Frontiers + Innovation
2009 CSPG CSEG CWLS CONVENTION • CALGARY, ALBERTA, CANADA

Potential Targets in Gravity Collapse Structures

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Summary

Most gravity collapse structures are superficial - that is, they slid down sloping land surfaces or along basal bedding-plane detachments tilted at 5 degrees or more. They include the more obvious catastrophic and incoherent mud or debris slides whose origins and downward routes are controlled by topography. They are frequently triggered by weather and human activities such as mining. Distance traveled down-slope exceeds width by a factor of two or more. Regional-scale slides, emplaced more slowly, spread laterally many times farther than they travel down-slope, retaining much of their original coherency. Many of them have buried ("triangle zone") thrust fronts. They may be difficult to recognize due to their sheer size. Regional scale landslides in Western Canada include the Mount Hosmer slide near Fernie, BC and the Rat Creek syncline in northeastern BC, more than 50km^2 in area, and the Calgary landslide, a mere10 km^2 in extent.

In the past few years, marine seismic profiling has identified buried gravity collapse structures traversing the equatorial margins of the Atlantic Ocean in deep and over-pressured extensional regimes. Such structures, over-pressured, with consequent low dips in the 1½-3 degrees range, have rarely been described onshore but there is no obvious reason why they should not occur and may be unrecognized. They will almost certainly be sought after as existing, innovative, and future hydrocarbon prospects.