

# The Lorenz energy cycle in simulated rotating annulus flows

R. M. B. Young

## Supplementary Material

### AX run at 4500s

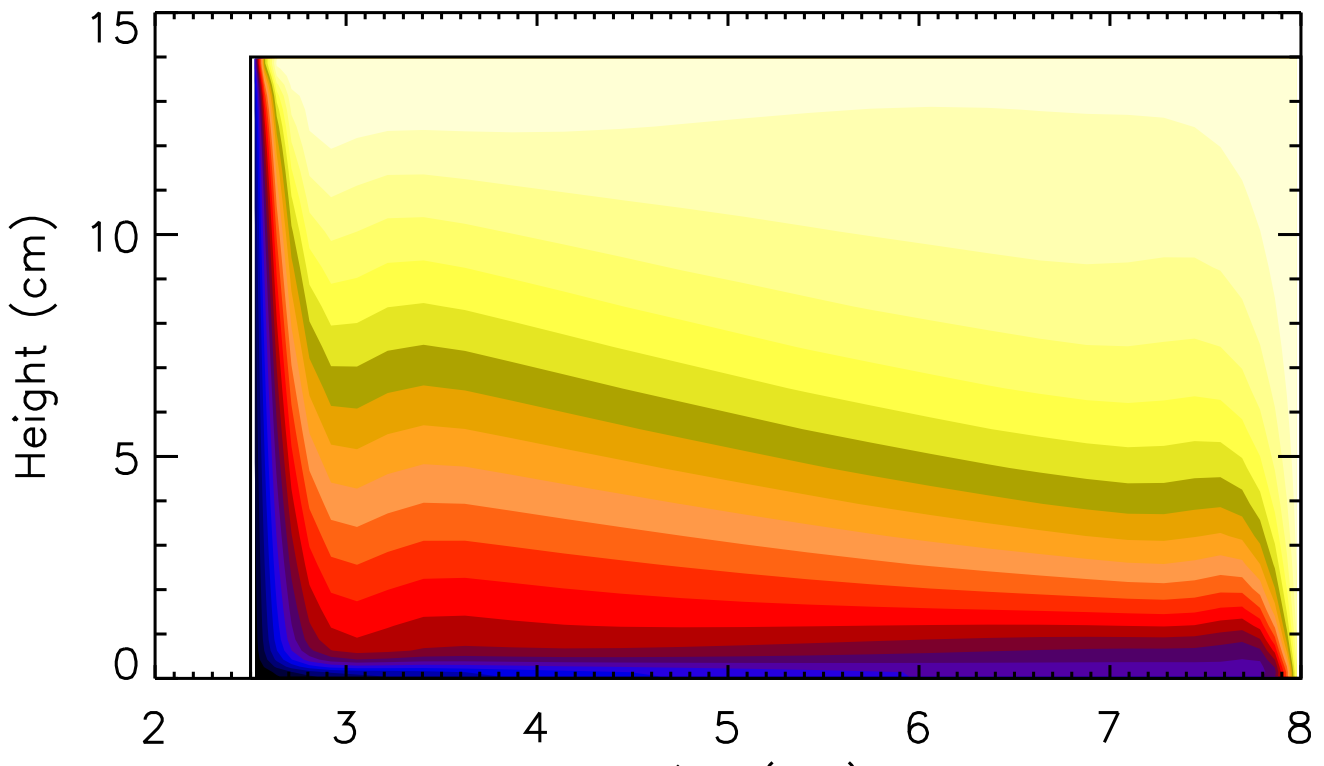
This file contains additional contour plots in the  $(R, z)$  plane, line plots showing horizontal means as a function of  $z$ , and time series.

Because of limitations in the plotting language, the notation for means is different in this document compared with the main paper:

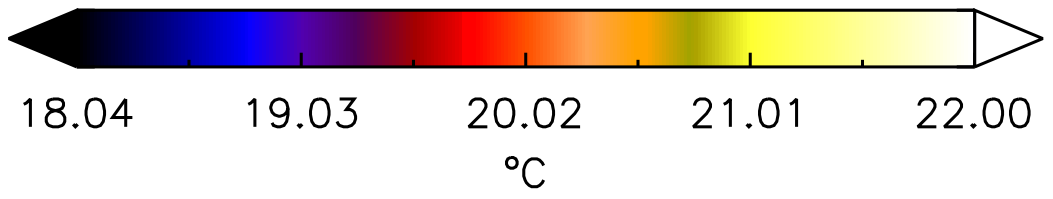
- A zonal or azimuthal mean is displayed as  $\langle x \rangle$  ( $\bar{x}$  in the main paper).
- A horizontal mean is displayed as  $|x|$  ( $\tilde{x}$  in the main paper).

Eddy fields use the same notation as the main paper.

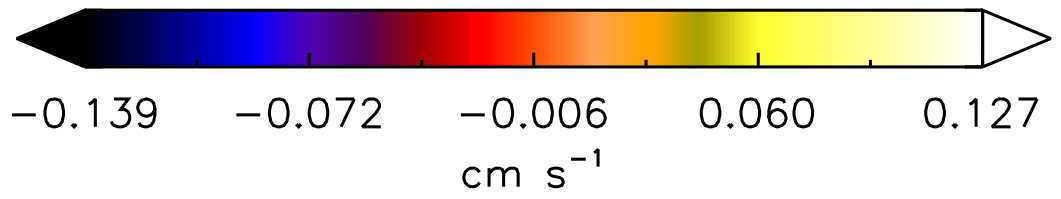
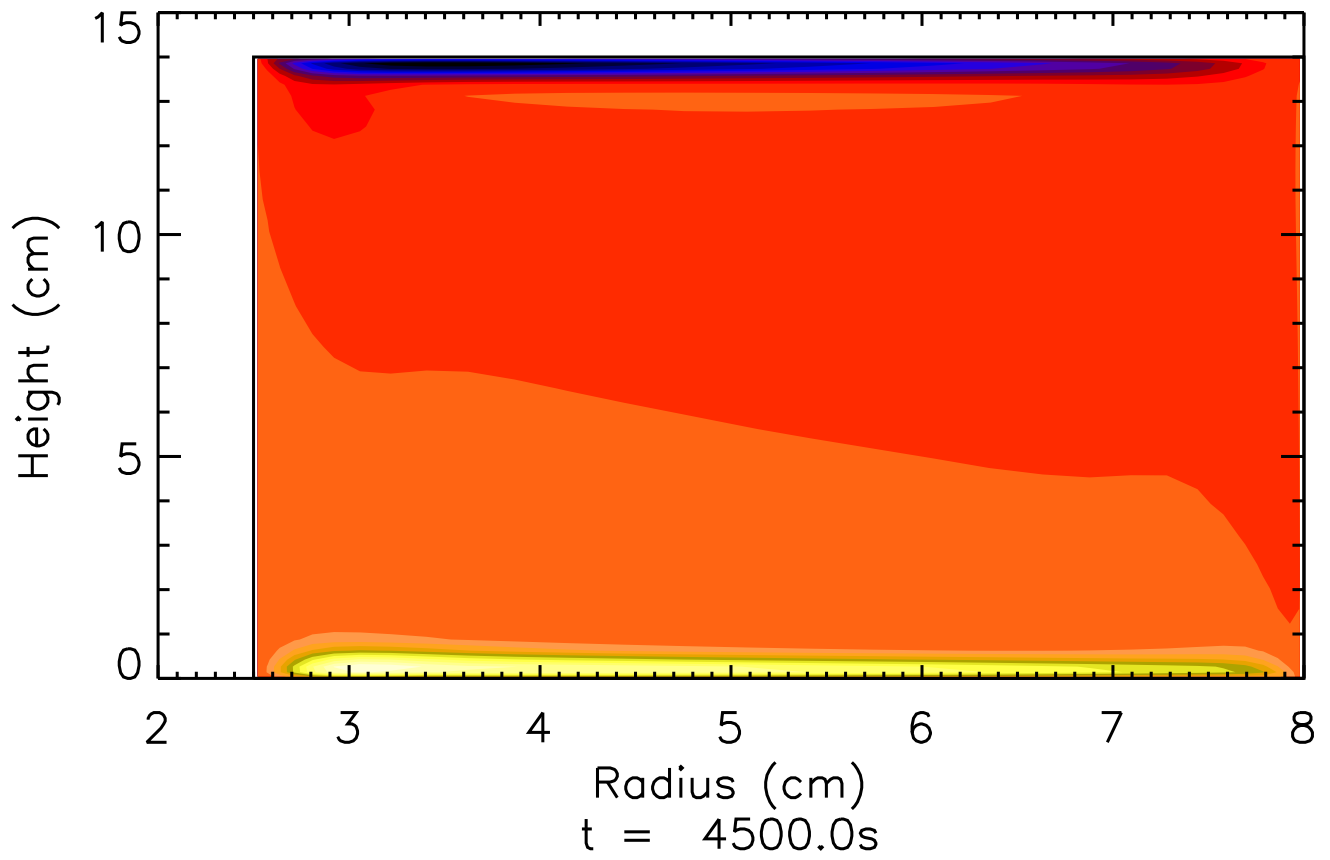
$\langle T \rangle$



