3D geometry and magnetic connections of erupting black hole jet

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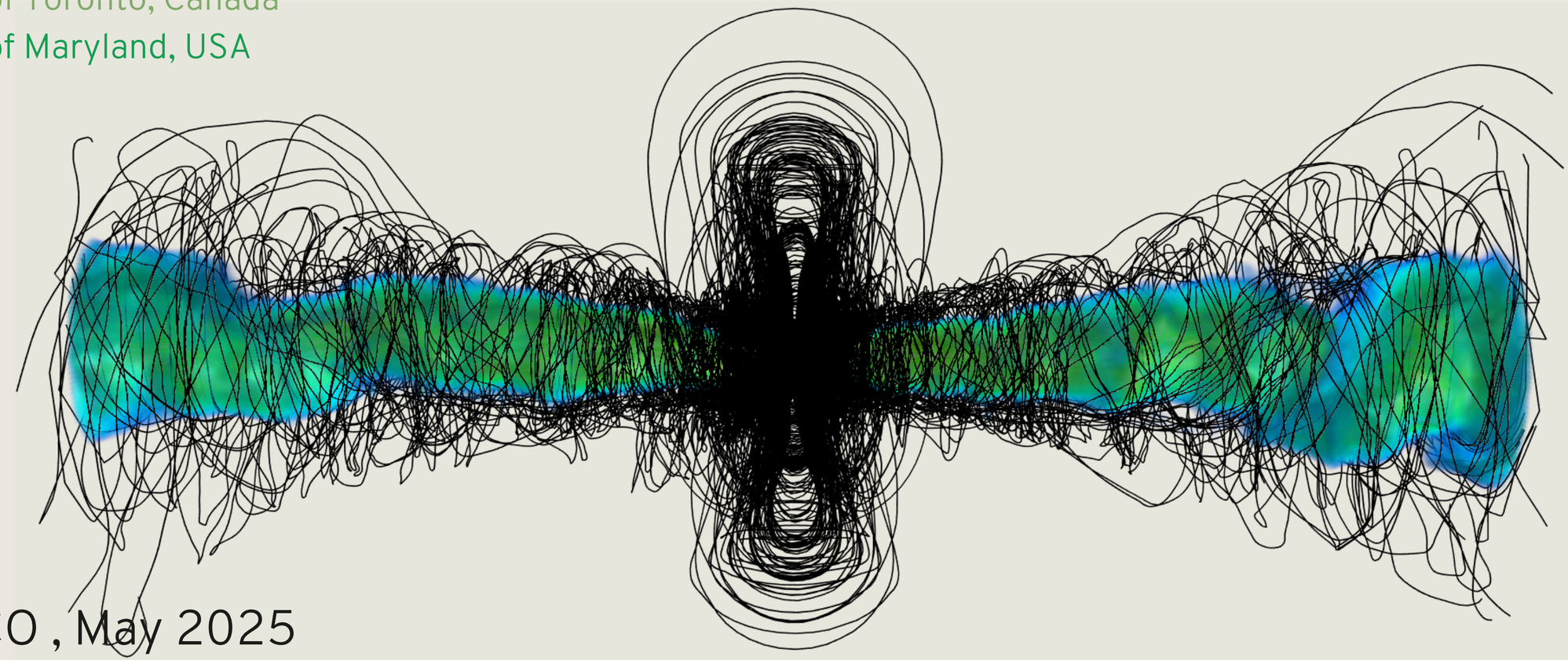

