



Big Blue Cloud: Empowering Data Science for the Ross Sea Region Marine Protected Area (RSRMPA)

Overview: The Big Blue Cloud, developed by Ocean Motion Technologies (OMT), is a cloud-based data science open platform designed to support the research and management needs of big ocean data. Leveraging cutting-edge data integration and analysis capabilities, the platform aims to facilitate informed decision-making, enhance conservation strategies, and foster international collaboration among key stakeholders.

Platform Capabilities: The Big Blue Cloud offers a robust suite of features that ensure comprehensive data management and analysis:

- **Data Ingestion and Management:** Supports a wide range of oceanographic datasets, including satellite remote sensing (e.g., MODIS, PACE, VIIRS), in-situ observations, and model outputs. Data is hosted through a repository and with collaborating partners, providing version control, access management, and data traceability.
- **Public Data Catalog:** Enables researchers to access a variety of public datasets and generate custom data products using intuitive querying tools. This catalog supports international collaboration by allowing users to share data across different organizations.
- **Advanced Analytics and Visualization:** Users can create interactive dashboards and visualizations, integrating datasets across spatial and temporal scales to support conservation decision-making. Dynamic filters and multi-dataset support allow for customized data analysis.
- **Automated Machine Learning (AutoML):** The platform's AutoML capabilities streamline complex analyses, enabling users to uncover insights into ecosystem dynamics. This tool supports the identification of key environmental drivers, facilitating more effective monitoring and management of the MPA.

Current Use Cases: The Big Blue Cloud is actively used for NASA Earth Action and Citizen Science projects, as well as for the RSRMPA Initiative. Notably, during a recent Ross Sea Catalyst Meeting (co-led by collaborators from New Zealand), the platform was successfully deployed to support data synthesis and analysis in real time. This enabled productive discussions among scientific representatives from the U.S., New Zealand, Italy, and South Korea, validating the platform's role in supporting the MPA's long-term conservation goals.

Next Steps and Collaboration Opportunity: We invite input from CCAMLR member states and other stakeholders to further refine and expand the capabilities of the Big Blue Cloud for the RSRMPA. A dedicated working group led by Ocean Motion is ready to engage with researchers and policymakers to tailor the platform to meet regional needs. We propose a collaborative discussion to align the platform's functionalities with the specific data requirements from RSRMPA and the broader CCAMLR community.

For more information or to schedule a call, please contact:

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