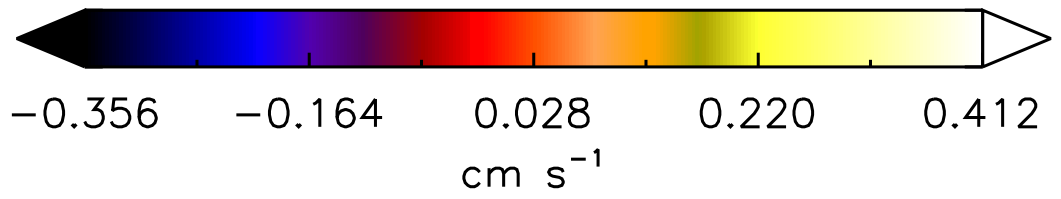
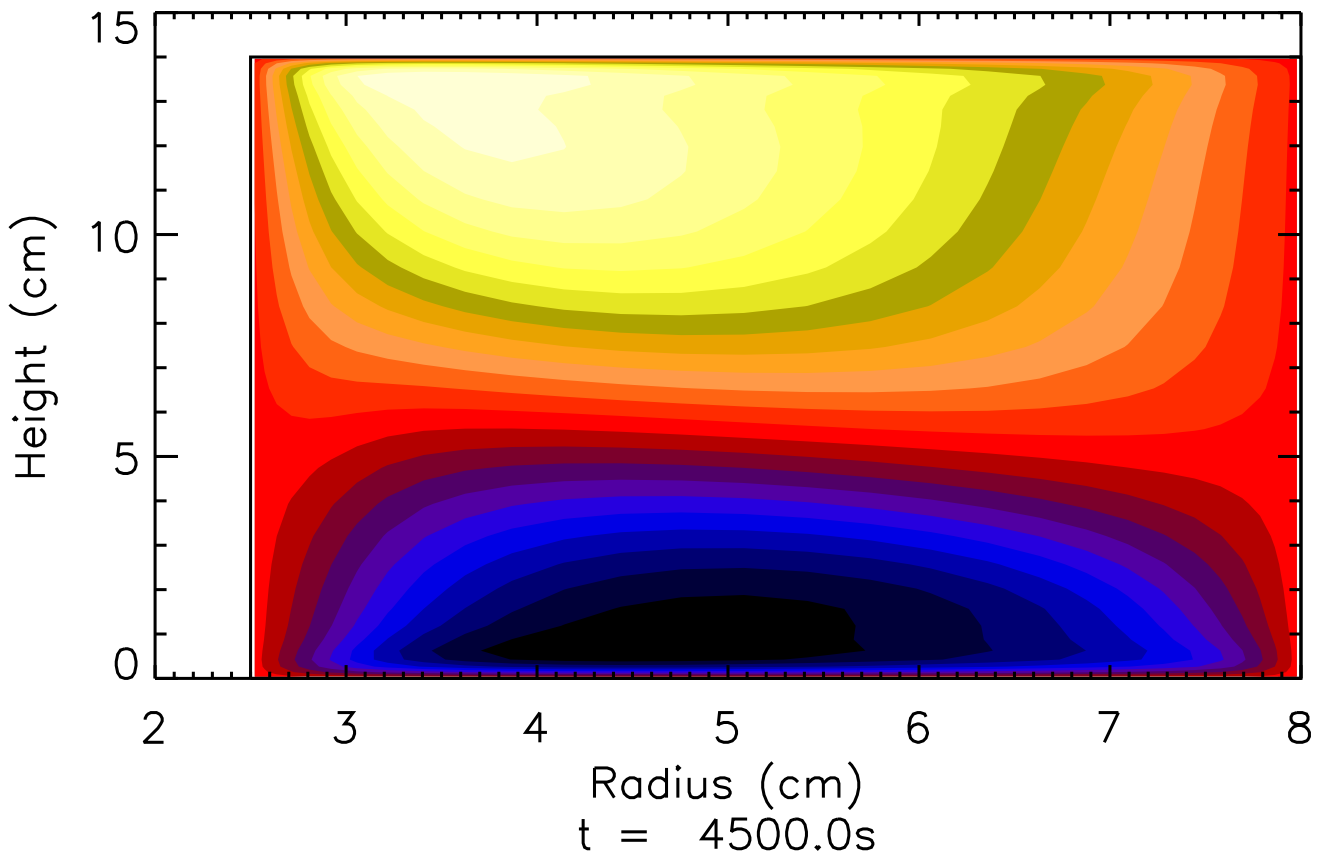
Radius (cm)  
 $t = 4500.0s$



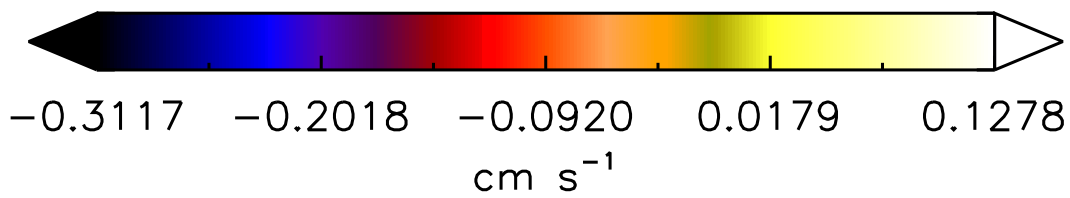
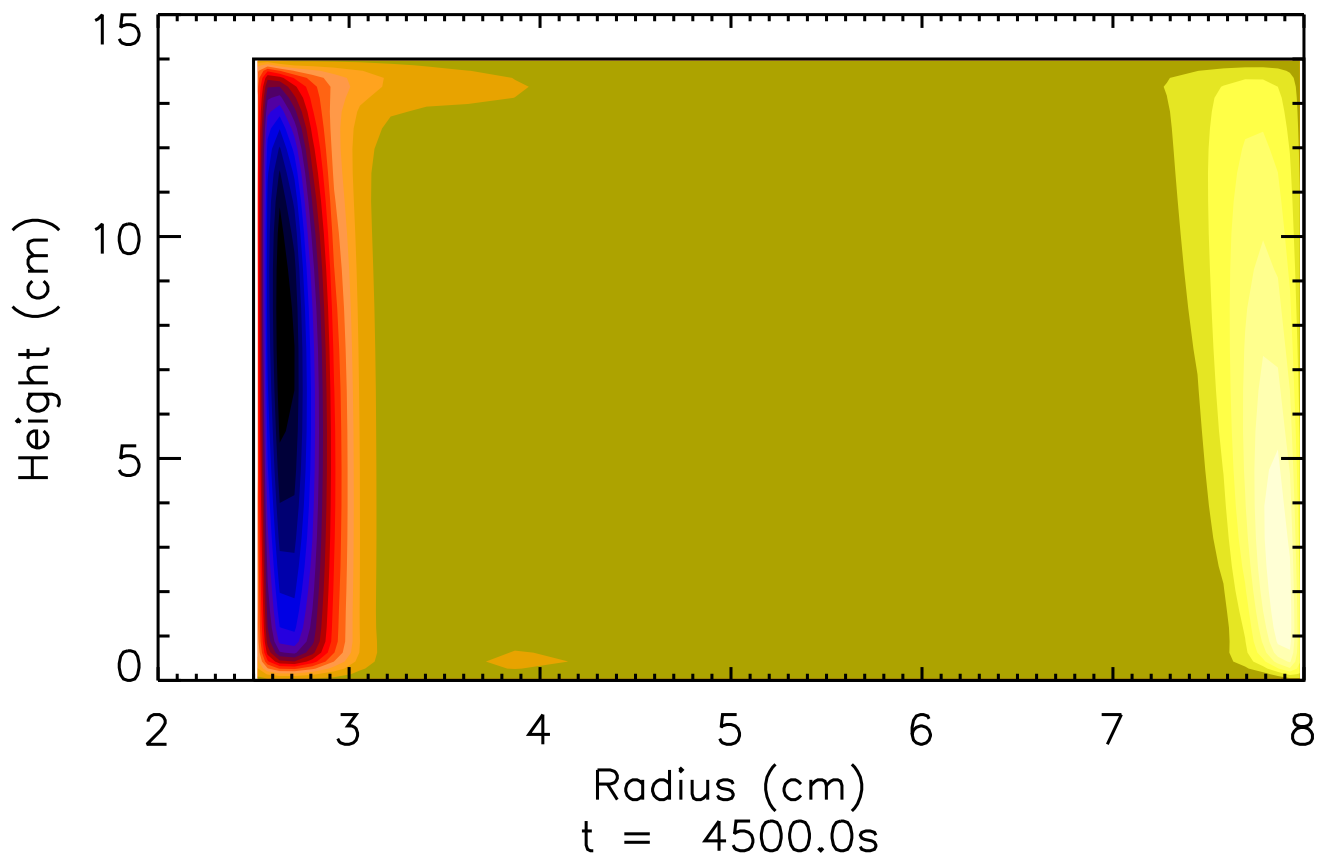
$\langle u \rangle$



