IPAC Follow-up

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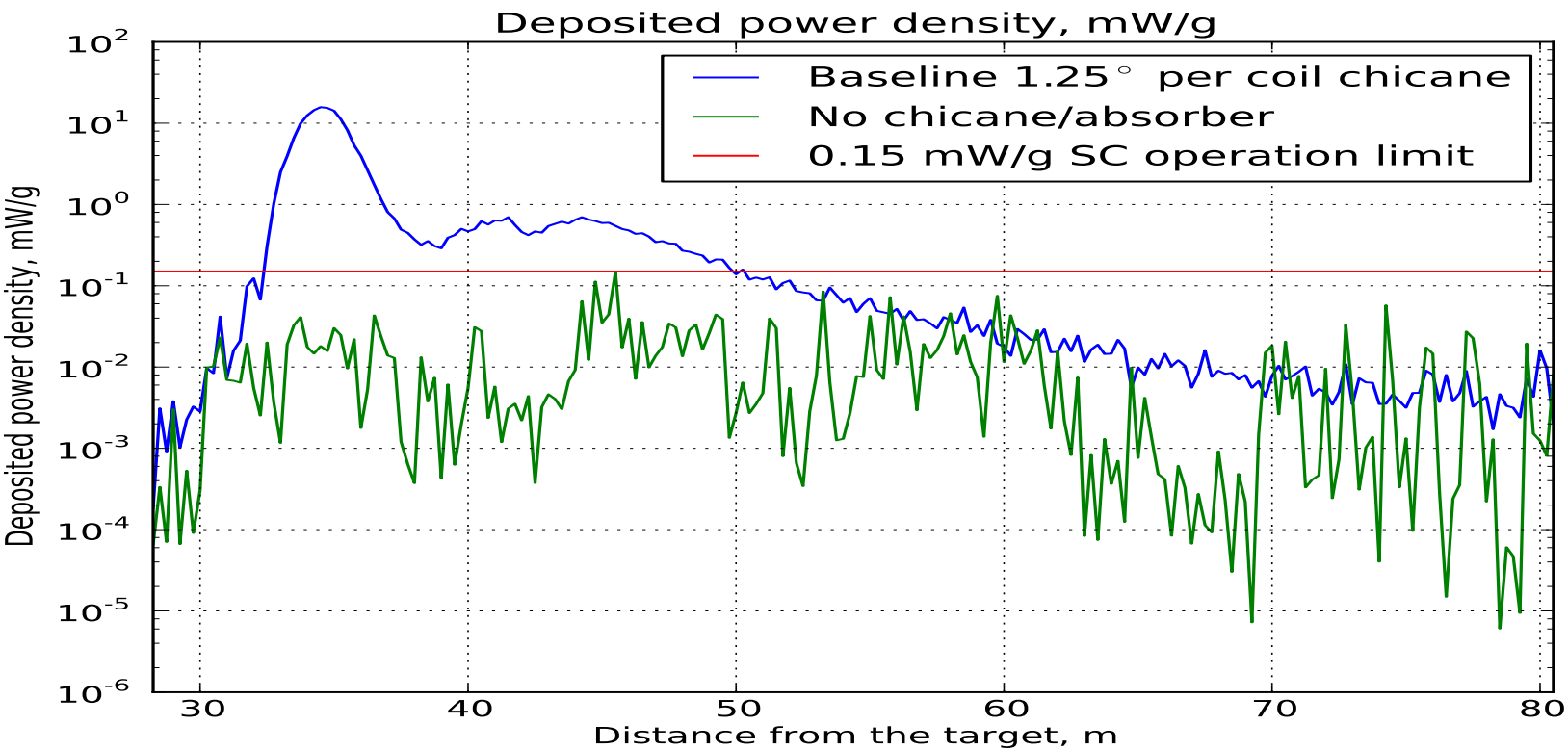
IPAC article questions

1. Why is the power deposition higher before the chicane/proton absorber than when there is no chicane/proton absorber at all?
2. Why is the power deposition higher after the chicane/proton absorber than when there is no chicane/proton absorber at all?

Plot in question



The graph shows the total energy deposition from all sources. I don't think seeing more energy deposited in the coils in the chicane/absorber scheme is a bad thing. That means less contamination in the downstream beam. In the case with no chicane/absorber all that undesired energy propagates downstream.

