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## Canary Islands data cEnter for astronomical Observations and Simulation (CIELOS) Data Management Plan

The OCAN hosts multiple facilities from many institutions, each distributing the data according to its data management and distribution policy.

Action A17 OCAN/S3: *Enhancing the data archive and management of the OCAN (CIELOS)* represents an effort from IAC to distribute data from our facilities and from our TAC time to the broader astronomical community in a way consistent with best practices adopted at other world-class observatories.

The CIELOS Data Management Plan Table of Contents (to be developed) is:

1. Description of Data
  - a. Provenance.
  - b. Data Level (see below).
  - c. Data Integrity (accuracy, consistency, and completeness).
  - d. Formats and standards for data (FITS, CSV, JSON, others).
2. Data Collection and Documentation
  - a. Methods for data collection and generation.
  - b. Metadata standards describing and documenting the data (observation times, instrument or code, configurations, weather conditions, data quality metrics, seeing, extinction, etc.).
  - c. Calibration data.
3. Storage and Backup
  - a. Storage solutions: cloud storage vs. institutional servers.
  - b. Backup strategies: frequency of backups, locations.
  - c. Security: Policies.
4. Ownership and acknowledgements
  - a. Ownership and intellectual property.
  - b. Proprietary periods.
  - c. Publications.
  - d. Compliance with OCAN Users Institutions' policies.
  - e. Compliance with Virtual Observatory policies.
5. Data Sharing and Access
  - a. Open access and restricted access (Globus, etc.).
  - b. Institutional Repository.
  - c. Public databases.
  - d. Licensing and intellectual property.
6. Long-term Preservation
  - a. Data archiving and preservation.



- b. Repositories responsible for long-term storage.
- 7. Roles and Responsibilities
  - a. Designation of individuals and responsibilities.
  - b. Helpdesk.
- 8. Tools and Software
  - a. Tools used for data collection.
  - b. Tools for data analysis.
  - c. Open-source pipelines.
  - d. Software compatibility, versioning, and re-distribution.

Definition of data levels:

Level 0: Raw, uncalibrated images of astronomical sources as a function of space, time, wavelength and polarization.

Level 1: Images that have been calibrated to remove the characteristics of the instrument and observing environment.

Level 2: Images that have been processed into physical quantities such as Doppler velocity; temperature; etc. and mapped onto properly defined coordinates.

Level 3: Products derived by combining Level 2 data.