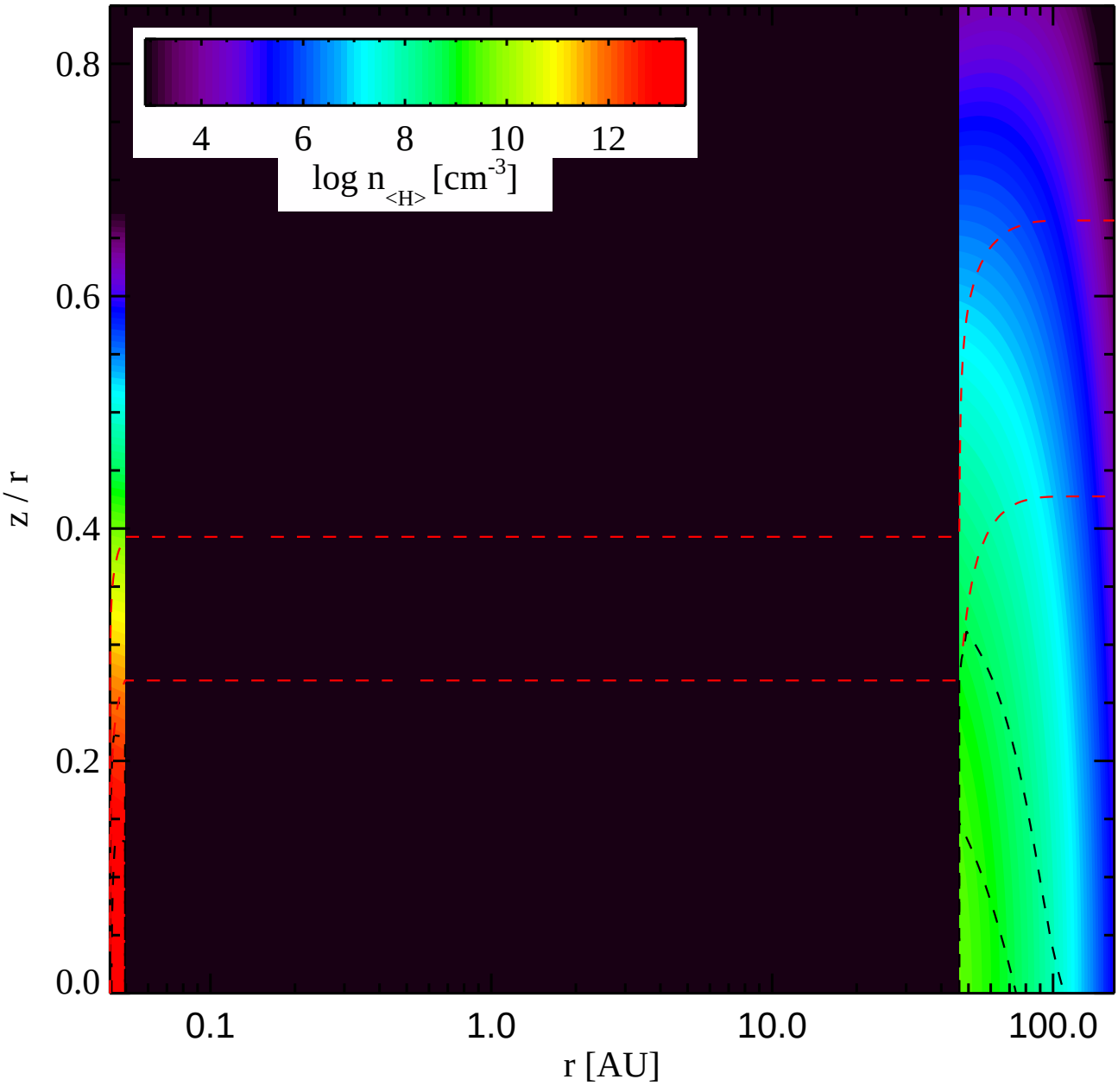
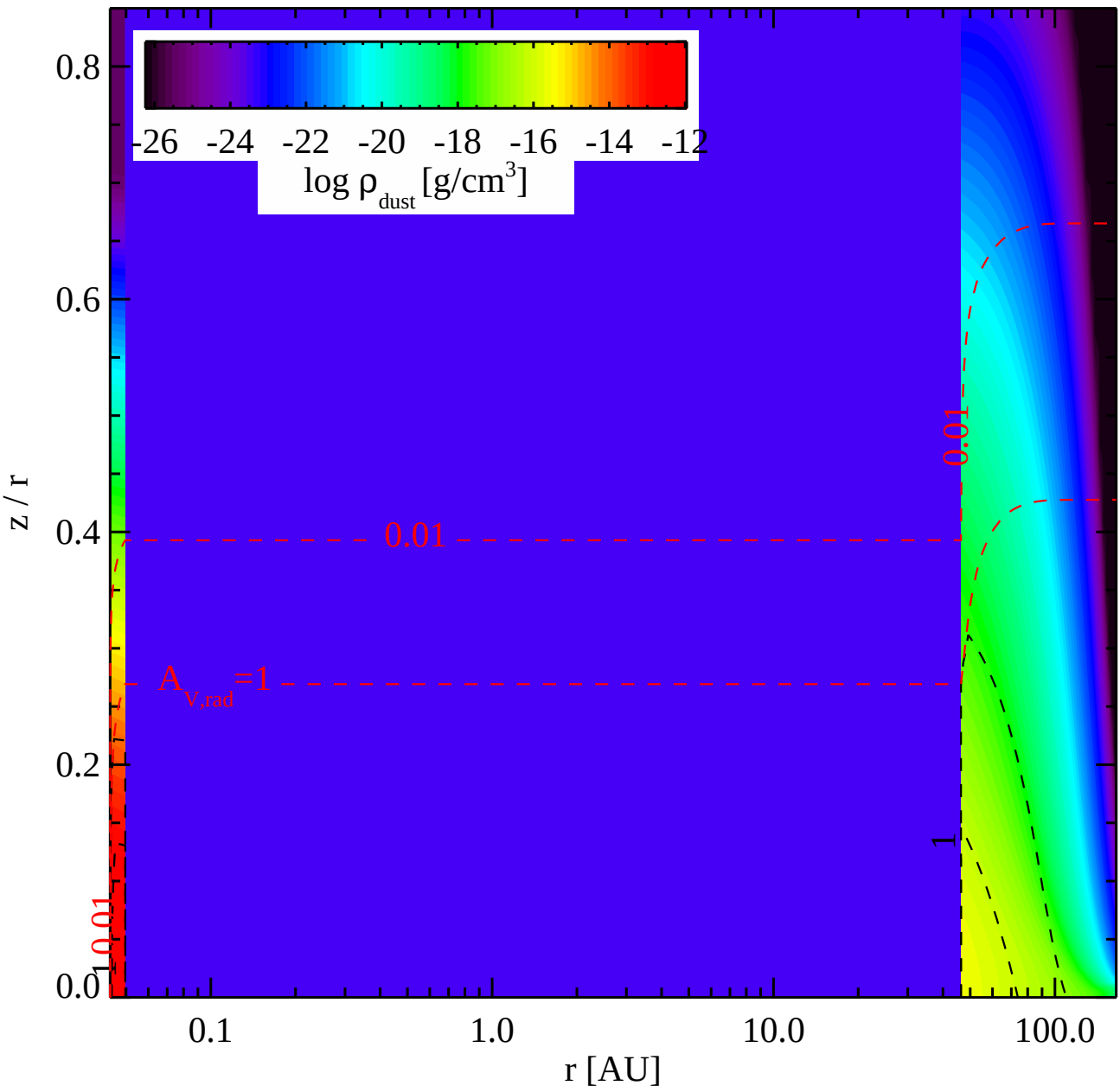
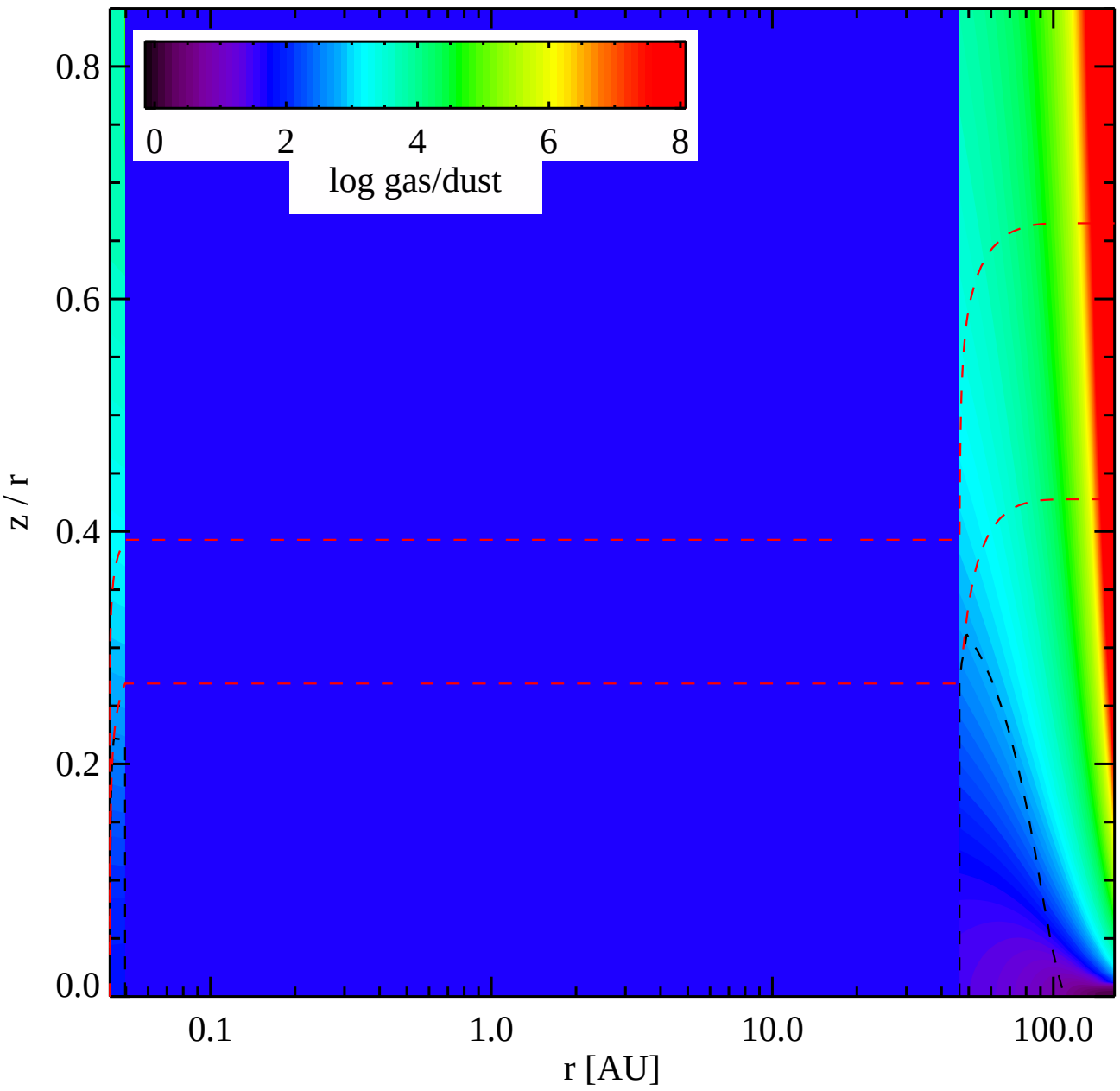
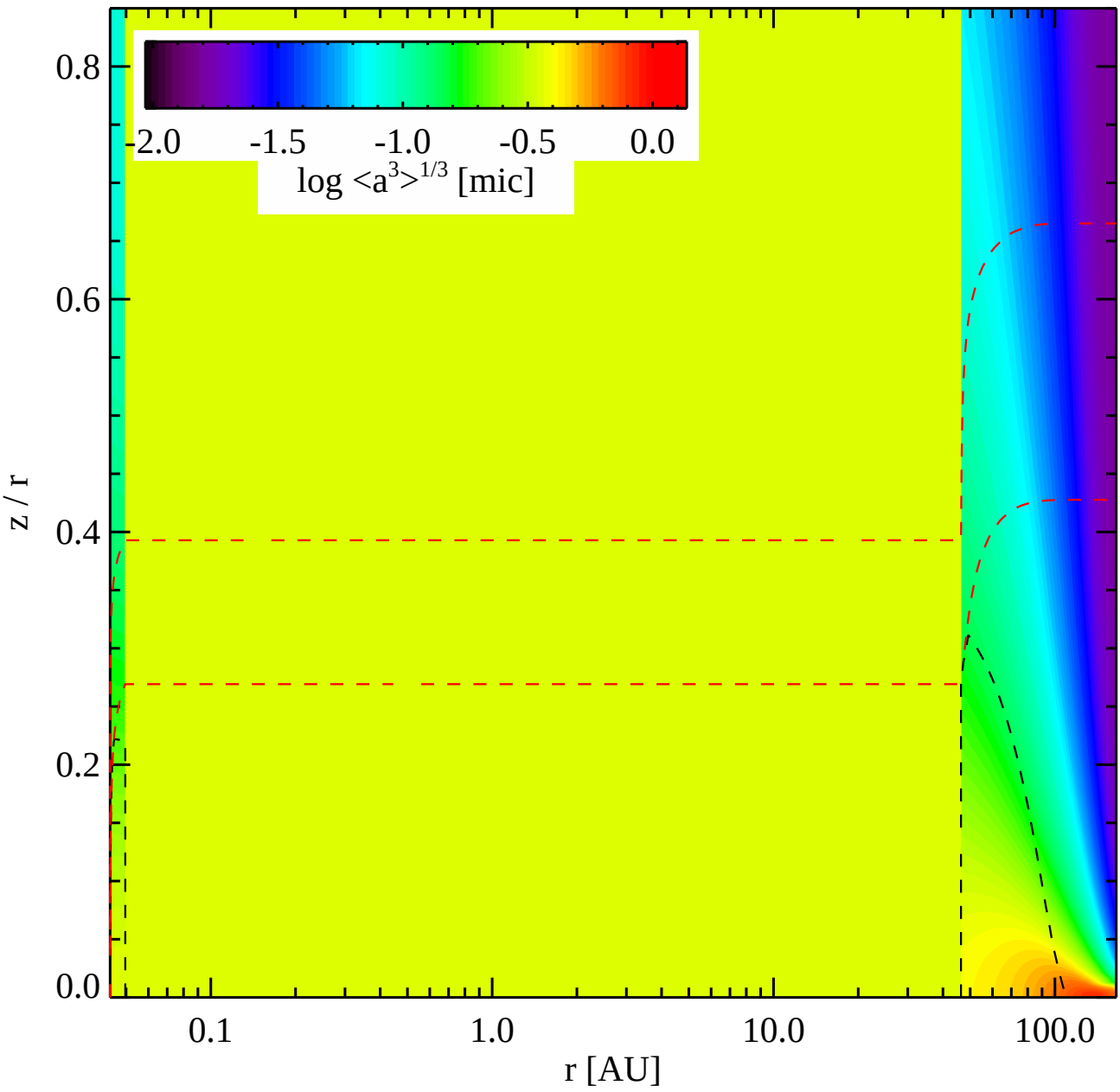
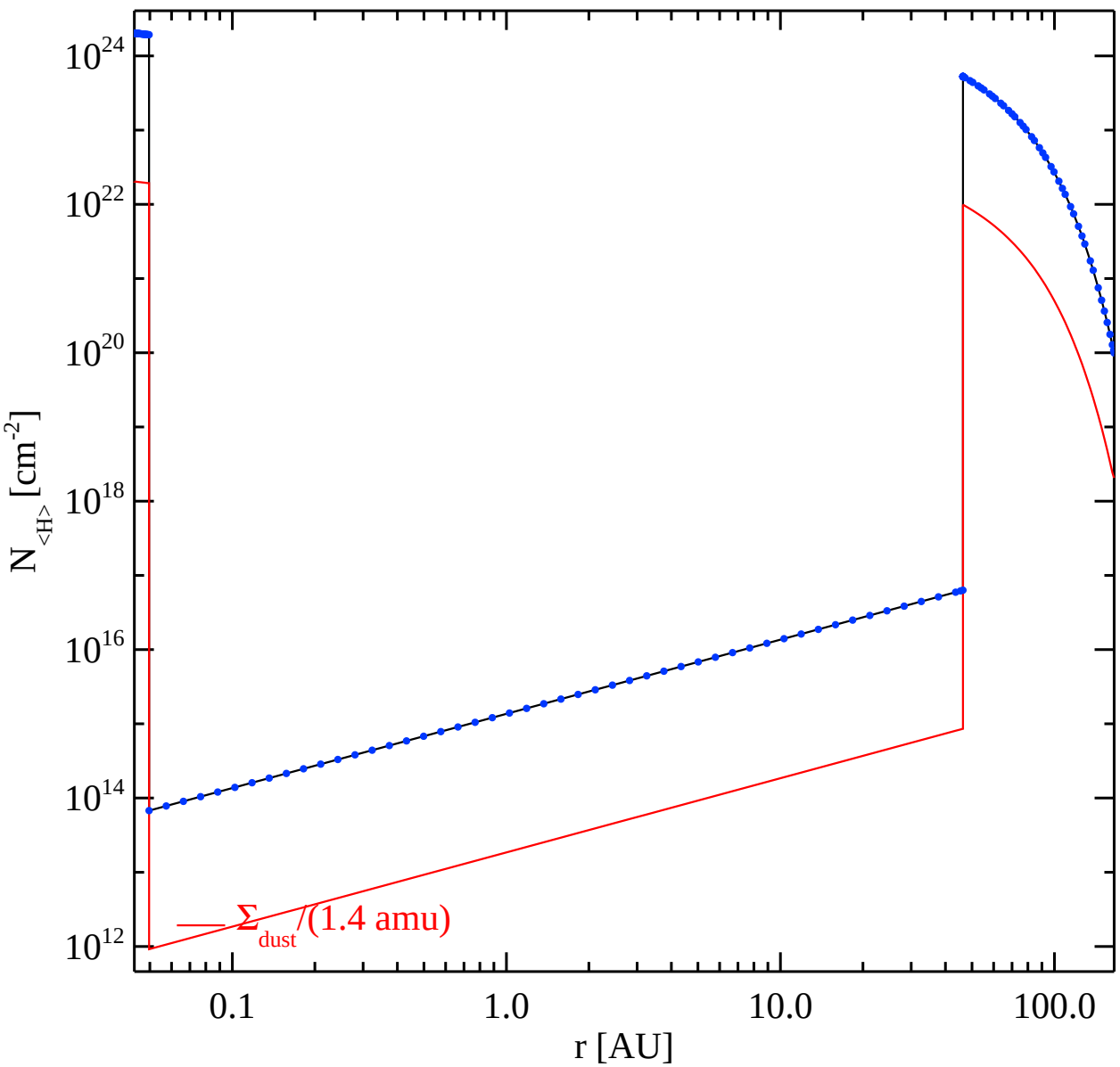
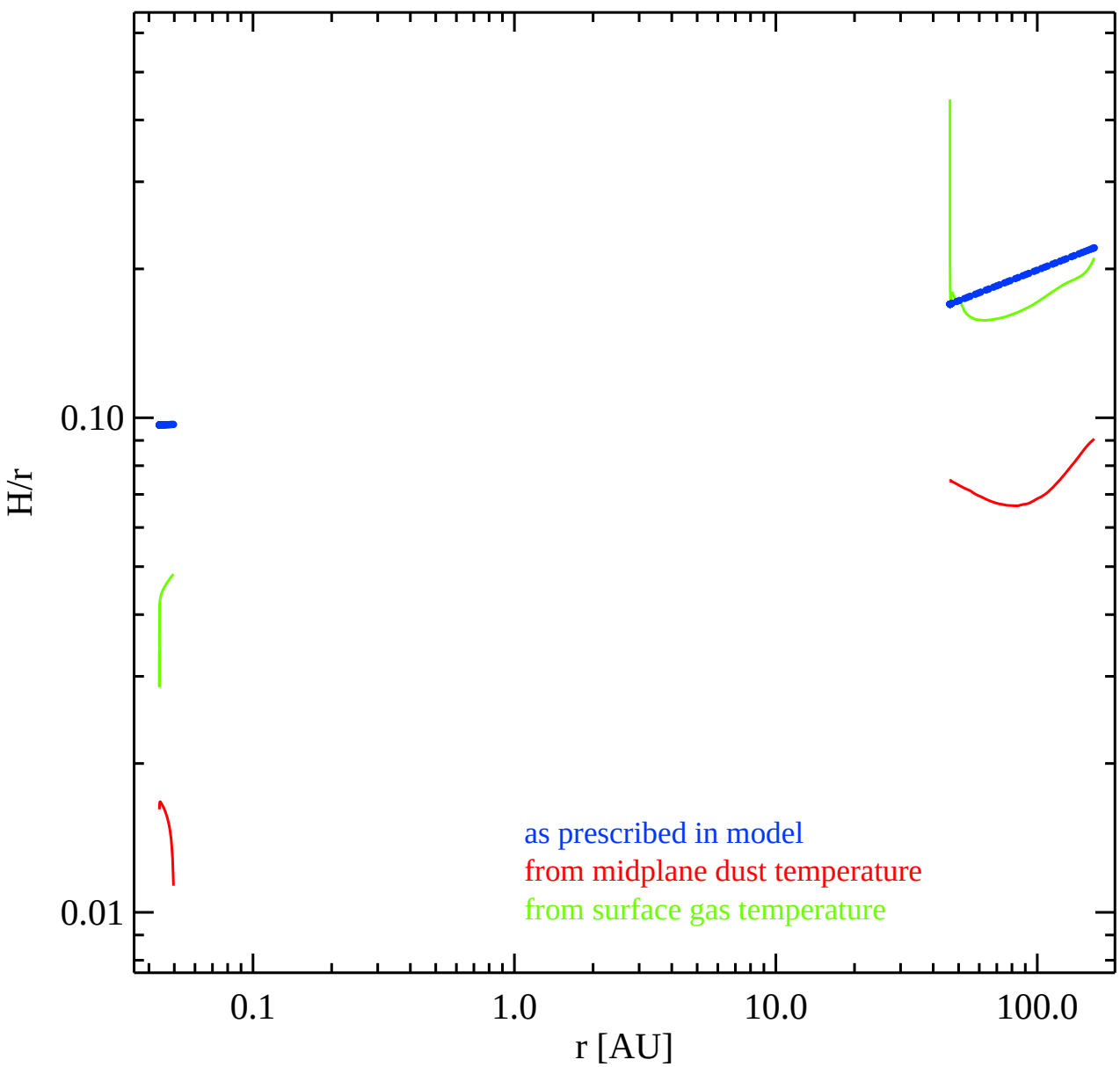

