



The Italian Antarctic Data Center at INGV (IN31B-0795)

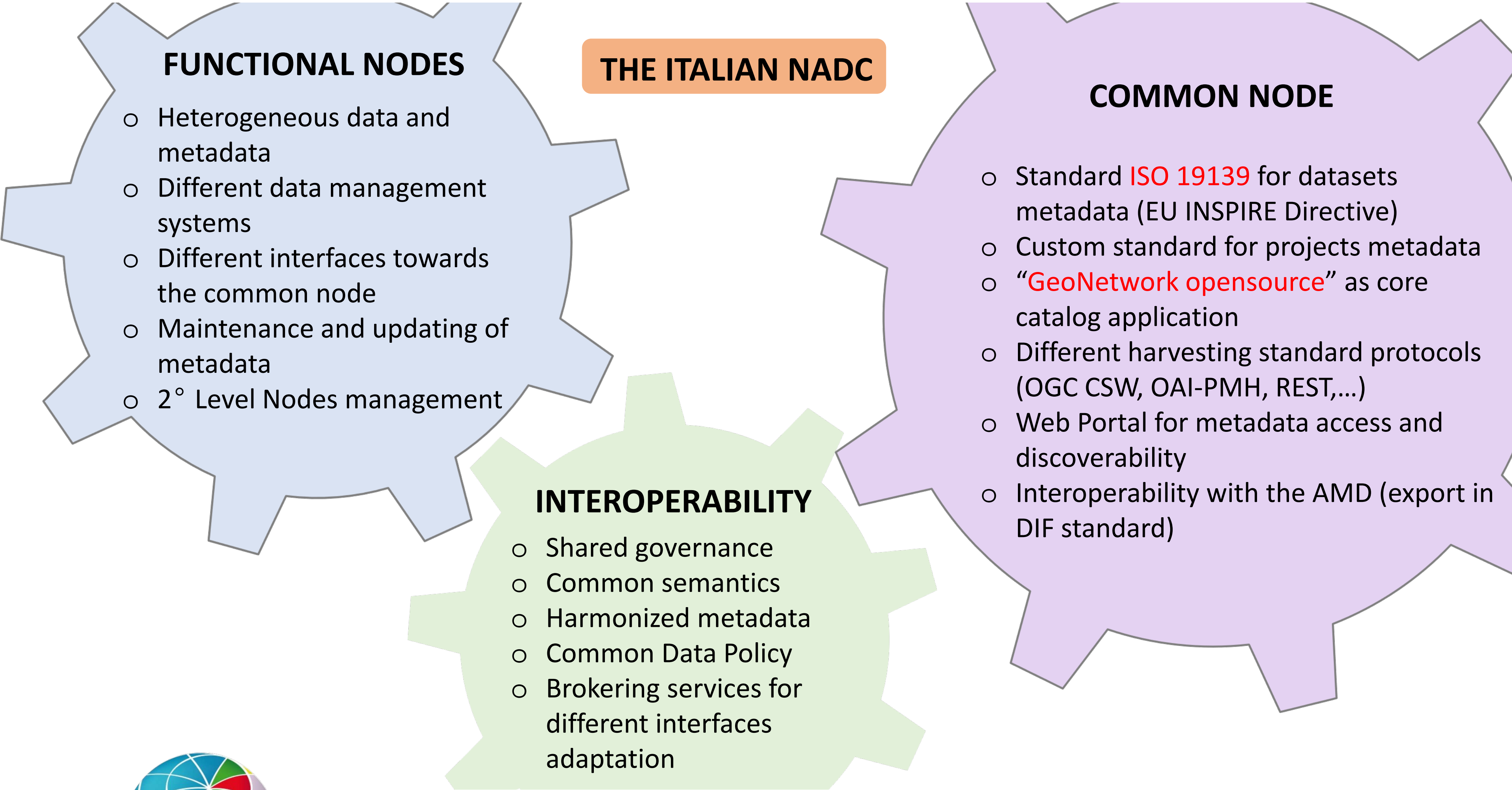
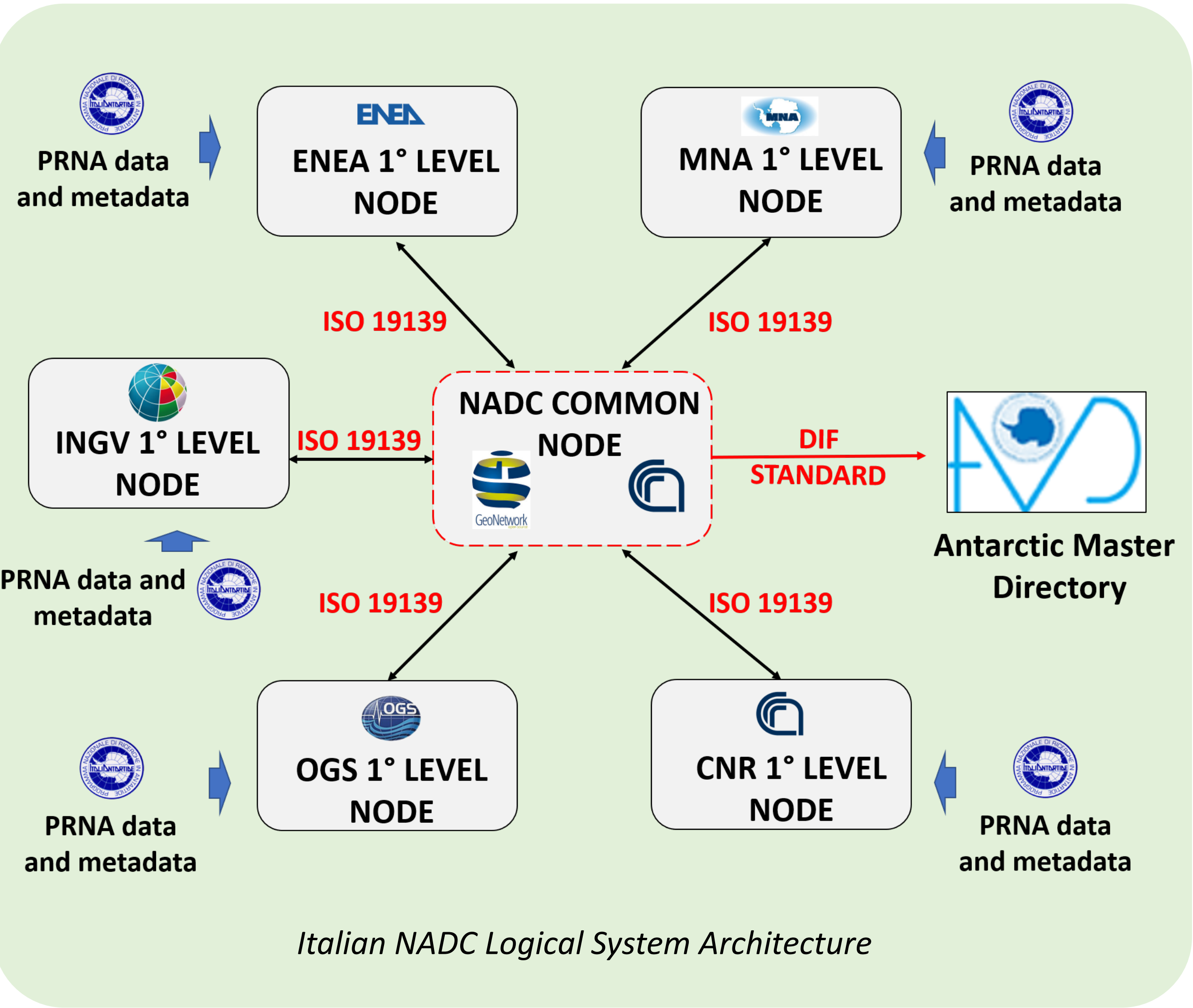
Emanuele Pica¹, Paolo Bagiacchi¹, Vincenzo Romano^{1,2}, Domenico Di Mauro¹, Claudio Cesaroni¹, Carlo Marcocci¹, Simona Longo³, Alberto Salvati³