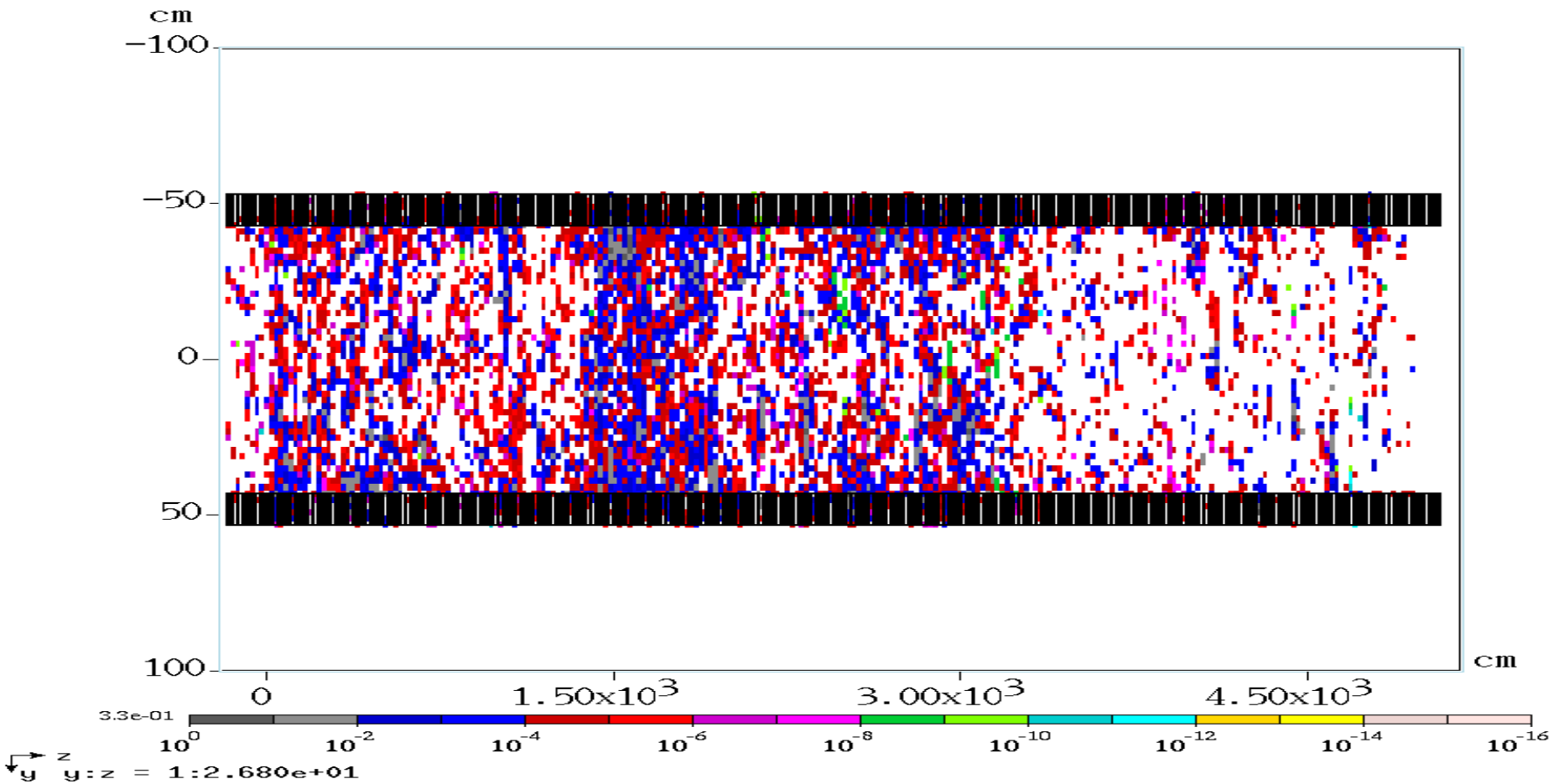
My response, details

I don't think there is anything wrong with MARS simulations.

1. Why is the power deposition higher before the chicane/proton absorber than when there is no chicane/proton absorber at all? — I presume this is due to the particles reflected back from the coils that take the main hit in the chicane.
2. Why is the power deposition higher after the chicane/proton absorber than when there is no chicane/proton absorber at all? — Again, that's definitely not from protons or muons, judging by the numbers it is due to EMS.

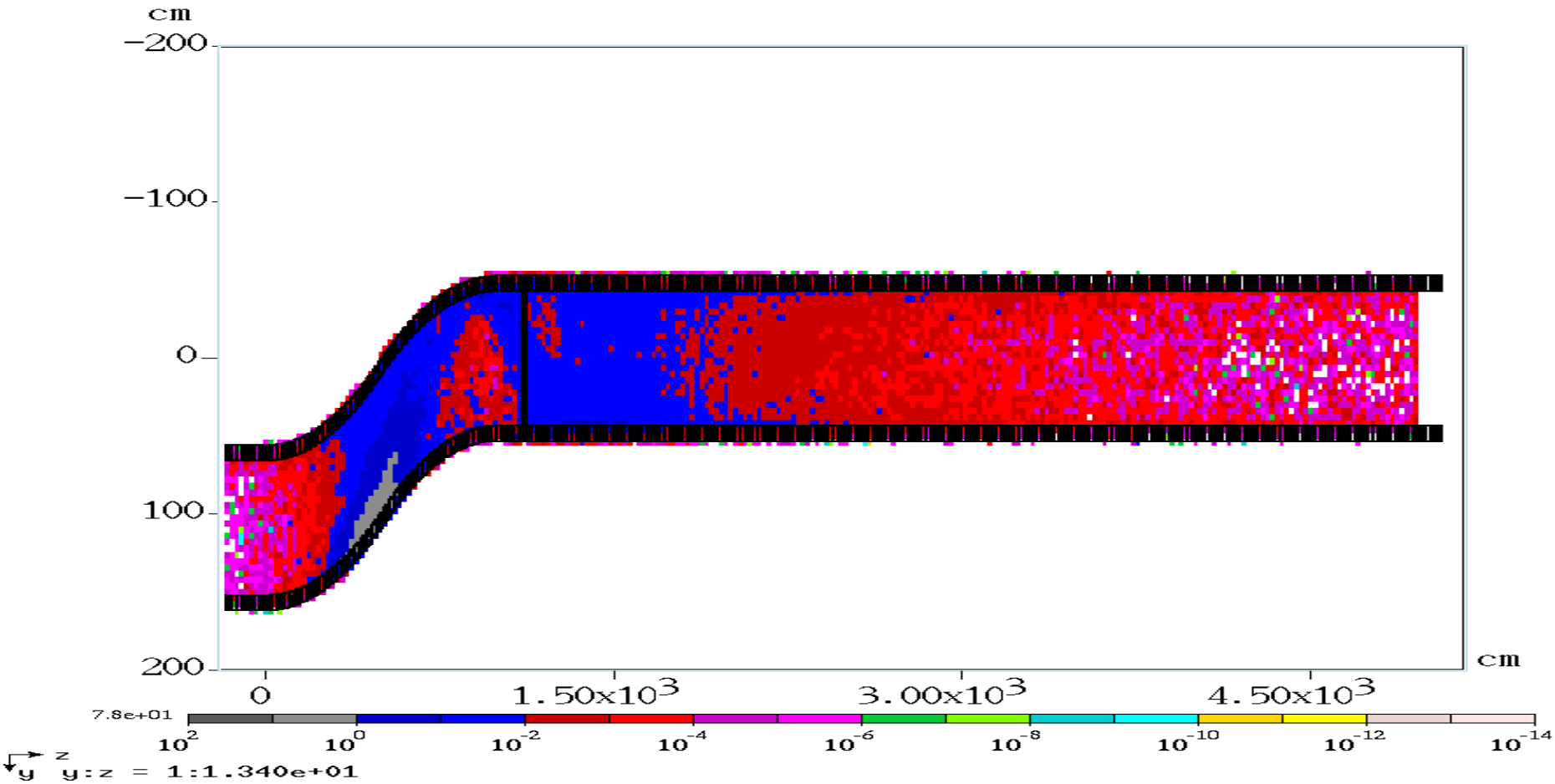
Histograms are in the next few slides.

