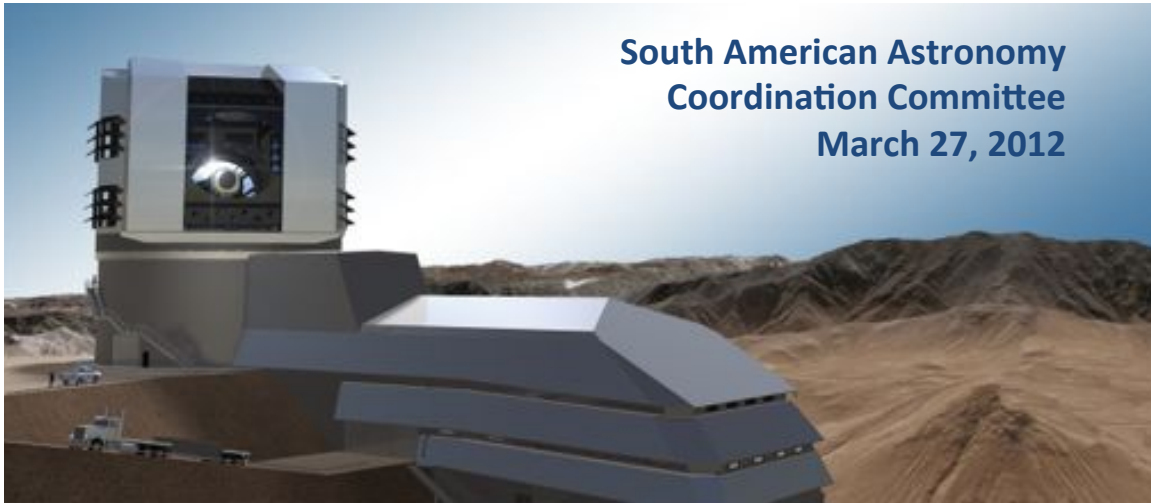


South American Astronomical Coordination Committee (SAACC) Meeting Minutes 27-March-2012



1 Attending:

David Halstead, ALMA/NRAO
Mark Lacy, ALMA/NRAO
Ron Lambert, AURA
Chris Smith, AURA
Jeff Kantor, LSST
Jorge Ibsen, ALMA/NJAO
Fernando Lielo, DFN
Sandra Jaque, REUNA
Florencio Utreras, CLARA
Leandro Ciuffo, RNP
Iara Machado, RNP
Alex Moura, RNP
Chip Cox, AmLight/FIU
Julio Ibarra, AmLight/FIU

2 Welcoming Remarks/Introductions (Julio Ibarra, AmLight PI)

- Summary of information. Refer to slides.

3 Introduction to SAACC (Chris Smith, SAACC Chair)

- Review of the SAACC charge.
- Goals:
 - In goal 2, Chris highlighted recent visits to Chile by Ed Seidel – head of MPS and AST at NSF; the new NSF Director; and President Obama

- They stressed the importance of astronomy in relationship between U.S. and Chile
- Going to funding agencies with an organized and coordinated plan is more effective than going individually.
 - Coordinate message. Take message to funding sources. Bridge at a technical level.

Goal 1

- -1) bring these key US Astronomy (and Physics) users together to discuss the needs of this community in South America over the next 5,10,15,20 years, in order to
- -1a) provide the AmLight project appropriate information and guidance on the needs and use of network resources, and among the technical partners.

