Standard Operating Procedure (SOP) for Providing Cloud Resource Accounts to Researchers

1. Purpose

This SOP outlines the process for providing cloud resource accounts to researchers within the consortium to support their work on water modeling technology related to NextGen. The goal is to ensure consistent, efficient, and secure access to cloud resources.

2. Scope

This SOP applies to all researchers affiliated with the consortium who require cloud resource accounts for their water modeling research.

3. Roles and Responsibilities

- **Cloud Administrator:** Responsible for managing cloud infrastructure, provisioning accounts, and ensuring compliance. Monitor resource utilization and optimize costs. – CIROH DevOps Engineer

- **Cloud Architect :** Review and approve budget for cloud resources. – CIROH Assistant Director of IT and DevOps

- **Cloud support team** - CIROH DevOps Engineer
- **Researcher:** The individual requesting cloud resources for their research. Provide justification for resource needs and submits resource allocation requests.

4. Request Process

1. **Submission of Request:** Researchers should submit an infrastructure request form to the Cloud Administrator, providing the following information:
    - Name
    - Affiliation
    - CIROH project number
    - Research project title, description
    - Specific cloud resources required (e.g., AWS/Google Cloud, virtual machines, storage, networking)
    - Estimated resource usage
    - Justification for the request
2. **Review and Approval:** CIROH IT head and CIROH Director will review the request to ensure it aligns with the consortium's research goals and resource allocation policies. If approved, the Administrator will proceed with provisioning the requested resources.

5. Account Provisioning

1. **Account Creation:** The Cloud Administrator will create a new cloud account for the researcher, following the consortium's security and compliance guidelines.
2. **Resource Allocation:** The requested resources will be allocated to the account based on the researcher's needs and available resources.
3. **Access Provisioning:** The Cloud Administrator will provide the researcher with the necessary credentials (e.g., username, password, API keys) to access the cloud account.
4. Cloud Admin passwords: The CIROH Admin and Architecture will keep track of Admin passwords in UA recommended password management tool “Keeper”.

6. Account Management

- **Usage Monitoring:** The Cloud Administrator will monitor resource usage to ensure compliance with allocation limits and identify potential issues.
- **Security Updates:** The Cloud Administrator will regularly update the cloud environment with best practices.
- **Account Deactivation:** If a researcher's project is completed or the account is no longer needed, the Cloud Administrator will deactivate the account to prevent unauthorized access.

7. Support and Troubleshooting

- **Helpdesk:** Researchers can contact the consortium's IT helpdesk for assistance with cloud resource issues or questions.
    - Bimonthly AWS office hours are conducted by Cloud Architecture and Admins. https://docs.ciroh.org/docs/products/ngiab/office-hours

- Software Installation on JupyterHub Images: A form is available for the software installation on CIROH’s JupyterHub.
- **Training:** The consortium may provide training sessions or documentation to help researchers effectively utilize cloud resources.

8. Compliance and Security

- **Compliance:** All cloud activities must adhere to the consortium's data privacy, security, and compliance regulations.
- **Security Best Practices:** Researchers are responsible for following best practices to protect their cloud accounts and data, such as using strong passwords, enabling two-factor authentication, and avoiding sharing credentials.

    o AWS best practices are available here.

9. Acknowledgement for papers using CIROH Cyberinfrastructure:

For presentation and papers:

For AWS Resources

"This research utilized AWS resources managed by CIROH Cyberinfrastructure, supported by the Cooperative Institute for Research to Operations in Hydrology (CIROH) with funding under award NA22NWS4320003 from the NOAA Cooperative Institute Program. The authors appreciate support from the CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

For GCP Resources

"This research utilized Google Cloud Platform (GCP) resources managed by CIROH Cyberinfrastructure, supported by the Cooperative Institute for Research to Operations in Hydrology (CIROH) with funding under award NA22NWS4320003 from the NOAA Cooperative Institute Program. The authors appreciate support from the CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

For CIROH-2i2c JupyterHub Resource:

"This research utilized Google Cloud Platform (GCP) resources and CIROH-2i2c services managed by CIROH Cyberinfrastructure, supported by the Cooperative Institute for Research to Operations in Hydrology (CIROH) with funding under award NA22NWS4320003 from the NOAA Cooperative Institute Program. The authors appreciate support from the CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

For poster:

For AWS Resources

“This research utilized AWS cloud computing resources managed by CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

For GCP Resources

“This research utilized Google Cloud Platform (GCP) resources managed by CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

For CIROH-2i2c JupyterHub Resource:

"This research utilized Google Cloud Platform (GCP) resources and CIROH-2i2c services managed by CIROH Cyberinfrastructure team. Learn more: https://docs.ciroh.org/docs/services/intro"

10. **Appendix**

Additional details that support the main content of the SOP will be linked or explained in this section.

10.1 **Definitions**

- SOP: Standard Operating Procedure
- CIROH DevOps Team: DevOps Team at CIROH
- Consortium: A group of universities collaborating on water modeling research
- UA - The University of Alabama
- Provisioning: The process of setting up IT infrastructure

10.2 **References**

- [Link to Cloud Access Request Form]
- [Link to JupyterHub's Software Installation Form]
- [Link to CIROH's AWS documentation]
- [Link to CIROH's Google Cloud documentation]
- [Link to CIROH's JupyterHub documentation]
- [Link to CIROH JupyterHub and HydroShare integration]
- [Link to AWS's best practices]

11. **Approval and Revision History**

Date	**Approved By**	**Changes Made**
9/17/24	Arpita Patel	Initial SOP Creation
9/23/24	Arpita Patel	Reformatted structure and updated contents
10/25/2025	Arpita Patel	Added responsible member name

11/25/2025	Arpita Patel	Updated approval process and added CIROH project number in IT request form
12/9/2025	Arpita Patel , Steve Burian	Updated Acknowledgment for CIROH IT usage