

OAR Cloud Services

All of OAR's cloud services are managed centrally, with all accounts administrated from the same FISMA System (NOAA3000). This consolidated system supports all of OAR's mission critical cloud requirements using the enterprise NOAA Cloud Utility contract for services. For the contract # 47QTCA18D006H/1305L419ANAAJ0008/1305M424F0123, OAR is operating Amazon Web Services Cloud Services (Infrastructure, Platform and Software as a Service), Google Cloud Platform (Infrastructure, Platform and Software as a Service), and Amazon Web Services Professional Services (PROSERVE) on behalf of all OAR labs and HQ programs.

These hosting services support OAR's statutory implementation for IIJA, IRA, Weather Act 2017, Global Change Research Act 1990, NIDIS Reauthorization Act of 2018, NDAA 2023

This task order supports many IT services across OAR. The intention with having a consolidated task order such as this is to streamline overhead and other fixed costs to obtain economies of scale across the entire OAR enterprise. These services would have immediate/instant outages/offline in the event of contract cancellation/termination.

- NOAA3000 FISMA System - The previously on-premise infrastructure for NOAA3000 was migrated to Amazon Web Services which consisted of web hosting platforms, custom applications and infrastructure to support HQ and program users.
- OAR HQ WordPress Hosting Platform: These are public facing websites managed on behalf of the hq programs and labs. This includes ALL backups/recovery points. If the Amazon Accounts are terminated, 100% unrecoverable data loss will occur.
 - <https://research.noaa.gov>
 - <https://epic.noaa.gov/>
 - <https://adp.noaa.gov>
 - <https://ci.noaa.gov>
 - <https://oeab.noaa.gov>
 - <https://orta.research.noaa.gov>
 - <https://testbeds.noaa.gov>
 - <https://qosap.research.noaa.gov>
 - <https://oss.research.noaa.gov>
 - <https://eeo.oar.noaa.gov>
 - <https://hub.oar.noaa.gov>
 - <https://sab.noaa.gov>
 - <https://globalocean.noaa.gov>
 - <https://cpo.noaa.gov>
 - <https://seagrant.noaa.gov>
- OAR HQ Custom Application Hosting Platform:
 - <https://researchprojects.noaa.gov>
 - <https://pier.seagrant.noaa.gov>
 - <https://apps.research.noaa.gov>
- OAR Lab Cloud Major Identified Workloads:

- WPO - EPIC Program - 1 AWS Account
 - The entire EPIC infrastructure stack runs on OAR AWS.
 - JIRA/Confluence
 - Sonarcube
 - Jenkins
 - EPIC Wordpress Site for collaboration (Hosted within boundary by EPIC team)
 - AWS workload for modeling, sandbox, and development for EPIC program. All these services run within the NOAA 3000 boundary on the OAR AWS account. Termination of the contract will directly impact the collaboration with the public for forecasting.
- NSSL - 2 AWS Accounts
 - MRMS in Amazon Web Services (Approx 227 EC2 instances, 486 EBS volumes, 909.5TB S3 storage) This service is running the modelings in AWS of North American (minus Mexico) radar units for forecasting.
 - Supporting infrastructure for the MRMS and other AWS projects for NSSL.
- GSL - 3 AWS Accounts
 - [DESI hosted within GSL AWS](#)
 - Fire Weather Testbed / AWS Appstream - This project was with BLM for forecasting wildfires.
 - VX Capella Evaluation / Couchbase Capella DB as a Service
 - NODD Testing (S3 and AWS Parallel Cluster) - Testing data path for HPC use cases and egress
 - EKS Cluster (Kubernetes) for scientific workloads (container compute service)
- PMEL - 2 AWS Accounts
 - Plotly Dash Server (Visualizations powering - <https://viz.pmel.noaa.gov/> run on OAR AWS - The NOAA Observing System Monitoring Platform, OceanSITES Air-Sea Fluxes, Long TimeSeries, Saildrone Mission data and Saildrone Hurricane Monitoring data visualizations)
 - Kubernetes (AWS ECS) for clustering in AWS. Container platform for lab workloads.
- ARL - 2 AWS Accounts
 - [NACC in the cloud service and supporting dataset.](#)
 - NACC HPC using AWS Parallel Cluster and S3 storage
- PSL - 2 AWS Accounts
 - AWS Database as a Service --> Collaboration and storage of scientific datasets for HPC processing
- AOML - 2 AWS Accounts
 - Cloud sandbox for piloting/testing of cloud native technologies to support AOML's mission
- GLERL - 1 AWS Accounts

- Cloud sandbox for piloting/testing of cloud native technologies to support GLERLs mission.
- WPO -1 AWS Account
 - Societal Data Insights Initiative (SDII) project support - Building and hosting the Integrated Societal-data Platform for Interdisciplinary Research and Evaluation (InSPIRE). Provides a shared processing, collaboration and storage environment for modern cloud computing of scientific datasets. AWS SageMaker + AWS DataZone.
 - SDII project web data portal (hosted on Wordpress with plugins)
- OAR HQ Development Sites (Sites we are hosting on behalf of labs for development purposes - They are not publicly available but outage will impact their project work)
 - <https://aoml.dev.oarcloud.noaa.gov>
 - <https://glerl.dev.oarcloud.noaa.gov>
 - <https://socalinsights.dev.oarcloud.noaa.gov/>
- OAR HQ Shared Services
 - OAR Single Sign on Portal for Applications using AWS Cognito (This enables OAR custom applications to leverage enterprise SSO for identity while managing user access/attributes at the application level)
 - All production wordpress sites
 - All development wordpress sites AND development custom applications (SDII)
 - Development integration with Login.gov (impact to stop that project work for making login.gov a scalable service across OAR)
 - OAR Domain Name Service (DNS) - Route 53 All services with dependencies on these DNS records will have impact (sites will not load and services with dependencies will not operate)
 - adp.noaa.gov
 - eeo.boulder.noaa.gov
 - ci.noaa.gov
 - cpo.noaa.gov
 - globalocean.noaa.gov
 - iuufishing.noaa.gov
 - library.noaa.gov
 - eeo.oar.noaa.gov
 - hub.oar.noaa.gov
 - oarcloud.noaa.gov
 - oeab.noaa.gov
 - research.noaa.gov
 - orta.research.noaa.gov
 - oss.research.noaa.gov
 - researchprojects.noaa.gov
 - sab.noaa.gov
 - seagrant.noaa.gov
 - testbeds.noaa.gov

