



**NOAA** NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION  
UNITED STATES DEPARTMENT OF COMMERCE

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**NOAA SCIENCE NETWORK**

**OCONUS Update**

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# Current Network



# N-Wave Design Basics

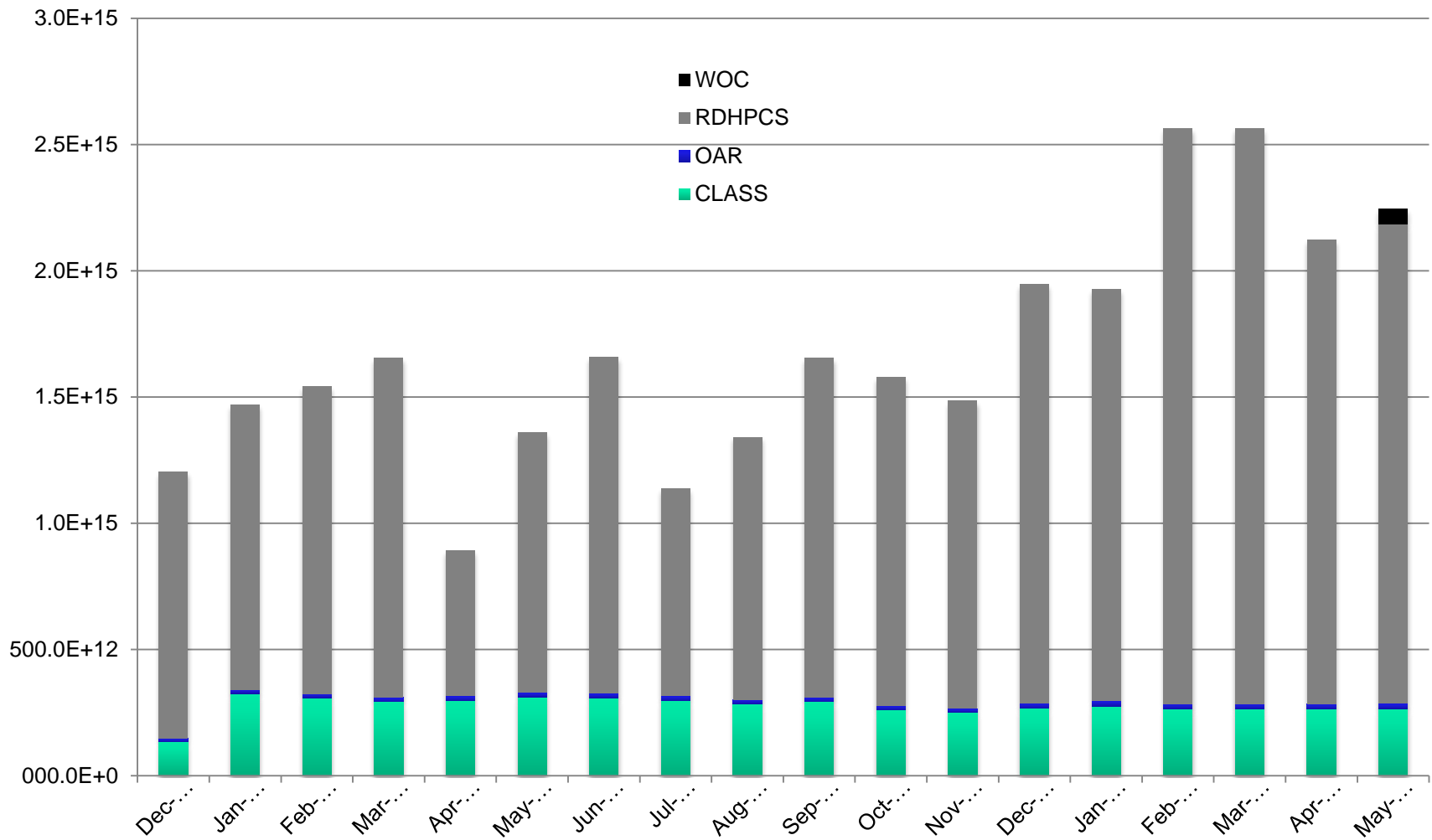
- 10 Gigabit Ethernet / Multi Protocol Label Switched (MPLS) Backbone
- Fully Meshed Dense Wave Division Multiplex (DWDM) waves for backbone circuits
  - Provided by Internet2 and National Lambda Rail
- 1G and 10G backbone access connections
- 100 Gigabit upgrade path