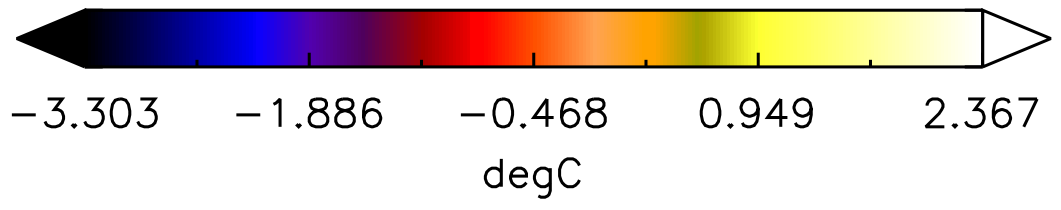
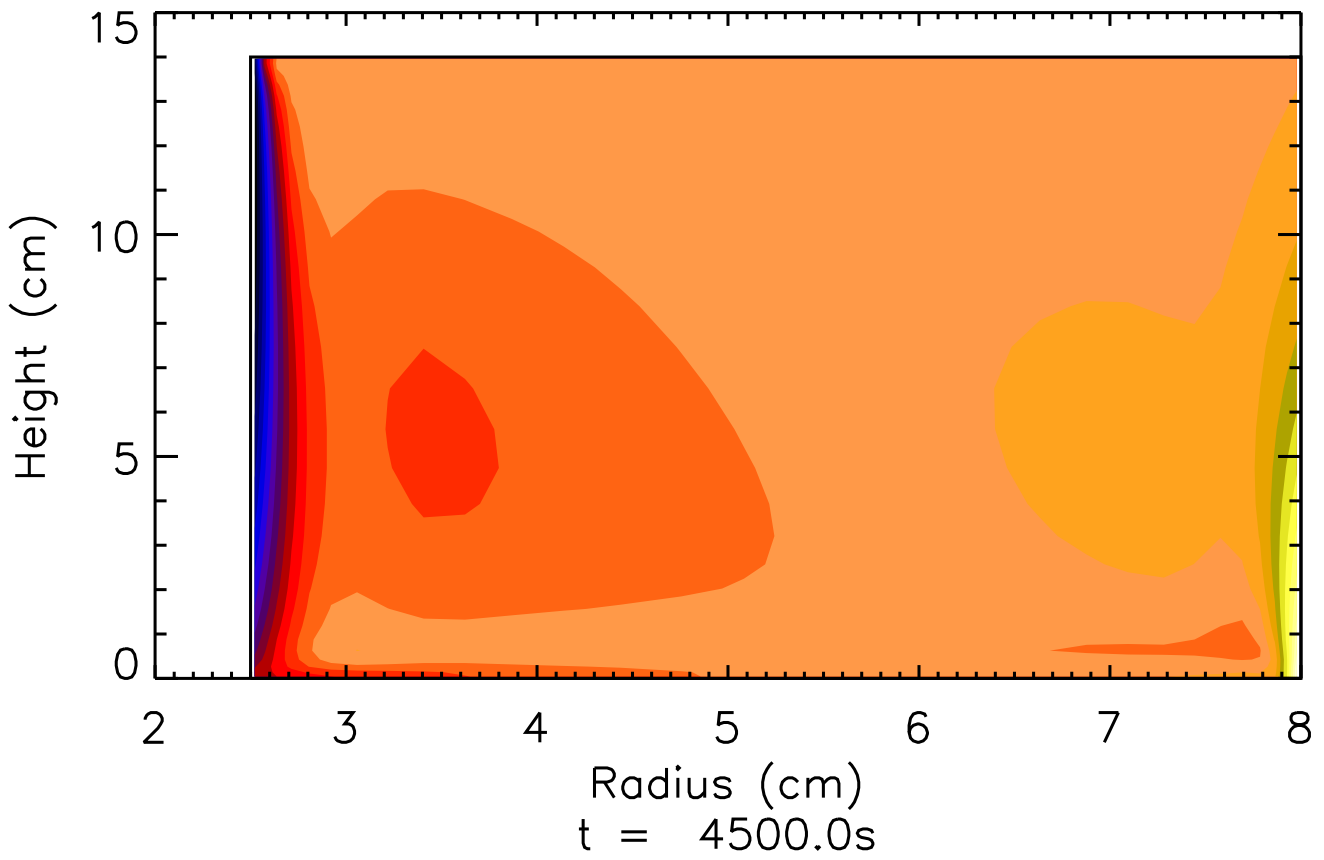
$\langle v \rangle$



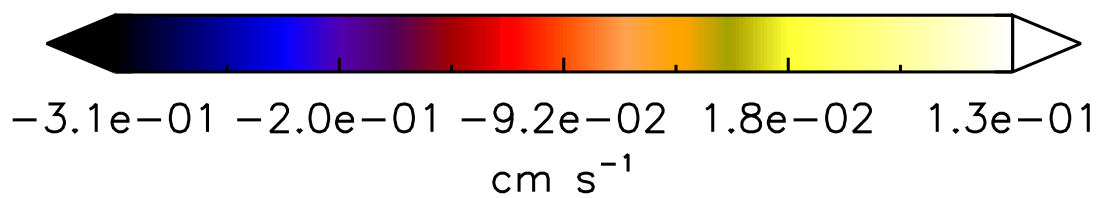
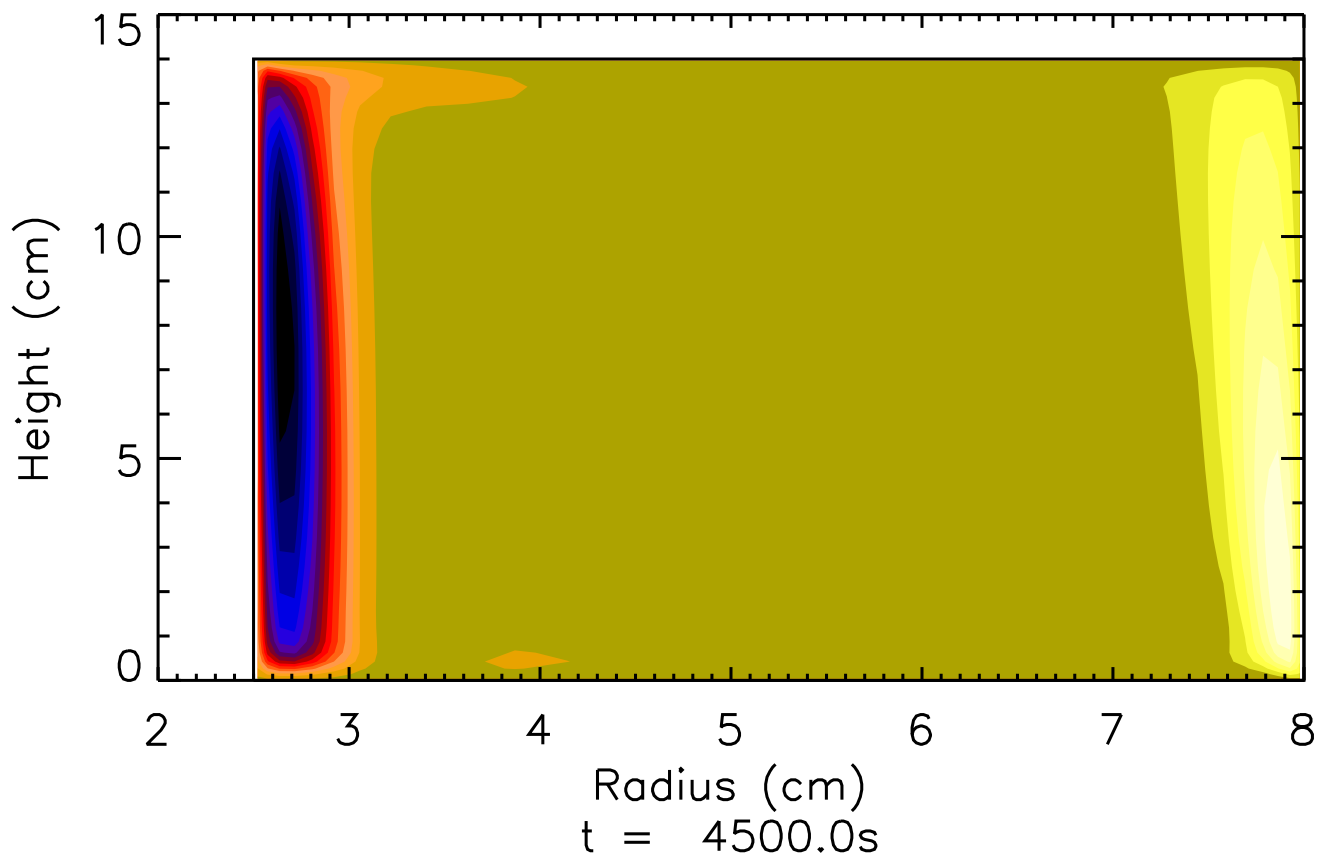
$\langle w \rangle$