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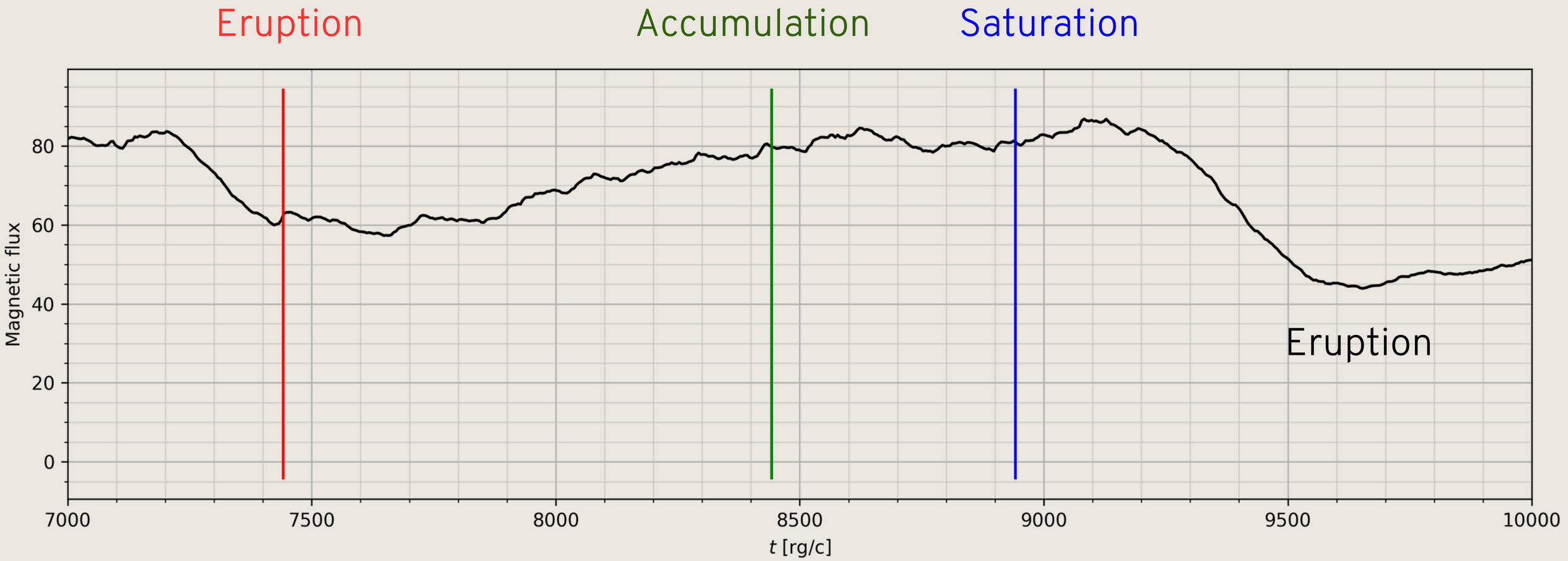
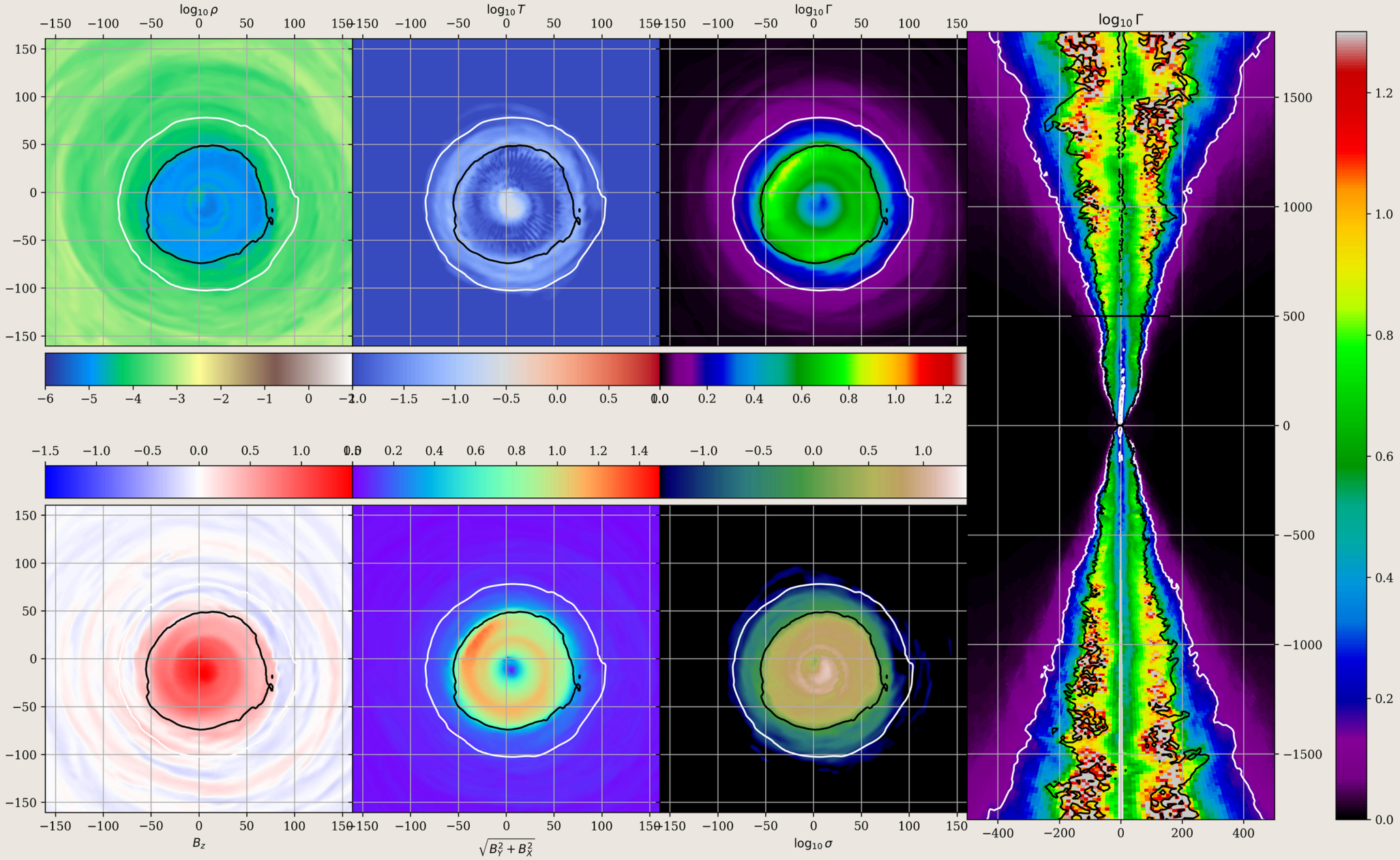
Analysis of extreme-resolution 3D GRMHD simulation