# N-Wave Customer Usage

- R&D High Performance Computing (biggest data)
  - Boulder, GFDL, Fairmont, Oak Ridge
- NESDIS CLASS Archive data (big data)
  - NSOF, NGDC, NCDC, Fairmont
- NOAA-to-NOAA general traffic – NSSL, AOML, Boulder
- NESDIS GOES-R AWIPS, C&C backup
  - Wallops, NSOF, SSMC, IV&V, NESCC
- NESDIS JPSS
  - Product Delivery from Fairmont, NSOF
- NOAA Security Ops Center (SOC) – Fairmont & SSMC
- NOAA Web Ops Center (WOC) – Boulder & DC
- GFDL – Transport to TIC sites for Internet access
- NOAA National Ocean Service sites – Charleston, Sand Point, SSMC



# Traffic Volumes



# Availability

- Network operational on Jan 1<sup>st</sup> 2011
- Core Network - “carrier class”
- Dual connected customers
  - 99.99% or higher Availability (52-week)
- SLAs done with customers if possible or needed.

# N-Wave Value

- High bandwidth (1Gbps-10Gbps) are substantially less expensive than Networx in most cases.
- Secure (TIC) commodity Internet diversity & savings
- Secure cost effective 24x7x365 Network Operations
  - Full A&A (C&A) including background checks
  - Contract based
- Top Tier Network Engineering
- Keeps up with the modern technology edge
  - 10 Gigabit Ethernet now – 40/100 GE in the future
- Predictable network infrastructure
  - Performance
  - Security
  - Transparency of operations

# N-Wave GOES-R Support

- IPv6 MPLS WAN support for GOES-R (S, and T):
- Provide routine data transport of products to AWIPS
- Provide backup connectivity for mission C&C
- Minimum availability of 99.9%
- Sites: Wallops, Fairmont, Silver Spring, Suitland