4
6
8
10
12
log n<H> [cm-3]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

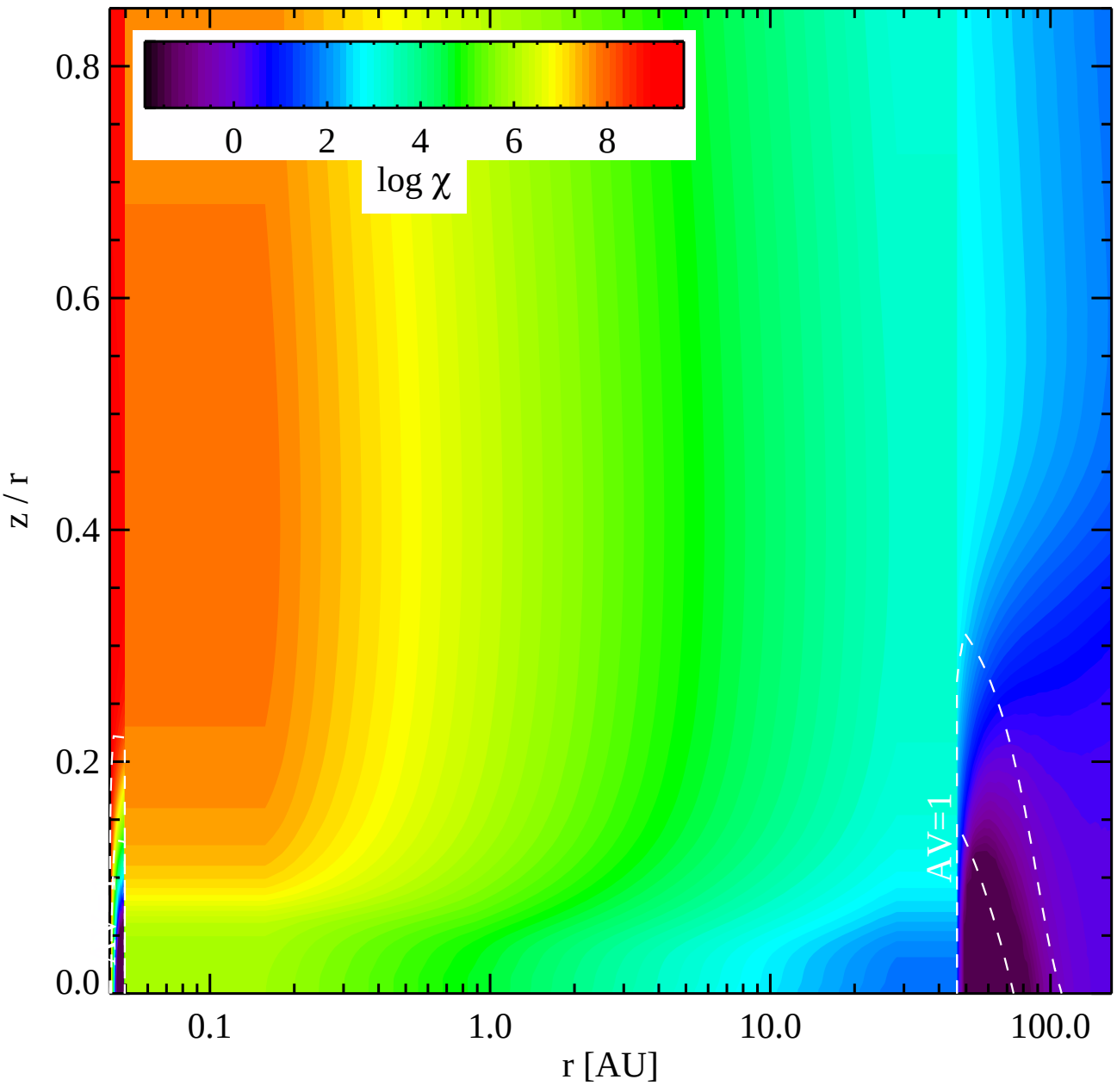

-26 -24 -22 -20 -18 -16 -14 -12
log ρdust [g/cm3]
0.8
0.6
0.4
0.2
0.0
z / r
0.01
AV,rad=1
0.01
1
1
0.01
0.1
1.0
10.0
100.0
r [AU]

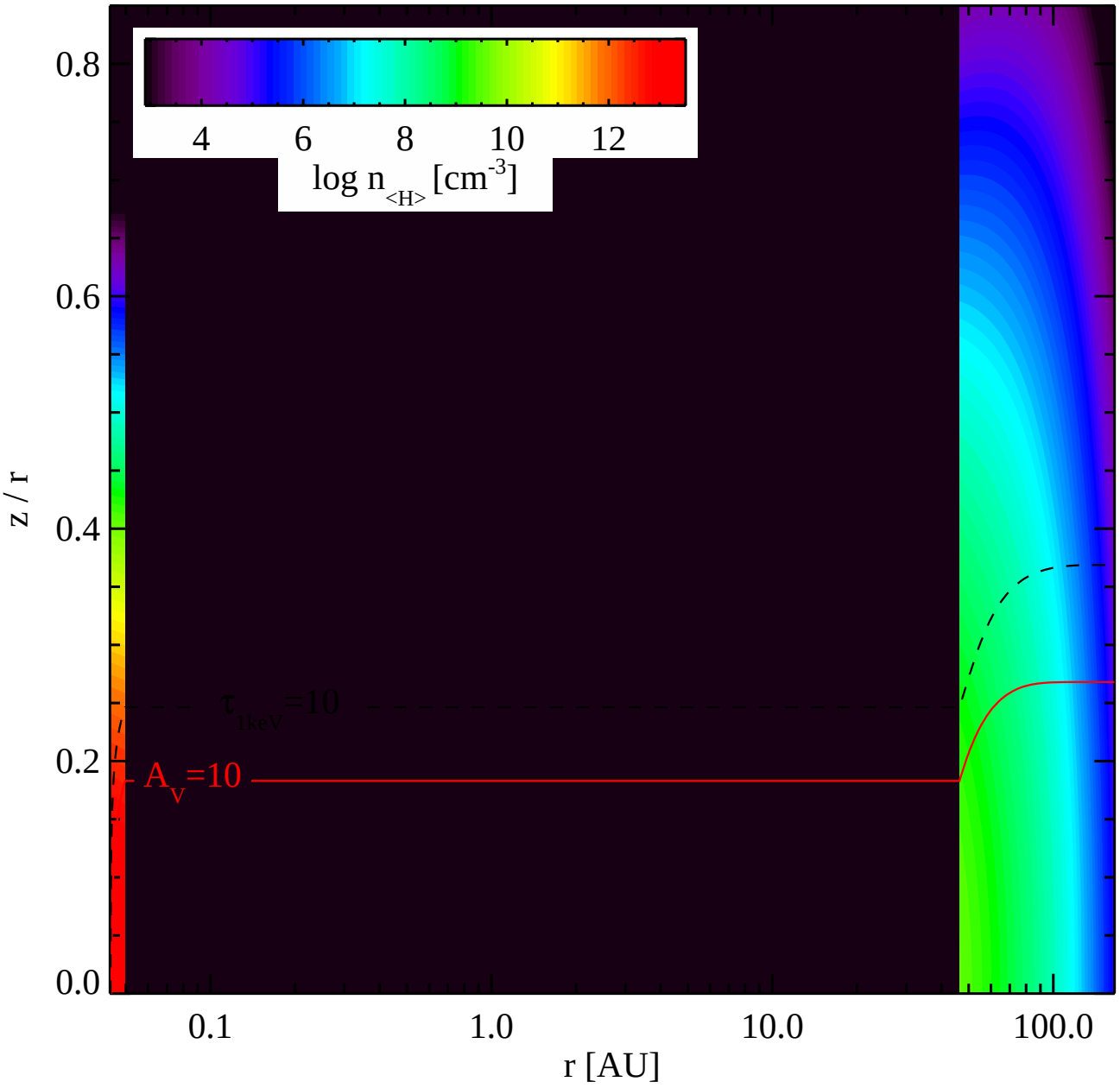

0
2
4
6
8
log gas/dust
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

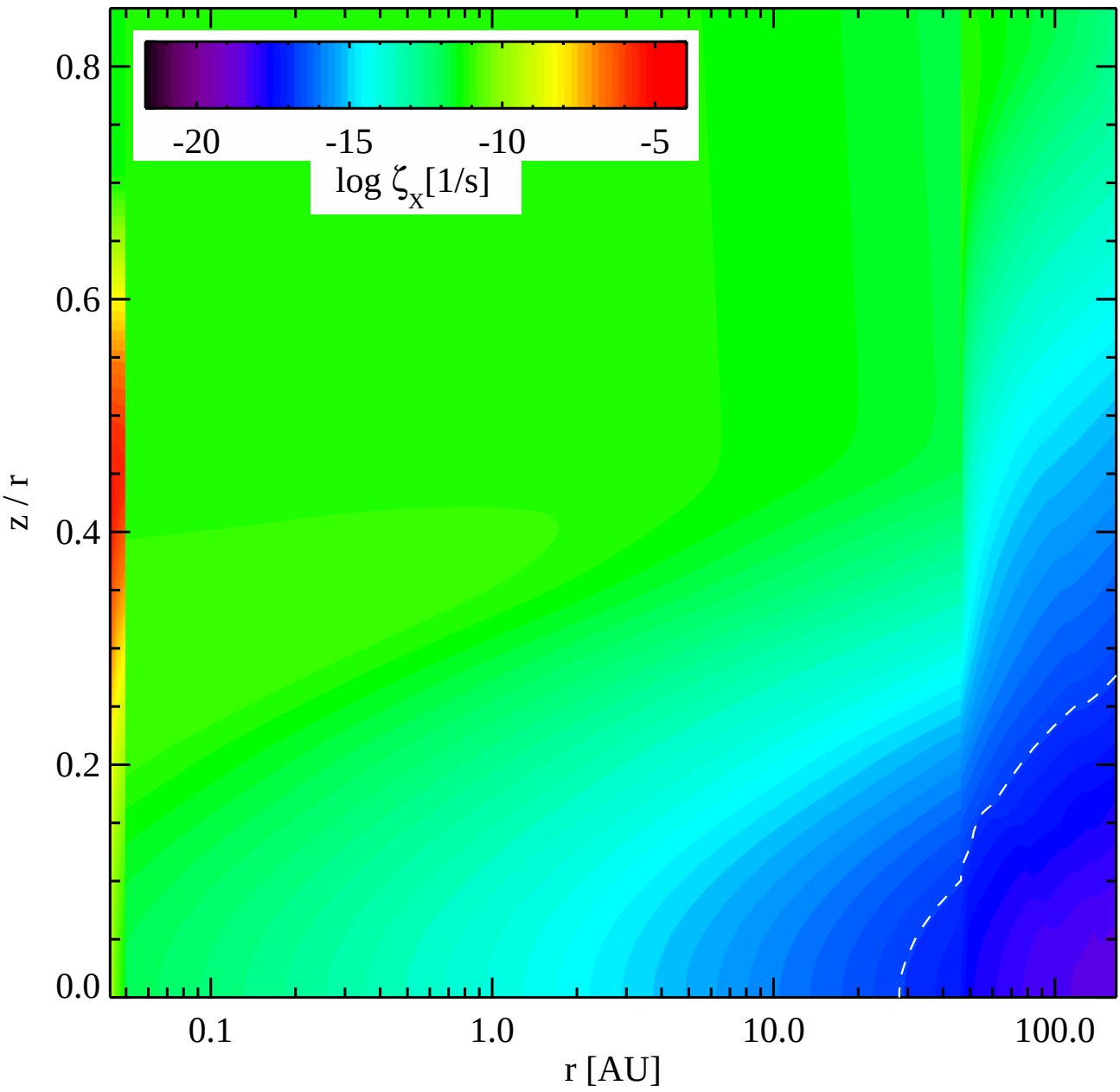

-2.0
-1.5
-1.0
-0.5
0.0
log <a^3>^1/3 [mic]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

