

## **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>Japan Agency for Marine-Earth Science & Technology (JAMSTEC), Center for Ocean Drilling Science

<sup>2</sup>Japan Agency for Marine-Earth Science & Technology (JAMSTEC), Center for Deep Earth Exploration

### **ABSTRACT**

Japan's contribution to the Integrated Ocean Drilling Program, riser equipped advanced drilling vessel (CHIKYU), began operations in 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 megasplay fault as deep as 7 km below sea level. Various challenges forced multiple delays during the operations, from strong currents of maximum 6 knots speed, difficult hole conditions 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.