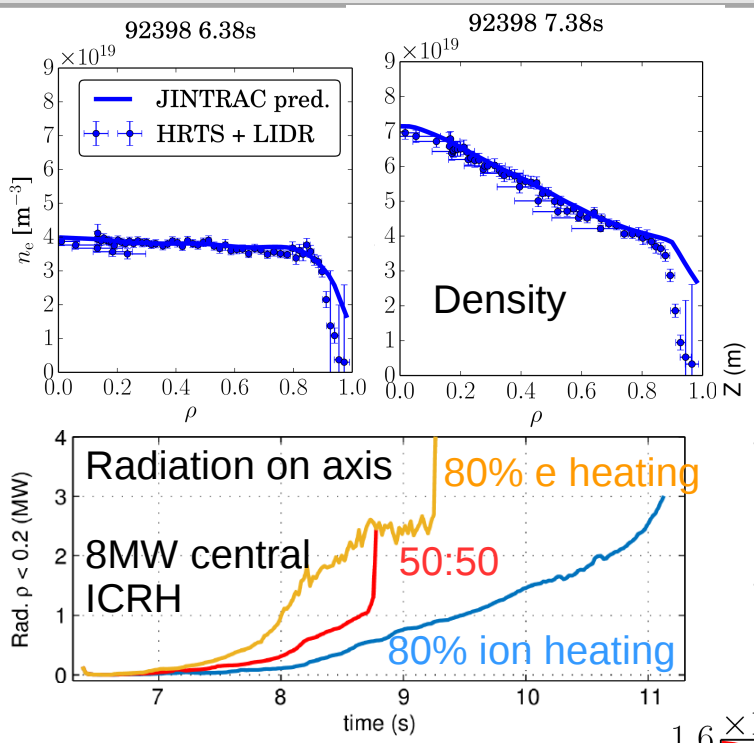
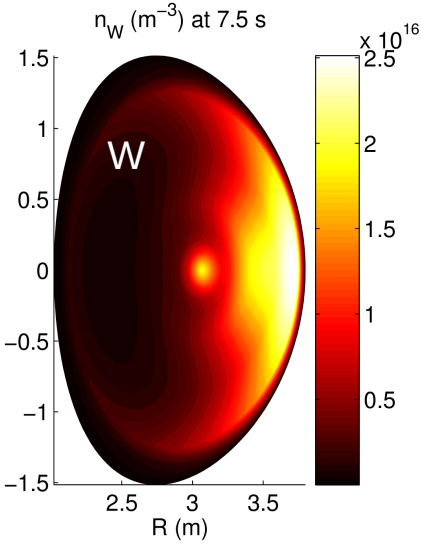
Predictive multi-channel modelling to optimise W control in JET

- 8 channels modelled predictively with first-principle models:

$$T_i, T_e, j, n_D, n_{Be}, n_{Ni}, n_W, \omega$$

  - Reproduces evolution including radiative collapse after ~10 τ_E
  - Includes poloidal asymmetry enhancement of neoclassical W transport (20x)
  - Used to optimise ICRH for W control: He-3 predicted more effective than H minority *in JET hybrid conditions* (increased temperature screening)





- Extrapolations to DT find positive isotope scaling of confinement due to increased Ti / Te and ITG stabilisation
  - Inclusion of ETG scales pins Te; ion-electron collisional energy exchange decreases with isotope mass
  - Improved confinement in DT also gives larger density peaking and earlier W accumulation
  - Mitigate with increased density (less central NBI particle deposition)