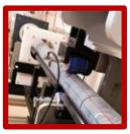
ICDP Equipment and Service provision

The goal of the International Continental Scientific Drilling Program, ICDP is to encourage Earth scientists to use the investigative tool of scientific drilling to test existing models developed at the Earth's surface. Successful proposals to ICDP receive financial support for drilling and access to utilize the ICDP instrument pool, the data infrastructure and downhole logging services, provided and maintained by the Operational Support Group OSG. Equipment and services will be offered for approved ICDP projects on first come – first serve basis. PIs are encouraged to contact ICDP as soon as they know for a concrete need for equipment.

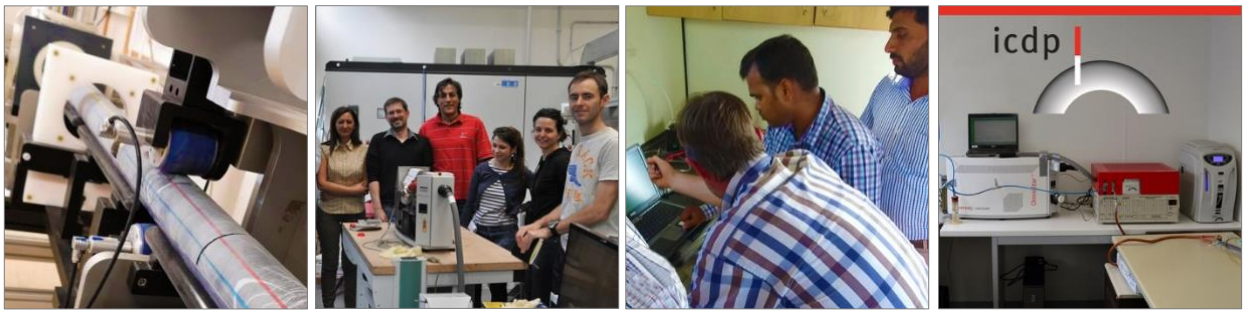
TOOL	CONTENT	PROVISION
Logging tools	Measure various parameters or allow sampling of borehole fluid downhole at in-situ conditions	As service to scientific drilling projects (no rental)
Logging winches	Together with the above listed or as stand-alone winch service	As service to scientific drilling projects (no rental)
GFZ Geophone Chain	17 levels with 3-component 15 Hz geophones each, borehole diameter between 57 and 330 mm	As service to scientific drilling projects (no rental)
OnLine Gas Analysis **OLGA**	For on-site gas analysis from returning drilling mud or pumped fluids. Includes gas mass spectrometer, gas chromatographer, methane carbon isotope spectrometer, gas separators and pumps	For approved ICDP projects after training of the on-site operator
Multi-Sensor Core Logger **MSCL**	Measures physical properties of drill core (up to 1.5 m long and 10 cm diameter). Includes sensors for mag. suscept., density, natural gamma, and p-wave velocity	For approved ICDP projects after training of the on-site operator
360° Optical Core Scanner **DMT**	360° optical scans of up to 1 m drill core and between 4 and 22 cm diameter	For approved ICDP projects after training of the on-site operator
Deep Lake Drilling System **DLDS**	Barge and wireline drill rig system to recover sediment and rock cores from lake bottom and shallow water floors down to 1400 m depth.	Service provision through contractor
Drill String	5 km diamond coring wireline drillstring	Service provision through contractor
GFZ BUGLab	Mobile field laboratory for geomicrobiological and biogeochemical research to be deployed in a wide range of both marine and terrestrial settings	For approved ICDP projects after training of the on-site operator



Equipment and service provision

Upon request by project PIs, OLGA, MSCL and DMT are made available for experienced project scientists based on a lending agreement. For inexperienced users, OSG will offer training at GFZ few weeks-months before spud-in, i.e. before instruments are shipped.