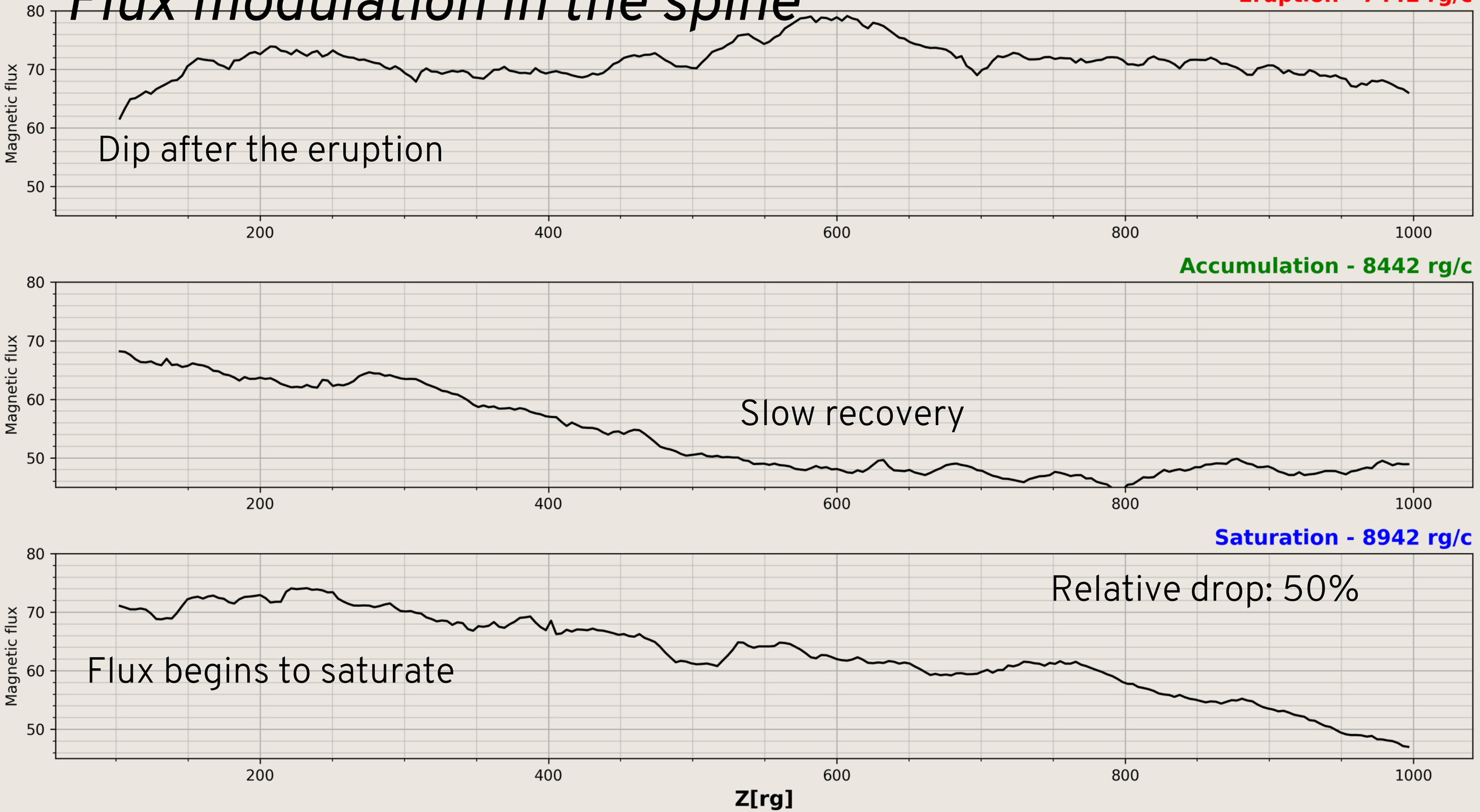
- Data from the H-AMR code (Ripperda et al. 2022), resolution (5376 x 2304 x 2304)
- Cycles of magnetic field eruption: just after eruption E, accumulation A, saturation S.



