



Introduction to AARCLight:  
Americas Africa Research and  
eduCation Lightpaths

WACREN 2017 conference:  
Catalyzing Quality Higher Education  
and Research

Abidjan, March 2017

**Julio Ibarra, PhD**  
**Florida International University**



# 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

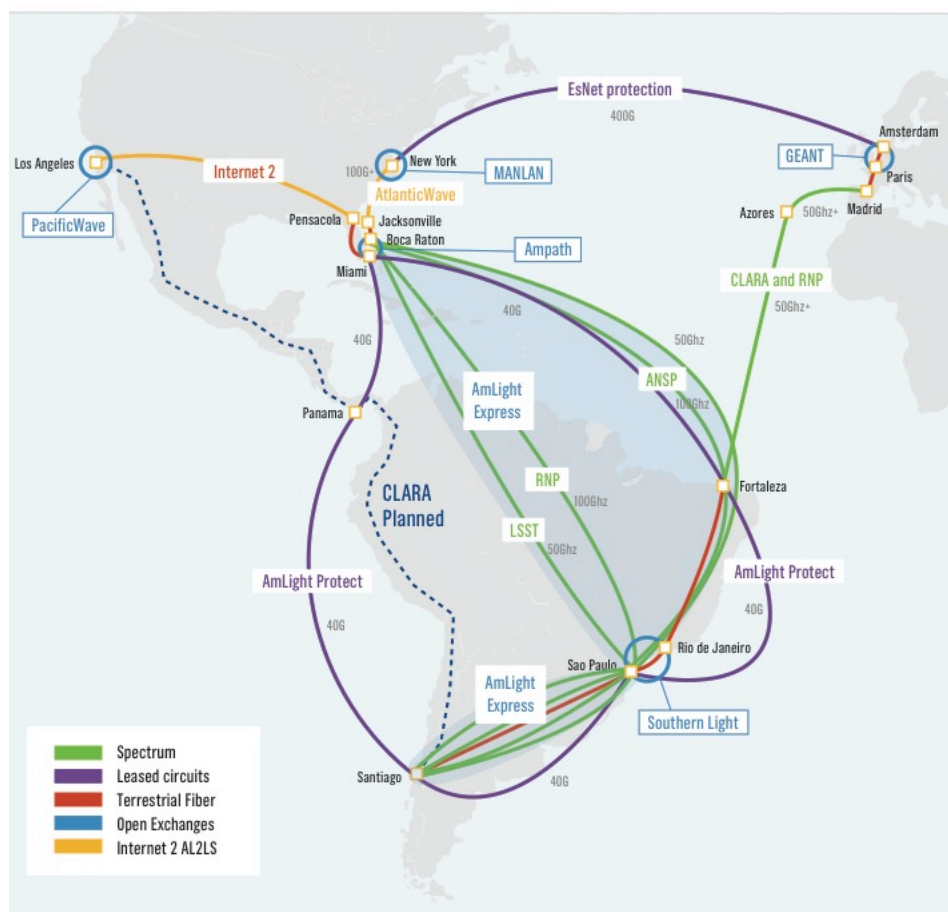
- New submarine cables in the South Atlantic
  - Aggregation in Fortaleza Brazil
    - USA (3)
      - BRUSA
      - Monet
      - Seabras-1
    - Europe (1)
      - EllaLink
    - Africa (2)
      - CBCS, now SAIL
      - SACS
    - S. America (1)
      - Tannat



# 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!**  
**Julio@fiu.edu**