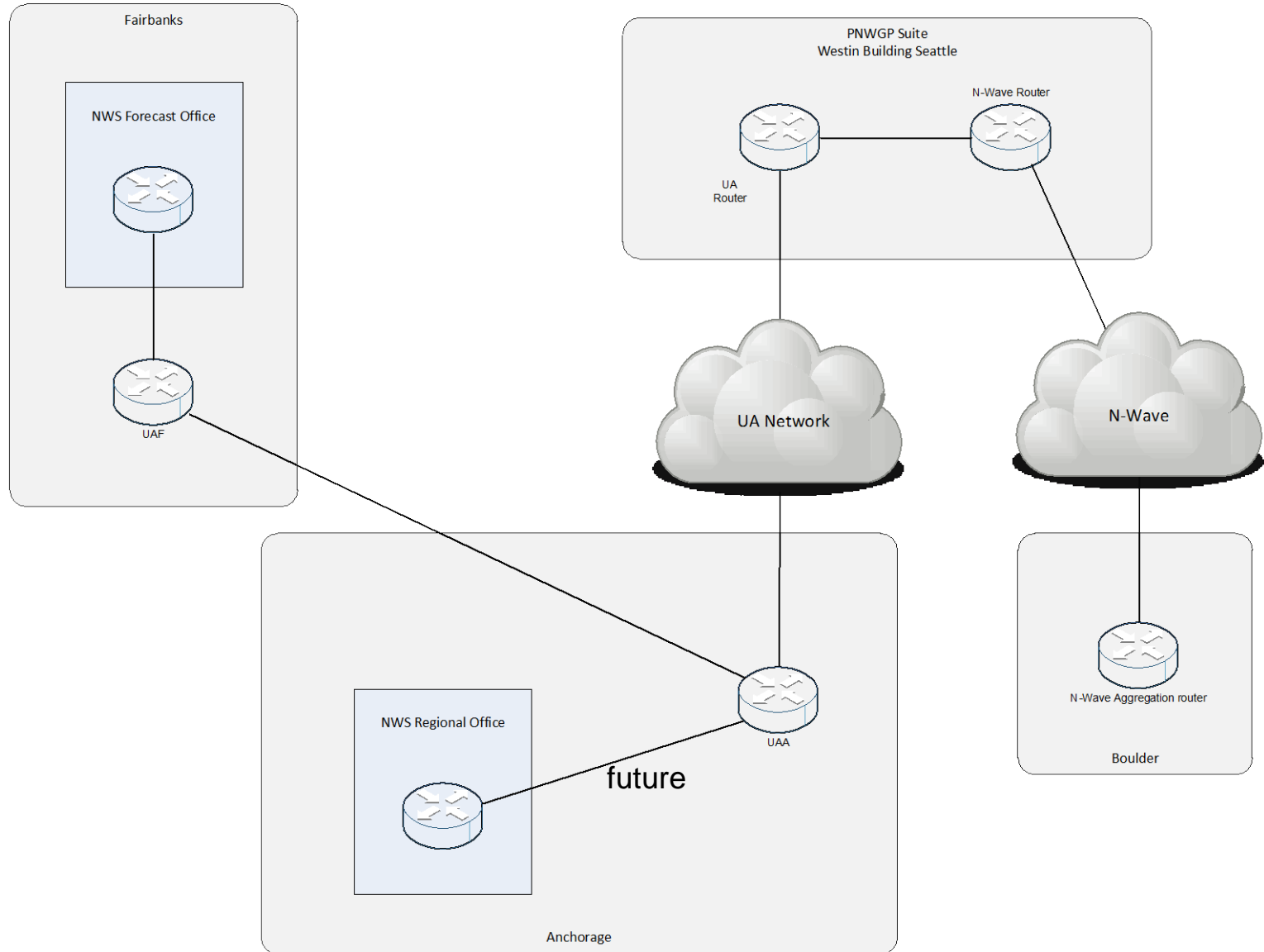




# OCONUS - Hawaii

- One OC-3 (155 Mbps) to Hawaii
  - Terminates into PRC metro-area network, to reach all of NOAA sites, prior to IRC occupancy
  - IRC responsible for MAN
- Options exist for 1 Gbps circuit