PDT, no chicane, no absorber



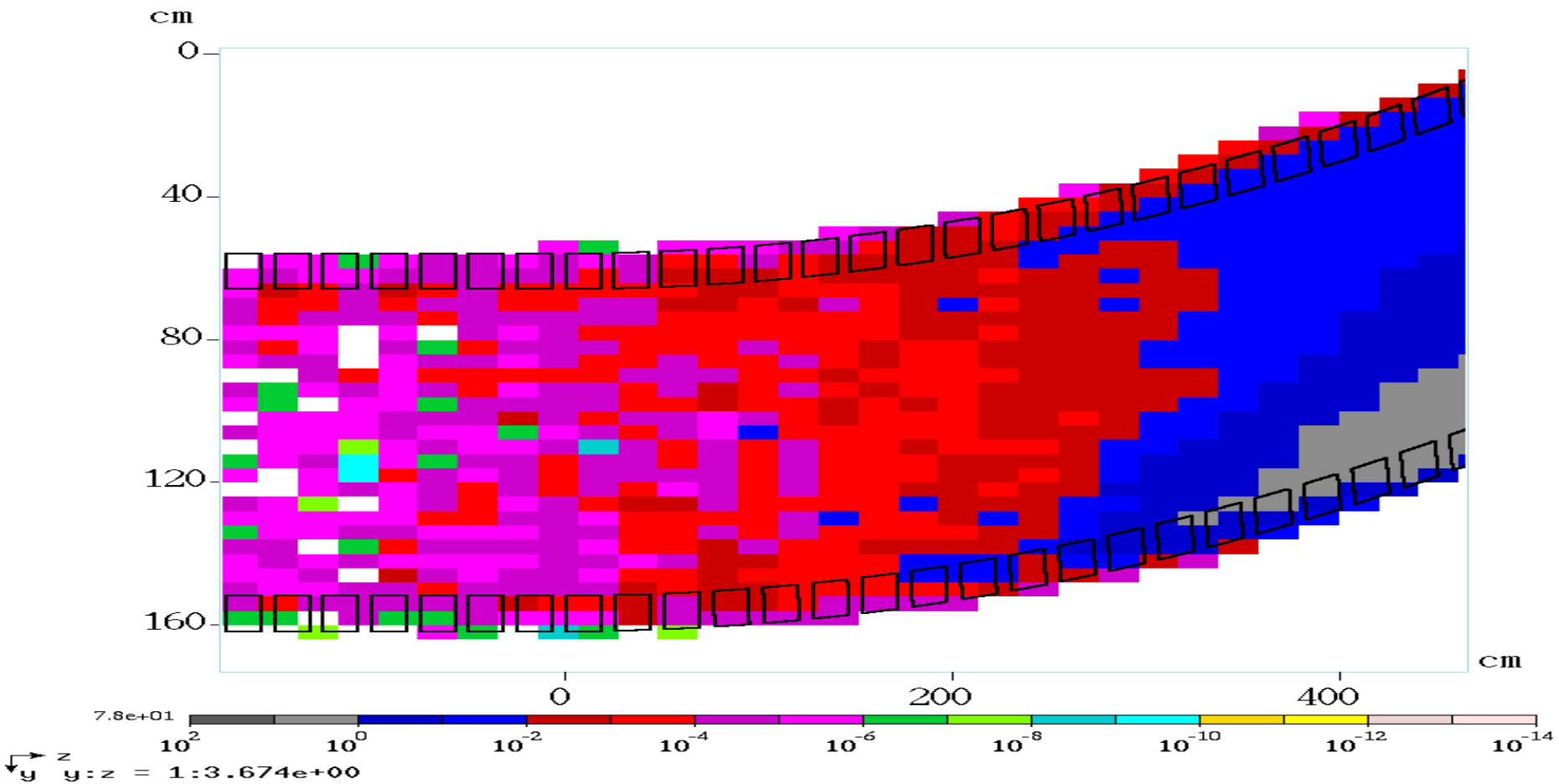
Power density total, mW/g, with no chicane and no absorber.