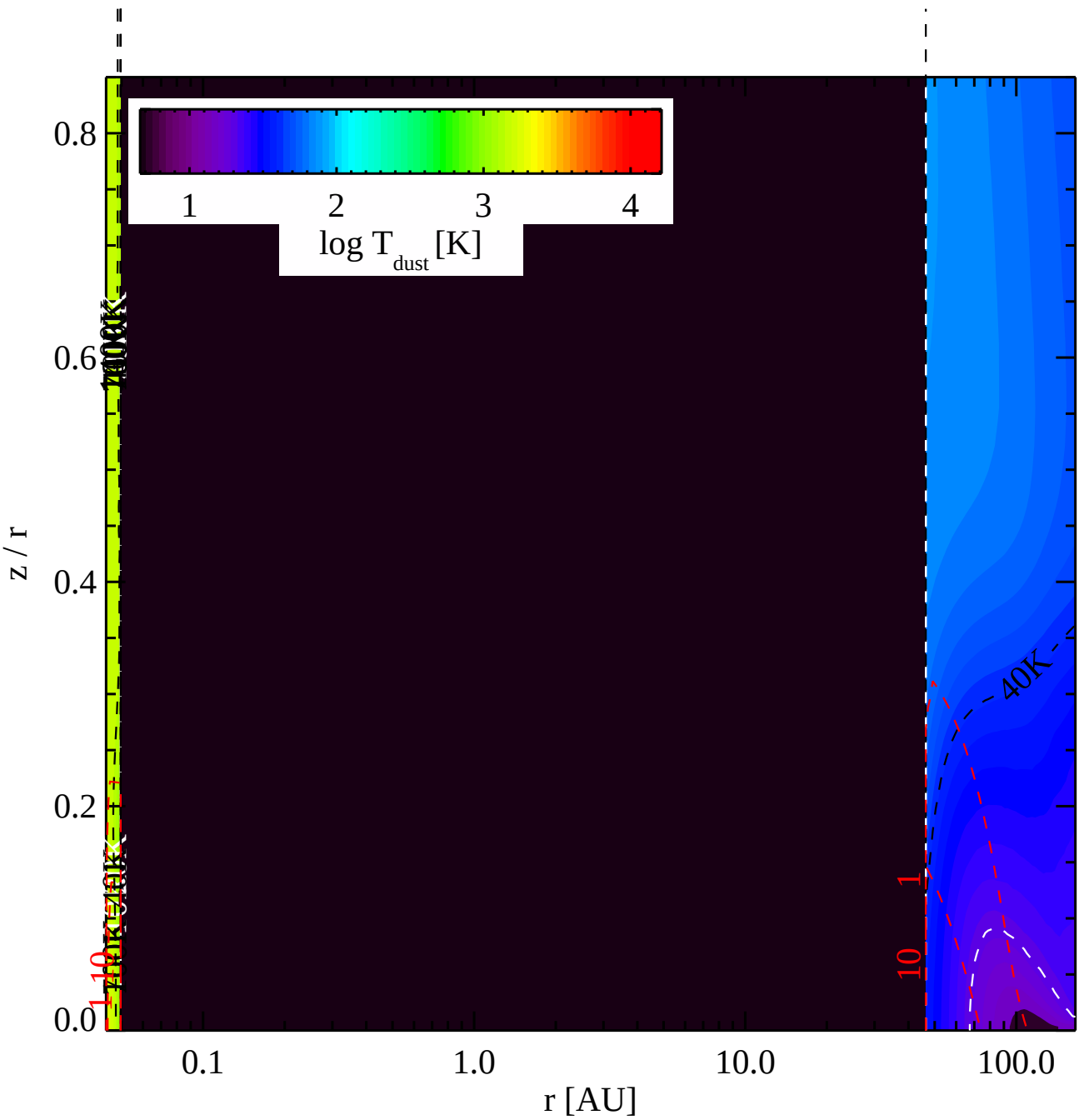

10^{24}
10^{22}
10^{20}
10^{18}
10^{16}
10^{14}
10^{12}
$N_{<H>}$ [cm^{-2}]
0.1
1.0
10.0
100.0
r [AU]
Σ_{dust}/(1.4 amu)

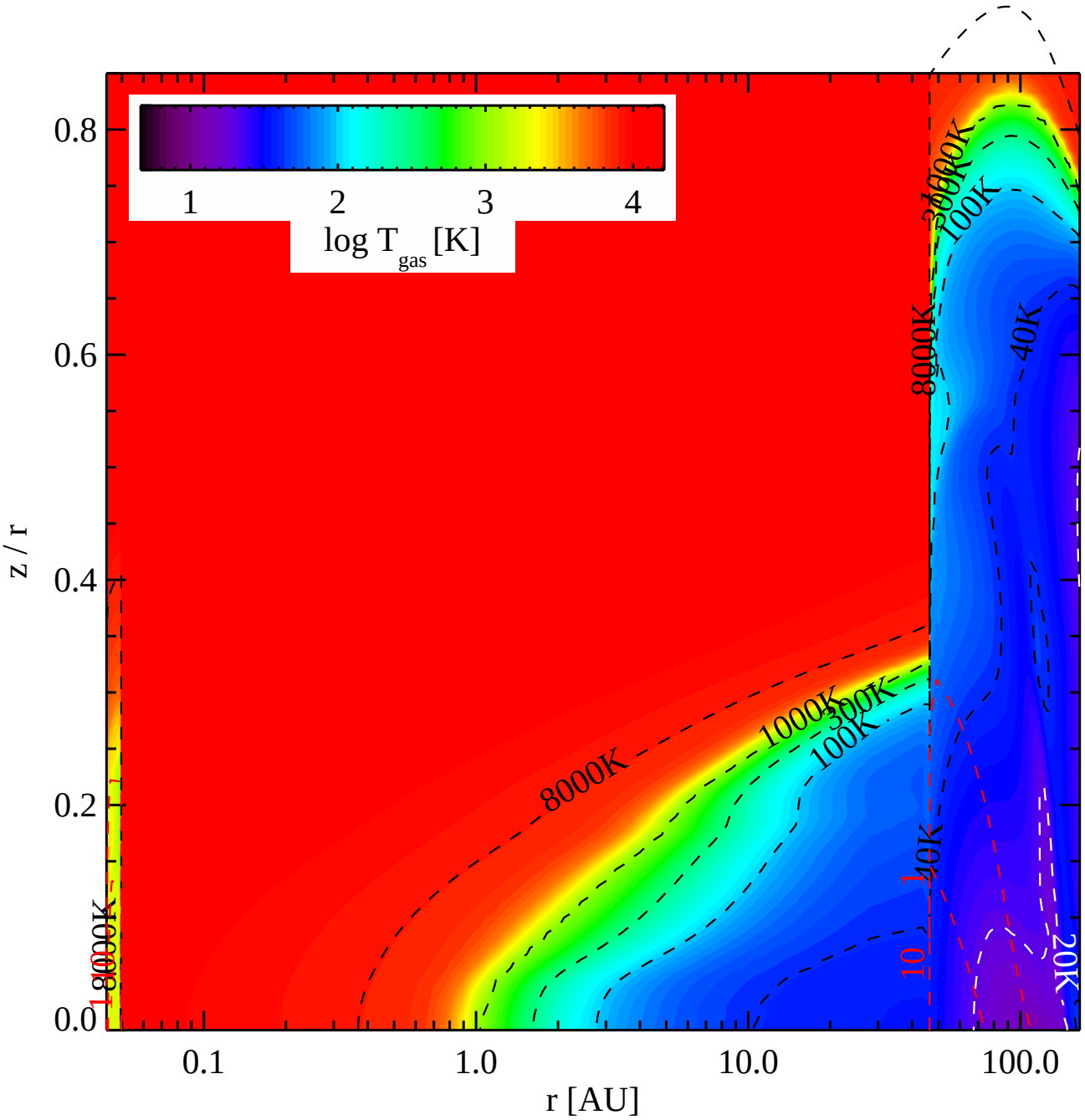

0.10
0.01
H/r
0.1
1.0
10.0
100.0
r [AU]
as prescribed in model
from midplane dust temperature
from surface gas temperature

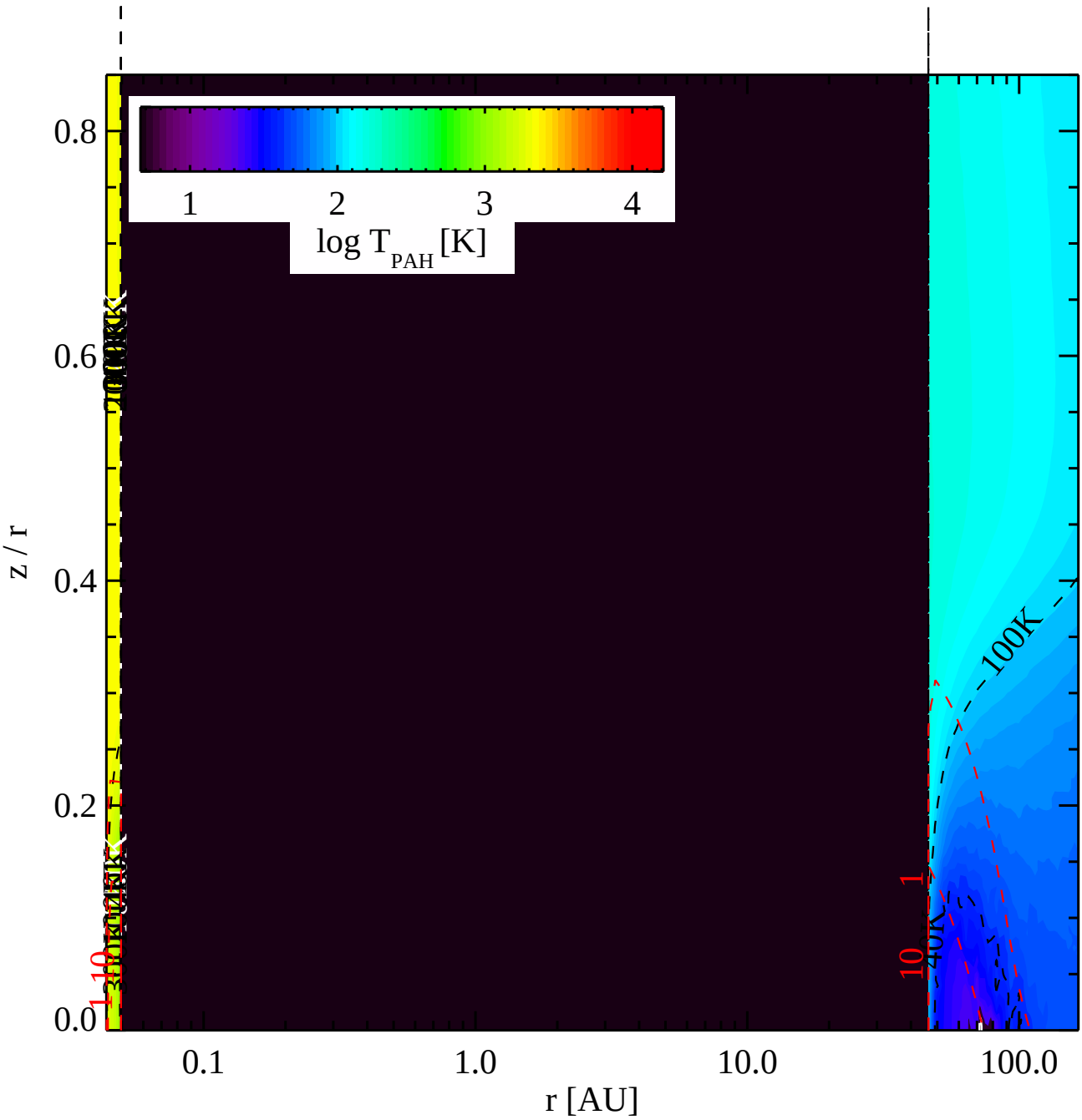

0
2
4
6
8
log χ
0.8
0.6
0.4
0.2
0.0
z / r
AV=1
0.1
1.0
10.0
100.0
r [AU]

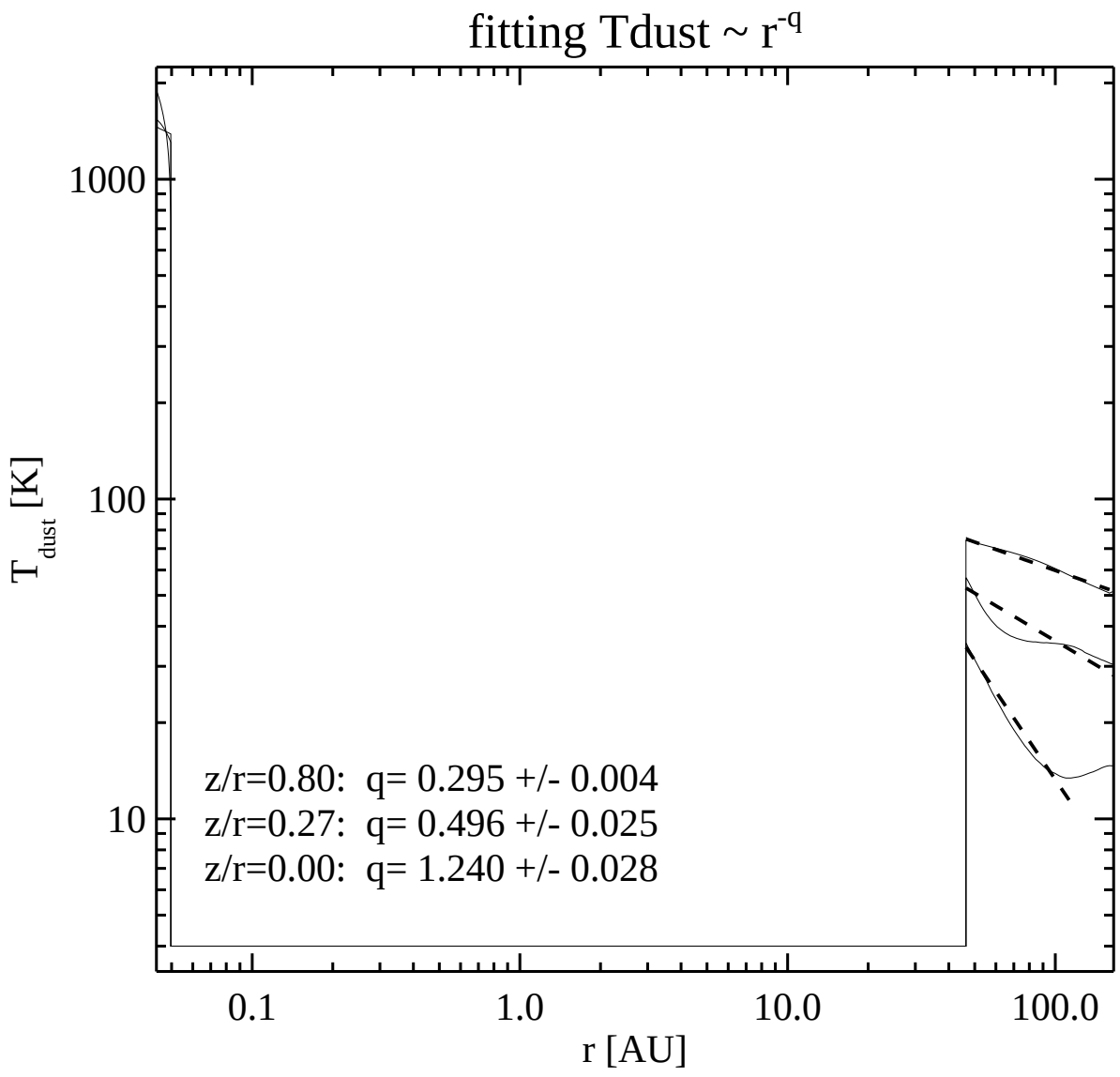

0.8
0.6
0.4
0.2
0.0
z / r
4
6
8
10
12
log n<H> [cm-3]
τ1keV=10
AV=10
0.1
1.0
10.0
100.0
r [AU]

