calibration runs scheduled for February-April

Final physics data run May - September

COUPP/PICO Operations Summary

- We continue to learn about particulates extracted from PICO-2L and COUPP/PICO60 last year
 - Dec. 2014 - Results from PNNL show 230 picograms of thorium in PICO-2L samples, enough to account for event rate observed in the 2014 run
- Currently working on improved extraction and cleaning of COUPP/PICO60 chamber particulates

COUPP/PICO Operations Summary

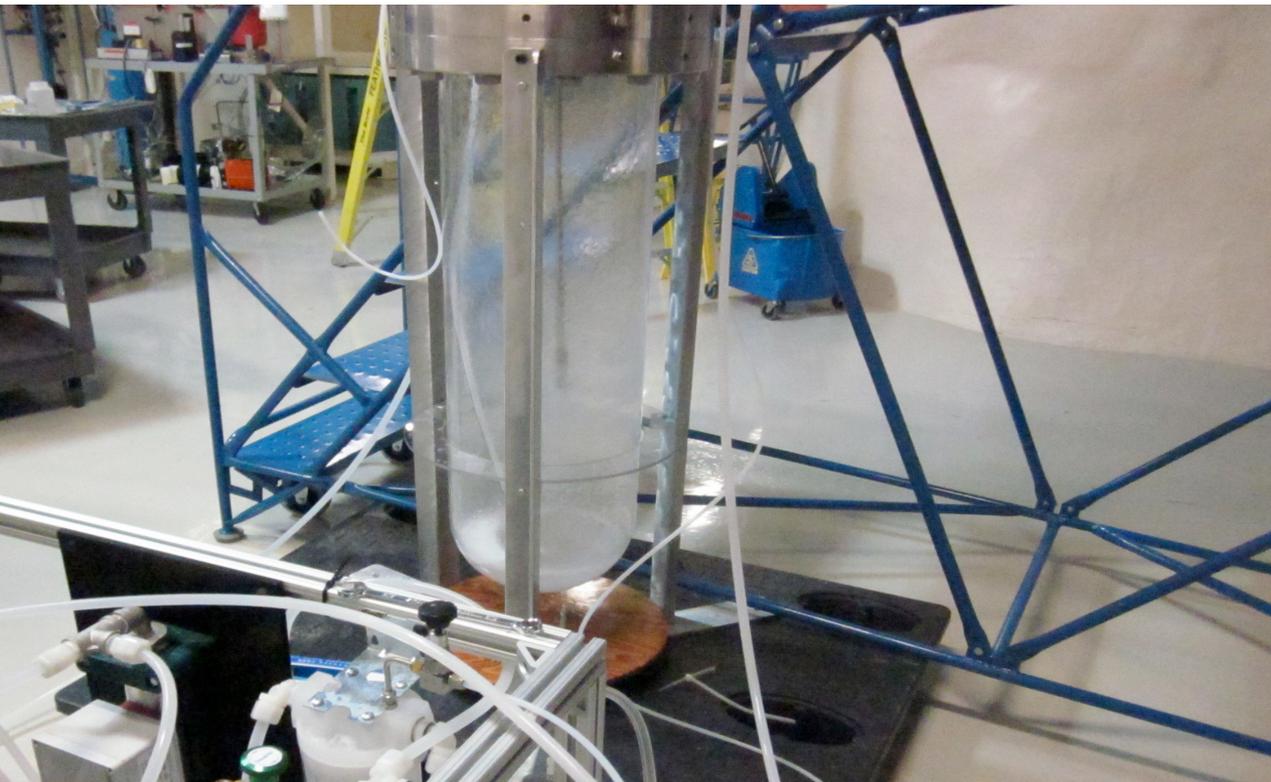
- PICO-2L run with new jar flange and cleaning process expected to begin soon
 - Engineering run to test whether particulates come in from the fill or are produced in situ

Meanwhile, as the presence of thorium contamination points to steel as the source, retrofit designs to isolate bellows from active fluid are being pursued



COUPP/PICO Operations Summary

- Cleaning of COUPP/PICO60 in progress
- Preparations ongoing for installation of in line purifier
 - Engineering run of COUPP/PICO60 to follow in spring