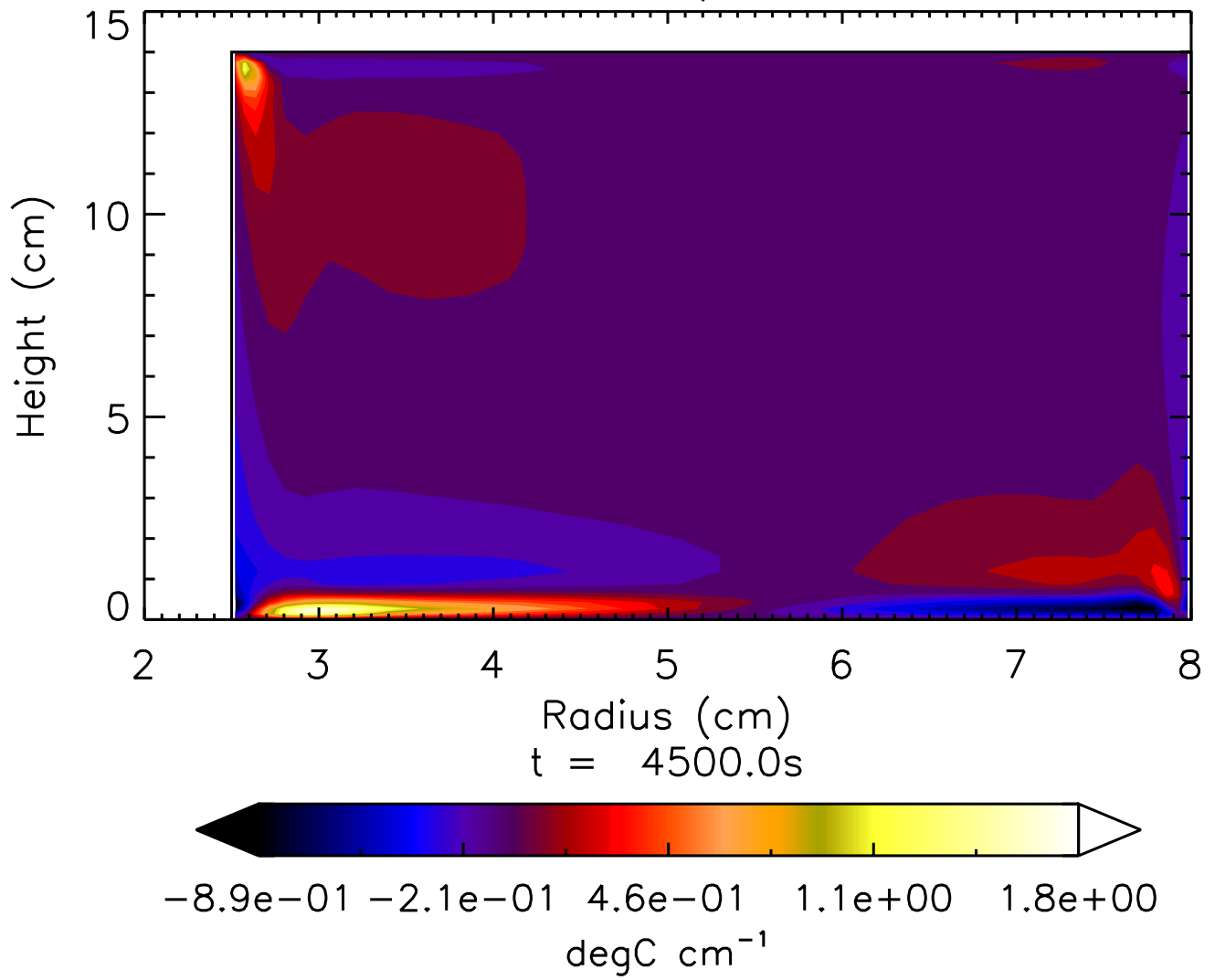
$\langle T'' \rangle$



$\langle w'' \rangle$

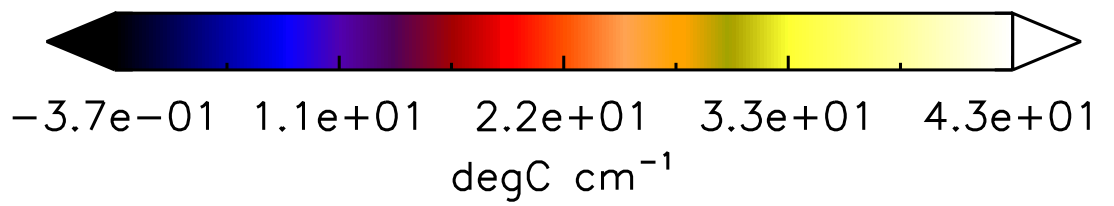
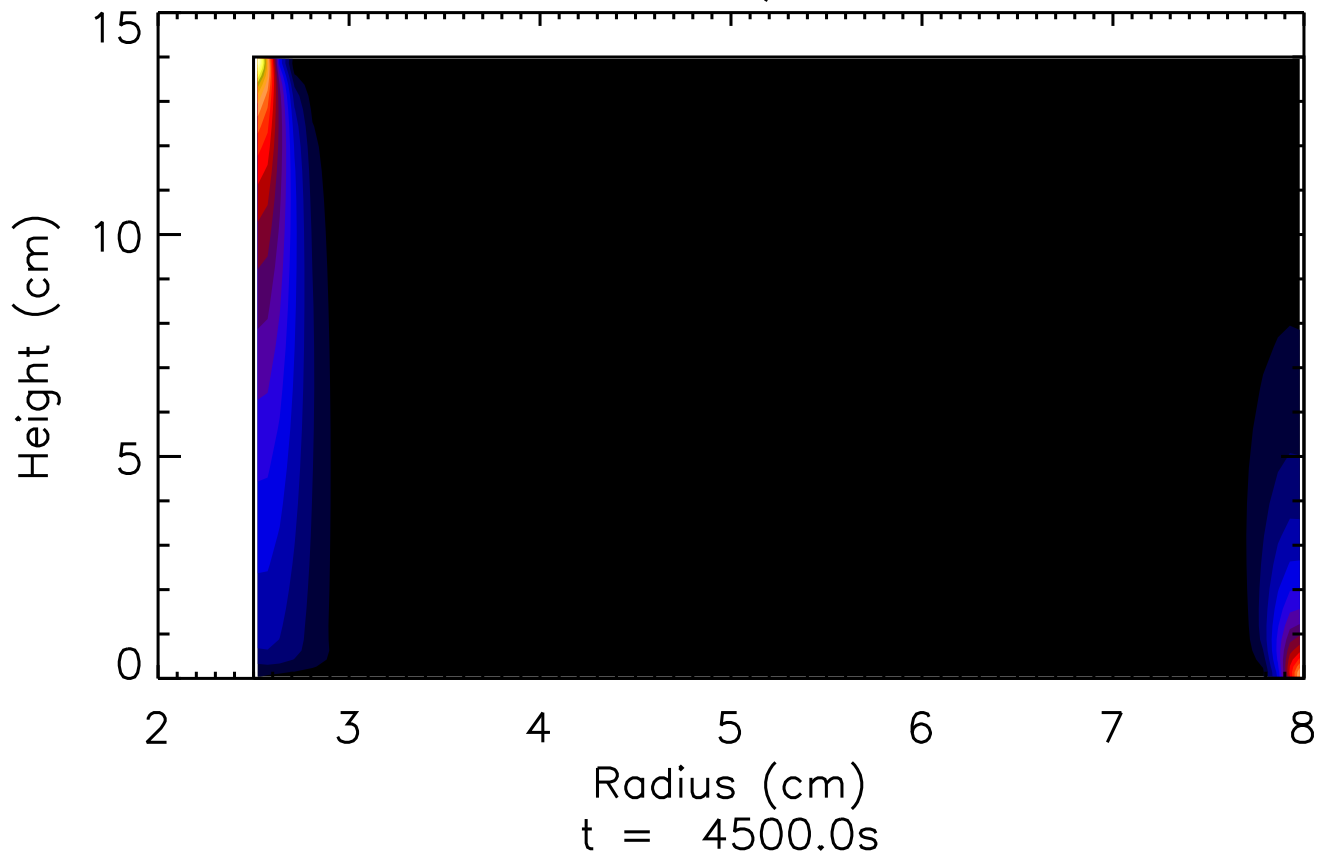


$$\partial \langle T'' \rangle / \partial z$$

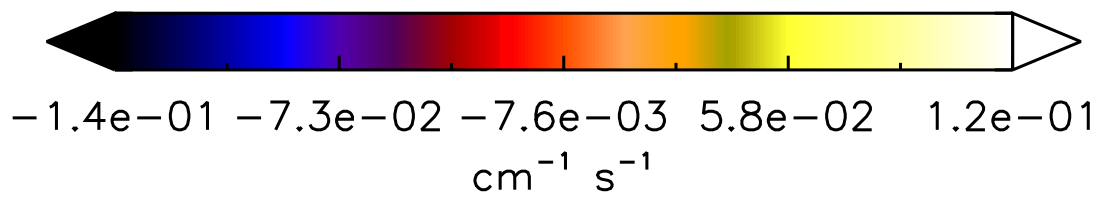
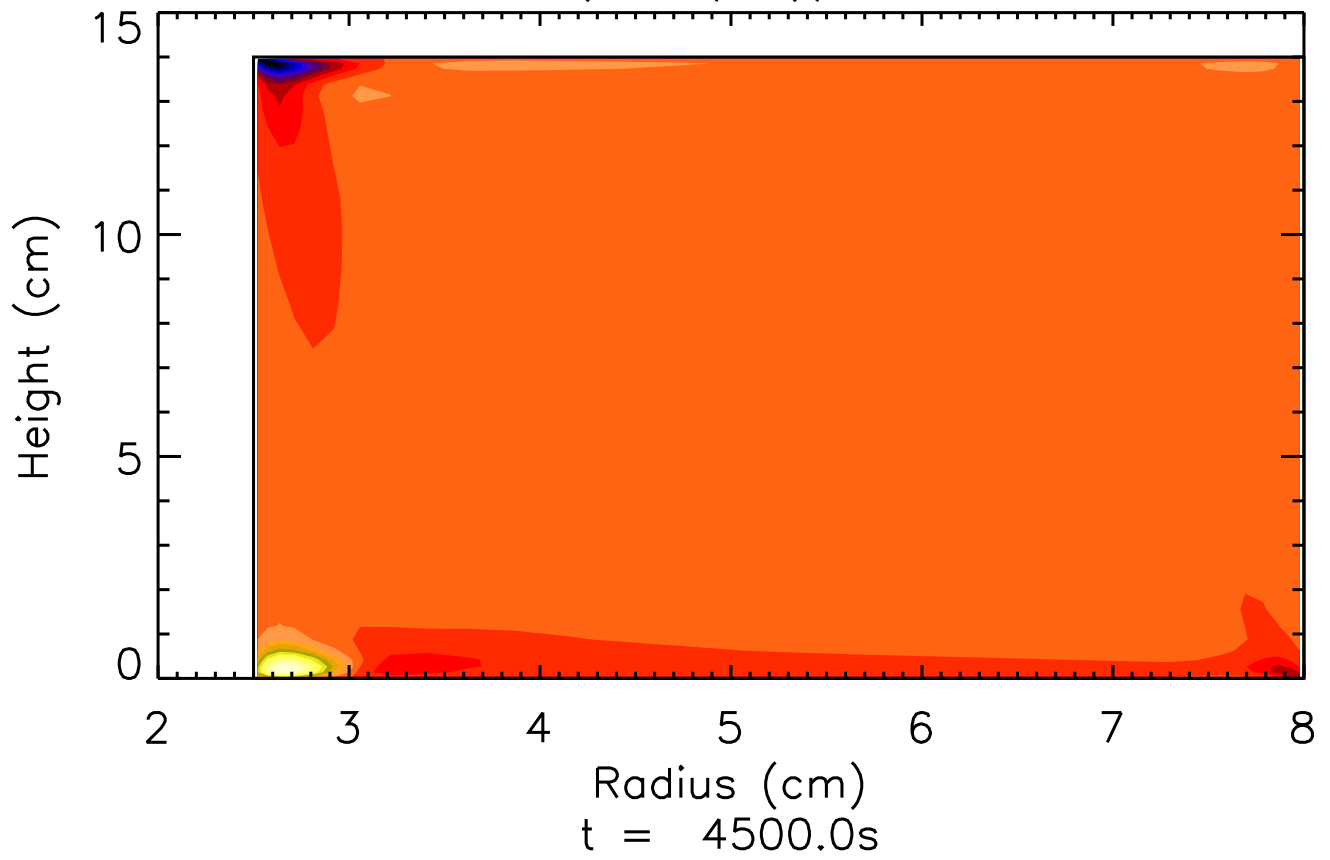