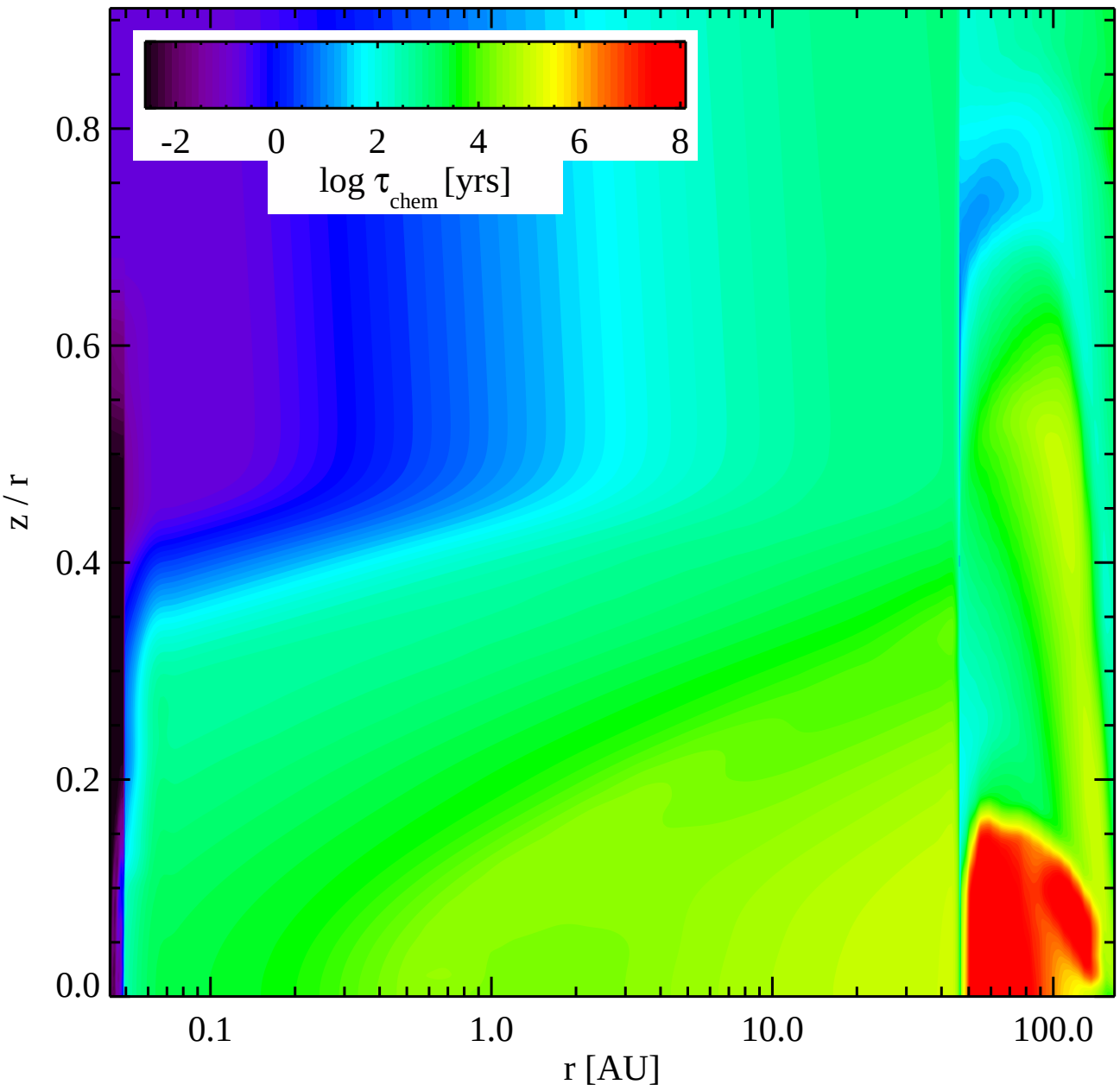

-20
-15
-10
-5
log ζx[1/s]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

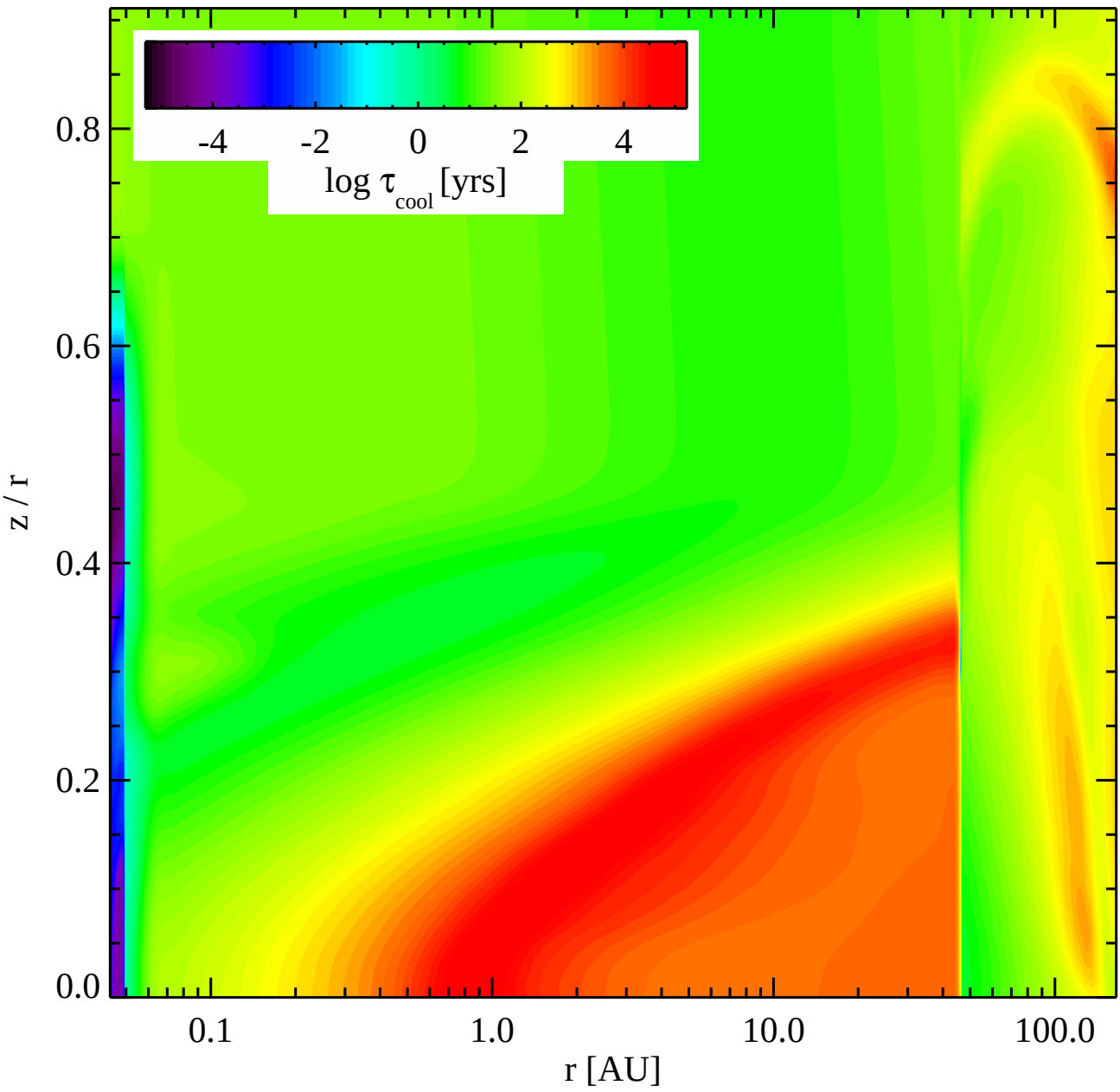

1
2
3
4
log T dust [K]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
40K
1
10

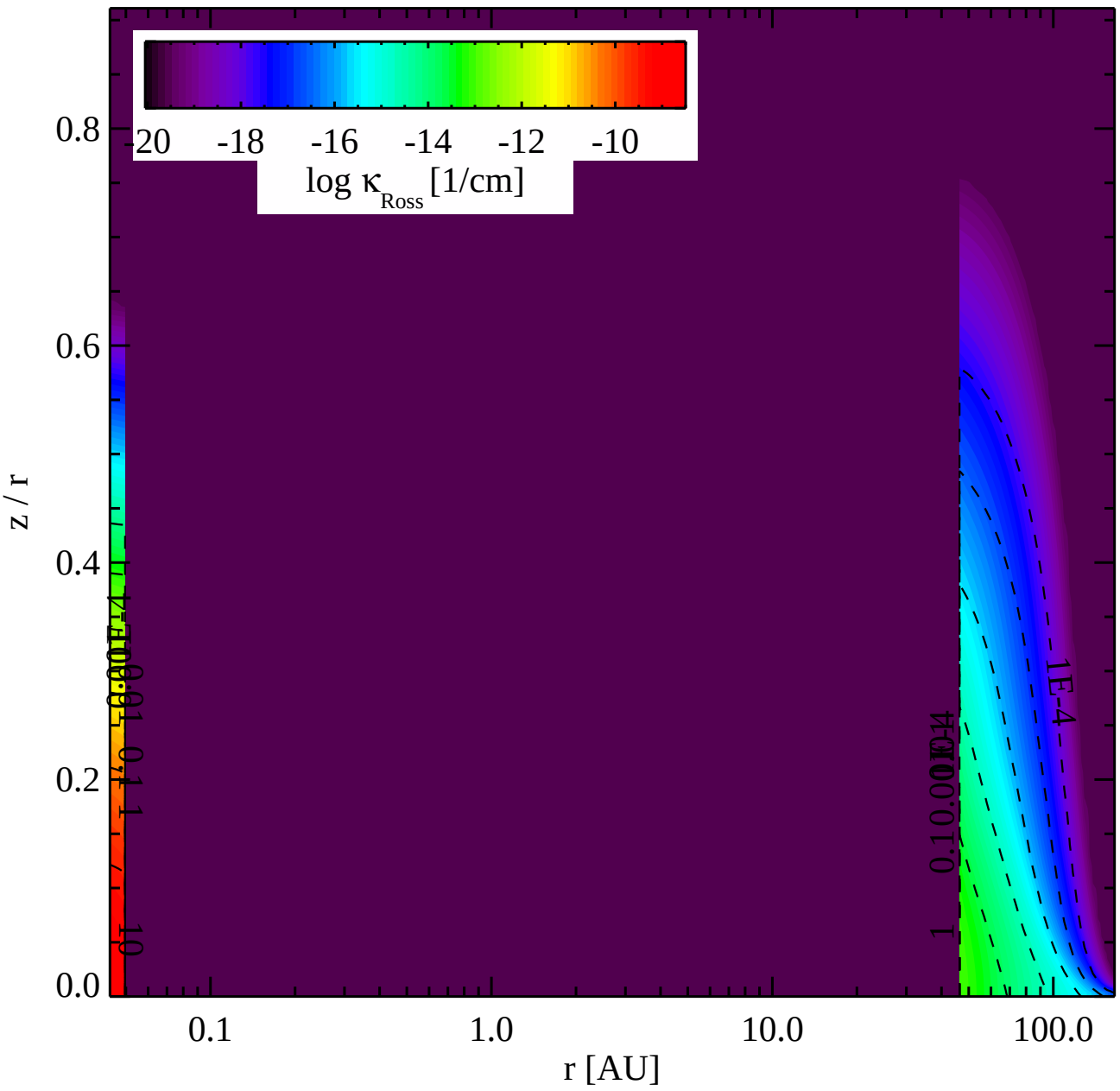

1
2
3
4
log T gas [K]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
8000K
1000K
300K
100K
40K
10K
20K

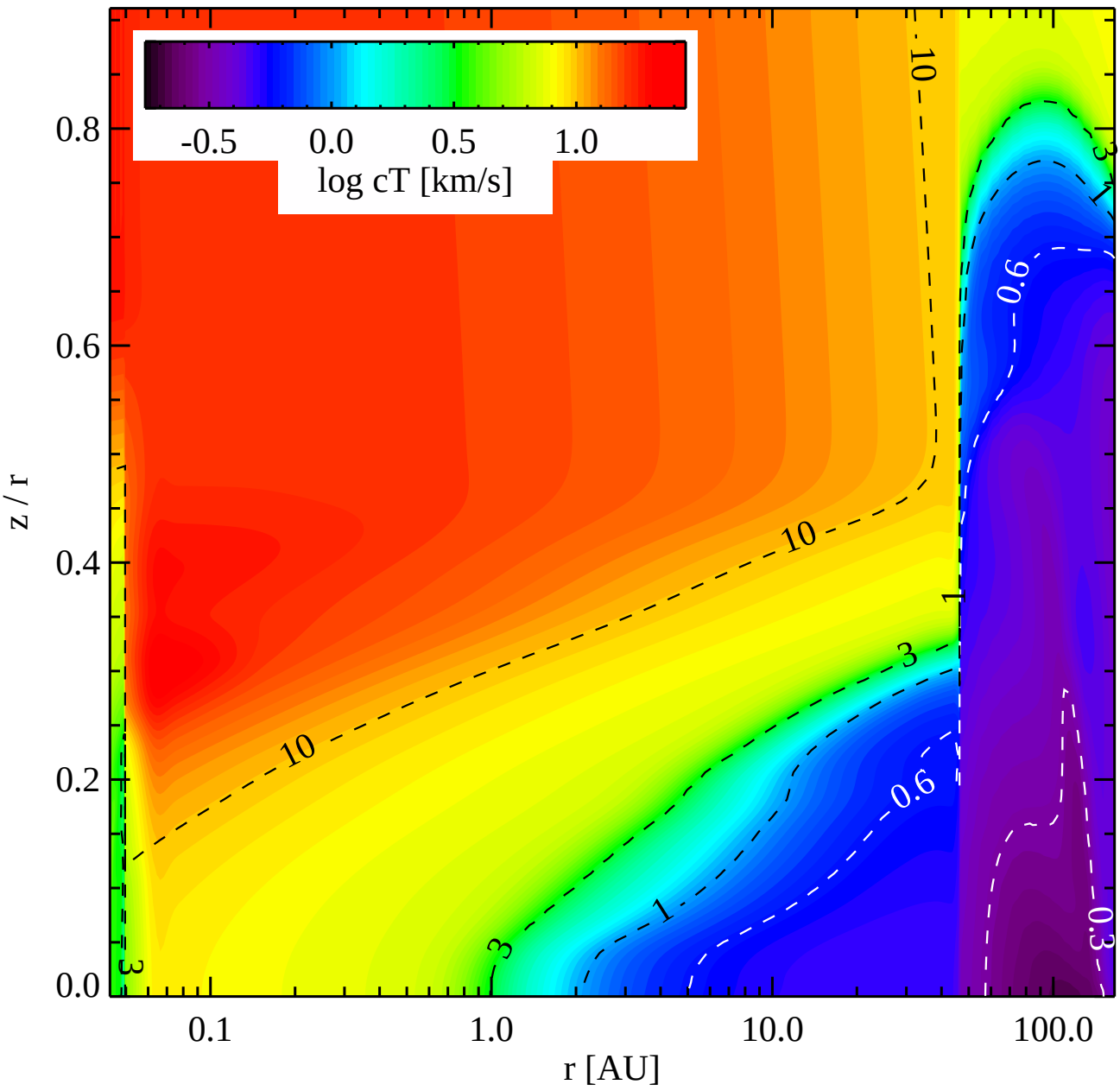

1
2
3
4
log T PAH [K]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
100K
40K
1
10