Cleaning apparatus installed on prototype jar at SNOLAB for testing

DarkSide-50 Status

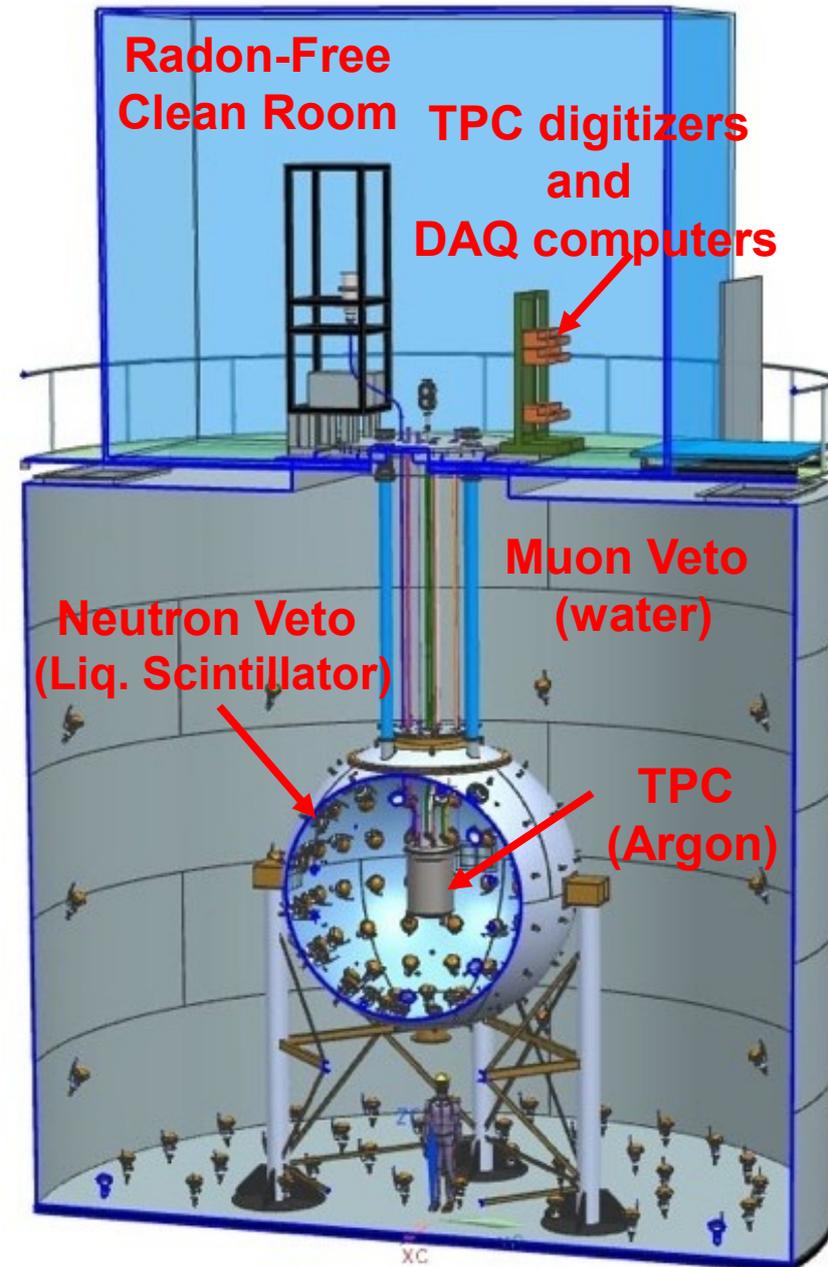


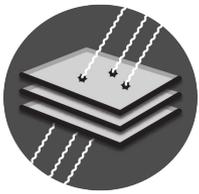
• TPC:

- Neutron calibration campaign to establish discrimination power using an AmBe source
- ^{36}Ar study: acquired data at null field observing only scintillation light

• Neutron Veto

- Initially we ran with TMB and PC mixture
- Observed high rate of ^{14}C rate due to TMB
- TMB removal: achieved $<0.1\%$
- Acquired new batch of clean TMB
- **During December we got ready to deploy the new batch**
- **Deployment starts this week**



