NRAO/NAASC SAACC Update

ALMA/NAASC

David M. Halstead, CIO

Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array

21st Century NRAO

Complementary research facilities under Open Skies policy

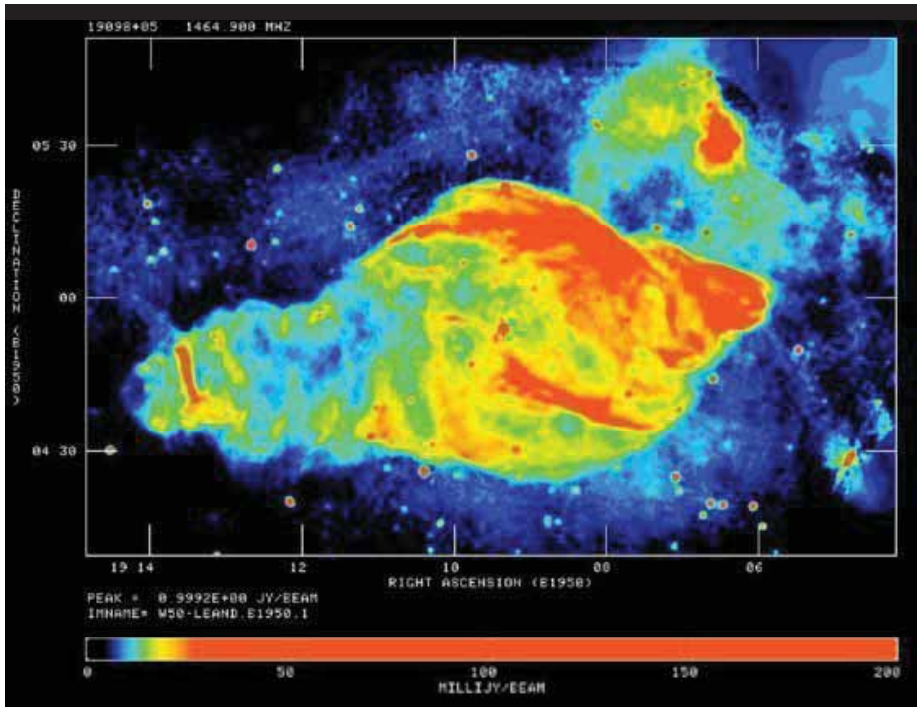
Jansky VLA

GBT

VLBA

ALMA

Radio Imaging: A Revelation



W50 SNR: SS 433 accreting neutron star

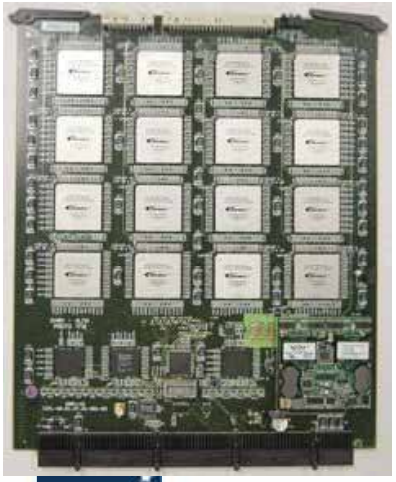
ALMA: High, Dry & Data Rich

Extreme conditions