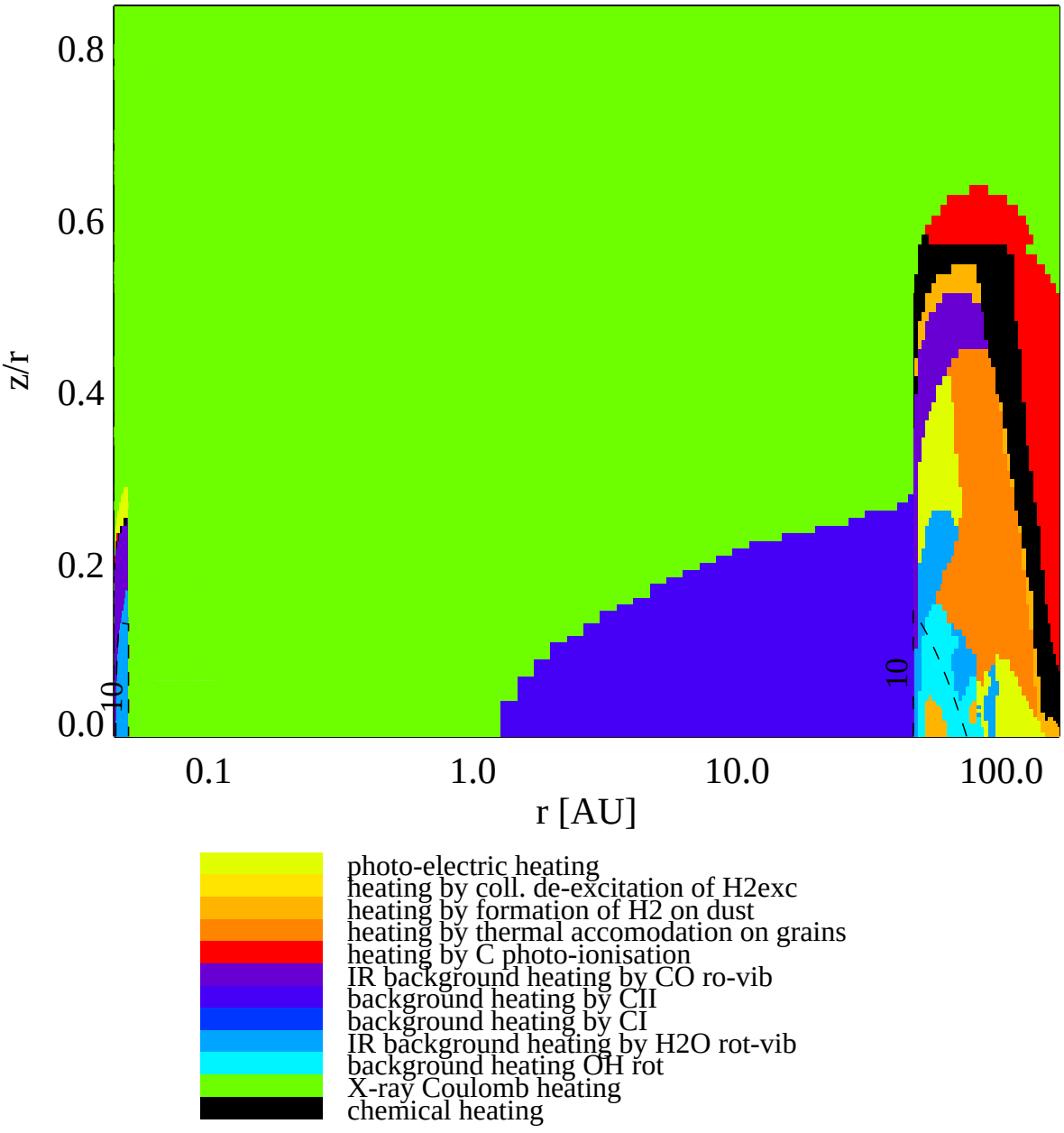

fitting Tdust ~ r^-q
1000
100
10
T dust [K]
0.1
1.0
10.0
100.0
r [AU]
z/r=0.80: q= 0.295 +/- 0.004
z/r=0.27: q= 0.496 +/- 0.025
z/r=0.00: q= 1.240 +/- 0.028

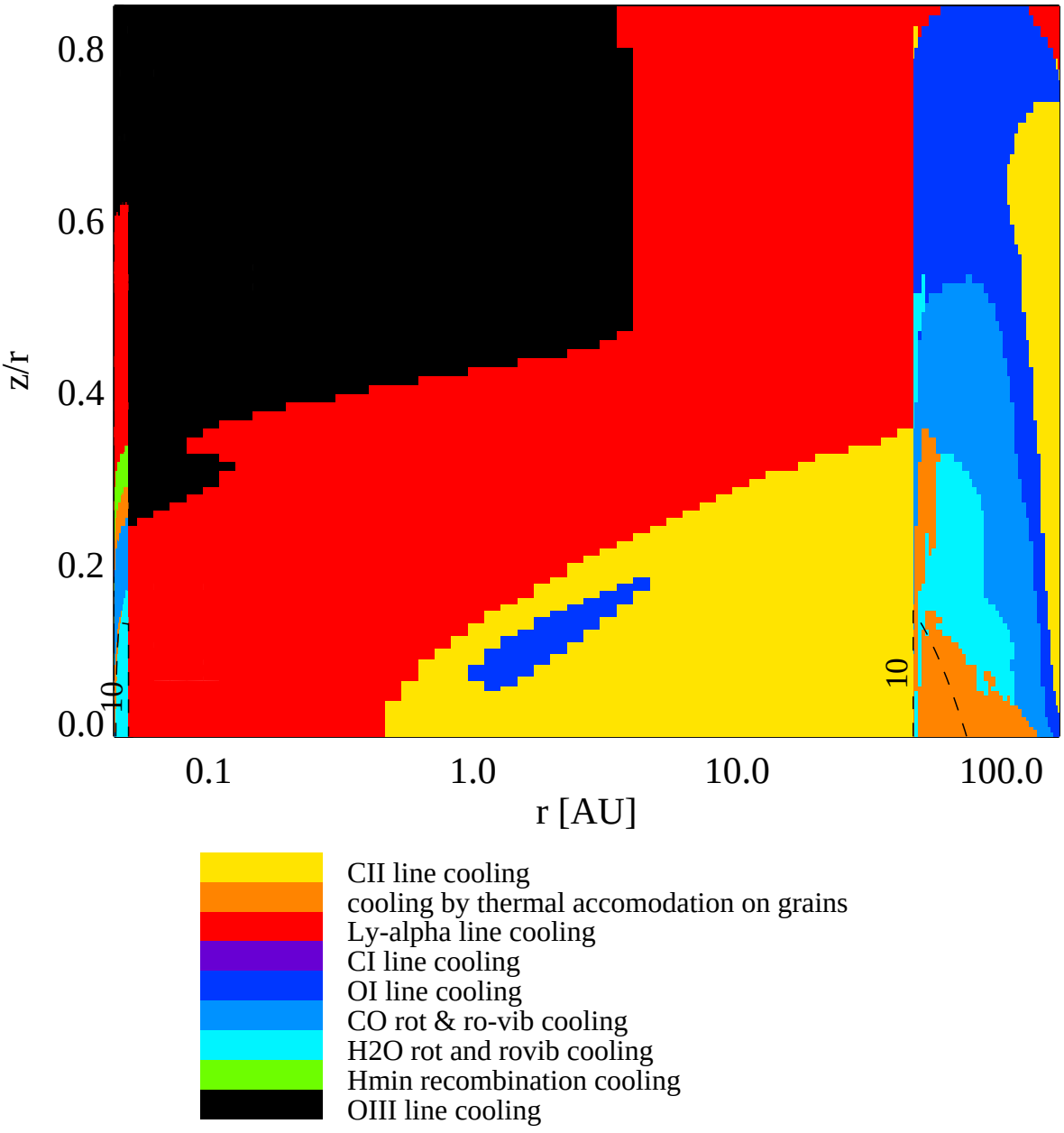

-2
0
2
4
6
8
log τ chem [yrs]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

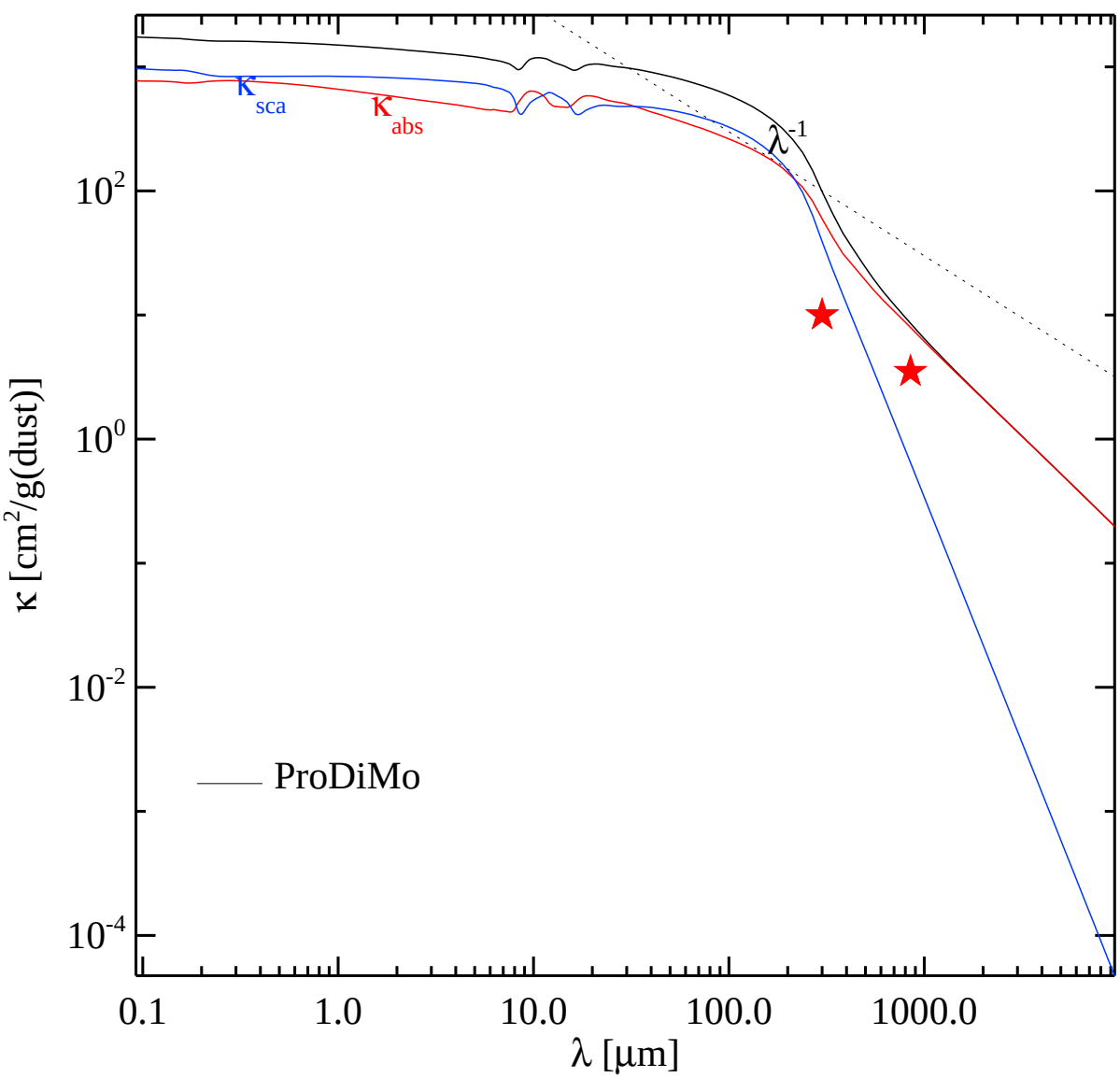

-4
-2
0
2
4
log τ cool [yrs]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

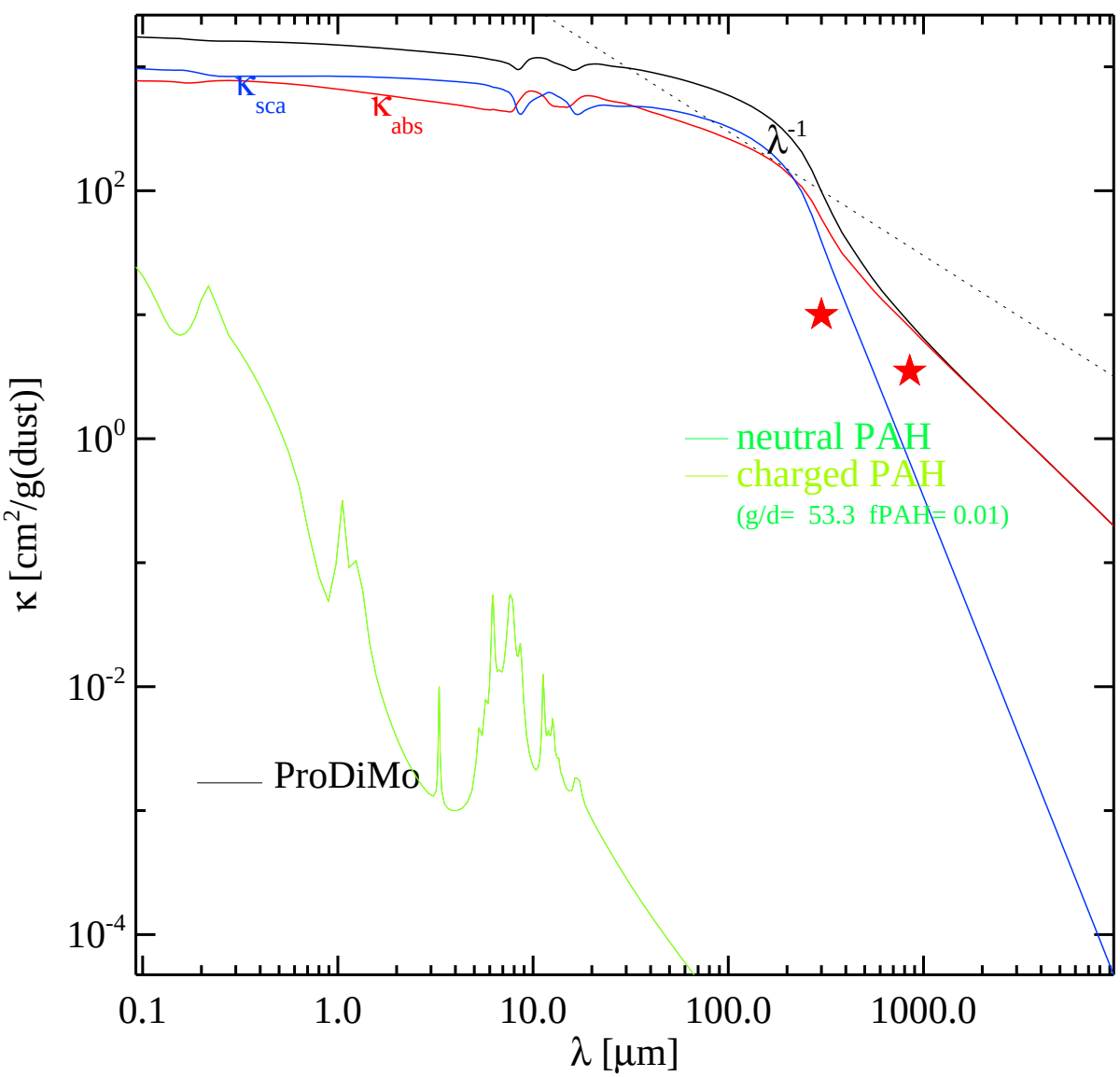

-20
-18
-16
-14
-12
-10
log κ Ross [1/cm]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
1E-4