- wpo.noaa.gov
 - OAR Shared Cloud Networking (Interconnect, transport, security) - The following AWS Cloud Accounts have interconnections to the OAR Cloud Transit Gateway (AWS Hyperscale Routers) and the connection to inherit NWAWE transport and NOAA Cyber TICAP services.
 - All OAR AWS Accounts (28)
 - PMEL interconnects for IoT use case (Drone to AWS IoT Service)
 - GSL interconnects for Fire weather testbed service (US-East-2 TGW)
 - OAR HQ On-Premises (VRF)
 - AWS Certificate Manager - ACM - OAR HQ transitioned away from using Digicert for SSL certificates to using AWS managed/issued certificates. Noting that terminating this contract will require OAR to go out and seek a new Digicert or public key infrastructure certificate provider contract. Currently NOAA cyber requires publicly validateable certificates for all interconnections. We are able to obtain certificates inexpensively through AWS on the infrastructure we are hosting.
- OAR HQ Security Services
 - Invicti Enterprise on demand (50 sites) - This is a vulnerability toolset that complements NOAA vulnerability scanners to proactively identify vulnerabilities and reduce the total time to resolution earlier in the development process. Currently scanning all sites before moving to production and regularly scanning live sites for new vulnerabilities. This service is used within and outside of the AWS environment allowing scanning on any OAR web service/site.
 - AWS Inspector - This is another vulnerability toolset that compliments NOAA vulnerability scanners to proactively identify vulnerabilities in both development and production workloads. This service scans/supports all AWS deployed web sites.
 - AWS SecurityHub - This is another shared service across all OAR cloud accounts to meet enterprise security requirements around the consolidation, logging, and response to security issues (from vulnerabilities to active threat mitigation and response) This service is deployed across all OAR cloud AWS accounts.
 - NOAA 3000 supporting security infrastructure. BigFix/FireEye/McAfee databases and forwarding servers. All previous infrastructure that was on-prem was migrated to Amazon Web Services. If the contract is terminated, all the infrastructure and corresponding backups will be lost.
 - NOAA 3000 is hosting a pilot for HCL on-demand code and site scanning in AWS. This service leverages the HCL licensing at the department level. Impact if AWS is terminated, we would need to house this infrastructure somewhere else to be able to continue building out that scanning/security capability.
 - NOAA 3000 operates AWS control tower / AWS organizations for policy inheritance and compliance with NIST SP 800-53-r5 control sets.
- OAR HQ Identity / Control Plane management Services

- OAR HQ Active Directory Domain Controllers are deployed within AWS HQ Prod Account. If AWS accounts are terminated, it will lose full access to HQ Directory/Domain administration. User attributes, permissions and security rules/policy for the domain are stored in the Domain Controllers.
- OAR HQ uses AWS Systems Manager for management and maintenance of virtual computing. These services operate within AWS natively allowing us to patch, harden and manage virtual resources.
- OAR HQ is hosting a pilot for Login.Gov integration with AWS Cognito using MiniOrange SSO identity broker. This pilot is to enable public access to cloud based resources primarily for the EPIC program but then for other OAR use cases.
- AWS Professional Services
 - NOS - IOSS program needed AWS units and we used our contract to help them acquire them. They have 5 active ProServe units right now (200 hours) of labor to support their integration of AWS with OKTA for login.gov authentication.
 - OAR HQ and programs have 2 active units of ProServe right now (80 hours) of labor remaining to support production issues and advisory services for HQ projects and programs.
- Other systemic organizational impacts:
 - OAR OU due to our research and development requirements often requires adjustments to AWS policy applied via AWS organizations. OAR tests and deploys policy within our OU and provides it to WOC for consideration for other NOAA line offices / customers. (If OAR stops incrementally improving the governance for the organization there will be long term issues)
- NESDIS Impacts:
 - The NOAA-wide [Google Earth Engine](#) contract, which is part of a fixed-price CLIN on the contract.
 - Drought.gov, led by OAR-NIDIS in partnership with NESDIS' National Centers for Environmental Information (NCEI), uses Google Earth Engine to run a NIDIS instance of the Climate Engine API (api.drought.gov), which operationally produces products used in the maps and statistics on [Drought.gov](https://drought.gov).
 - The Drought.gov team has prototyped accumulation products from MRMS, and selenium-based map product which are used operationally by the NWS for Drought Information Statements.
 - The [Industry Proving Ground IPG\) project](#) at NESDIS-NCEI. NOAA's IPG is an innovative effort to develop and share actionable climate information and improve the delivery of that information to industry partners. The IPG connects major U.S. industries with NOAA products, services, and actionable extreme weather and climate data to better assess risks and opportunities. The IPG will connect these industries with environmental data to build a more resilient future for our nation, economy, and communities. Similar to Drought.gov, the IPG project uses Google Earth Engine to run an IPG instance of the Climate Engine API

(climate-engine-api.ncei.noaa.gov), which operationally produces products used in the maps and statistics for NOAA's industry partners.