Goal 2

- -2) Create a bridge between the US network planning (AmLight and partners), the Regional RENs (CLARA, GEANT) and local RENs (REUNA and equivalents in Brazil and Argentina, if not others)
 - -2a) at the highest level and user level, here we serve as stewards of the NSF's desire to encourage and support innovation in S.American countries. This was a theme of Obama's recent visit to the region, a MAJOR theme of Ed Seidel's visit, and a significant theme for the visit of the Director of the NSF.
 - -2b) at the technical level (AmLight/Ampath, CLARA, REUNA, CENIC, etc.) we create an environment for coordination over the different physical networks for optimized traffic, as well as sharing of ideas and techniques

Goal 3

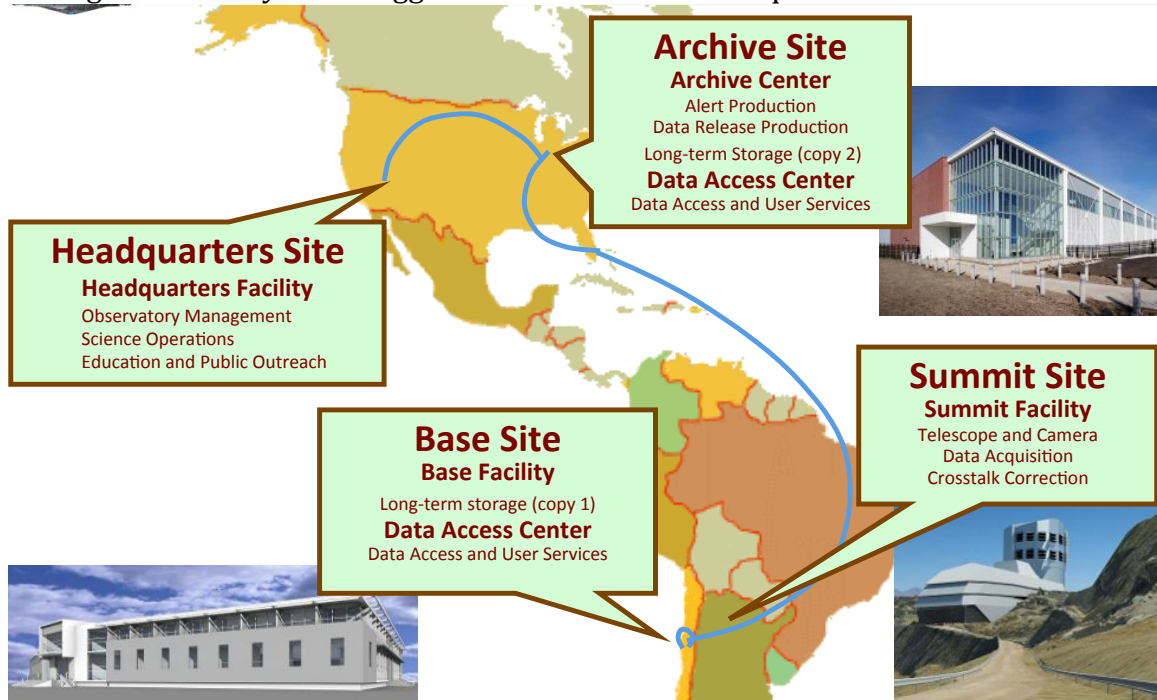
- -3) create a venue for international coordination of astronomical networking needs in the S.American region. Here we fold in our colleagues from ESO (La Silla, Paranal, ALMA, Armazones), as well as DES partners in England and Spain, ALMA partner in Japan, GMT partner in Korea, possible LSST partners in Europe and Asia, as well as smaller projects on Tololo, La Silla, and Las Campanas involving both European and Asian astronomical interests (AURA alone has German, Thai, Korean, Spanish, English, Brazilian, Canadian, Argentinian, and Australian participants!)
 - -3a) provide venue for discussions at user level
 - -3b) provide venue for discussions at technical level

3.1 Current Operational AURA & Affiliated facilities (Lambert)

- Refer to slides

3.2 LSST (Kantor)

- 40G per night, observing period.
- High availability is the biggest driver for network requirements.



