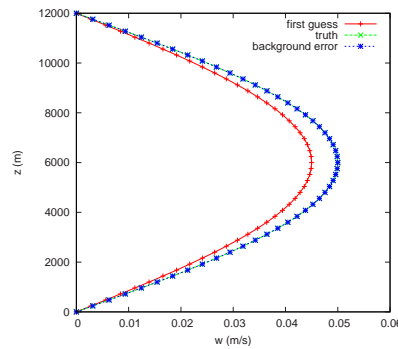


Checking the effect of the perturbations on the value of J

Alison C. Rudd

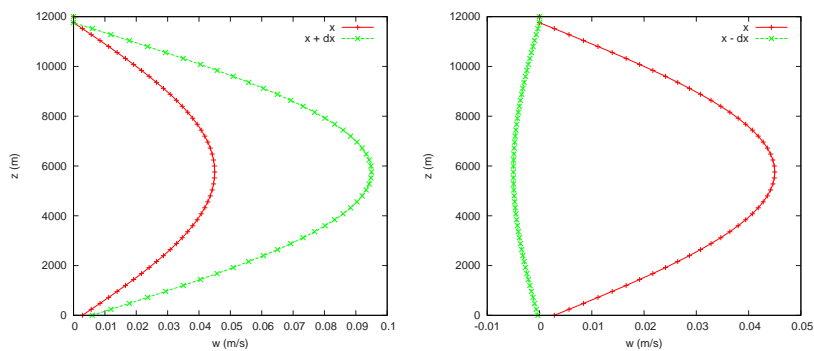
December 9, 2008

I left the true profiles alone and just perturbed the background profile.
The error for w is the same as the true value of w .



(a)

Figure 1:



(a) $w + \sigma_w$

(b) $w - \sigma_w$

Figure 2: w

Note that when $w - \sigma_w$ we get values of w that are negative.

	J^o
\mathbf{w}	18.7696736613883
$\mathbf{w} + \sigma_{\mathbf{w}}$	417.695141880530
$\mathbf{w} - \sigma_{\mathbf{w}}$	7746.17472117228

Table 1:

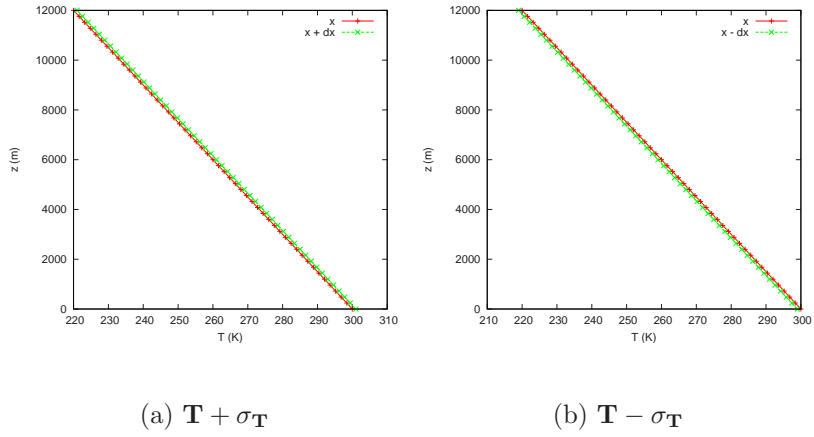


Figure 3: T

	J^o
\mathbf{T}	18.7696736613883
$\mathbf{T} + \sigma_{\mathbf{T}}$	1898.92059872172
$\mathbf{T} - \sigma_{\mathbf{T}}$	1220.79043021673

Table 2:

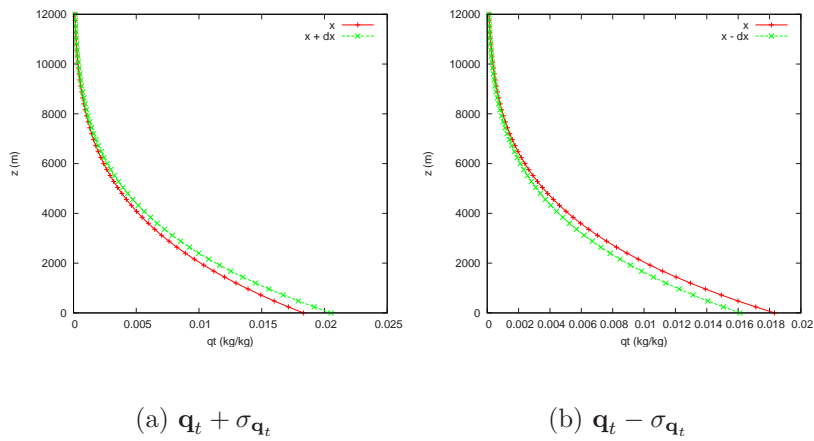


Figure 4: q_t

	J°
\mathbf{q}_t	18.7696736613883
$\mathbf{q}_t + \sigma_{\mathbf{q}_t}$	1263.84095647481
$\mathbf{q}_t - \sigma_{\mathbf{q}_t}$	3305.62484061139