PDT, with chicane and absorber



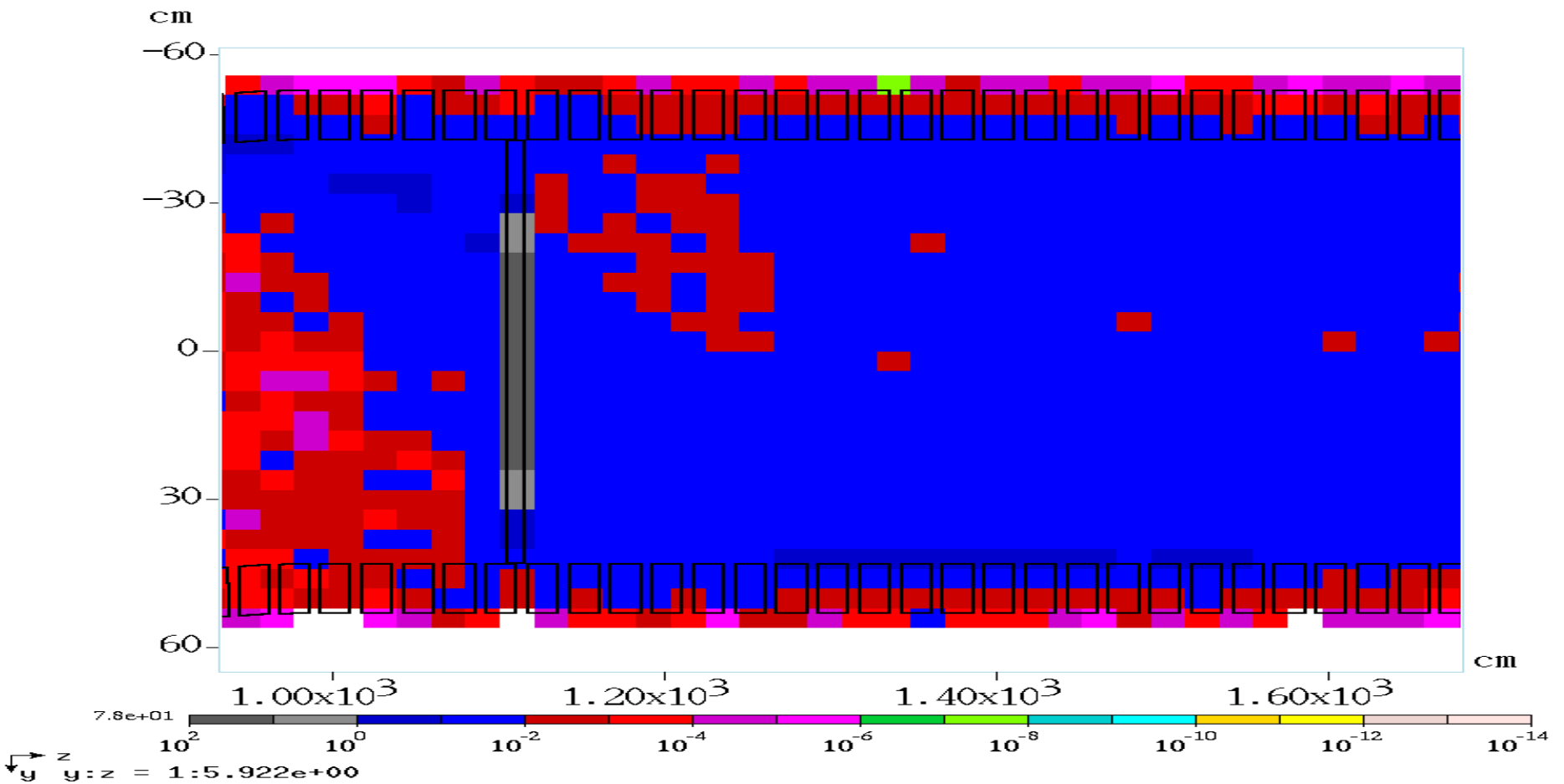
Power density, total, mW/g, with chicane and absorber. Same color shows values two magnitude higher than in the previous slide.

PDT, with chicane and absorber



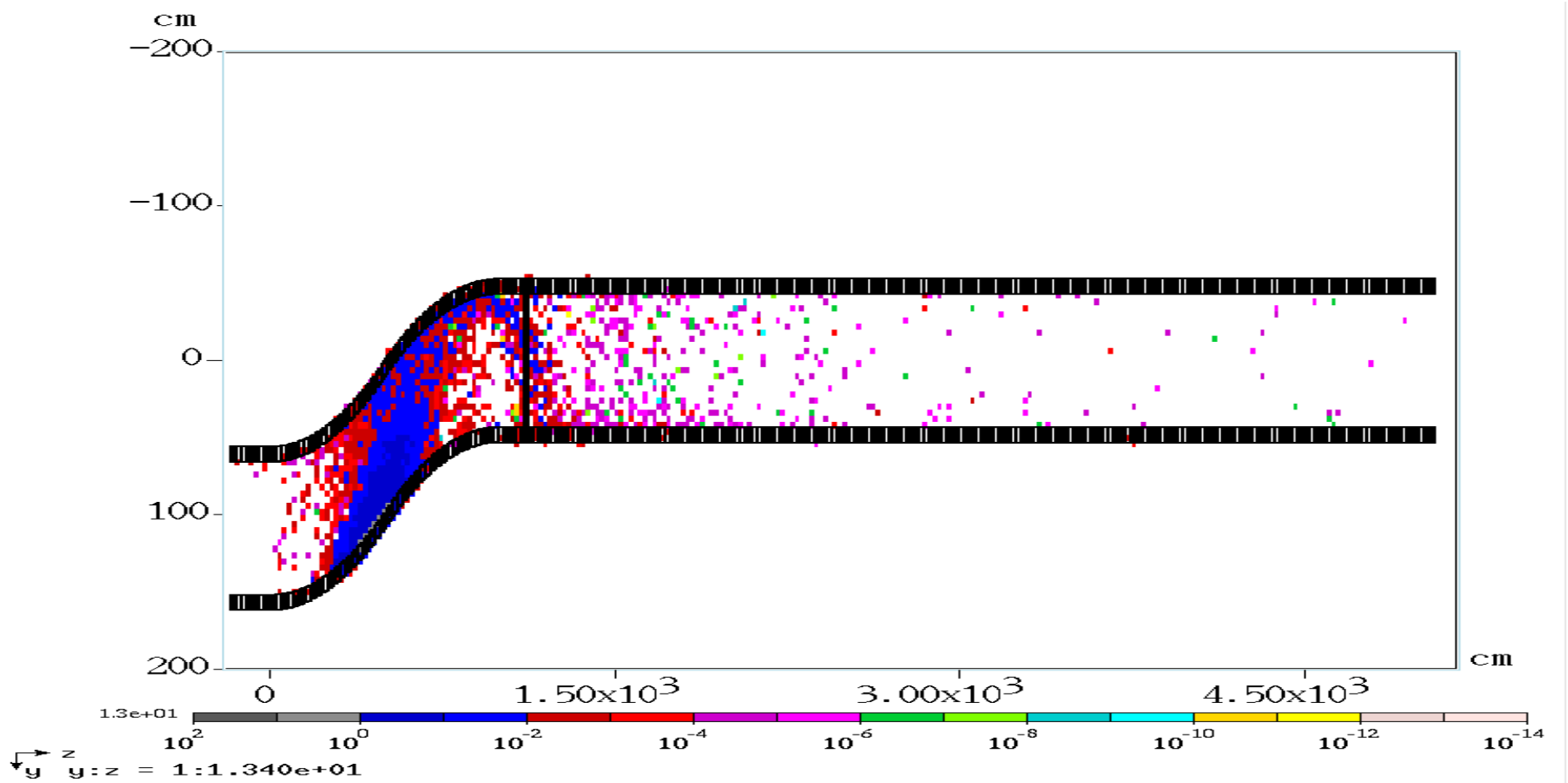
Power density, total, mW/g, with chicane and absorber, zoom into the chicane area.