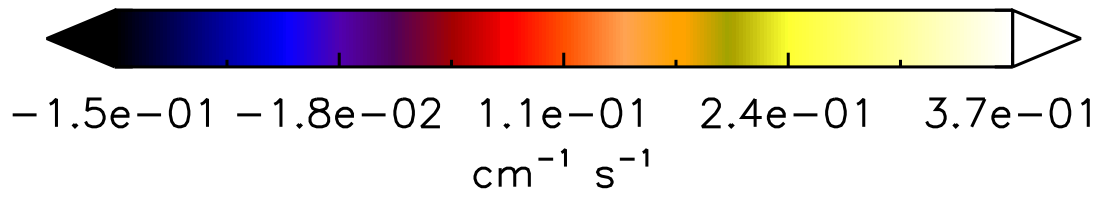
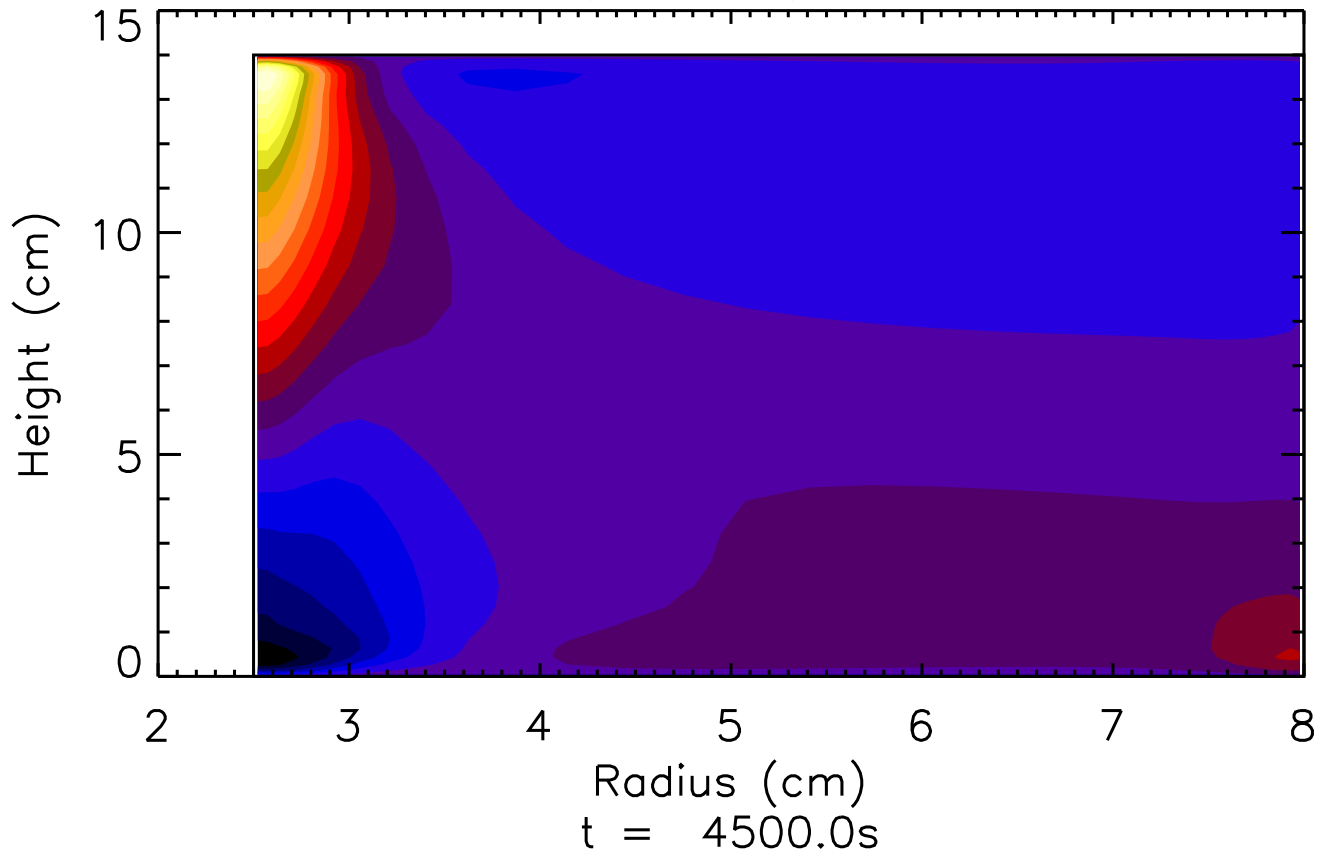
$$\partial \langle T'' \rangle / \partial R$$



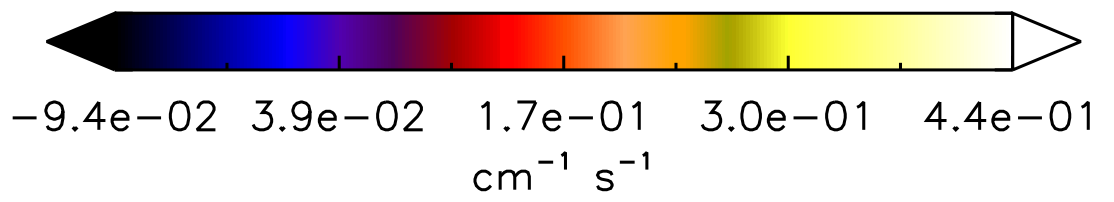
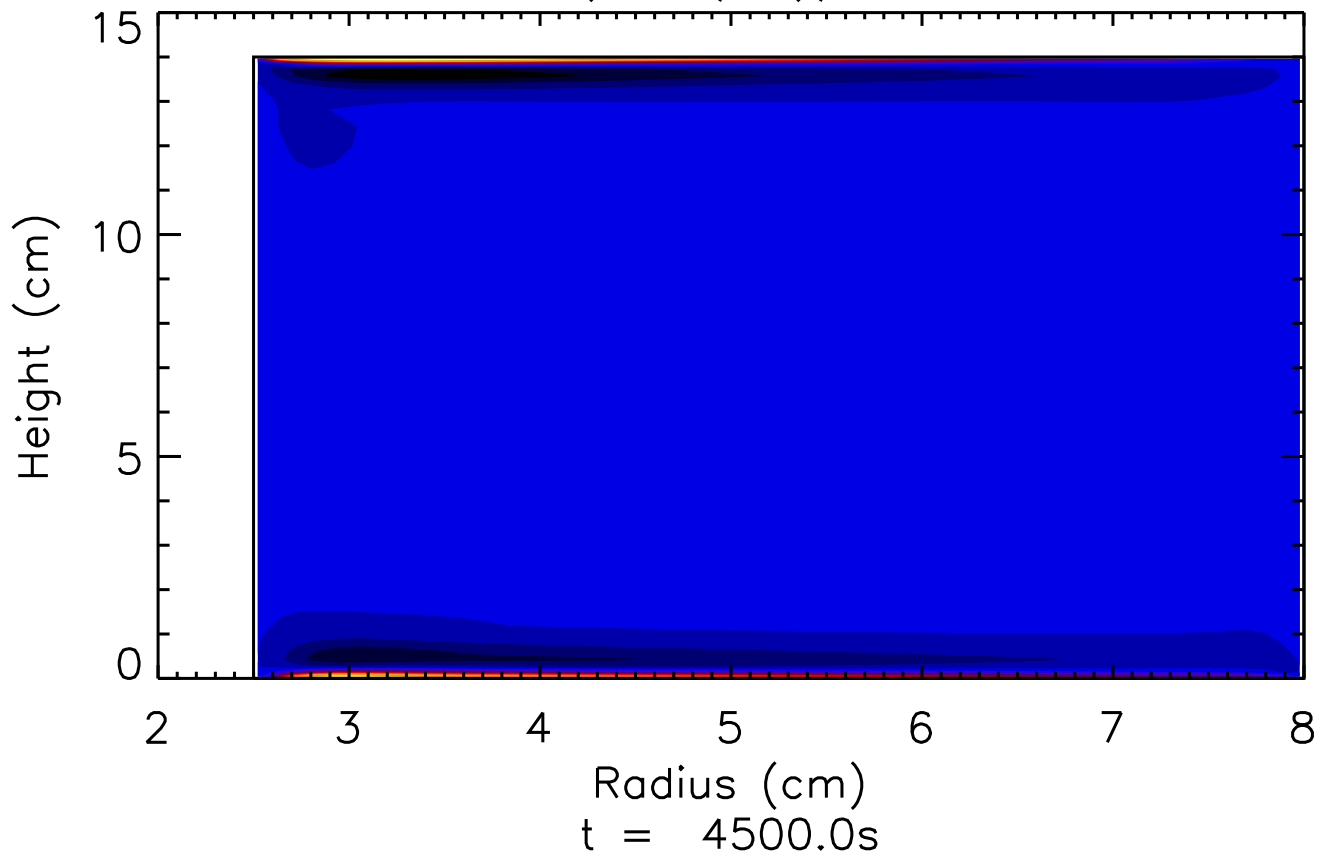
$$\partial(\langle u \rangle / R) / \partial R$$