- Copy of data in Chile and NCSA
- Making early investments for Chile and North America, for bandwidth to be available when needed.
- Now, other countries have expressed intent to participate in operations and gain data access, data rights:
 - 60+ letters from 20+ countries already received
 - IN2P3 in France has agreed to perform half of Data Release Processing in Lyon, expect this will require a 10G connection with NCSA.
 - Path how to get from NCSA to France is undetermined, will largely be up to IN2P3 since they will fund it.
 - Images move south to north nightly
 - Databases move north to south on annual updates
- Processing:
 - Alert Production (near Real Time) is now at NCSA, makes reliability from Chile – U.S. very important, still specified at 98%
- AURA and AmLight are interfaces for LSST in response to questions from Florencio.

3.3 ALMA/NRAO (Lacy & Halstead)

- Peak of < 1Gb/s until 2020, then perhaps 2 Gb/s
- No day/night requirements (24 hr observing)
- ~10% is database synch, telepresence, higher QoS
- Higher data rates in Chilean Winter
- Need 100 Mb/s now, not getting it yet out of 622 Mb/s link

- Using 20 Mb/s REUNA link now for Japanese
- Other ALMA is using existing REUNA consortium link, more than 20 Mb/s
- Agreement of 100M CIR, burstable to 622M.
- Will need ~1G by 2016.
- No real time requirements.
- Bulk data requires only best effort.
- ALMA operates 24 hours per day. Seasonal for observation. Winter in Atacama is best season for observing.

Lacy or Halstead discussed a next generation architecture with the following characteristics:

- Oracle database
- 1TB data set takes about 2 weeks
- Need today to increase CIR to 100Mbps.
- Getting 8Mb actual throughput. Falling behind schedule.

See slides for more information.

3.4 ALMA Chilean & International Connectivity (Ibsen)

- Remote operation (slide 7)
- Fiber to Santiago
- OSF to Antofagasta. Willing to accept waves
- Needs shown up to 300 Mb/s to SCO
- In future, would like to enable remote observing, higher B/W needed all the way to Santiago

See slides for more information.

4 Discussion of Connectivity Requirements & Complementarities (moderator: Kantor)

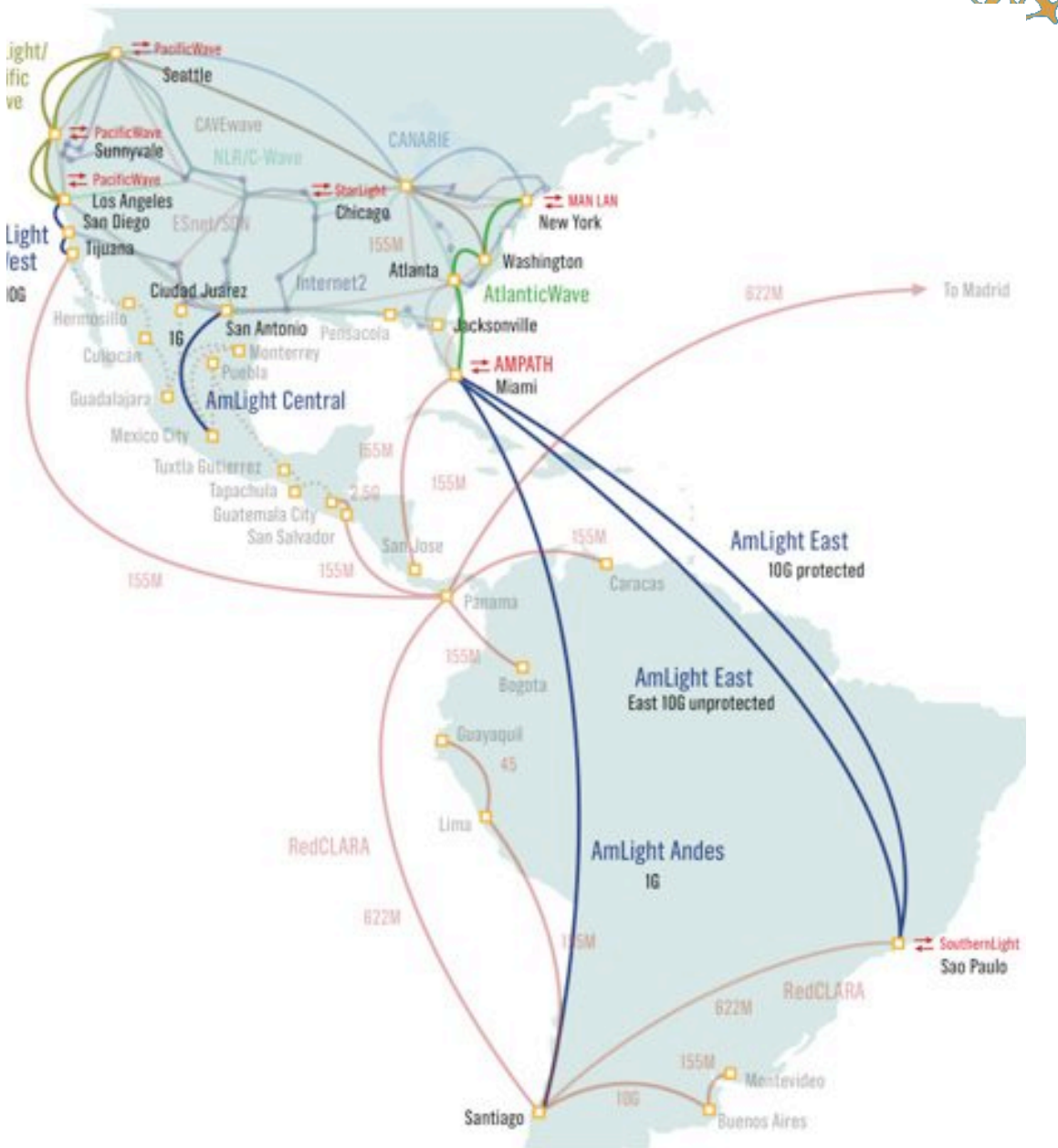
Jeff Kantor started the discussion with the question “How can we find areas of collaboration?”