PDT, with chicane and absorber



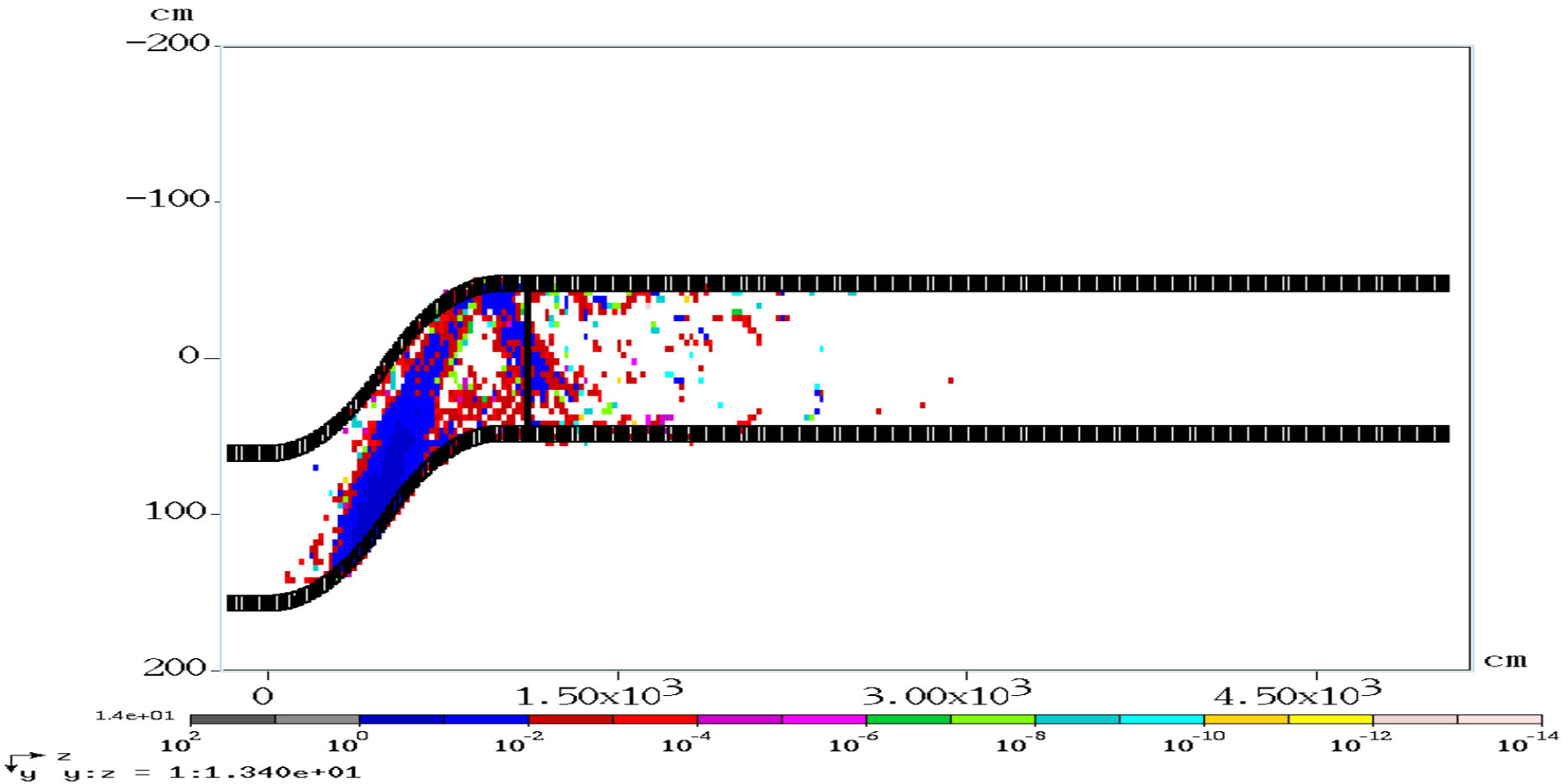
Power density, total, mW/g, with chicane and absorber, zoom into the area after the proton absorber.