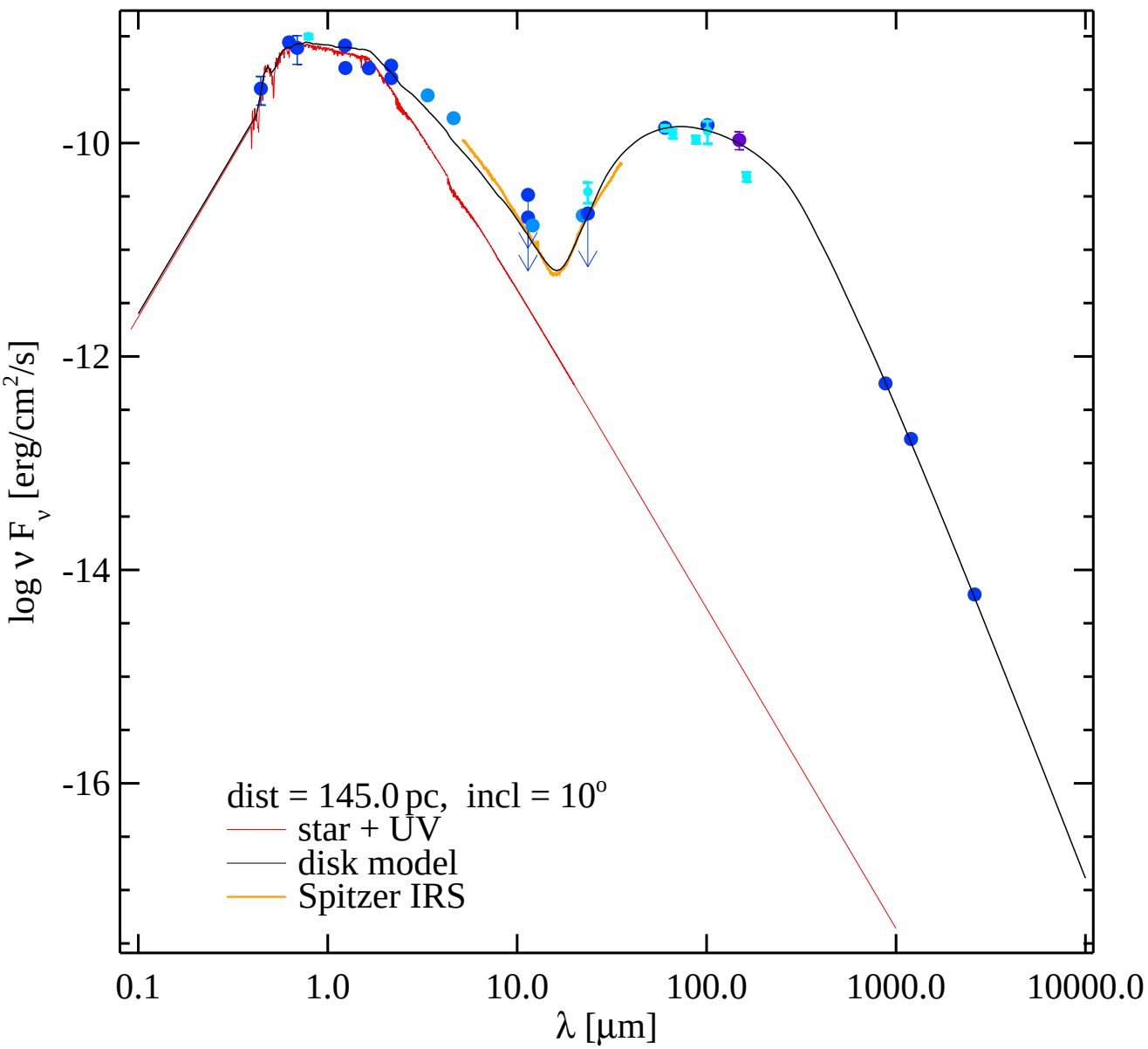

-0.5
0.0
0.5
1.0
log cT [km/s]
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
10
10
10
3
3
3
3
1
1
1
0.6
0.6
0.3

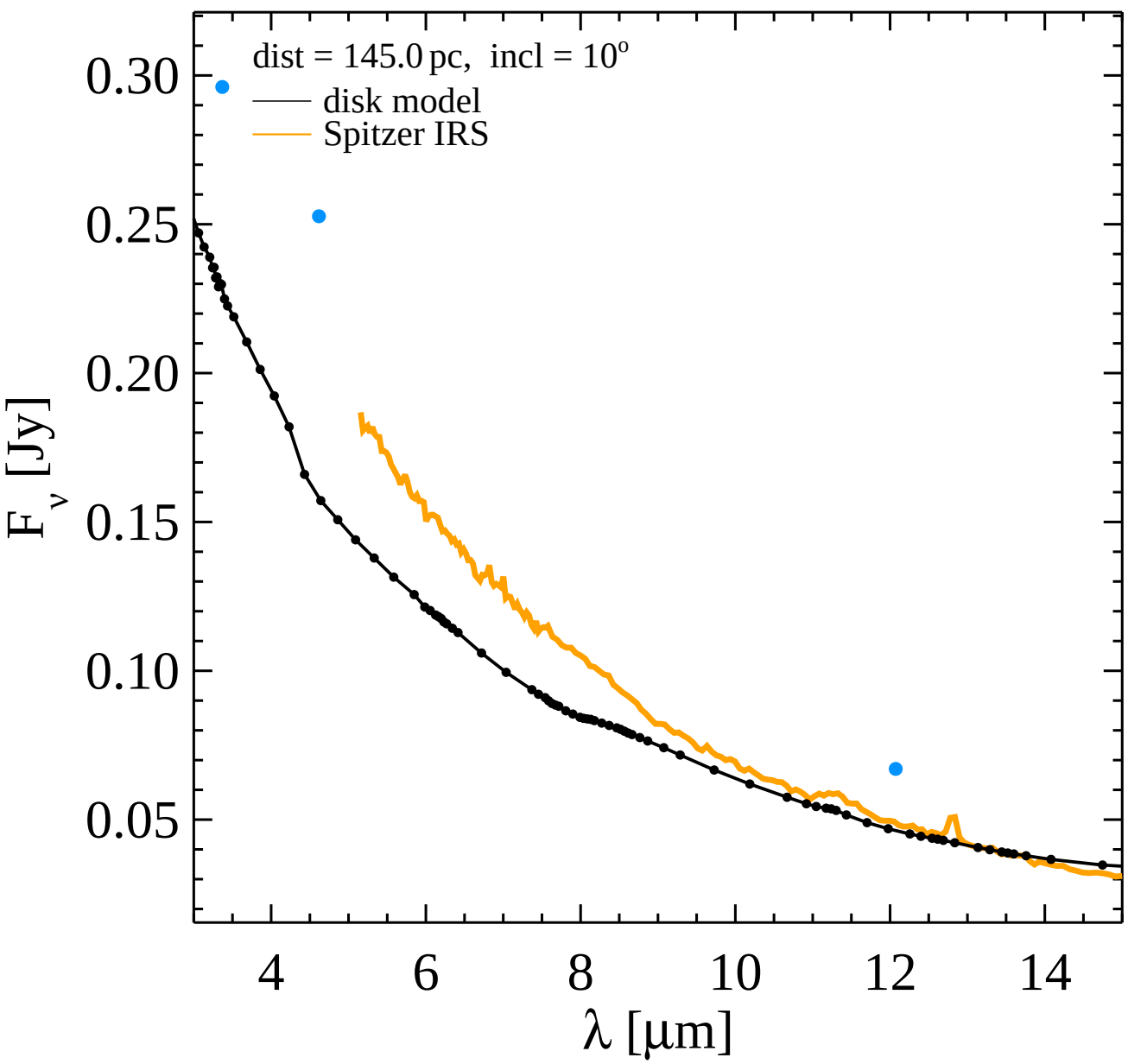

0.8
0.6
0.4
0.2
0.0
z/r
10
10
0.1
1.0
10.0
100.0
r [AU]
photo-electric heating
heating by coll. de-excitation of H2exc
heating by formation of H2 on dust
heating by thermal accomodation on grains
heating by C photo-ionisation
IR background heating by CO ro-vib
background heating by CII
background heating by CI
IR background heating by H2O rot-vib
background heating OH rot
X-ray Coulomb heating
chemical heating

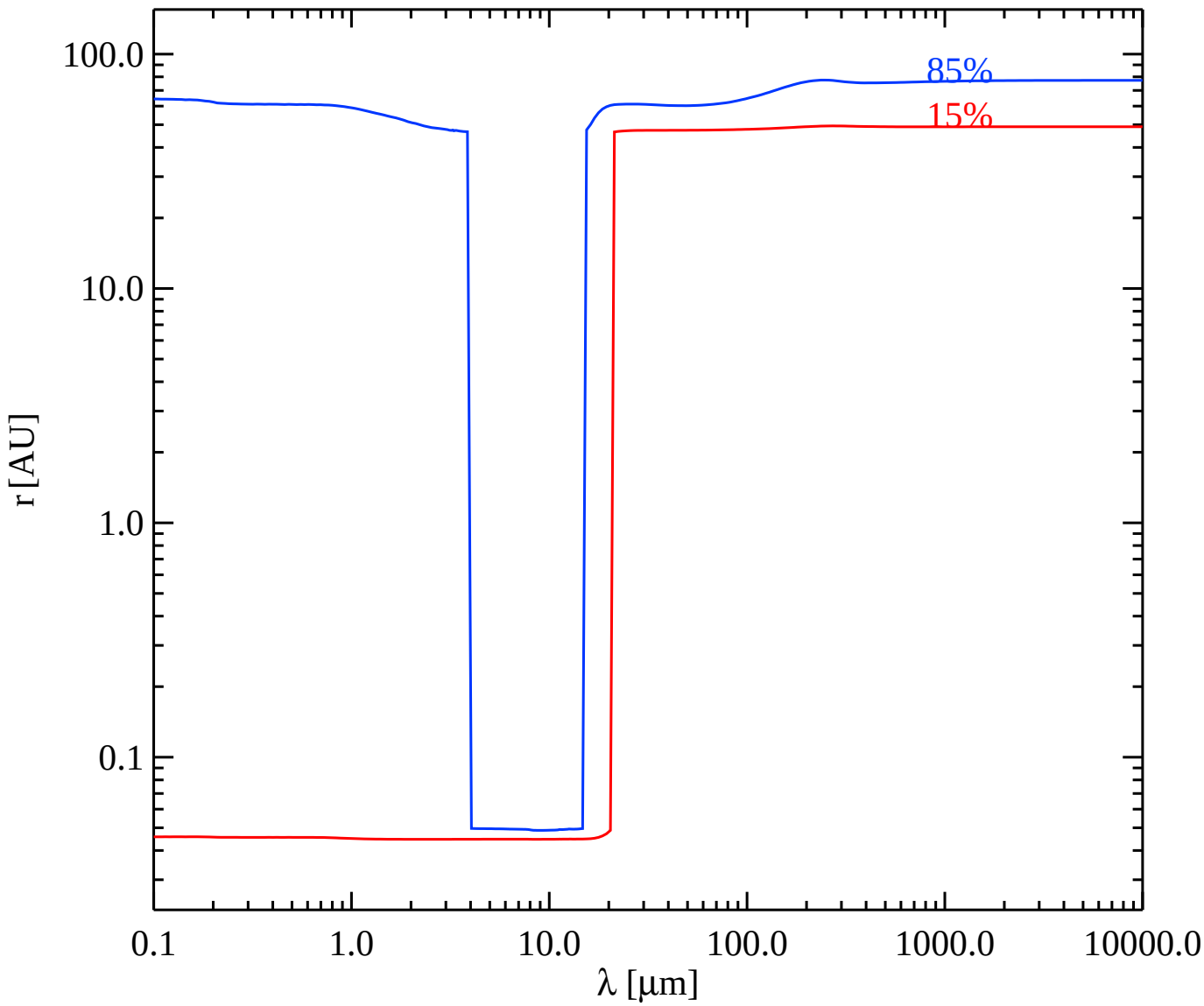

0.8
0.6
0.4
0.2
0.0
z/r
10
10
0.1
1.0
10.0
100.0
r [AU]
CII line cooling
cooling by thermal accomodation on grains
Ly-alpha line cooling
CI line cooling
OI line cooling
CO rot & ro-vib cooling
H2O rot and rovib cooling
Hmin recombination cooling
OIII line cooling

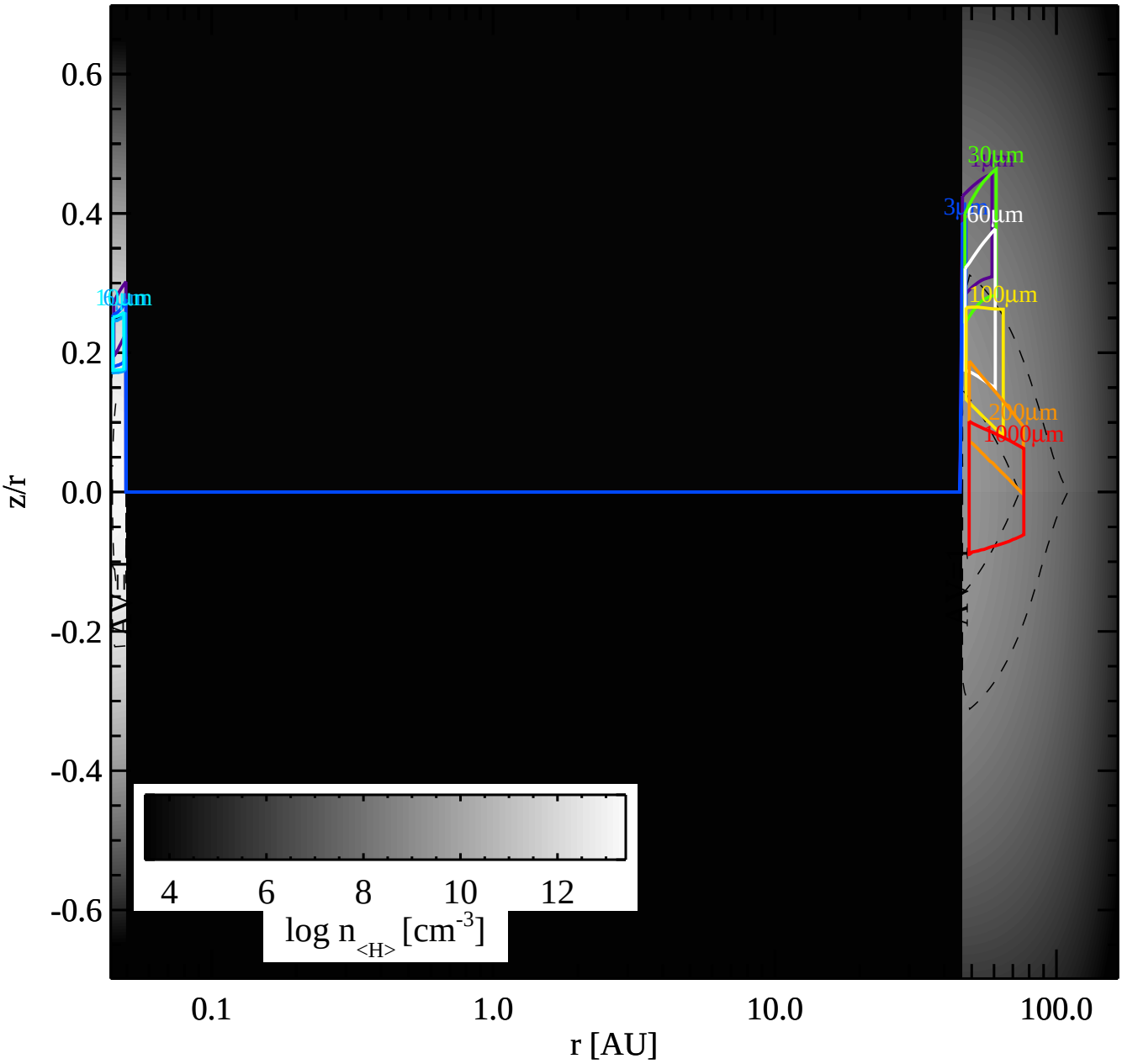

κ sca
κ abs
λ-1
ProDiMo
κ [cm2/g(dust)]
λ [μm]
10^2
10^0
10^-2
10^-4
0.1
1.0
10.0
100.0
1000.0

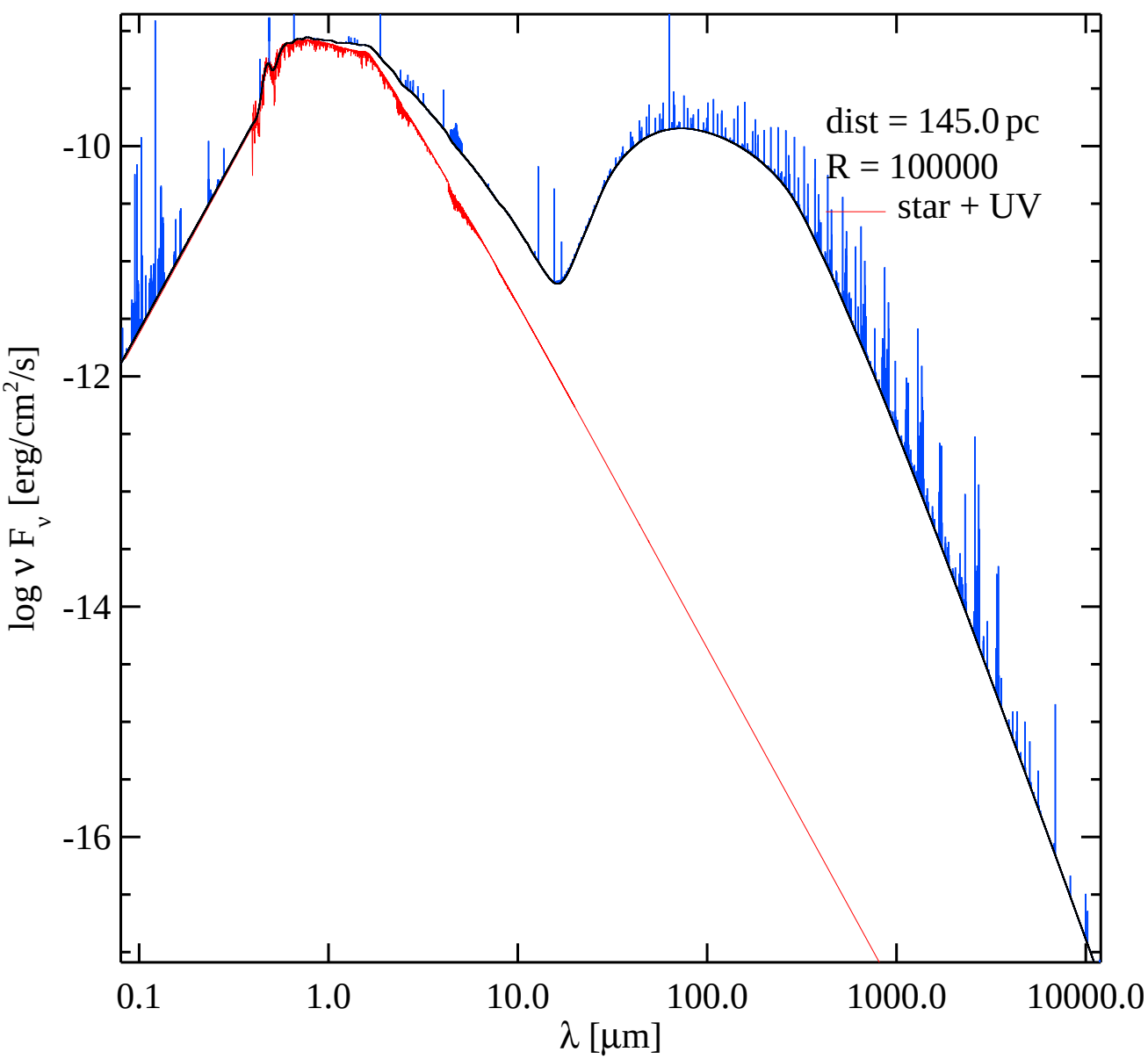

κ sca
κ abs
λ-1
neutral PAH
charged PAH
(g/d= 53.3 fPAH= 0.01)
ProDiMo
κ [cm2/g(dust)]
λ [μm]
10^2
10^0
10^-2
10^-4
0.1
1.0
10.0
100.0
1000.0