Table 3:

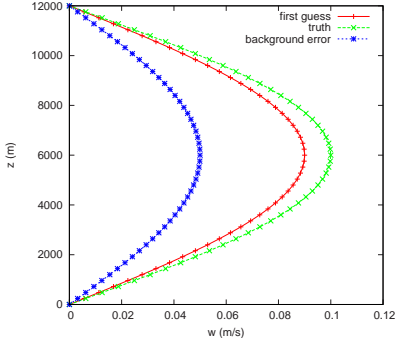
	Difference in J°
$J(\mathbf{w} + \sigma_{\mathbf{w}}) - J(\mathbf{w})$	398.925468019142
$J(\mathbf{T} + \sigma_{\mathbf{T}}) - J(\mathbf{T})$	1880.15092486033
$J(\mathbf{q}_t + \sigma_{\mathbf{q}_t}) - J(\mathbf{q}_t)$	1245.07128261342

Table 4: Comparing the difference in J . Positive perturbations.

	Difference in J°
$J(\mathbf{w} - \sigma_{\mathbf{w}}) - J(\mathbf{w})$	7727.40504731089
$J(\mathbf{T} - \sigma_{\mathbf{T}}) - J(\mathbf{T})$	1202.02075635534
$J(\mathbf{q}_t - \sigma_{\mathbf{q}_t}) - J(\mathbf{q}_t)$	3286.8551667500

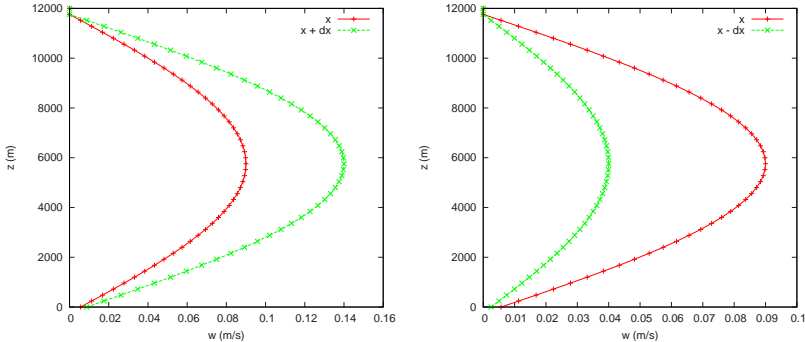
Table 5: Comparing the difference in J . Negative perturbations.

Tried with a larger w profile... so that $\mathbf{w} - \sigma_{\mathbf{w}}$ doesn't take us to a negative w profile.
 I have kept the T and q_t profiles and their errors the same.



(a)

Figure 5:



(a) $\mathbf{w} + \sigma_{\mathbf{w}}$

(b) $\mathbf{w} - \sigma_{\mathbf{w}}$

Figure 6: w

	J°
\mathbf{w}	22.9244458059504
$\mathbf{w} + \sigma_{\mathbf{w}}$	66.6461387827424
$\mathbf{w} - \sigma_{\mathbf{w}}$	945.464707484071

Table 6:

	J°
\mathbf{T}	22.9244458059504
$\mathbf{T} + \sigma_{\mathbf{T}}$	1058.08318144638
$\mathbf{T} - \sigma_{\mathbf{T}}$	306.864761375718

Table 7:

	J°
\mathbf{q}_t	22.9244458059504
$\mathbf{q}_t + \sigma_{\mathbf{q}_t}$	285.670445594895
$\mathbf{q}_t - \sigma_{\mathbf{q}_t}$	1768.84686062395

Table 8:

	Difference in J°
$J(\mathbf{w} + \sigma_{\mathbf{w}}) - J(\mathbf{w})$	43.7216929767920
$J(\mathbf{T} + \sigma_{\mathbf{T}}) - J(\mathbf{T})$	1035.15873564043
$J(\mathbf{q}_t + \sigma_{\mathbf{q}_t}) - J(\mathbf{q}_t)$	262.745999788945

Table 9: Comparing the difference in J . Positive perturbations.

	Difference in J°
$J(\mathbf{w} - \sigma_{\mathbf{w}}) - J(\mathbf{w})$	922.540261678120
$J(\mathbf{T} - \sigma_{\mathbf{T}}) - J(\mathbf{T})$	283.940315569768
$J(\mathbf{q}_t - \sigma_{\mathbf{q}_t}) - J(\mathbf{q}_t)$	1745.92241481800

Table 10: Comparing the difference in J . Negative perturbations.