It is recommended to combine this training with the DIS training (see below). Cost for such training will be shared between the project (flight costs) and ICDP (accommodation, local public transportation, meals). The project also covers equipment shipping costs and costs for consumables, but no maintenance fees. Operation and maintenance of the provided equipment is executed by project scientists only. OSG helps for assembling the equipment on site and in case of instrumental failure. Capacity building on site is performed by the ICDP project directly.



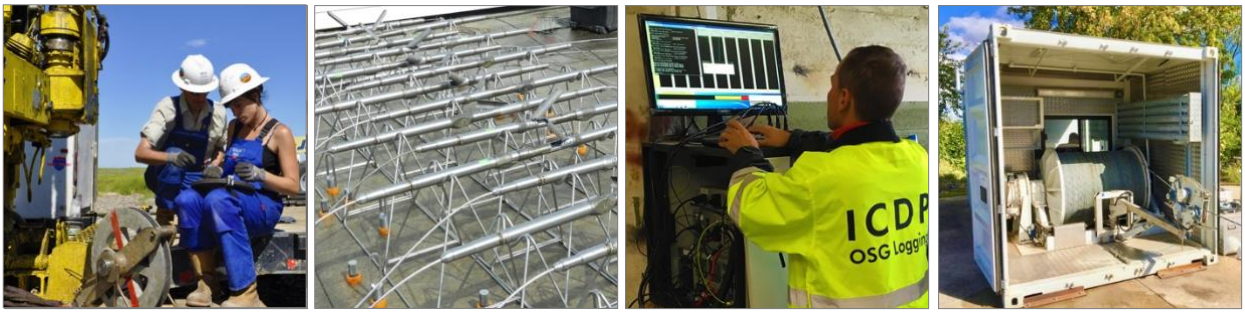
(01) Mulitsensor core logging **(02)** Capacity Building in the Field **(03)** OnLine Gas Analysis Training **(04)** OnLine Gas Analysis Equipment

Downhole Logging

OSG offers downhole measurements service for scientific drilling projects. To each project the OSG contribution can be complementary to any other logging services or indeed form the entire downhole logging program. The logging services are offered at cost prices comprising a fixed tool maintenance fee and travel/transport costs of personnel and equipment.

Based on the most frequent requirements of drilling projects OSG established a downhole logging equipment of versatile slimhole logging tools and logging winches, which allow utilization in very different hole conditions. The measured parameters and tools are: electric resistivity, sonic velocity, natural gamma total & spectrum, magnetic susceptibility, magnetic field, acoustic borehole images, oriented caliper, mud parameters T, p, and resistivity, spontaneous potential, downhole fluid samples, borehole geophone chain. The first four parameters can be measured under adverse logging conditions with wireline-free memory sondes for use in logging while tripping mode. Most tools are rated for 150 °C/80 MPa, except for the imager (125 °C), and the memory tools (70 °C/50 MPa).

All tools can be used in hole sizes as small as 75 mm. The maximum possible hole size differs for each tool. OSG holds 5 specific logging winches of various sizes covering depth ranges from 200 m to 7000 m.



(01) Preparing a logging depth device **(02)** Borehole geophone chain surface check **(03)** MSCL setup on site **(04)** Largest OSG logging winch CW7000

Data Infrastructure

The infrastructure of ICDP provides the onsite data collection software Drilling Information System (DIS), a database maintained and further developed (mobile-DIS) by ICDP to collect and store data during the field campaign and beyond. On site, the DIS is operated by project scientists, who were previously trained by the OSG Data Management team in a training course. During and after field campaigns, the ICDP-OSG data management group provides the online availability of the project data using the ICDP website. Further, ICDP-OSG archives all basic data sets of the drilling projects, publishes the Operational Reports, and assigns and publishes persistent identifiers (IGSN, International Geo Sample Numbers) for the drilled material. ICDP-OSG supports organizing core storage and the curation DIS, which is freely provided for core repositories storing ICDP cores.

(01) mDIS: platform independent, for multiple device interaction **(02)** Offsite access to onsite data **(03)** mDIS field application **(04)** Core data curation and archiving