¹ Istituto Nazionale di Geofisica e Vulcanologia, Roma, IT ²SpacEarth Technology Srl, Roma, IT ³ Consiglio Nazionale delle Ricerche, Roma, IT

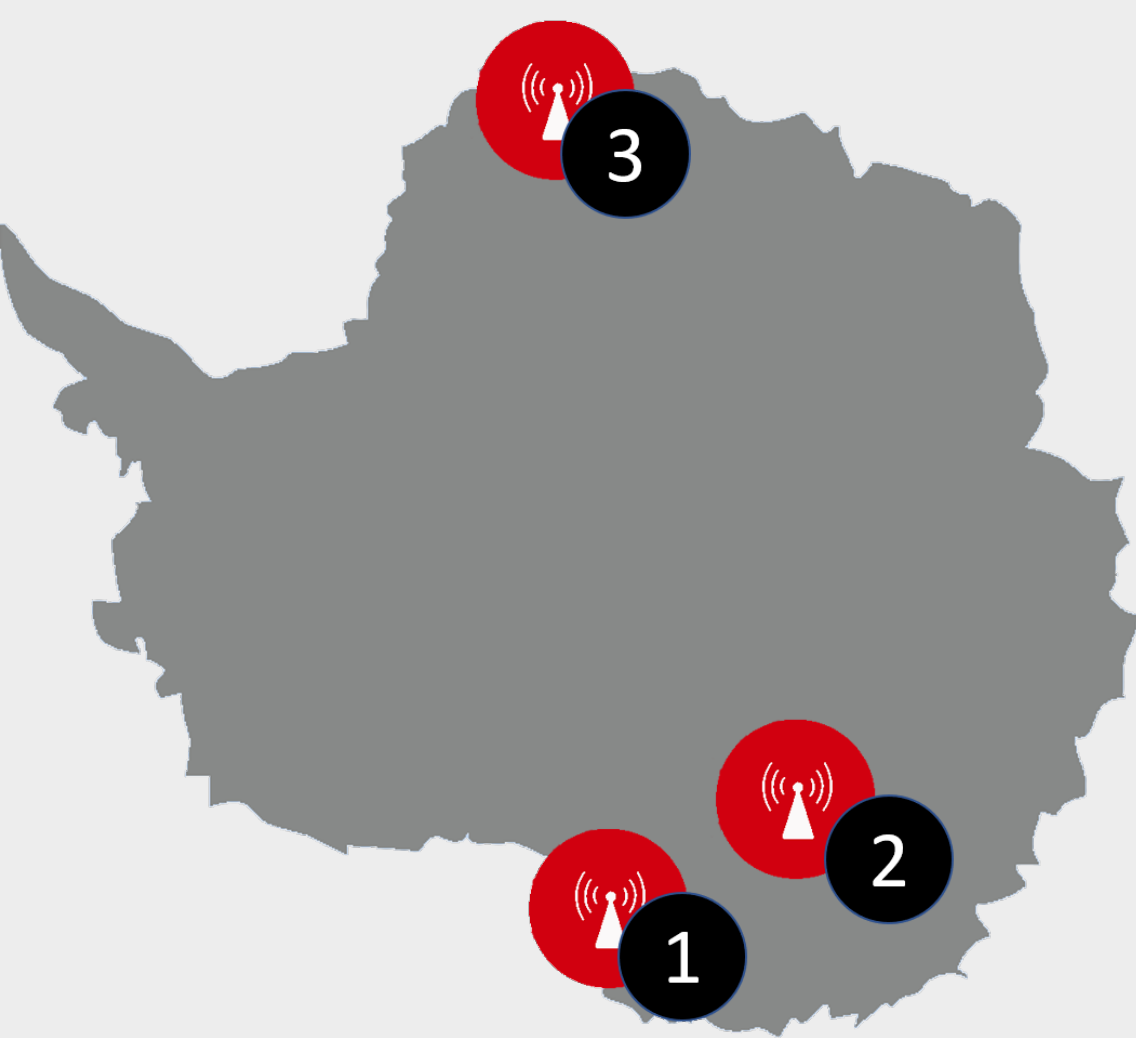


ABSTRACT

The National Antarctic Data Center (NADC) is the ICT infrastructure designed to gather, handle, publish and provide access to the large amount of scientific data collected by several projects in the framework of the Italian Antarctic National Research Program (PRNA). Aim of the infrastructure is to provide a single integrated system that allows the final users to easily access and share data wherever they are stored. The architecture is based on a System-of-Systems (SoS) concept: a set of systems (functional nodes) interconnected together with each other by means of mediation and adaptation services running on a central infrastructure (common node). The common node is managed by the five Organizations (CNR, INGV, ENEA, OGS, MNA) that contribute to the NADC and is devoted to a regular harvesting of the metadata. Each functional node consists of an existing metadata and data management system implemented by each Organization. Istituto Nazionale di Geofisica e Vulcanologia (INGV) hosts one of those functional nodes and it is managing, among others, data/metadata produced by the permanent geomagnetic and ionospheric observatories installed in Antarctica since 1985. The functional nodes are interconnected and federated together by means of interfaces and standard data/metadata models. This distributed architecture allows to interconnect heterogeneous systems and digital infrastructures in a flexible, scalable and sustainable way.