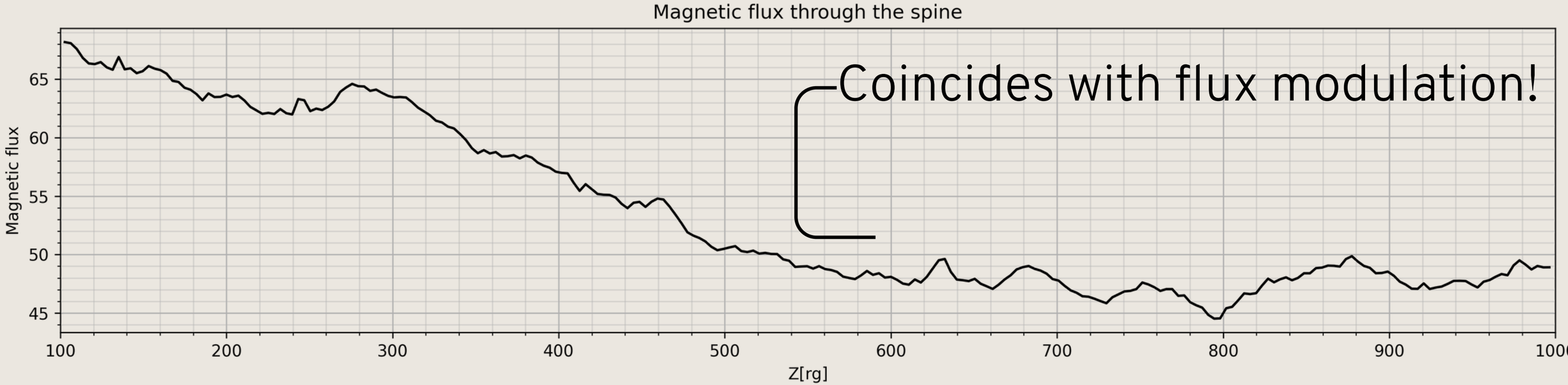
Spine (σ > 1), Sheath (Γ > sqrt(2))