PDP, with chicane and absorber



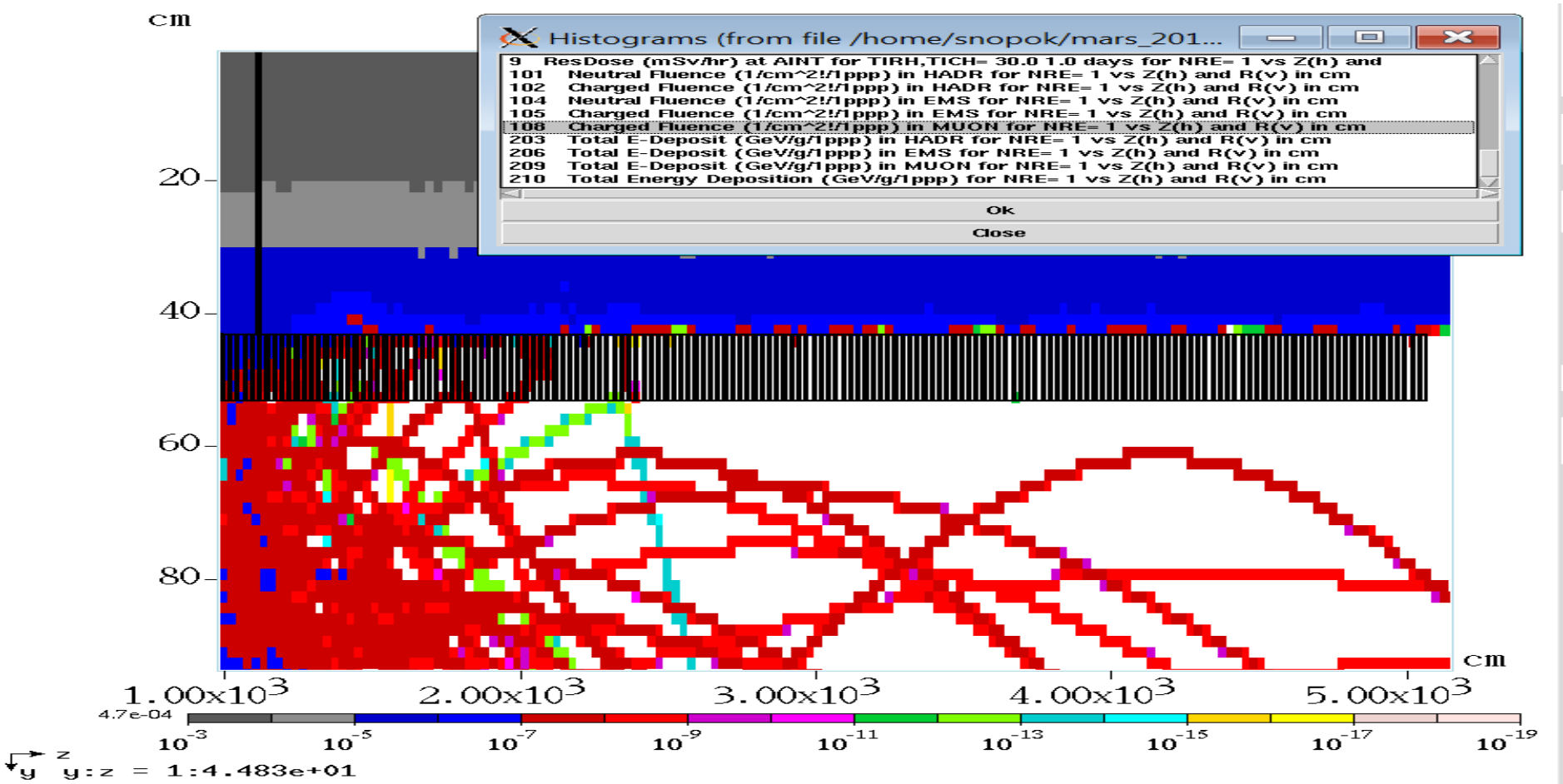
Power density, protons, mW/g, with chicane and absorber. Not a significant contribution downstream of the absorber.

PDM, with chicane and absorber



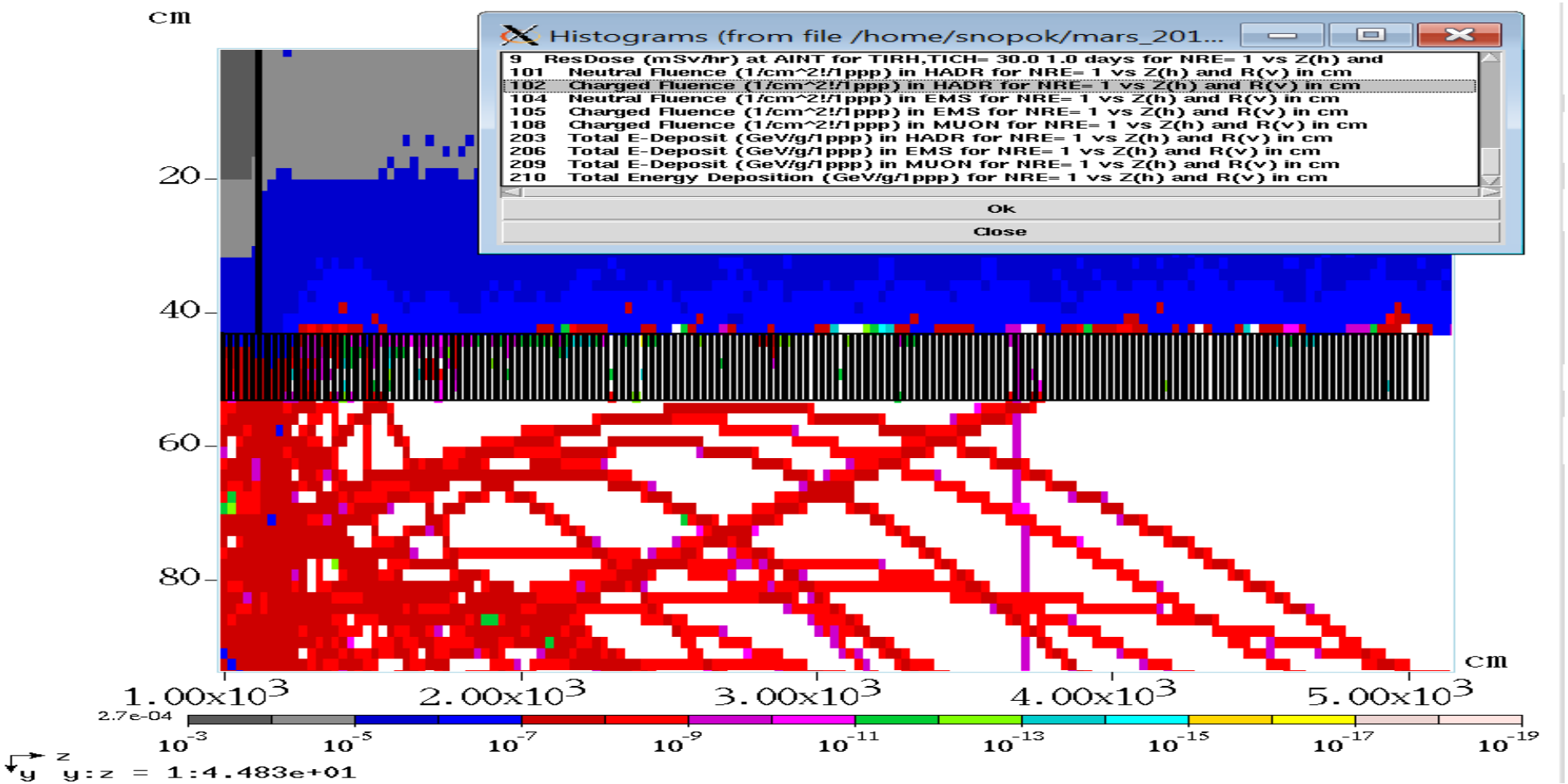
Power density, muons, mW/g, with chicane and absorber. Not a significant contribution downstream of the absorber.