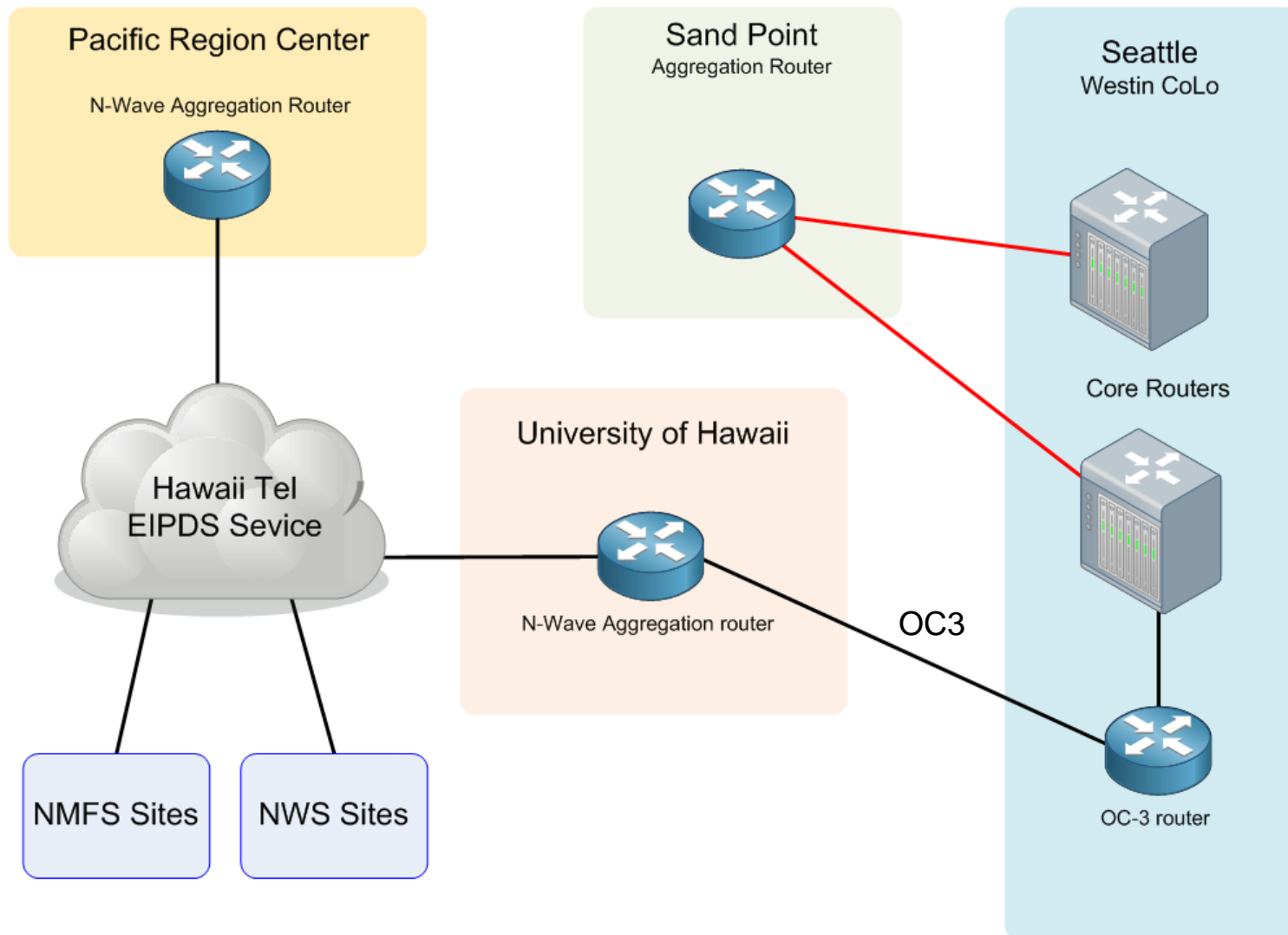
# N-Wave connection to Alaska



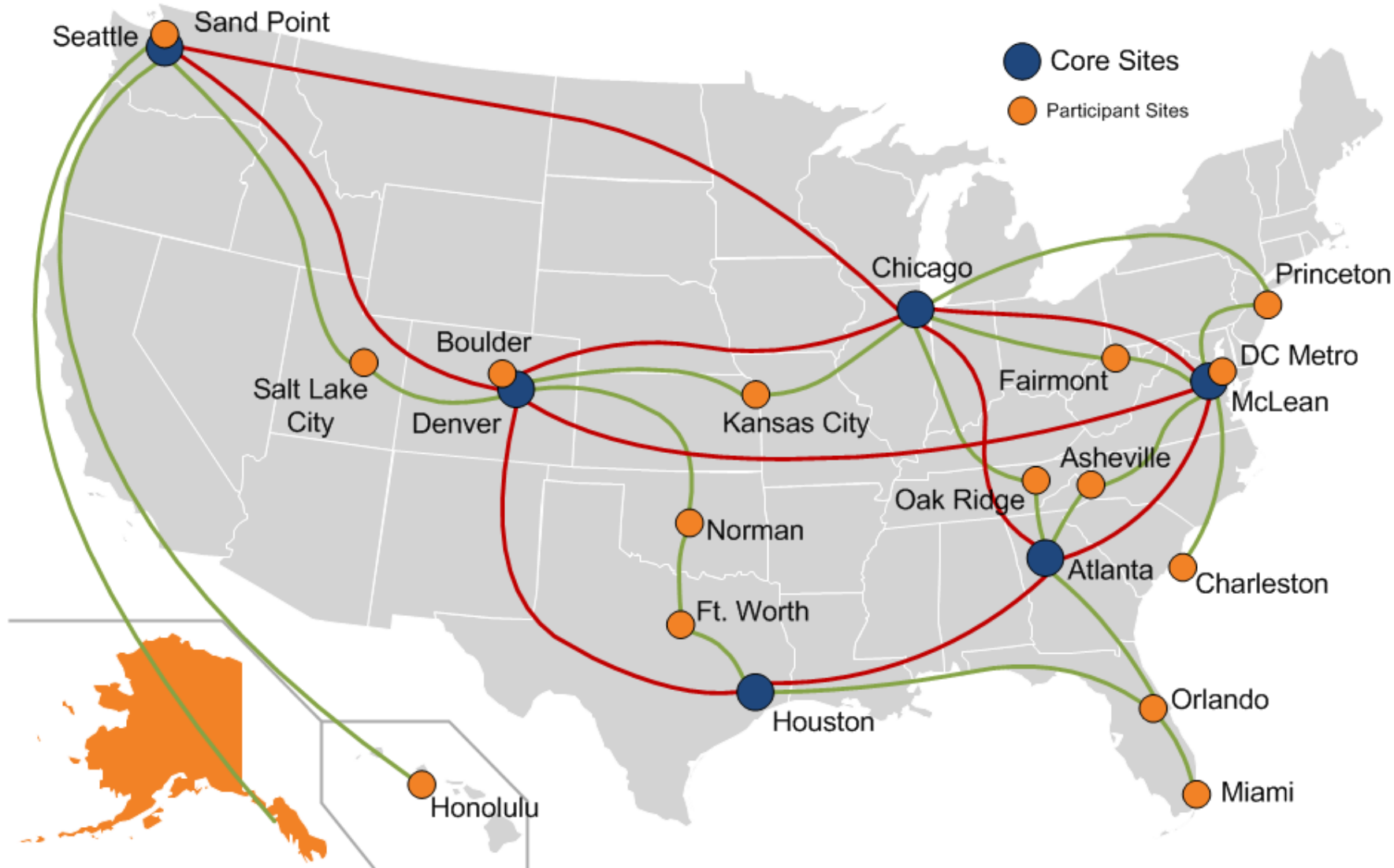
# OCONUS - Alaska

- Peering Boulder with U of AK R&E network in Seattle (over N-Wave)
  - TIC compliant connection
- Investigating NOAA <-> UAK science data flows
  - Models (HRRR, FIM)
  - Satellite products, Level 0 data?

# Hawaii Connectivity



# Future



# Alaska: How can we help?

- Satellite data?
- Model data?
- NOAA: Trusted Internet Connection

# http://noc.nwave.noaa.gov