- JKantor - Could ALMA/NRAO shape traffic for day, leaving LSST for night to NA
- DHalstead - Argentina import controls is a current barrier, need clear political sponsorship. 1 year behind due mainly to non-technical issues?
- FUtteras - Not political, good news is that it will be solved within 2 weeks, was a series of bad decisions by people who had to import equipment into BA. Can provide details. That equipment will support 20 lambdas once installed.
- CCox - Networking research projects are not necessarily a good model for operational/production needs of observatories. Trying to keep a synergy between innovation in growth and production. Need a better way to manage those conflicting concerns. Downside could be that we can't do large-scale systemic change due to near-term need to operate.

- JKantor/CCox - We should share network operations/management plan for LSST, integration with NOCs, etc. Idea would be having incremental increases per project, not entirely replicated NOCs.
 - Regarding network operations, NRAO people would get with Jeff and Ron to ensure scale and scope.
 - JKantor comment: "It's cheaper to aggregate than each project doing its own work".

5 International and National Providers' Planning

5.1 AmLight (Cox)



- Integrating consortium activities
- ~\$1M invested last year to respond to consortium requirements
- Working with national providers to increase access and capacity going North; e.g., improving AtlanticWave.

5.2 CLARA (Utreras)

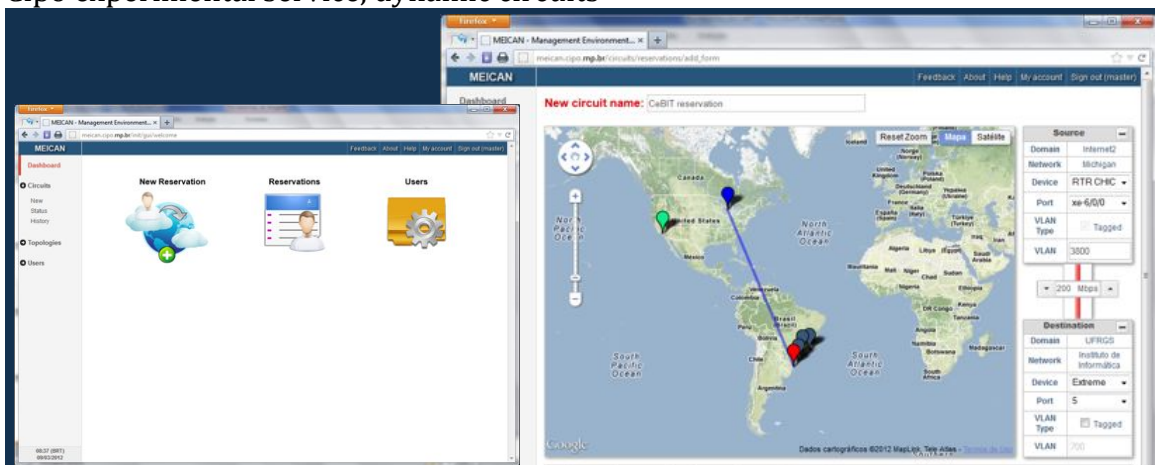
- STM-4 ring around South America
- BA – SCL, DWDM up to 20 x 10G
- Porto Alegre to BA. Joint project with RNP.
- 2.5G to Madrid, not yet upgraded.
- EU funding ending in 2012
- Peru to Ecuador at 600M
- Dark fiber between San Jose CR to Managua, and from San Jose CR to Panama
- Panama to Tapachula is part of build out into Mexico. Eventually will disconnect at Tijuana
- See slides for more information

5.3 REUNA (Sandra Jaque)

- REUNA is already 2.5Gbps LS to SCL (via EVALSO investment)
- Establishing VLAN ALMA to UVA
- Establishing VLAN from SOAR to Brazilian astronomy institutions (with AmLight/CLARA)***
- See slides for more information

5.4 RNP (Leandro Ciuffo, Iara Machado, Alex Moura)

- Still on aggressive infrastructure build-up to connect 24 of 27 regional capitals at 10 Gbps and later to 100 Gbps
- Cipo experimental service, dynamic circuits



ON, the National Observatory, was previously selected as a beta-tester

- Did proof of concept between Brazilian institutions and US i2-connected institutions

- LINeA - Brazilian institutions collaborating on astro data center, will be at next week LSST workshop
- See slides for more information

6 Discussion of Connectivity: How to meet User requirements

- AmLight operators should meet to describe/engineer how to get 98% reliability in network layer end to end
 - Ibarra note: LSST requirement of 98%
- Also should have a coherent approach across operators for network management, tools for monitoring, diagnostics
- Data flows distributed to different centers/points is another topic for operators to understand better (CCox - could test application devices e.g LSTORE on research side, deploy into ops side, could still use research side in overflow situations)
- Projects please provide any requirements on monitoring/management*** e.g. RedCLARA using perfsonar.
- Themes that emerged from the discussion:
 - Hybrid Networking
 - IP
 - Persistent Layer2 service
 - Data Flow characterization
 - Network Performance management (perfSonar)
 - NOC Support, NOC Coordination
 - Monitoring and Measurement

6.1 Performance Requirements

The following table represents estimates of the bandwidth requirements of LSST and ALMA from their sites in Chile to the U.S.

LSST										
Bandwidth unit in Mbps										
FISCAL YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021...30
Mountain to Base	0	0		1,000	1,500	2,000	2,500	100,000	100,000	100,000
Base to Santiago	650	1,000	1,000	1,000	1,500	2,000	2,500	3,000	10,000 - 40,000	10,000-40,000-80,000
Santiago - MIA	650	1,000	1,000	1,000	1,500	2,000	2,500	3,000	10,000 - 40,000	10,000-40,000-80,000
MIA - NCSA	650	1,000	1,000	1,000	1,500	2,000	2,500	3,000	10,000 - 40,000	10,000-40,000-80,000
NCSA - Tucson	650	1,000	1,000	1,000	1,500	2,000	2,500	3,000	10,000 - 40,000	10,000-40,000-80,000
International Collaborators	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