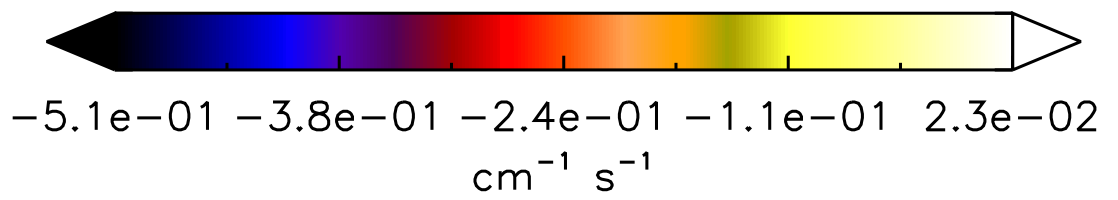
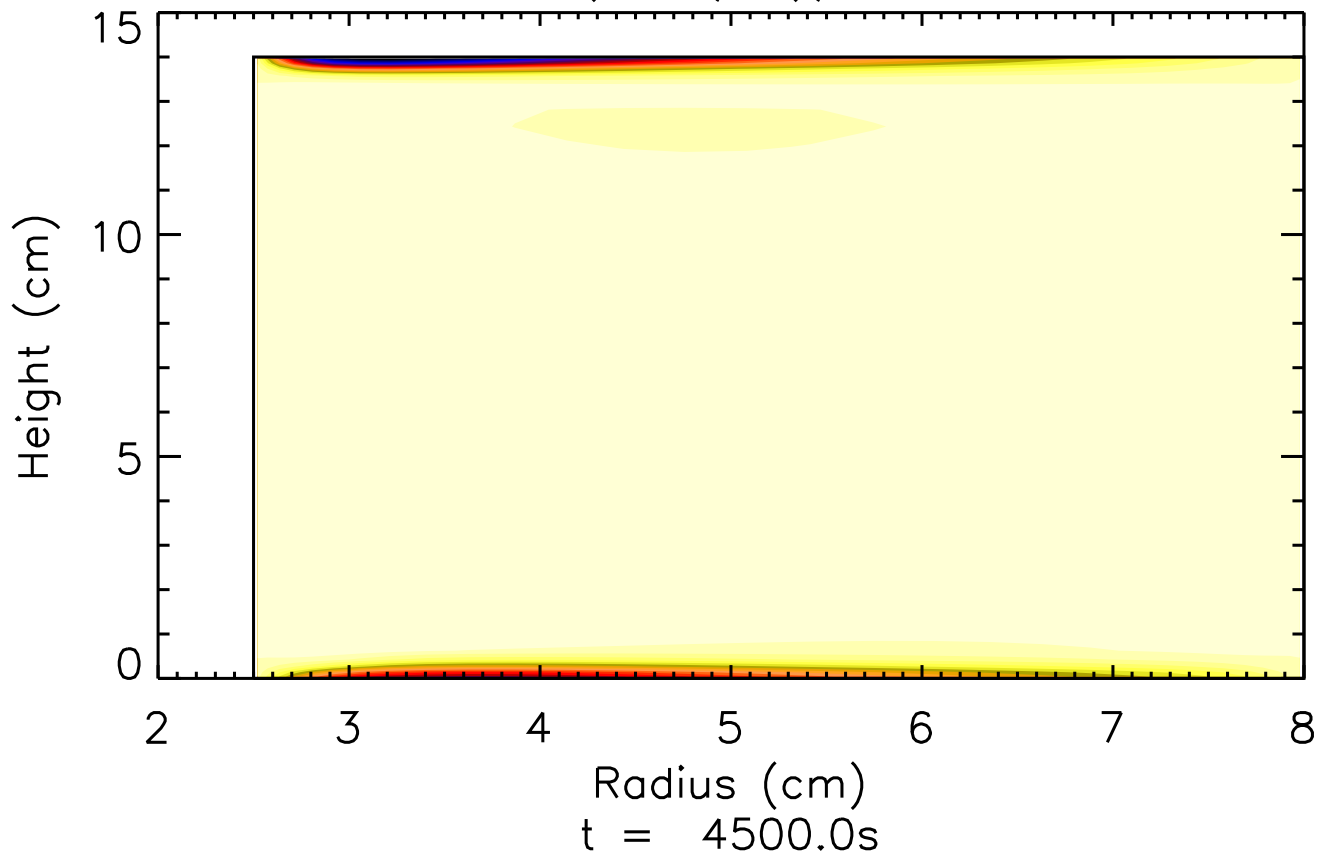
$$\partial(\langle v \rangle / R) / \partial R$$



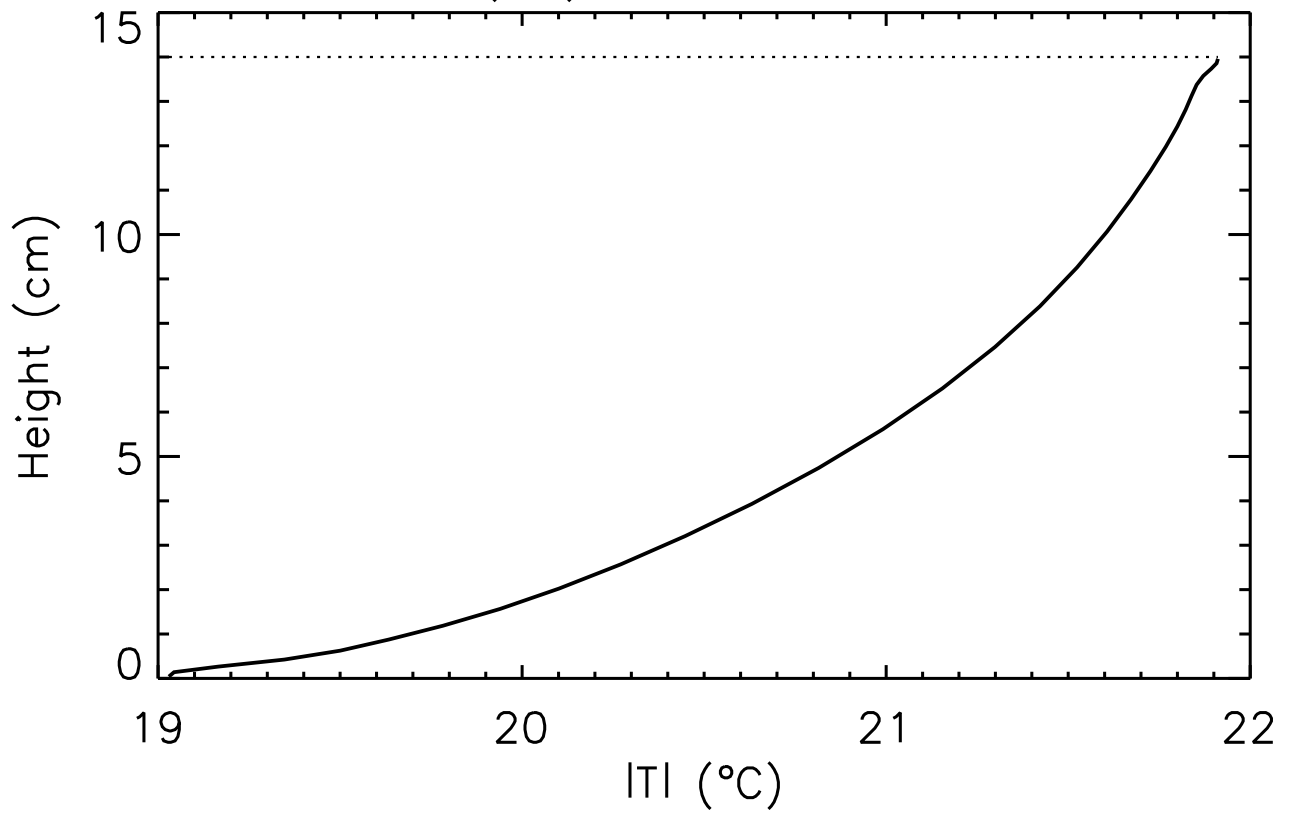
$$\partial(\langle u \rangle / R) / \partial z$$