HPC: ALMA Correlator @ 16,200 feet

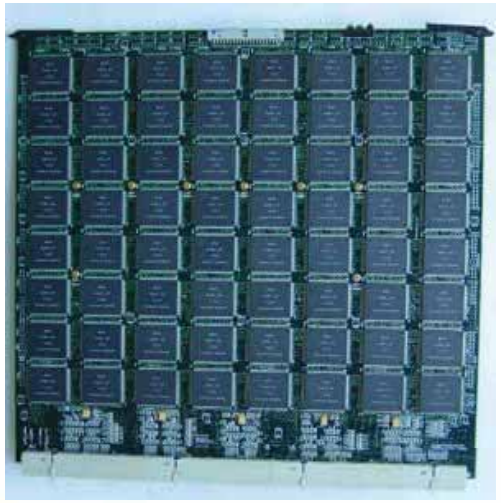
Correlator Quadrant

Tunable Filter Bank Card

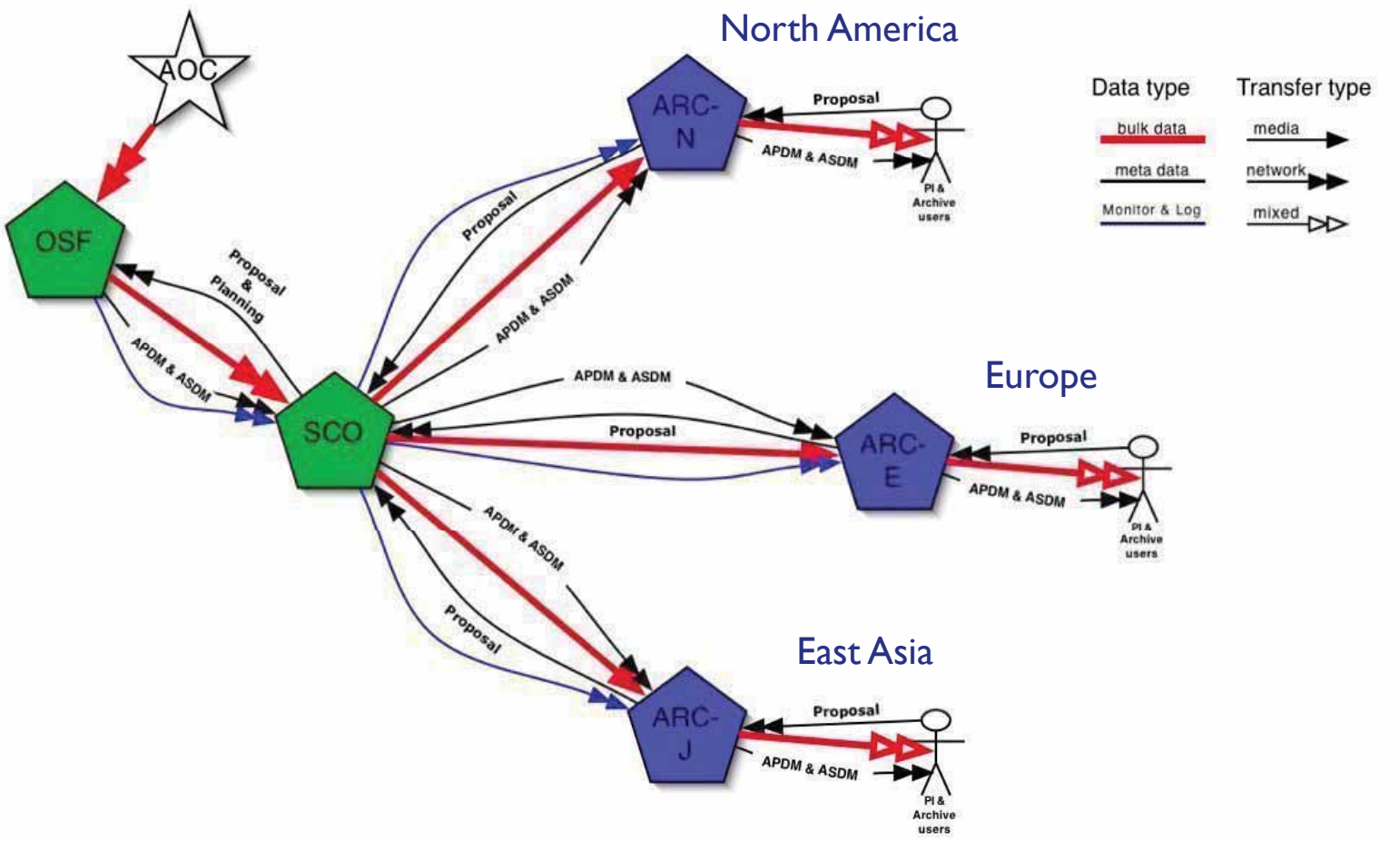


- Receives signals from 50x12m antennae
- 2551 printed circuit boards total in system
- 8192 Altera Stratix II FPGAs on TFB cards
- 32768 custom correlator chips with 4096 processors for multiply-and-add calculations
- Cross-correlation rate 17 Peta ops/sec
- Output specified at 6-60MBytes/sec

