



**STATE INSTITUTION
NATIONAL ANTARCTIC
SCIENTIFIC CENTER**

Ministry of Education and Science of Ukraine

Toward Interoperable and Globally Integrated Open Science in Antarctic Research through Standards and Identifiers

National Antarctic Scientific Center of Ukraine

Azores 2026

Antarctic Research & Data

Main challenges

- Data loss & fragmentation
- Technology changes
- Need for global use

What is needed

- Standards (metadata)
- Persistent IDs (DOI, ORCID, ROR)
- Open & interoperable systems

Goal

→ Reliable, accessible, globally integrated Antarctic data

Antarctic Research & Data (NASC)

Why data matters

- ▶ Antarctic science = long-term data (40–50+ years)
- ▶ Climate, ice, ecosystems need continuous observation

Role of NASC (Ukraine)

- Collects and stores Antarctic data
- Supports Ukrainian Antarctic station
- Ensures data quality over decades

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Antarctic Research as a Long-Term Resource

What data we use:

- Weather observations
- Ice cores (past climate)
- Atmosphere (ozone, gases)
- Ocean & ecosystems

Why it matters:

- Shows climate change over time
- Helps global science

Challenges:

- Data gaps, equipment changes
- Staff rotation, funding issues



Antarctic Treaty & Open Science

- 1959: Antarctic Treaty

Main idea:

- Science should be open and shared

What countries agreed:

- Share data and results
- Exchange scientists
- Inform about research plans

Why it is important:

- Cooperation instead of competition
- Data available for all



Why Open Science is Necessary

Why open science is needed:

- New scientists use old data
- Many countries & stations → need common rules
- Harsh conditions → data can be lost

What helps:

- Open access to data
- Shared standards & formats
- Data stored in many places

Result:

→ Data is safe, understandable, and usable worldwide



Model for NASC: Data & Identifiers

1. Use Identifiers



DOI for
datasets



ORCID for
researchers



ROR for
institutions

2. Apply Metadata Standards



CERIF - for structured,
interoperable records

3. Connect to Global Systems



OpenAIRE



DataCite



SCAR



OpenAIRE, DataCite, SCAR

Benefits



Clear links between data,
researchers, and institutions



Reduced
manual work



Improved visibility
and discoverability

Goal: → Build an integrated, modern, and interoperable data system



International Data Governance Models

1



- Countries have **national data centres** (Australia, USA, UK)

2



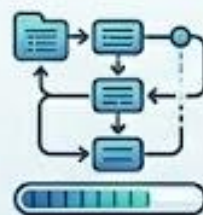
- What they do: Store and share Antarctic data
- Support long-term data use

3



- How it works: **Open Data policies**

4



- How it works: **Data Management Plans (DMP)**

5



- How it works: **Clear data submission rules**

6



- Tools: **DOI, ORCID, ROR**
- Common metadata standards

Key idea: → Strong systems = better global cooperation



Practical Recommendations for NANC

1



- Adopt official **Data Policy** + Data Management Plans (DMPs)

2



- Create or connect to a dedicated **repository**

3



- Use persistent **identifiers**: DOI, ORCID, ROR

4



- Define clear **access & embargo** rules

5



- Participate in **SCAR metadata** initiatives

6



- Align with **FAIR** principles

Goal: → Open, standardised, and internationally visible data



Conclusions



Antarctic research needs openness, standards, and FAIR practices.



Long-term data must be documented, identified, and standardized.



NANC can join global systems and collaborations.



Open science makes Ukrainian Antarctic research visible and reusable.

**Key idea: → Open and standardised data =
= strong, internationally recognized research**