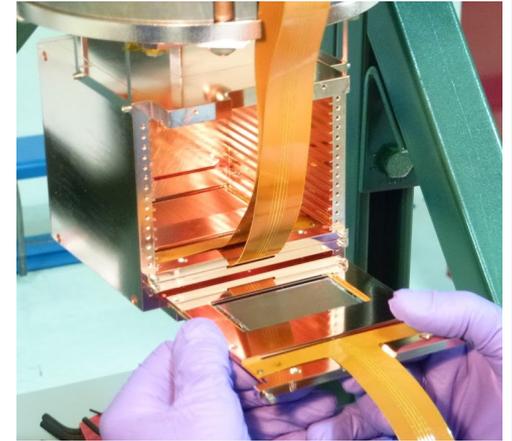


DAMIC - Dark Matter In CCDs

FNAL, UChicago, UMich, Mexico, Argentina, Paraguay, Zurich

December 2014 - January 2015

- DAMIC-100 first phase upgrade at Snolab
 - Completed installation of three new detectors.
 - Upgraded detector housing and electrical isolation.
 - First nitrogen bag prototype installed.
 - All detectors working with unprecedented low background levels.



- DAMIC@Snolab: Next Upgrade
 - Starting the packaging process for larger 4x4 detectors.
 - Fabricating a nitrogen purge box to reduce Radon background.
 - Next upgrade during January 2015.

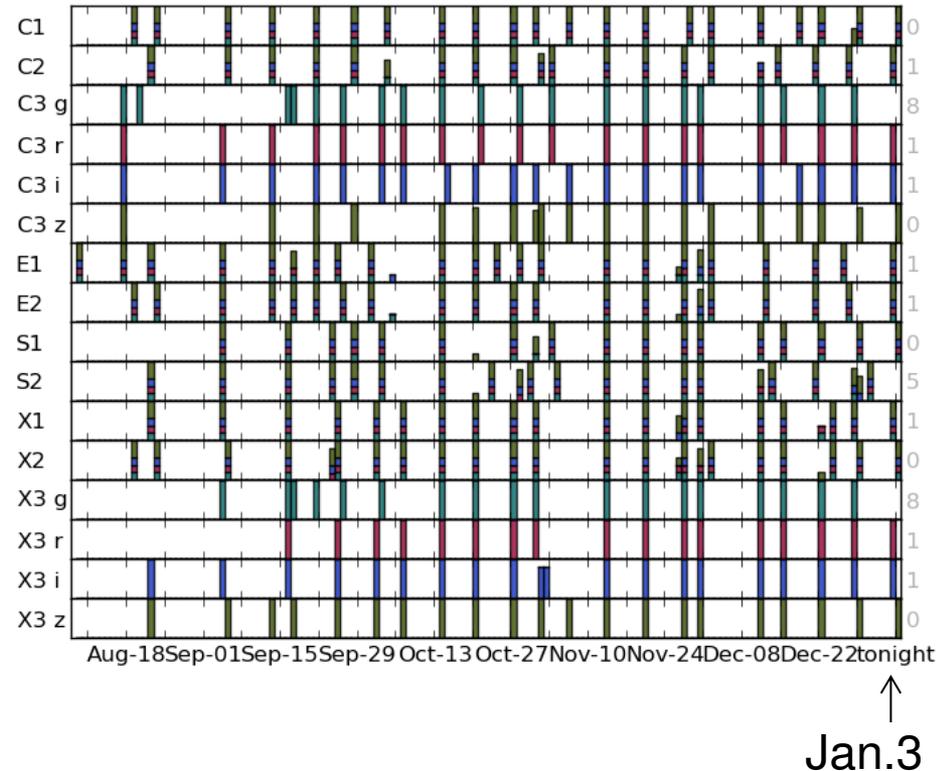
Status: taking data with prototype detectors. Uptime >95%. High quality data.



Y2 SN Survey Status

DARK ENERGY
SURVEY

- DES switched to (1st) half-nights in late December because the observing fields aren't available after ~3/4 of the night.
- We will continue to take observations until mid-February
- In Y1 the SN fields had a median # days between revisits of about 6.5 days. The maximums gaps were 11 to 16 nights.
- Big gaps early on in Y2 but ...
- Since early November the Y2 SN observing has settled into a good cadence.