INGV ANTARCTIC OBSERVATORIES AND DATA PRODUCTION



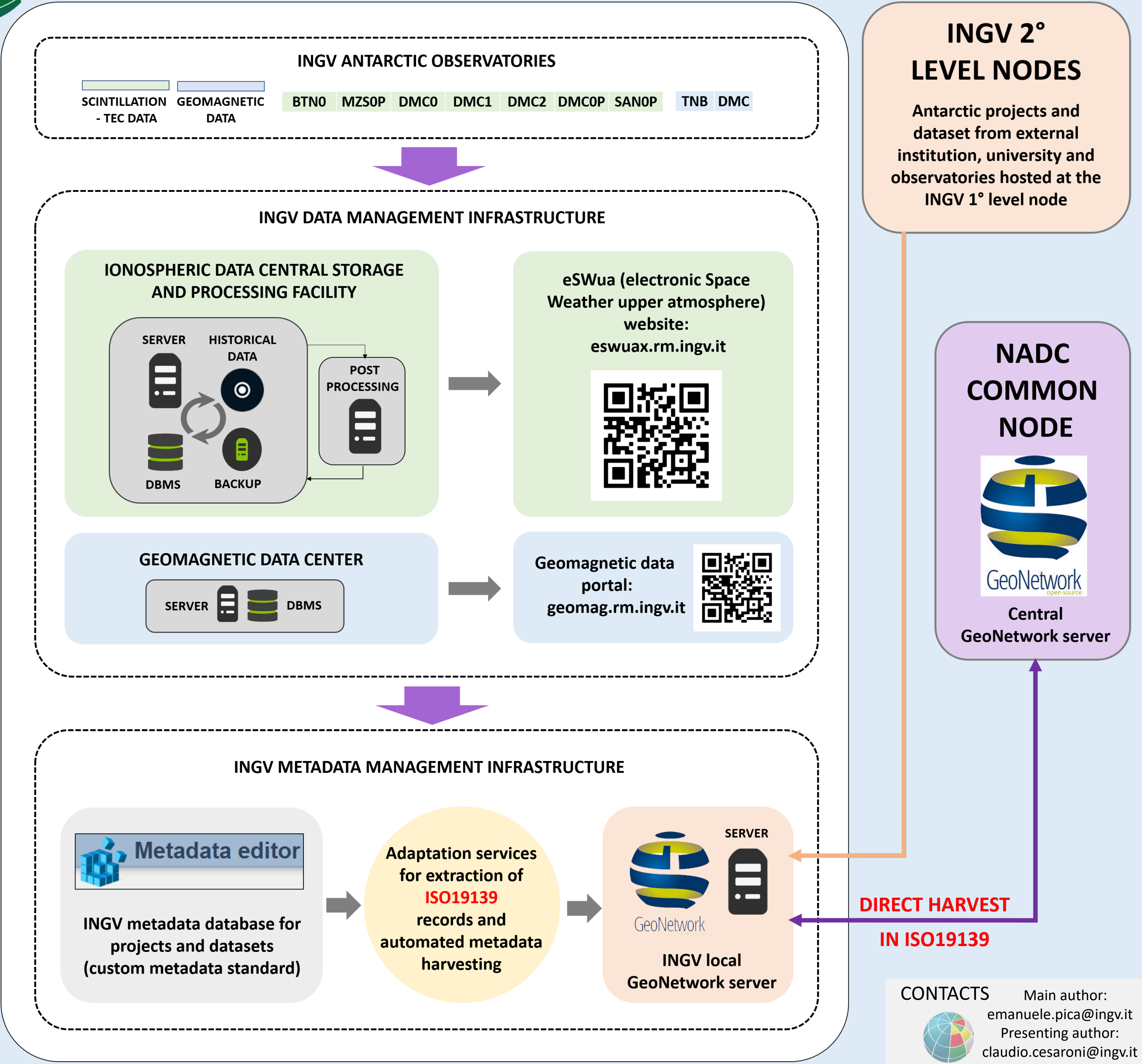
The Upper Atmosphere Physics group and the Geomagnetism group at INGV collect ionospheric and geomagnetic data for **Space Weather** monitoring and scientific research in the polar regions as well as at middle and low latitudes. More info at:

eswuax.rm.ingv.it



| | Location | Instrument Code | Year | Sensor |
|---|--|-----------------|--------------|--|
| 1 | MARIO ZUCHELLI STATION (Latitude: 74° 42' S; Longitude: 164° 6' E) | BTNO | 2006-2018 | GPS IONOSPHERIC SCINTILLATION AND TEC |
| | | MZSOP | 2017-present | MULTI-GNSS IONOSPHERIC SCINTILLATION AND TEC |
| | | TNB | 1987 | OVERHOUSER MAGNETOMETER VECTOR MAGNETOMETER |
| 2 | CONCORDIA STATION (Latitude: -75° 05' S; Longitude: 123° 19' E) | DMC0 | 2009-present | GPS IONOSPHERIC SCINTILLATION AND TEC |
| | | DMC1 | 2010-present | GPS IONOSPHERIC SCINTILLATION AND TEC |
| | | DMC2 | 2013-present | GPS IONOSPHERIC SCINTILLATION AND TEC |
| | | DMCOP | 2017-present | MULTI-GNSS IONOSPHERIC SCINTILLATION AND TEC |
| | | DMC | 2005 | OVERHOUSER MAGNETOMETER VECTOR MAGNETOMETER |
| 3 | SANAE IV STATION (Latitude: -71° 40' S; Longitude: -2° 50' W) | SANOP | 2019-present | MULTI-GNSS IONOSPHERIC SCINTILLATION AND TEC |

INGV 1° LEVEL NODE IMPLEMENTATION



CONTACTS

Main author: emanuele.pica@ingv.it
Presenting author: claudio.cesaroni@ingv.it