

Underway Geophysics WG Report

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Platform Considerations:

- MSPs: Moving target in terms of logistics so recommendations should include little in the “must have” category and most in the “nice to have” category.
- Chikyu: Little underway time and far more time spent on station. Some time will still be spent in the non-riser mode and therefore transiting between sites. An underway geophysics program therefore should be included in the Chikyu plans. However, deck height suggests towed geophysical equipment may be unrealistic and the geophysics may be limited to sources for VSPs, GPS, and bathymetric data.
- Non-riser Platform: Need to consider what worked well and what did not work well in ODP and revise for IODP. Quite a bit of underway time occurs and certain measurements/equipment are important whereas other measurements are too expensive in terms of personnel and time to warrant use on a platform that is first and foremost a drilling vessel.

Measurements (in order of priority):

- Bathymetric Data: All platforms should routinely collect bathymetric data. It is expected this will usually be accomplished with 12 kHz echosounders and should be collected both at a drill site as well as underway.
- Navigation Data: All platforms should routinely collect GPS navigation data to determine exact drill site position and to plot trackline positions during transits in order to render the underway geophysics data useful.

Note: Effectively on all platforms we need to know where we are and how deep the water is!

- Seismic capabilities:
 - Non-riser Platform: While it may be important for non-riser ship to have the capability to shoot small single channel to low fold seismic surveys, these surveys should only be done in the case of very shallow target depths or for “at sea” requirements. The non-riser ship is in no way a seismic vessel and for all but the most basic situations a bonified seismic survey should be collected using multichannel seismic acquisition systems. The airgun capability for a single or low-fold seismic system for the non-riser platform should be capable of serving as the source for zero offset VSPs as well.
 - Chikyu: Very unlikely to need seismic capabilities at sea. Further, the deck height of the Chikyu may make all underway geophysics that require towed instruments untenable. However, VSPs are of greater importance for riser legs due to greater target depths. Therefore, airgun/GI gun capability for the Chikyu should exist that is suitable to collect VSPs/checkshots to the maximum drilling depth of the Chikyu.
 - MSPs: No routine seismic capabilities can reasonably be discussed. The operator will have had to commission any specific site requirements,

including geophysics, before the operation. This means for full approval to use a particular platform the geophysical survey(s) would have to already be collected. The only time that any site specific work is likely to be conducted from the drilling vessel is if a jack-up is used. In that case it is quite common to do the geotechnical evaluation for the spud cans from the jack-up itself and this is purely for insurance regarding the stability of the jack-up. If VSPs are required for the science plan then either the MSP ship will need to have the capabilities to be the source or a separate ship will be required.

- **Additional Underway Geophysics Data:**
 - **Non-riser Platform:** In order to maximize the science done at sea it is recommended that the non-riser ship collect magnetics data while underway. This is seen as important due to the non-riser drillship venturing into waters that are not frequently traversed by other research vessels but should never be placed in priority over drilling objectives.
 - **Chikyu:** The deck height and infrequent transits of the Chikyu suggest that it would be unnecessary for the Chikyu to have an underway geophysics facility beyond the capabilities of bathymetric measurements, navigation, and seismic sources.
 - **MSPs:** When MSPs are completed using drilling ships of opportunity or modified research vessels we would recommend the collection of whatever suite of underway geophysics data is available on the platform during transits. Clearly in some cases such as jack-up rigs there will be no underway component.
 - **Gravity Data:** Due to the difficulties of maintaining a high-quality gravimeter on board the non-riser platform or other vessels, it is not recommended that an underway capability in gravity be continued in IODP.
 - **Swath Mapping Data:** Due to the expense of acquiring and maintaining swath mapping systems we not recommend the use of the riser or non-riser platforms for swath mapping (ie SeaBeam). For MSPs, in the unfortunate case where drilling is unable to continue and the platform being used has swath mapping capabilities then the use of such a system is of course warranted.