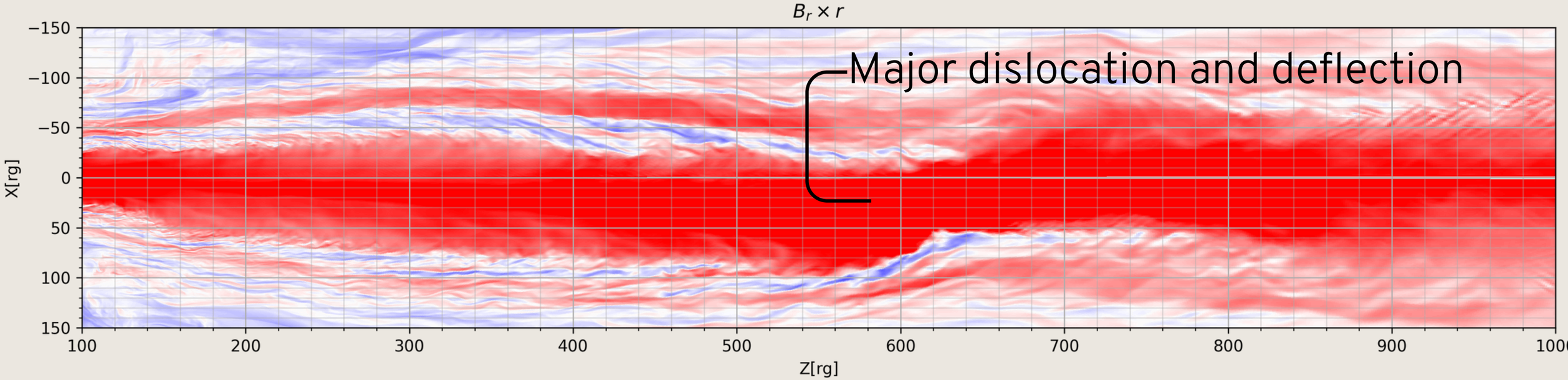


Flux modulation in the spine

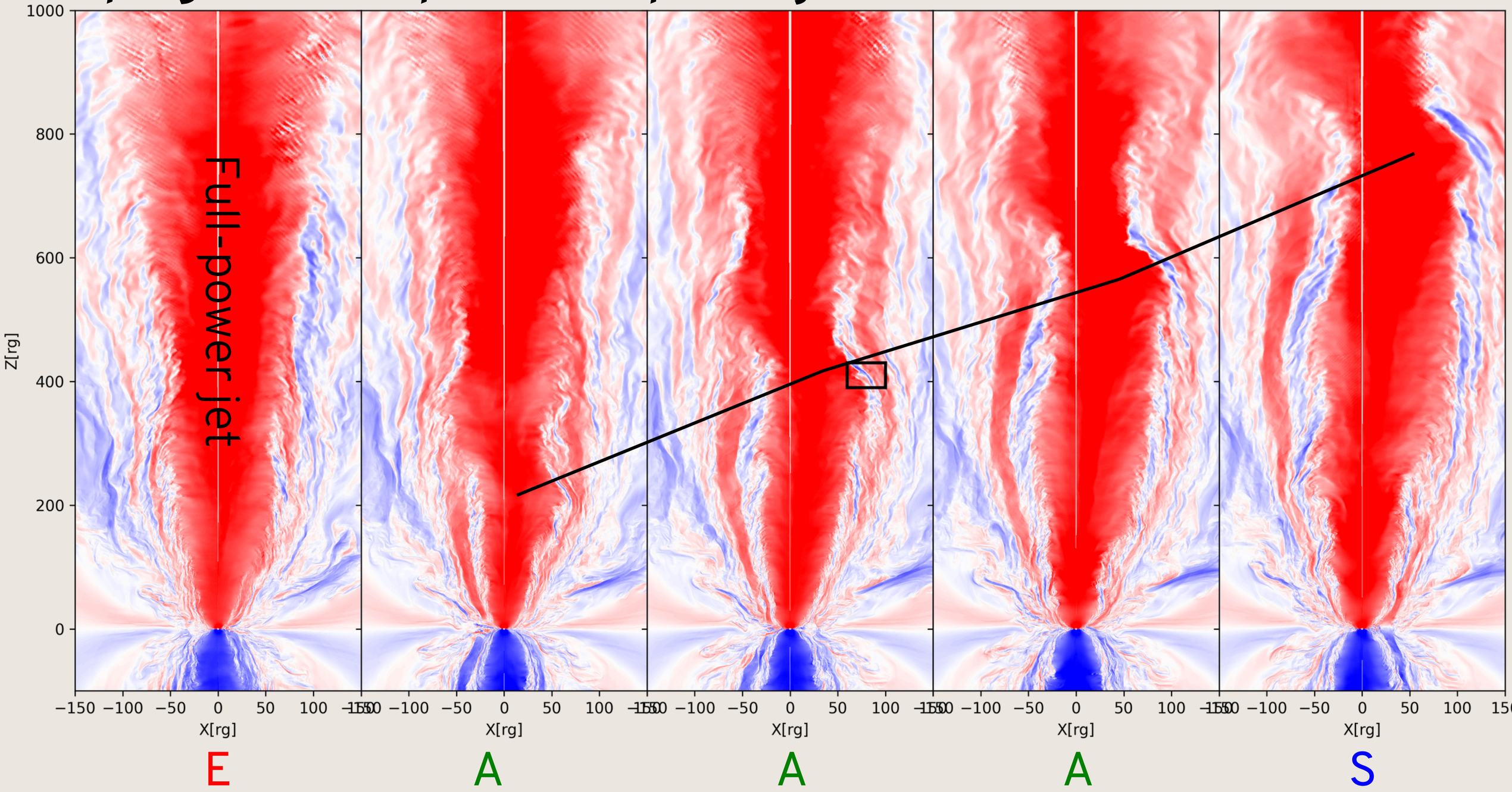


Disruption- accumulation state - 8442 rg/c

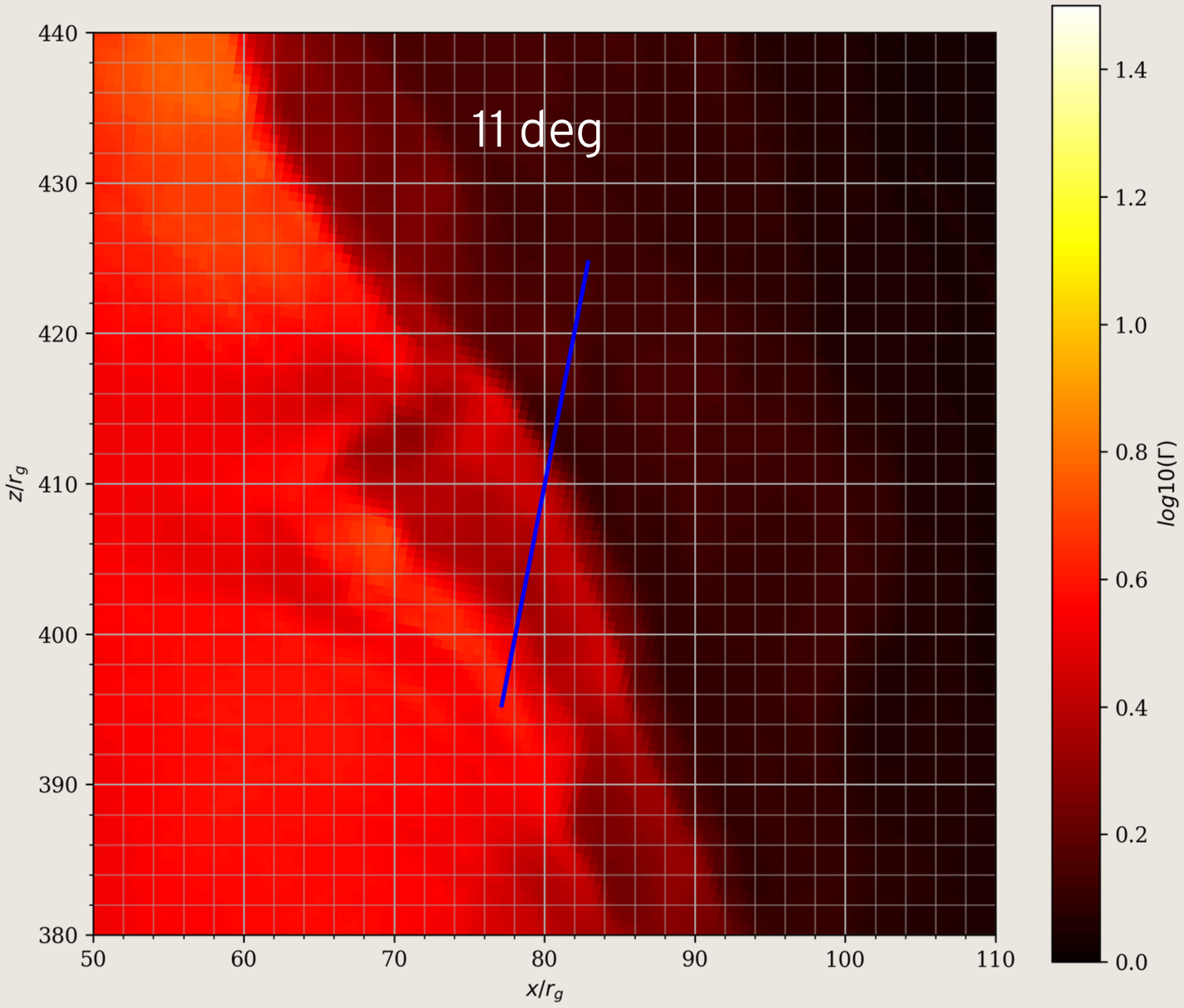