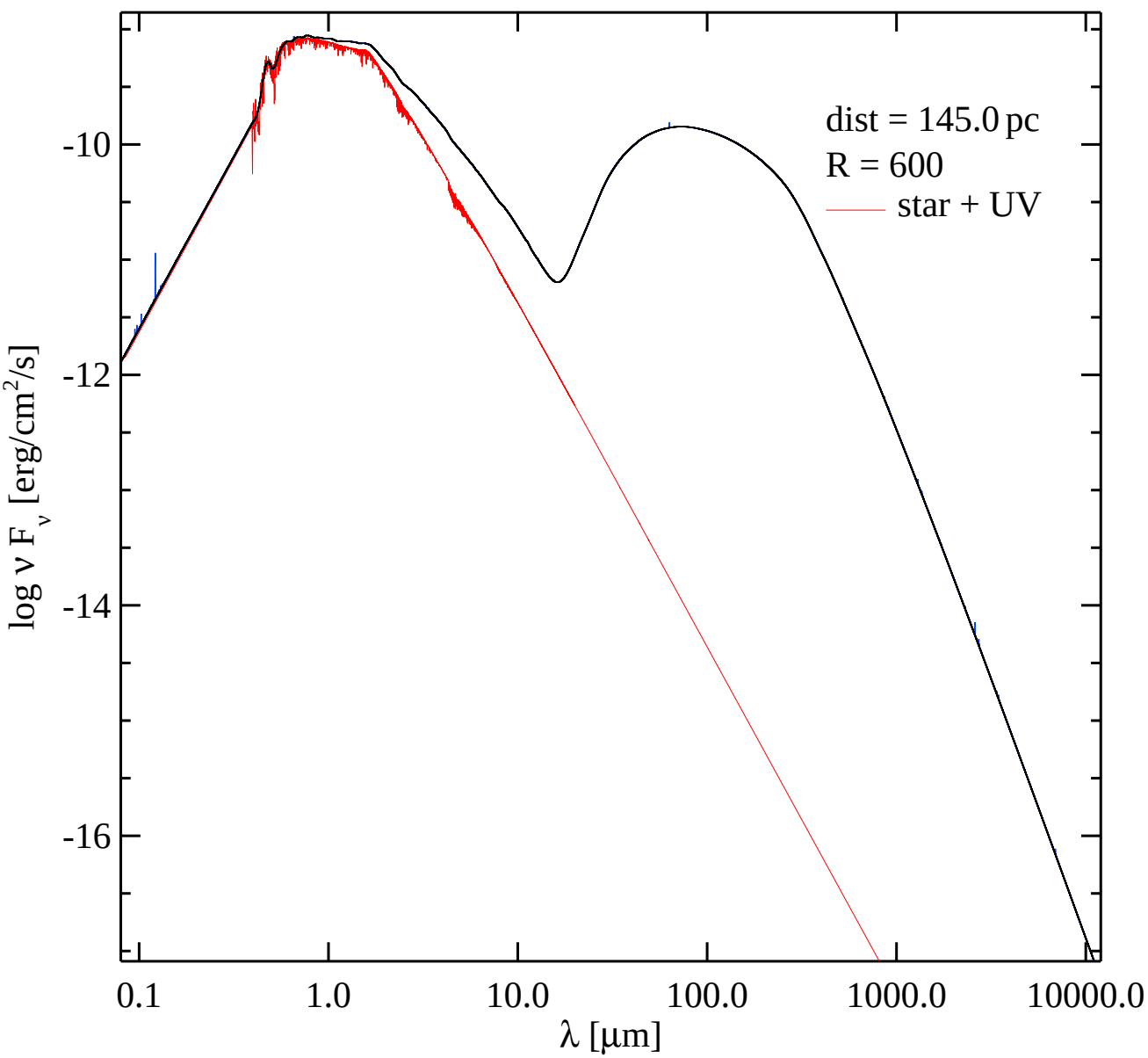

-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]
dist = 145.0 pc, incl = 10°
star + UV
disk model
Spitzer IRS

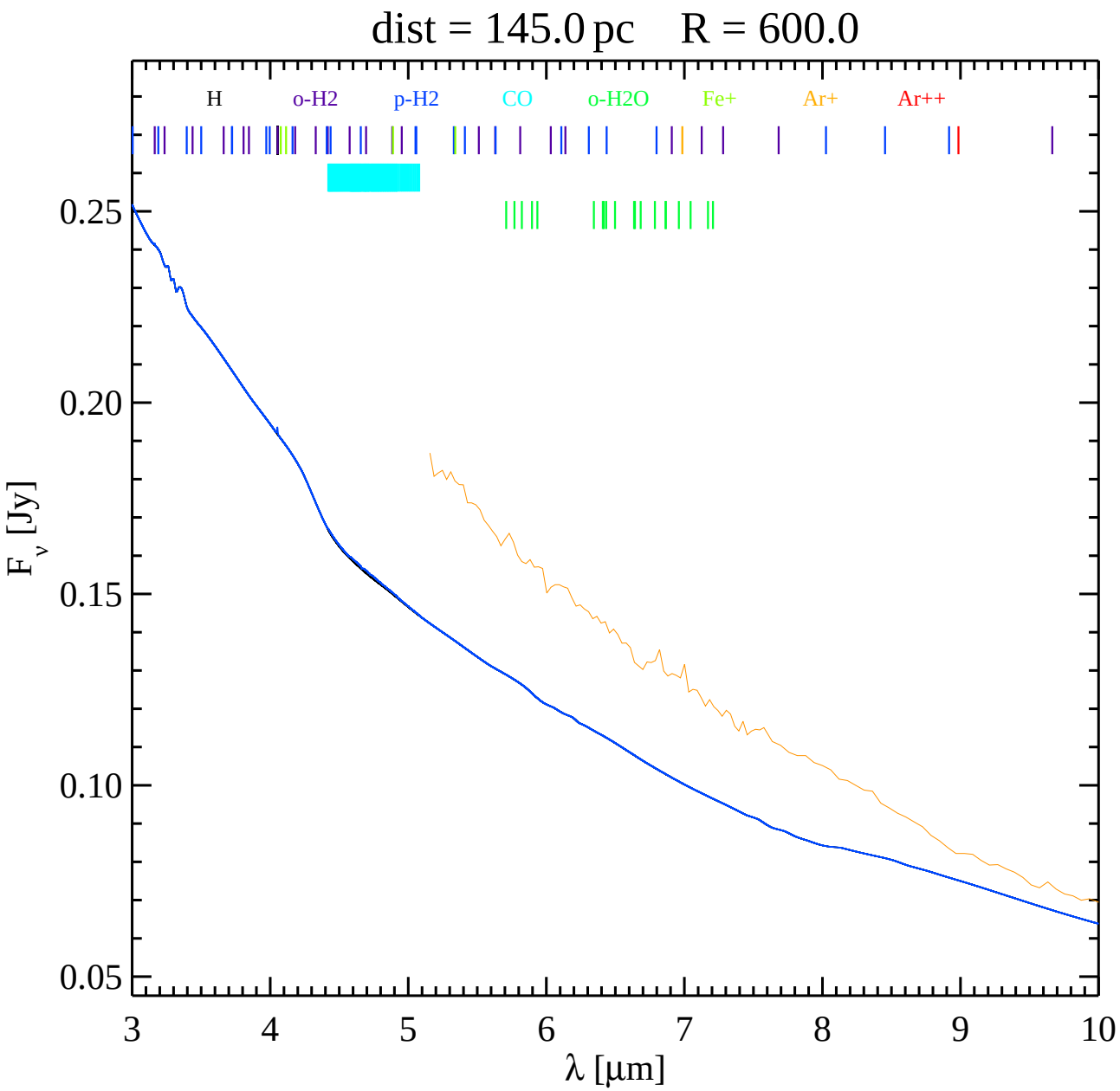

dist = 145.0 pc, incl = 10°
disk model
Spitzer IRS
0.30
0.25
0.20
0.15
0.10
0.05
F_ν [Jy]
4
6
8
10
12
14
λ [μm]

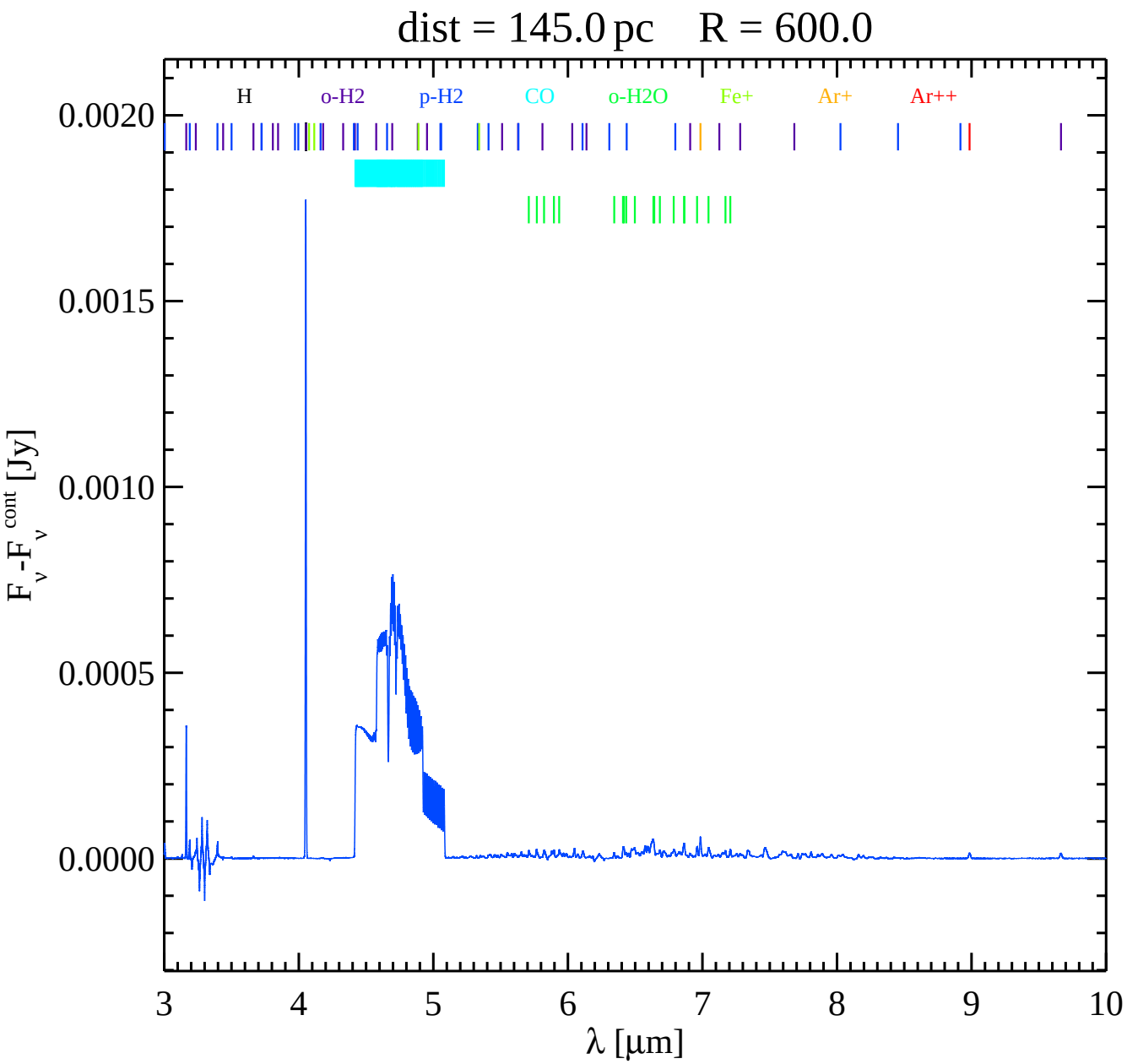

100.0
10.0
1.0
0.1
r [AU]
85%
15%
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

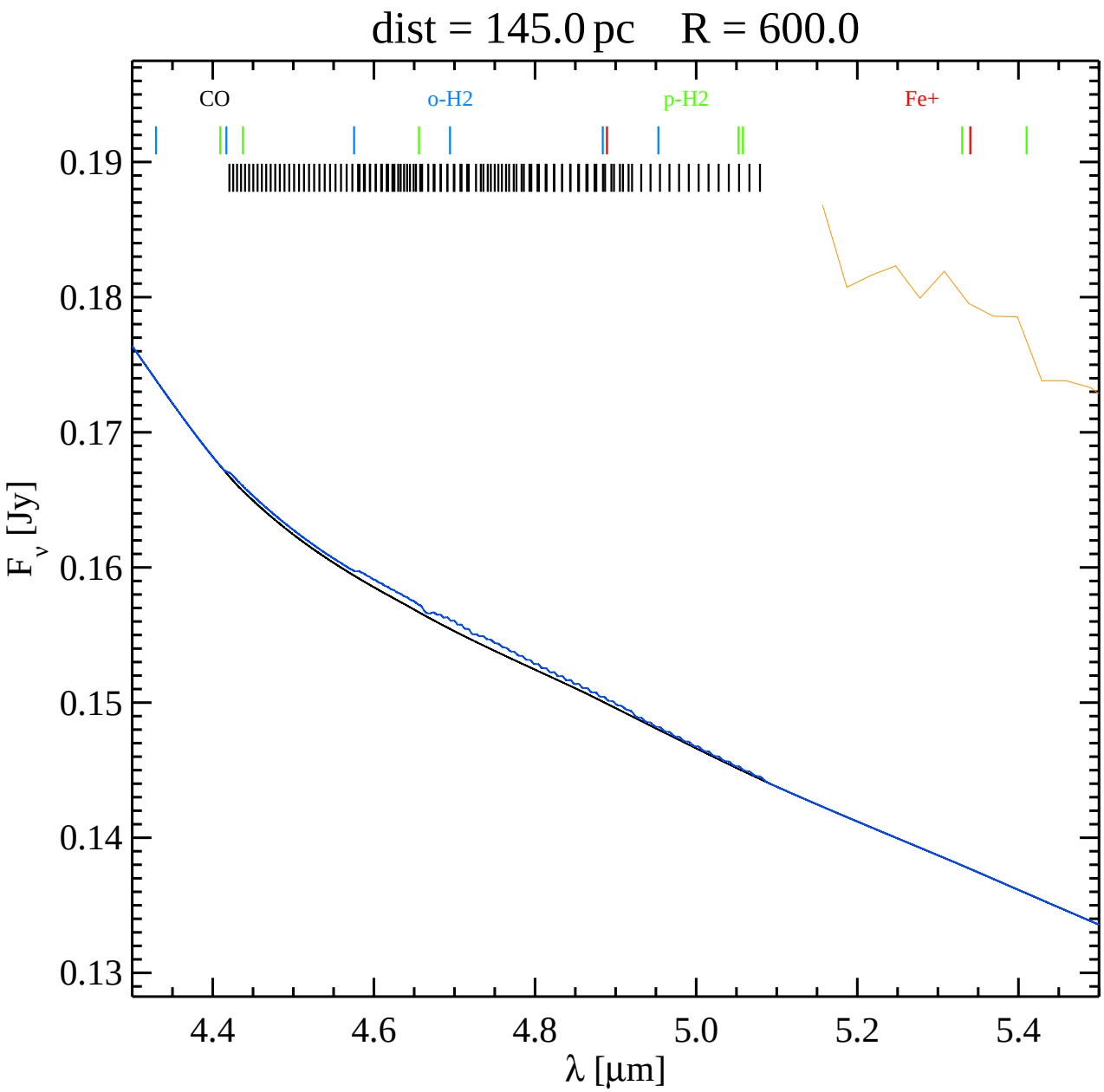

0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
z/r
30μm
60μm
100μm
200μm
1000μm
4
6
8
10
12
log n<H> [cm-3]
0.1
1.0
10.0
100.0
r [AU]