ALMA-NRAO											
	Q1-Q2 20; Q3+ 100, burstable to 622	100, burstable to 622	300, burstable to capacity	300, burstable to capacity	1000, burstable to capacity	1000, burstable to capacity	1000, burstable to capacity	1000, burstable to capacity	1000, burstable to capacity	1000, burstable to capacity	2000, burstable to capacity
ALMA to NRAO at UVA											
OSF - SCO	100	100	2500	2500	2500	2500	2500	2500	2500	2500	
AOS to OSF	1,000 - 10,000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
OSF - SCO	100	100	2500	2500	2500	2500	2500	2500	2500	2500	

Colors for LSST represent the following:

- Blue years are Research and Development phase

- Pink years are Construction Phase
- Yellow years are Commissioning Phase
- Green years are Operations Phase

The ALMA-NRAO quoted numbers are averages. ALMA-NRAO expects to get a considerable amount of day-to-day and seasonal variation, meaning that they would like to be able to obtain any unused bandwidth up to the full bandwidth in a burst mode. Currently, the ALMA-NRAO performance requirement is 100Mbps, burstable up to 622Mbps, on the AmLight Andes connection.

Please refer to the presentations for additional information.

7 Next Steps (Ibarra moderated)

- The SAACC is interested in evaluating perfSonar as an instrument to measure end-to-end performance between project sites in Chile and sites in the U.S.
 - Start the process of conducting a requirements analysis to determine what resources are needed to achieve goal.
 - Internet2 has an award in the IRNC program to deploy perfSonar on IRNC links. The AmLight PI will inquire of the PI at I2 to provide guidance on how should perfSonar be deployed.
- JKantor - Can host meeting at LSST AHM in August, 2012
 - Action item to investigate interest in organizing a face-to-face in Tucson.
- Annual face-to-face in conjunction with other conference
 - Face-to-face every 1-2 years? Rotate between US, Brazil & Chile
 - suggestion: first face-to-face in Chile - Jun/Jul/Aug 2013
 - leverage meeting with Vera's Pucon cross-disciplinary data-intensive meeting
- Video teleconferences every 6 months.
 - ~March/April and ~Oct/Nov windows
 - Ibarra: start the process to identify next video telecom in October/November timeframe. Note: those are busy months with conferences
- JIbarra - Will create report and post to web site, also develop agenda for next meeting.

8 Appendix

SAACC Meeting

2012.03.26

SAACC Charge

From the AmLight proposal:

"Given the extensive use of AmLight by the astronomical community, the AmLight PI will convene a South American Astronomy Coordination Committee (SAACC) that will be comprised of representatives from the various astronomy projects who are conducting projects or operating observatories in South America. ... The SAACC will serve not only to provide input and advice to the AmLight PI and the Steering Committee on program and network needs, but will also serve as a venue for coordinating the needs of these astronomical projects and institutions to improve their resource planning and implementation of operational connections between these distant facilities and users in the continental US."

SAACC Meeting Agenda

Tuesday, March 27,

2pm-5pm Chilean, 1pm-4pm U.S. Eastern time

(All times in Chilean time below)

2:00pm: Welcoming Remarks/Introductions (Julio Ibarra, AmLight PI)

2:15pm: Introduction to SAACC (Chris Smith, SAACC Chair)

2:30pm: Users Requirements/Project Status update (see suggestions below)

10min – Current Operational AURA & Affiliated facilities (Lambert)

10min – LSST (Kantor)

10min – ALMA/NRAO (Halstead)

10min – ALMA Chilean & International Connectivity (Ibsen)

3:10pm – Discussion of Connectivity Requirements & Complementarities

3:30pm: International & National Providers' Planning

10min – AmLight (Cox)

10min – CLARA (Utreras)

10min – REUNA (Arellano)

10min – RNP

10min – ANSP

4:20pm – Discussion of Connectivity Availability & meeting requirements

4:45pm: Planning for next meetings

5:00pm: Close SAACC meeting