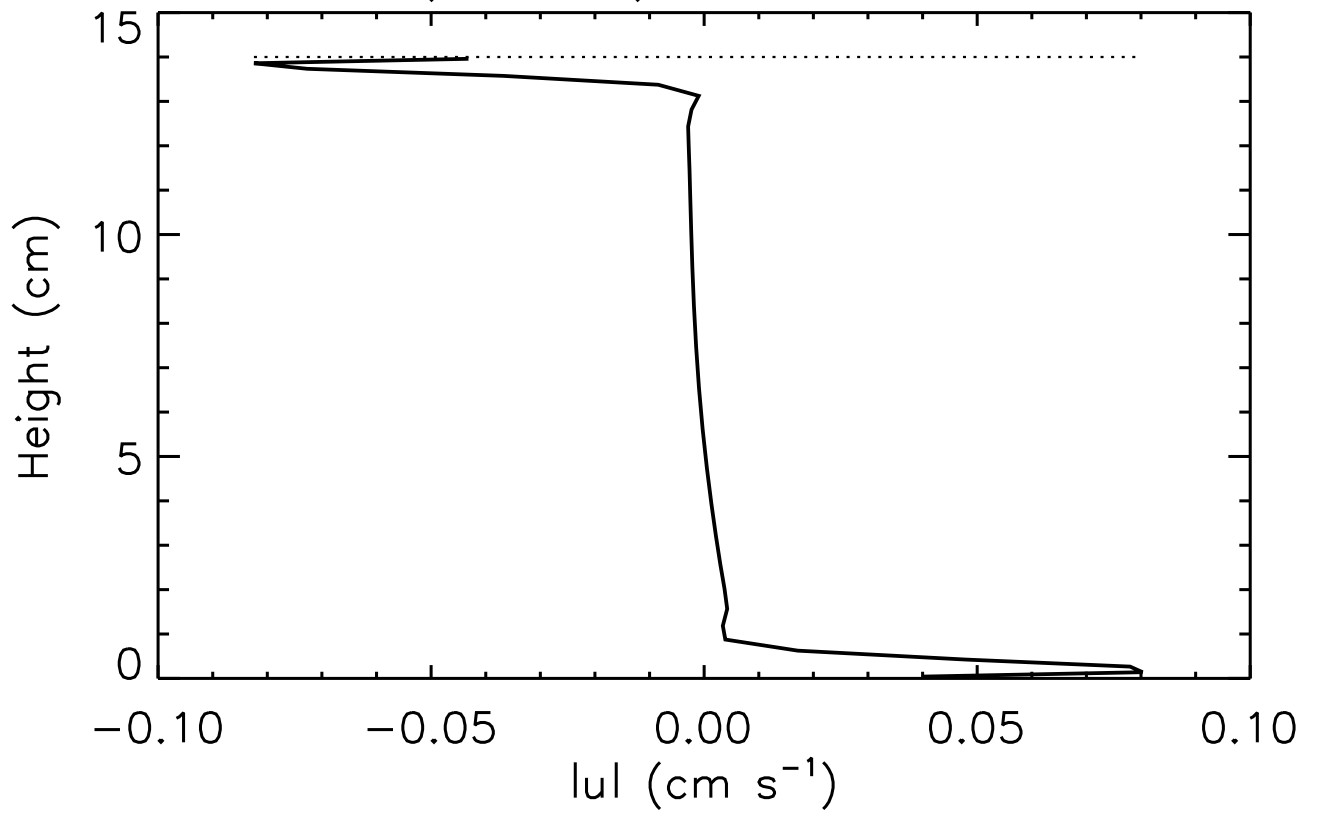
$$\partial(\langle v \rangle / R) / \partial z$$