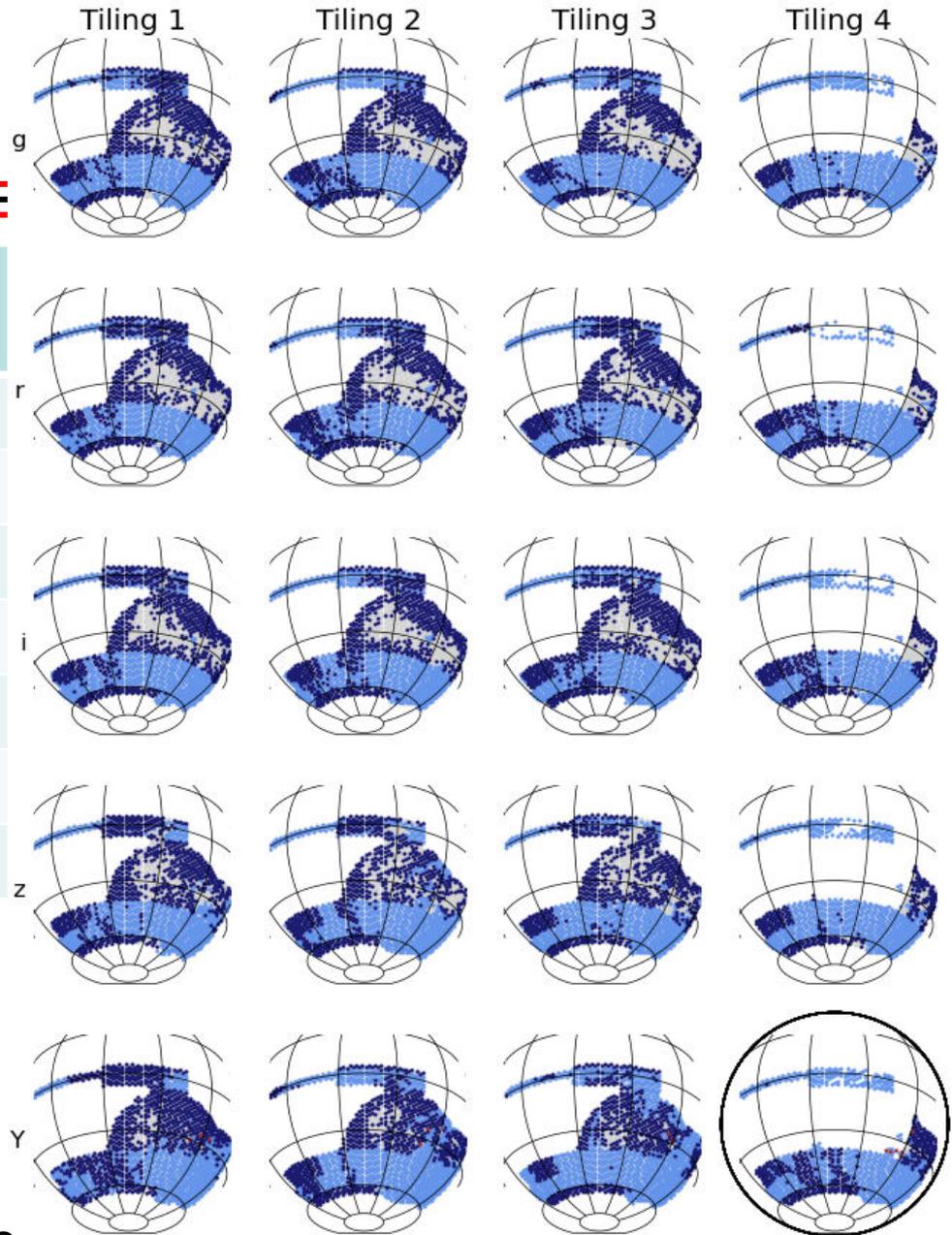




Y2 WF Survey Status

DARK ENERGY SURVEY

	Nights	# WF Images	# WF Good (%)
Aug.	9	1382	955 (69%)
Sep.	18	3023	2056 (68%)
Oct.	21	3297	2369 (72%)
Nov.	21	3555	2764 (78%)
Dec.	18	3442	3283 (95%)
Jan.	2	165	165 (100%)
Total	89	14864	11562 (78%)