Charged fluence: muons



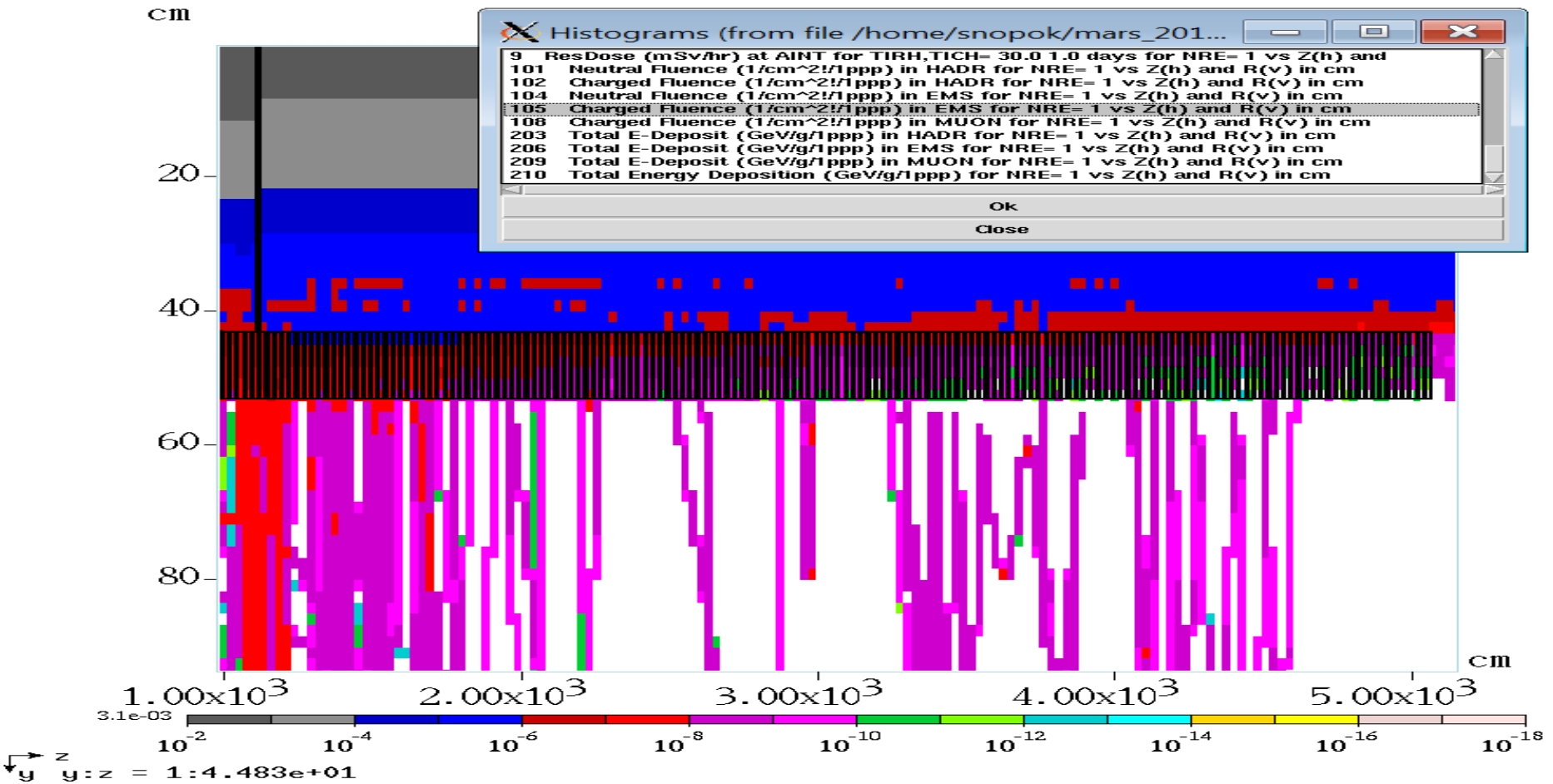
- Muons: small contribution in the coils downstream of the absorber.

Charged fluence: protons



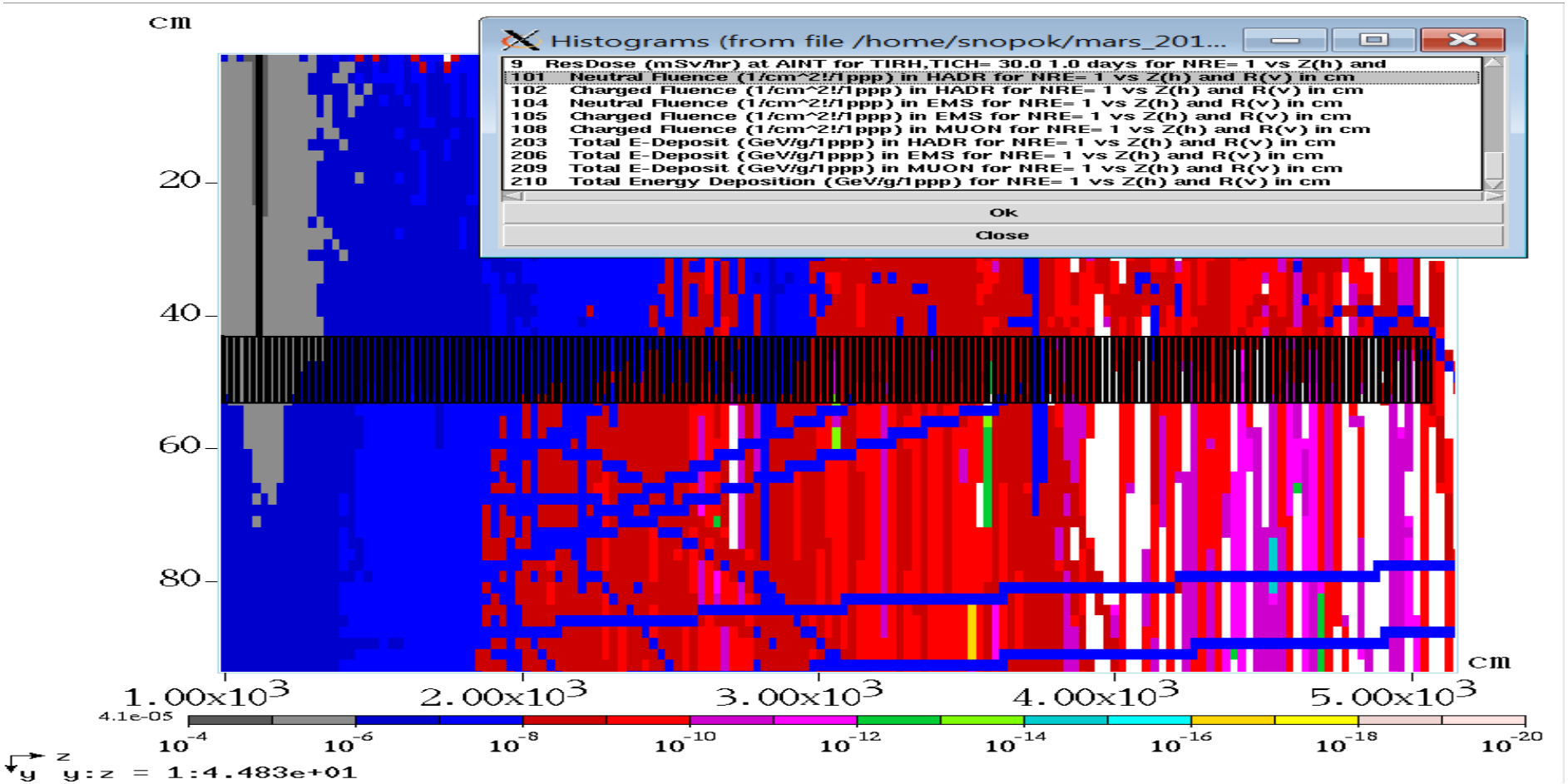
- Protons: small contribution in the coils downstream of the absorber.

