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Plasma flows due to blobs and drifts in Alcator C-Mod scrape-off layer¹ A.YU. PIGAROV, S.I. KRASHENINNIKOV, UCSD, B. LABOMBARD, MIT, T.D. ROGNLIEN, LLNL — Long-range near-sonic parallel plasma flows in Alcator C-Mod tokamak scrape-off (SOL) layer are measured and modelled with UEDGE (2D multi-fluid plasma/neutral transport code). As shown, the dominant mechanism driving such flows is fast non-diffusive intermittent cross-field transport (due to blobs) which is modelled as anomalous convection of ion species with strong ballooning-like poloidal asymmetry ($HFS/LFS < 1/10$). Here, the properties of asymmetric-transport driven flows, main chamber and divertor recycling, as well as divertor detachment are studied with UEDGE. The conditions for zonal and circular plasma flow patterns in the SOL are analyzed. The impact of $E \times B$ and ∇B plasma drifts on non-diffusive transport driven flows is modelled and discussed.

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