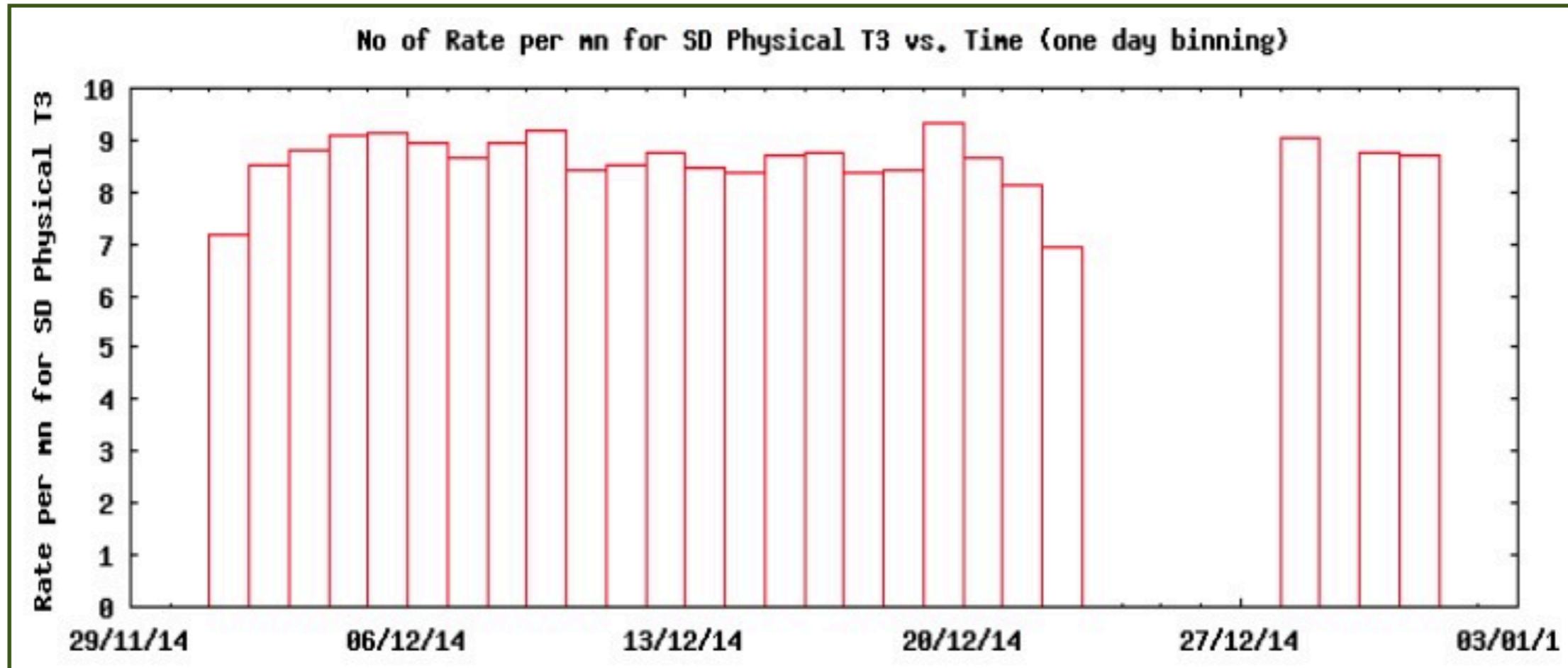
Lt Blue: last Yr, Dk blue: this Yr, Red: last night

- Aug. to Nov. Even when we observed, we often had partially cloudy conditions. Dec. never clouded out.
- We are ahead of Y1 by about 1 good night but about 6 good nights behind where we'd like to be at this point in Y2.

Pierre Auger Observatory

Activities between Dec 1 - Jan 1

- SD efficiency: 97.1% efficiency in the past two weeks, on-going maintenance, upgrade R&D activity (involves SD) continuing in the field, very stable.
 - number of black tanks ≤ 19 on any given day
 - Recent FD observation period: Dec 14 - Dec 29; smooth, rain on Dec 16
 - remote shift operational
 - Radio array (AERA) - stable & continuous data taking
- ❖ Dec 1 - Jan 1: Number of triggers from cosmic rays ($E > 10^{18}$ eV) per minute ~ 12000 / day



Holometer Operations Status

1/5/2015

Slow month due to preparations for DOE Operations Review on 12/17/2014 followed by winter break.

- Mode of operation for next few months:
 - Analyze data to discover systematics
 - Modify apparatus to quantify/correct systematics
 - Take more data
- Currently analyzing 25 hours of high-quality data taken in November, 2014
 - Only 5 hours needed for holographic noise sensitivity
 - Next steps to be determined from results of data analysis
- Data archiving to tape farm implemented with help from Michael Diesberg and SCD team
 - Data rate = few TB/day of time-averaged spectra when running
 - Data sharing plan – publish final spectra (20 MB) on Holometer website