



Introduction to AARCLight: Americas Africa Research and eduCation Lightpaths

WACREN 2017 conference:
Catalyzing Quality Higher Education
and Research

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Who We Are



Florida International University (FIU):

- [FIU](#) is Miami's first and only public research university (60,000 students)

Center for Internet Augmented Research and Assessment (CIARA):

- [CIARA](#) is a research center at FIU positioned to leverage advanced Cyberinfrastructure for science research and education



Confluence of Opportunities

- New data-intensive science instruments in the southern hemisphere:
 - Large Synoptic Survey Telescope (LSST) in Chile
 - SKA in South Africa
- New submarine cables in South Atlantic
- Network aggregation in the southern hemisphere
- Leveraging network infrastructure linking the U.S., South America, and Africa

The Phenomenon in S. Hemisphere

- New scientific instruments are being developed in the southern hemisphere that will increase the need for large, real-time data transfers among scientists throughout the world:
 - The Large Synoptic Survey Telescope (LSST) being built in Chile
 - Will produce 6.4 GB images that must be transferred to the U.S. in 5 seconds
 - The Square Kilometer Array (SKA) in South Africa
 - Will transmit approximately 160Gbps of data from each radio dish to a central processor

South Atlantic Aggregation

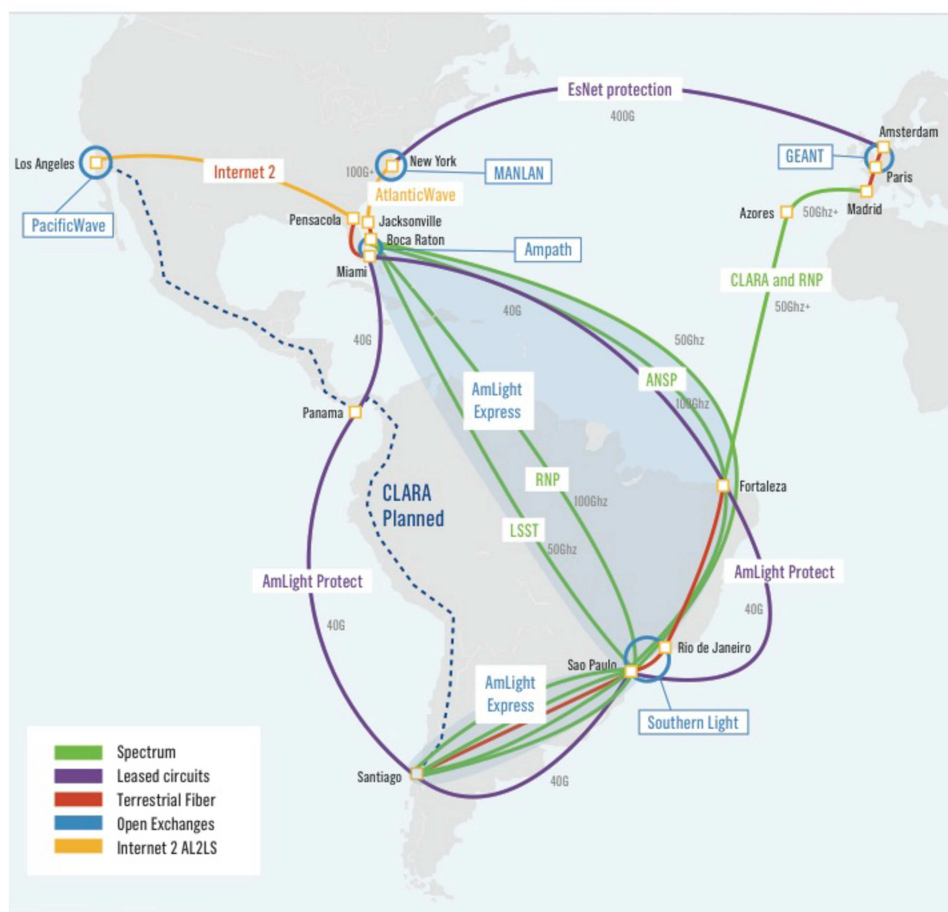
- New submarine cables in the South Atlantic
 - Aggregation in Fortaleza Brazil
 - USA (3)
 - BRUSA
 - Monet
 - Seabras-1
 - Europe (1)
 - EllaLink
 - Africa (2)
 - CBCS, now SAIL
 - SACS
 - S. America (1)
 - Tannat



Leveraging Network Infrastructure

680G+ bandwidth capacity

- AmLight Express & Protect:
 - 600G of aggregate bandwidth to be added:
 - Santiago-São Paulo, and São Paulo-Miami
 - 100G Protect Ring
 - 100G for Panama in 2018
- Fortaleza as a south Atlantic hub
 - EulaLink submarine cable from Fortaleza to Portugal
 - SACS submarine cable to Angola (Q3 2018)
 - South Atlantic Inter-Link (SAIL) to Cameroon (2018)





AARCLight

- Project of the U.S. National Science Foundation, Award #ACI-1638990, at FIU
- Aims to define a strategy for research and education network connectivity between the US and West Africa
- Aims to coordinate planning efforts among stakeholders in the U.S., Africa, and Brazil
- Aims to create economies of scale
 - making use of the offered spectrum
 - towards serving the broadest communities of interest in research and education



Suggested Next Steps

- Knowledge sharing between the network engineers
 - Increase understanding of where network aggregation is developing or planned
 - Representation of the network between Africa, Brazil, U.S.
- Engaging science communities
 - Focused workshops with U.S. and African researchers
 - Engaging early adopters
 - Increase understanding of needs for network and e-Infrastructure resources
- Developing a strategy for research and education network connectivity between the US and Africa

Thank You!
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