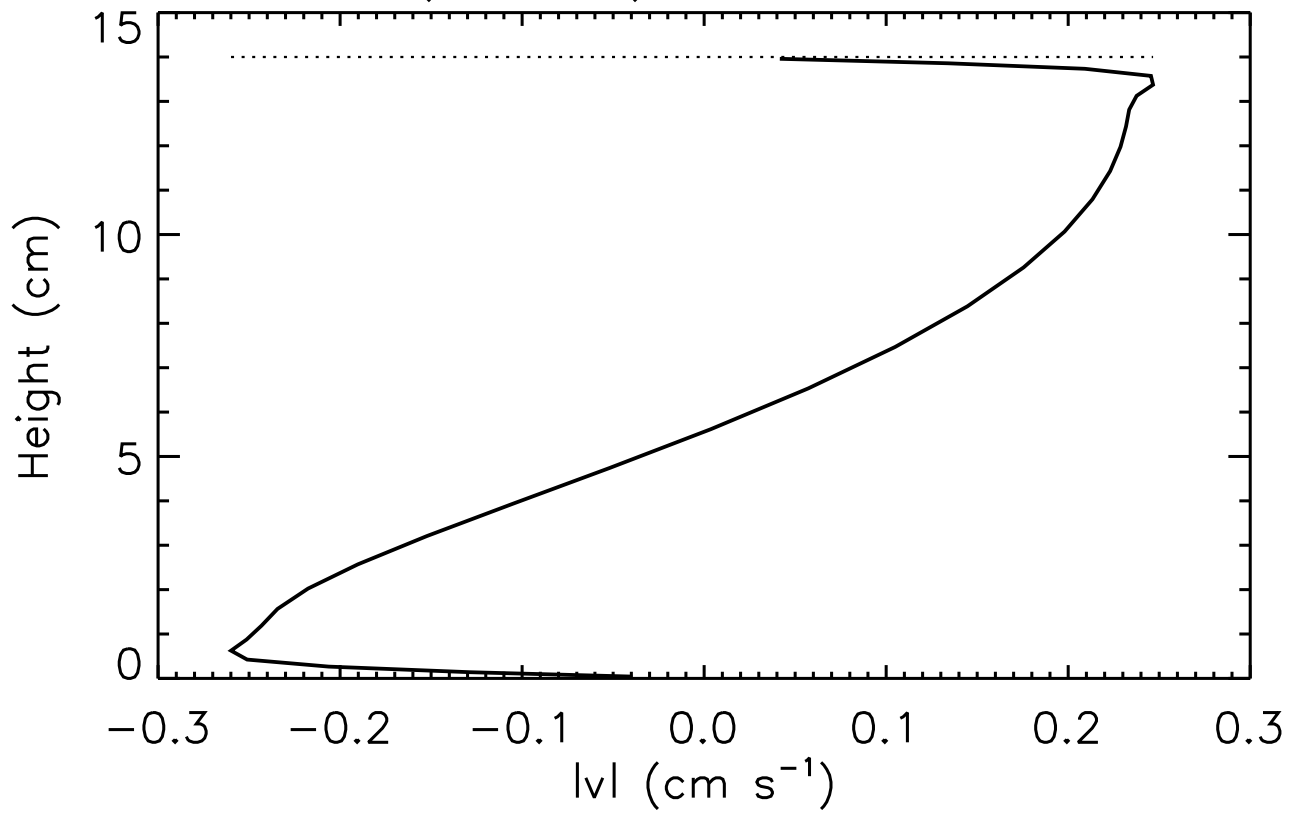
ITI (°C) t = 4500.0s



$lul$  ( $\text{cm s}^{-1}$ )  $t = 4500.0\text{s}$

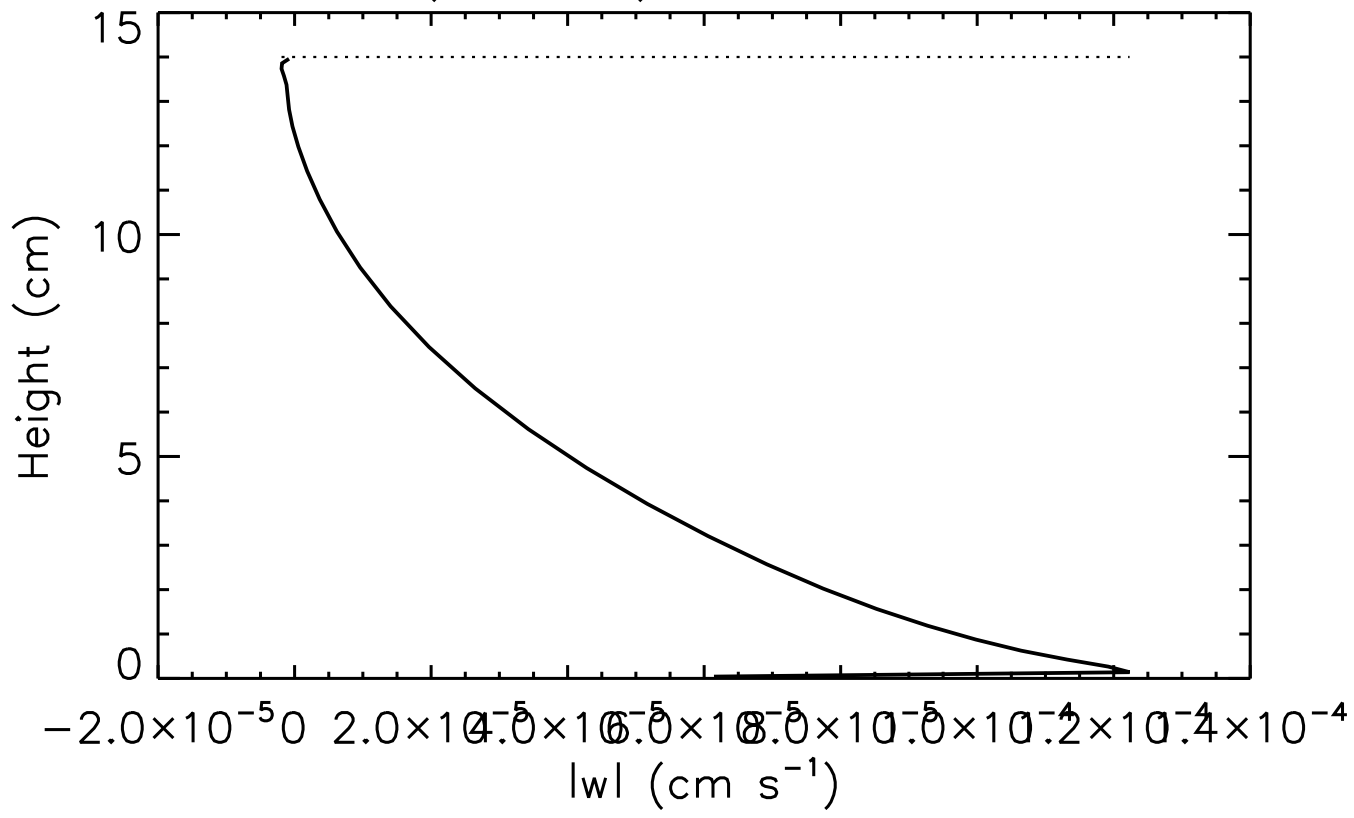


$lv_l$  ( $\text{cm s}^{-1}$ )  $t = 4500.0\text{s}$

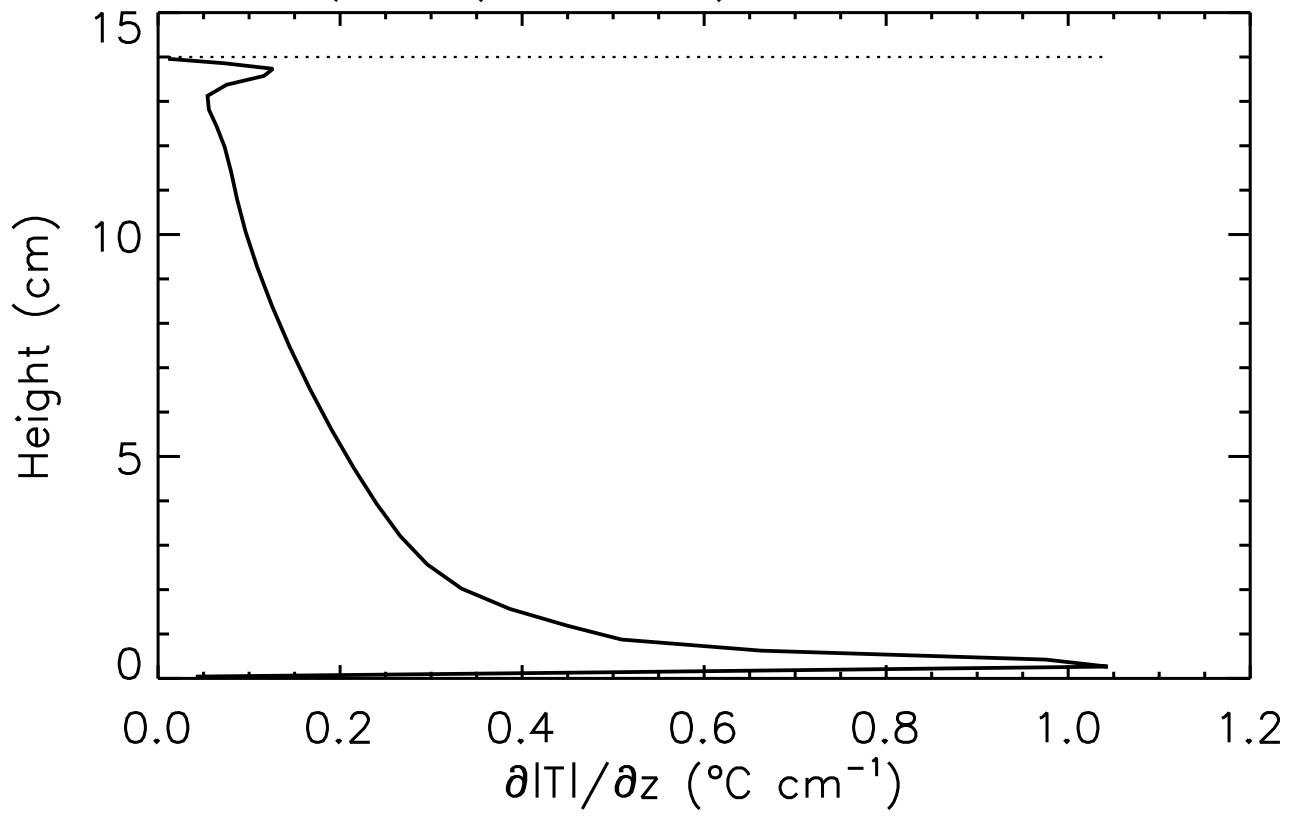




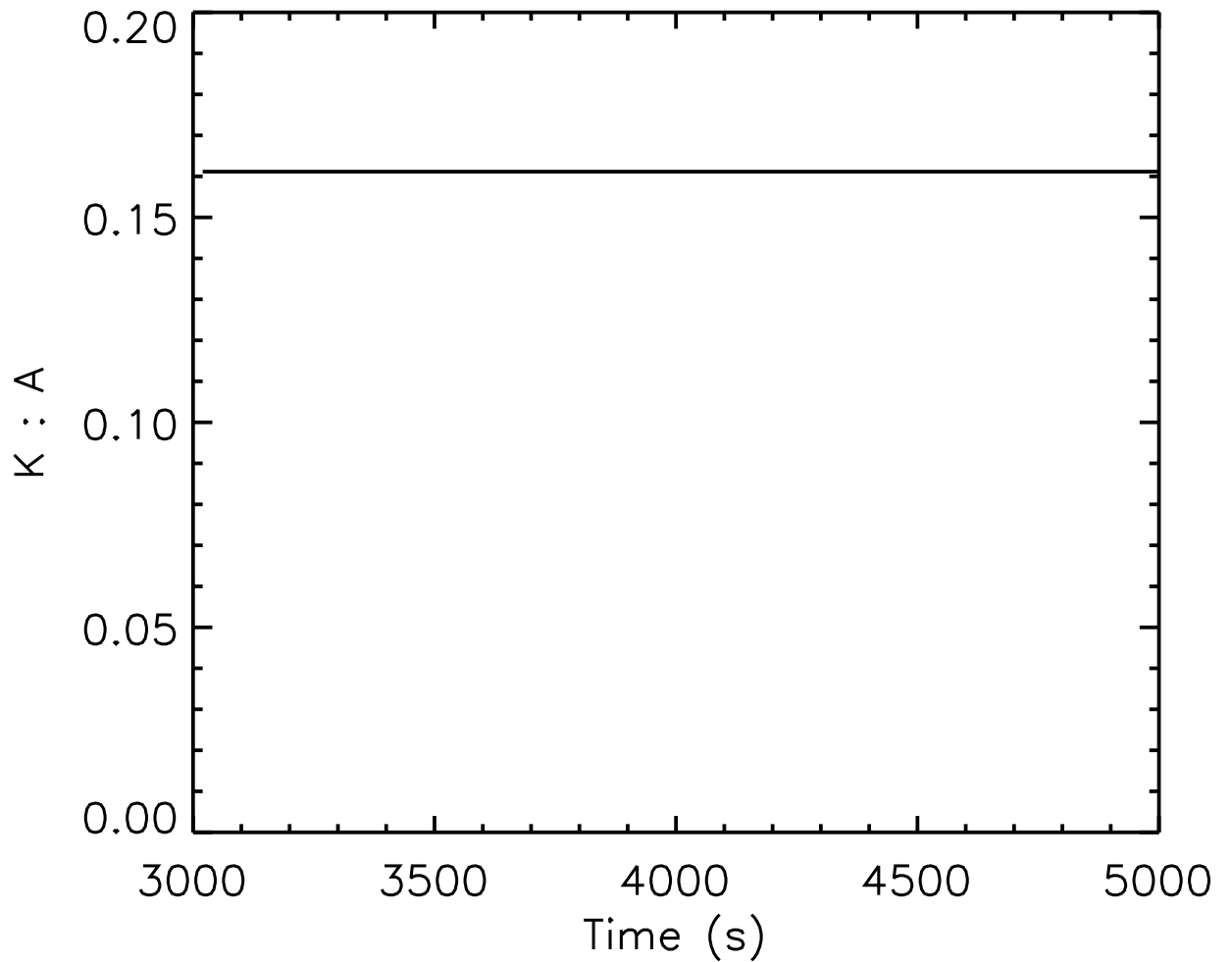
$lwI$  ( $\text{cm s}^{-1}$ )  $t = 4500.0\text{s}$



$\partial|T|/\partial z$  ( $^{\circ}\text{C cm}^{-1}$ )  $t = 4500.0\text{s}$



# Ratio K to A



Percentiles [25,50,75]=[ 1.61e-01, 1.61e-01, 1.61e-01]

# Energy rates of change