Correlator Card



ALMA Data Flow to 3 regions

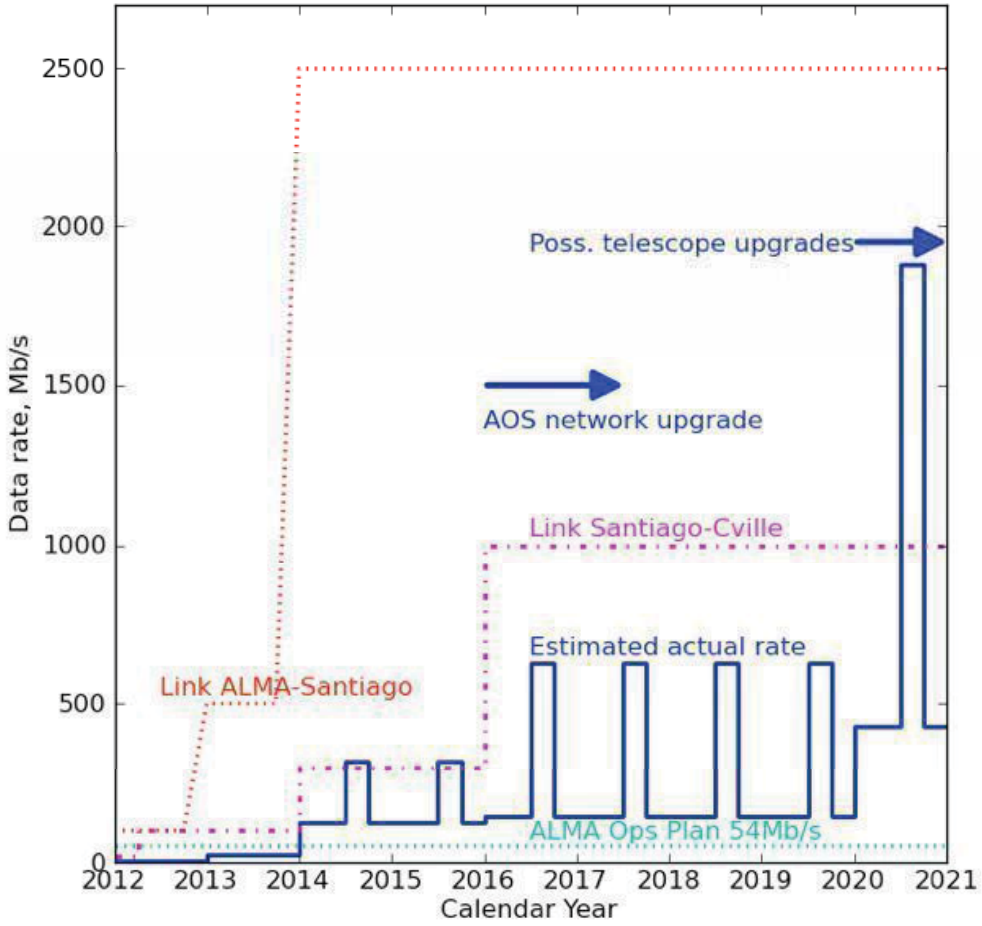


ALMA Data Growth

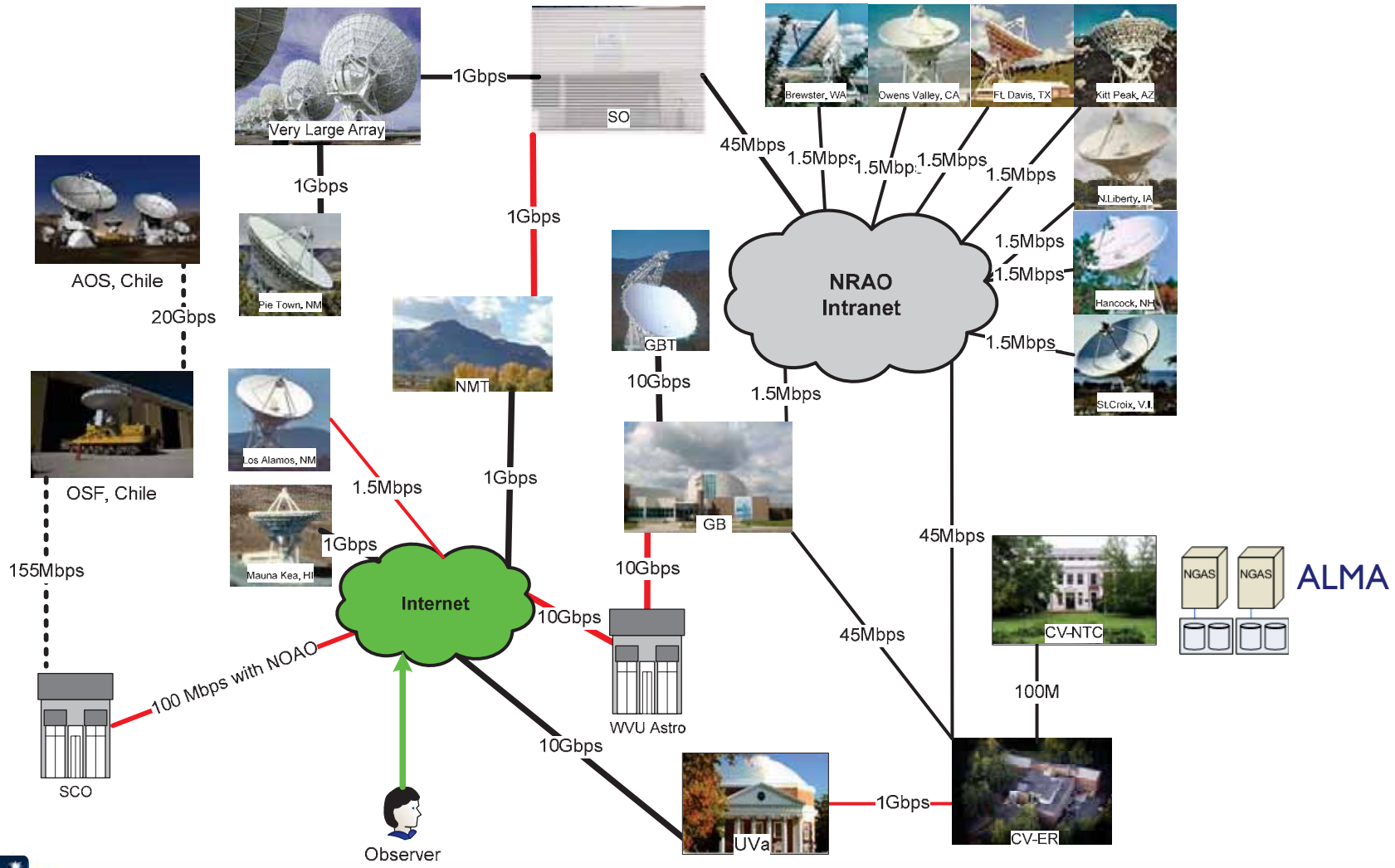
ALMA in Cycle0 now

Call for Cycle 1 happened in July

Start observing in January 2013



NRAO Network Architecture Upgrades



Joint Communication

- Gigabit to Chile:
  - NOAO/AURA
  - ESO
  - REUNA
  - Red CLARA
  - RNP
  - AMPATH
  - Internet2