

## Deepwater Exploration Challenges and Lessons Learnt From Scientific Ocean Drilling

Moe Kyaw Thu<sup>1</sup>, S. Kuramoto<sup>2</sup>, and Y. Yamada<sup>1</sup>

<sup>1</sup>Center for Ocean Drilling Science

<sup>2</sup>Center for Deep Earth Exploration, Japan Agency for Marine-Earth Science & Technology (JAMSTEC), Japan ([moe@jamstec.go.jp](mailto:moe@jamstec.go.jp))

### Abstract

Japan's contribution to the Integrated Ocean Drilling Program <[iodp.org](http://iodp.org)>, riser equipped advanced drilling vessel- CHIKYU, began operations since 2005 with the aim to reach the challenging targets at deep, dynamic faults, continent formation and mantle, sediment secrets and deep biosphere. Since 2007, D/V Chikyu challenges began with the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) by drilling, sampling and monitoring at extensive shallow holes transecting across the subduction, and continues deepening the primary riser hole to reach the mega-splay fault as deep as 7 km from the sea level. Various challenges forced multiple delays during the operations, from strong current of maximum 6 knots speed, difficult hole condition to drill the formation from the tectonically active faulting environment, typhoon and winter cold fronts to the mechanical failures related to those natural challenges. Most of those challenges were overcome by further developing existing industry technologies, such as successful operations using riser fairing system, real-time current monitoring and precise drifting operations under very strong current.