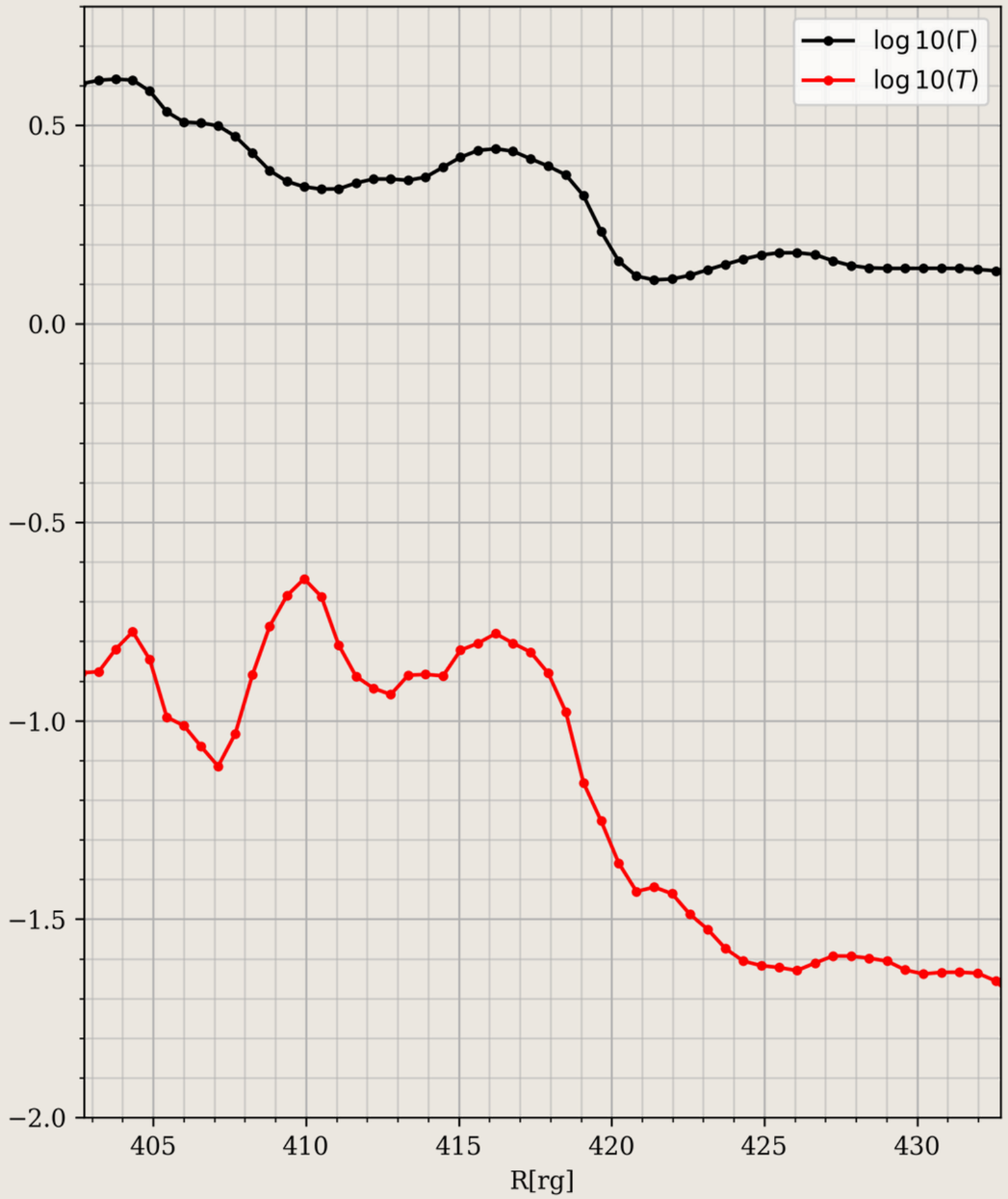


Propagation of post-eruption jet distortion



Qblique forward shock - accumulation state 8442 rg/c





Conclusions

- Magnetic field eruptions in MAD systems induce a temporary reduction of magnetic flux through the jet.
- A distortion propagates along the jet spine, which can be associated with the recovery of magnetic and Poynting fluxes.

Thank you for your attention!