Charged fluence: e^+/e^-



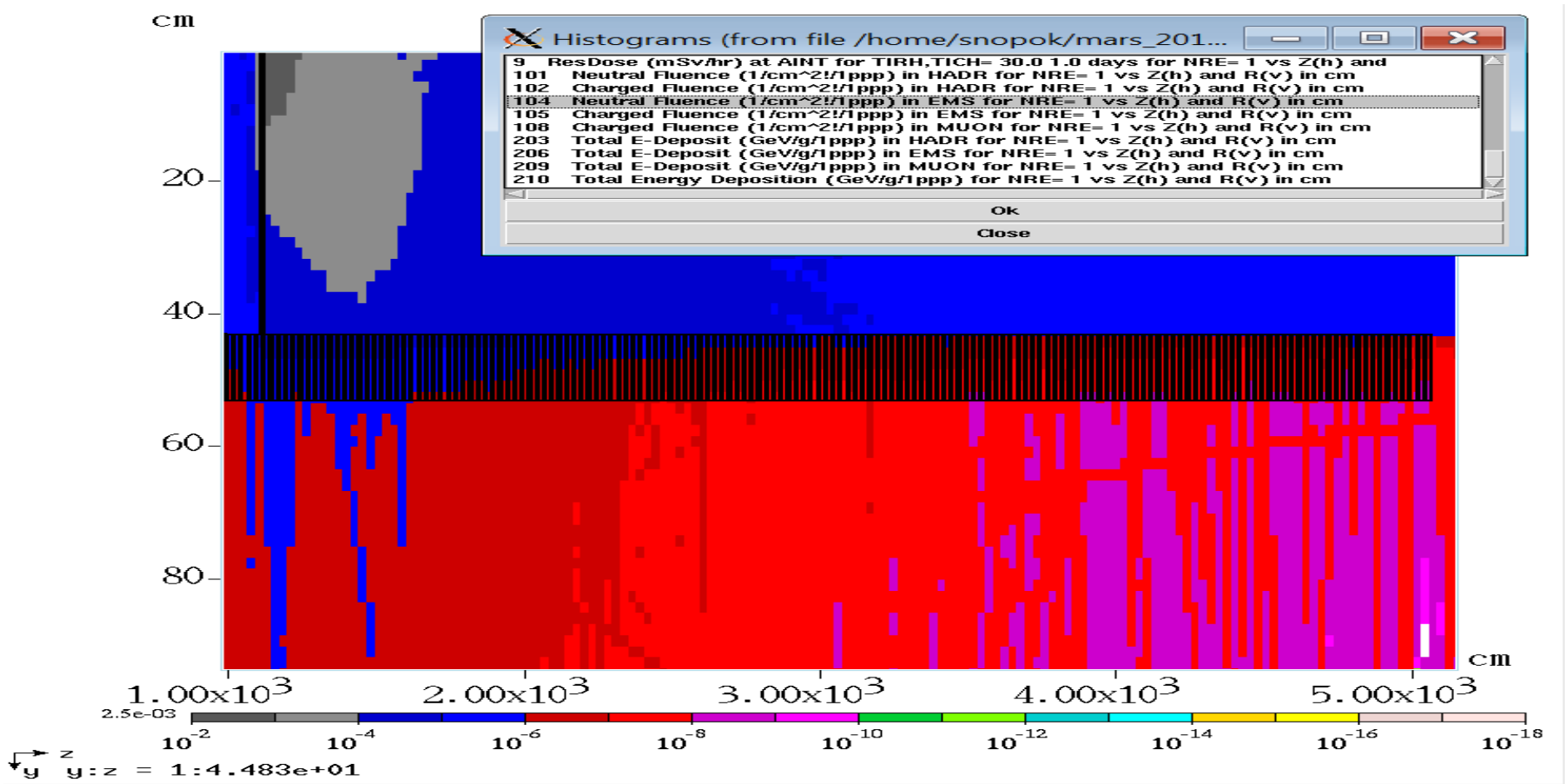
- EMS contribution: major factor downstream of the absorber.

Neutral fluence: neutrons



- Neutrons: small contribution.

Neutral fluence: gammas



- EMS contribution: strong again.