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Characterizing Tungsten Sourcing and SOL Transport during the Metal Rings Campaign[1] D.M. THOMAS, T. ABRAMS, General Atomics, E.A. UNTERBERG, Oak Ridge National Laboratory, D. DONOVAN, University of Tennessee Knoxville, J.D. ELDER, University of Toronto, W.R. WAMPLER, Sandia National Laboratoty, DIII-D TEAM — The Metal Rings Campaign on DIII-D utilized two isotopically and poloidally distinct toroidal arrays of tungsten coated inserts in the lower divertor to study W divertor erosion near the outer strike point (OSP) and divertor entrance and subsequent migration in a mixed-material (C-W) environment. In AT hybrid discharges (P_{AUX} =14 MW, H_{98} =1.6, β_N =3.7) with rapid ELMs (f_{ELM}˜200 Hz, δW/W˜0.7%) W impurities are seen to reach the midplane predominantly from the OSP region rather than the divertor entrance (far-SOL). Conversely, in scenarios with less frequent larger ELMs (f_{ELM}˜60 Hz, δW/W˜3.6%) , the W impurities are found to transport equally from the OSP and entrance region. ELM-resolved spectroscopic measurements of W sourcing indicate that large ELMs can source W at many times the inter ELM rate. The peak W erosion rate can shift radially outwards consistent with the ELM energy flux, thereby shifting the balance between strikepoint and far-SOL sources. Changes in the peak erosion locations between forward and reversed Bt discharges are consistent with ExB ion drift effects. Evidence for a near-SOL impurity buildup between the divertors driven by the parallel grad-Ti force is also seen.

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