



A Three-Dimensional Approach to Investigating Hummocky Terrain using Airborne Lidar and Ground-Penetrating Radar

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Low-amplitude landforms forming apparently chaotic hummocky topography are widely observed across the Irish Midlands, south of the main drumlin belt. This topography is commonly interpreted as evidence of ice stagnation during recession of the last Irish Ice sheet, after c.20,000bp. We utilise high resolution airborne LiDAR DTMs, aerial photo mapping and field survey, combined with ground-penetrating radar and sedimentological evidence to examine this hummocky topography around the main Irish Midlands esker system. Around the eskers are extensive hummocky areas thought to have formed during the westward recession of ice, during disintegration of the Irish Sea Ice Stream to the east. Previously unmapped landforms identified on the DTMs include mega-scale glacial lineations (MSGs), overridden moraines, and rectilinear arrangements of ridges and mounds, interpreted as crevasse squeeze and crevasse fill ridges. These features are interpreted as subglacial in origin and indicate that episodic accelerated ice flow (surging) involving readvance occurred along this margin of the Irish Ice Sheet, before occurrence of widespread bed deformation associated with formation of the northern drumlin fields.