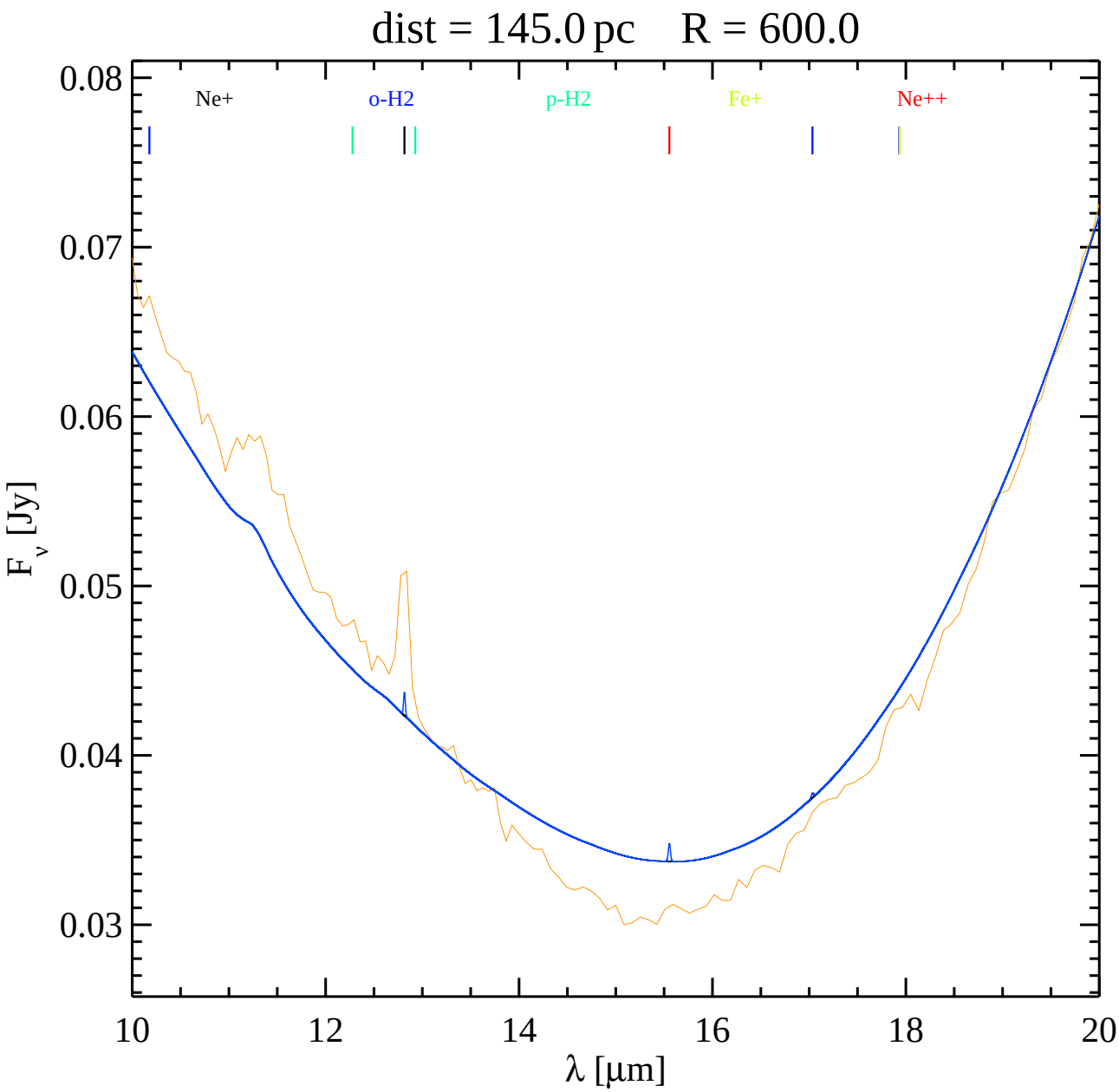

dist = 145.0 pc
R = 100000
star + UV
-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

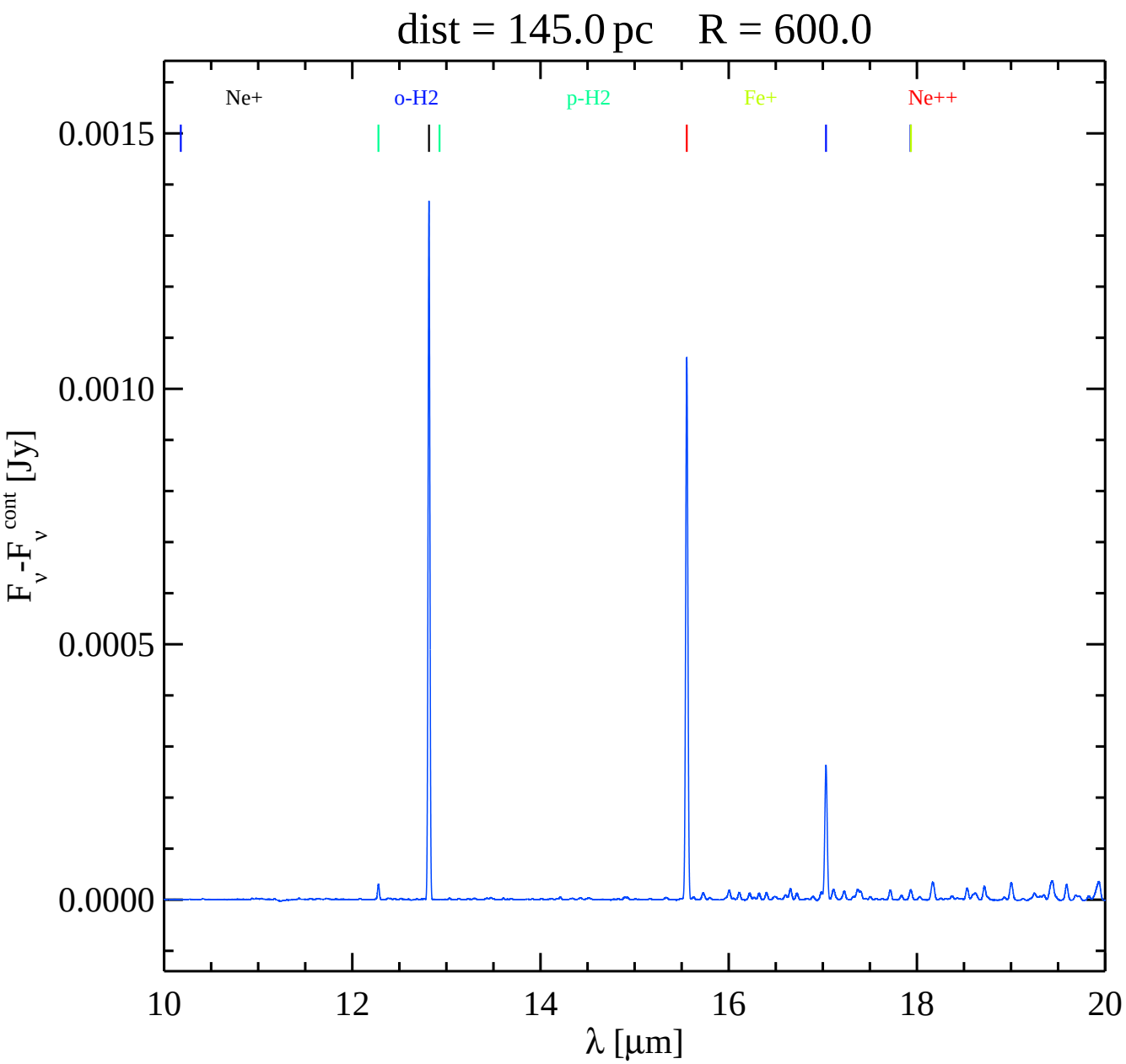

dist = 145.0 pc
R = 600
star + UV
-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

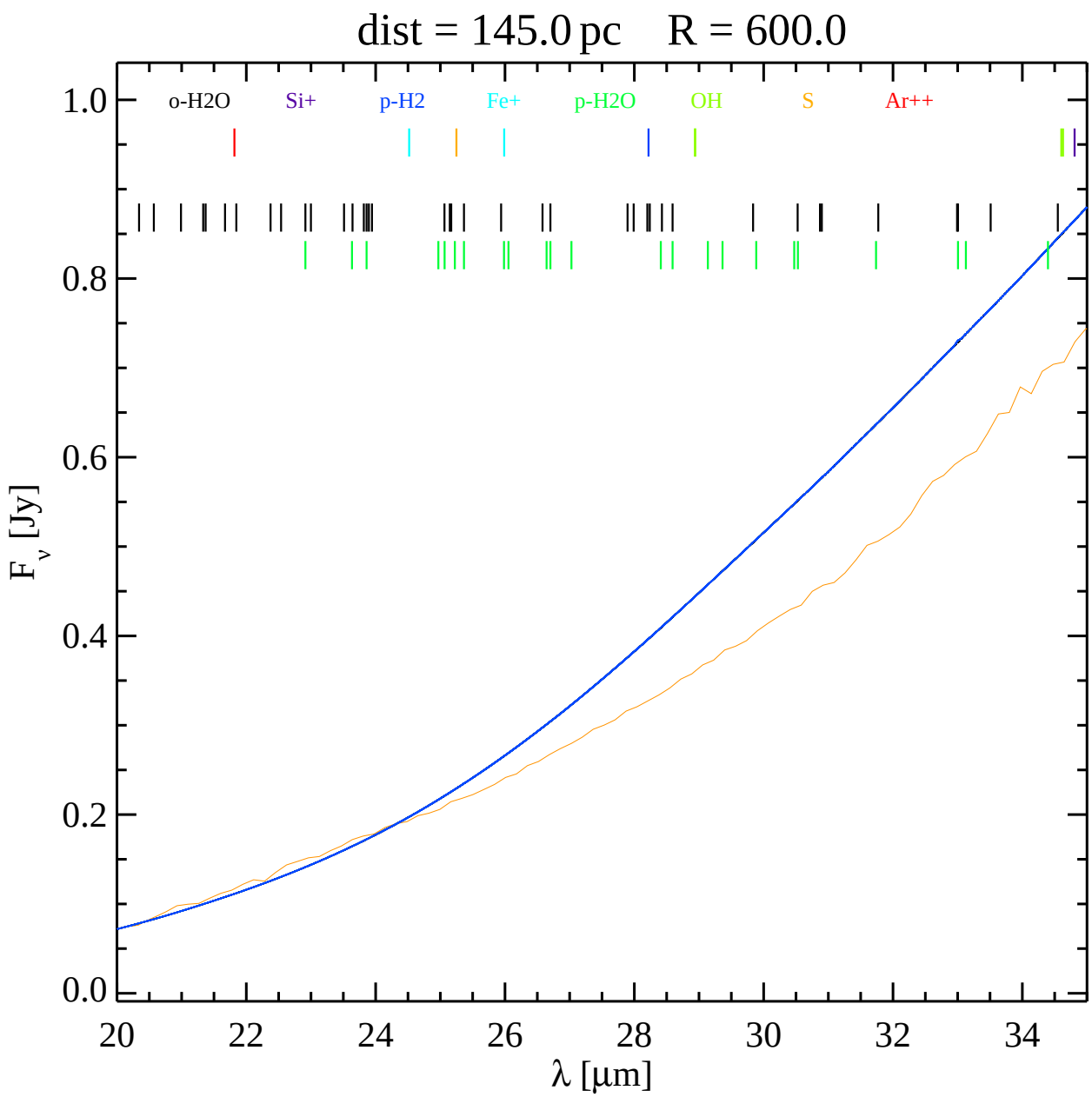

dist = 145.0 pc R = 600.0
H
o-H2
p-H2
CO
o-H2O
Fe+
Ar+
Ar++
0.25
0.20
0.15
0.10
0.05
F_ν [Jy]
3
4
5
6
7
8
9
10
λ [μm]

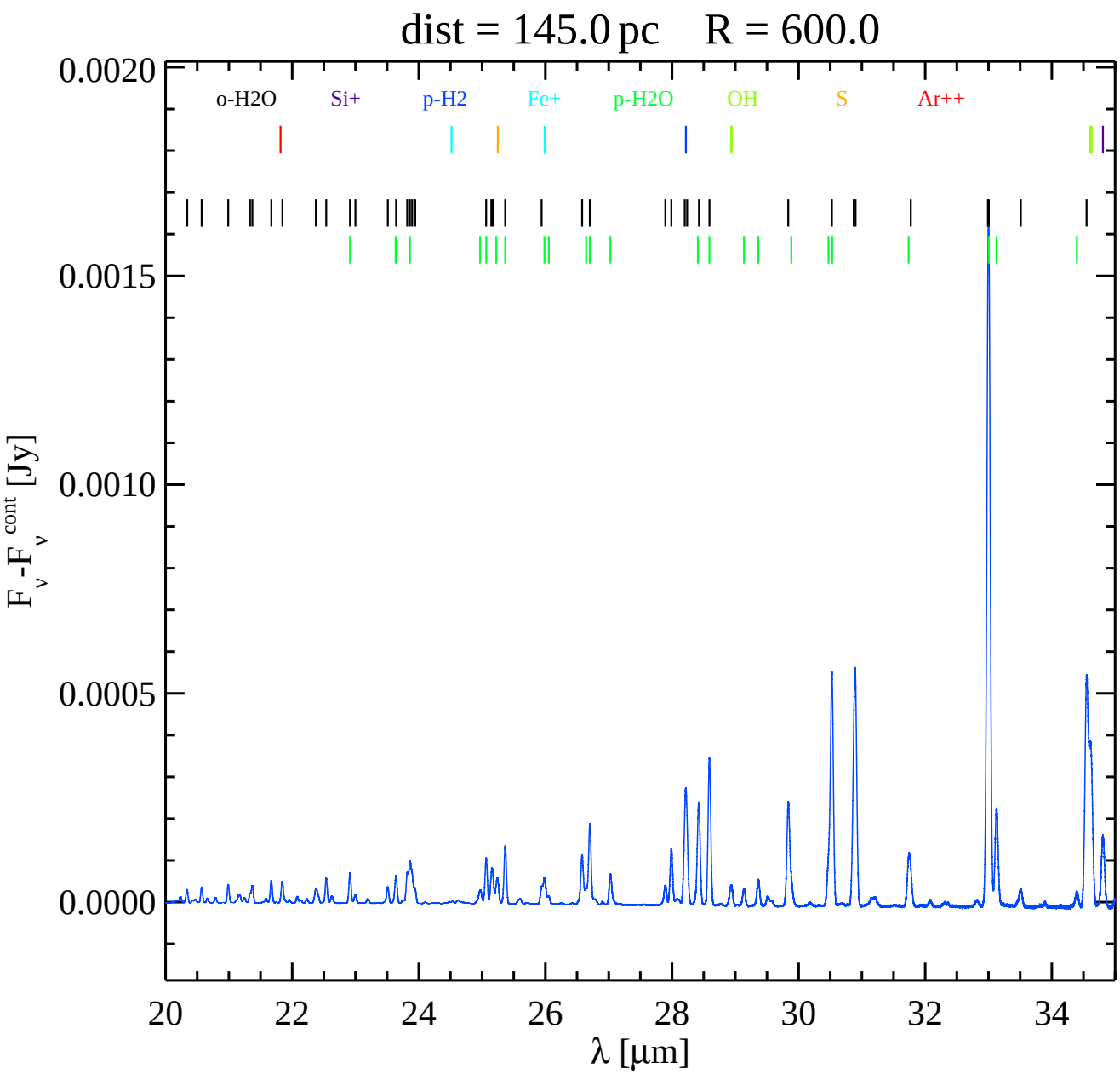

dist = 145.0 pc R = 600.0
H
o-H2
p-H2
CO
o-H2O
Fe+
Ar+
Ar++
0.0020
0.0015
0.0010
0.0005
0.0000
F_ν -F_ν^cont [Jy]
3
4
5
6
7
8
9
10
λ [μm]

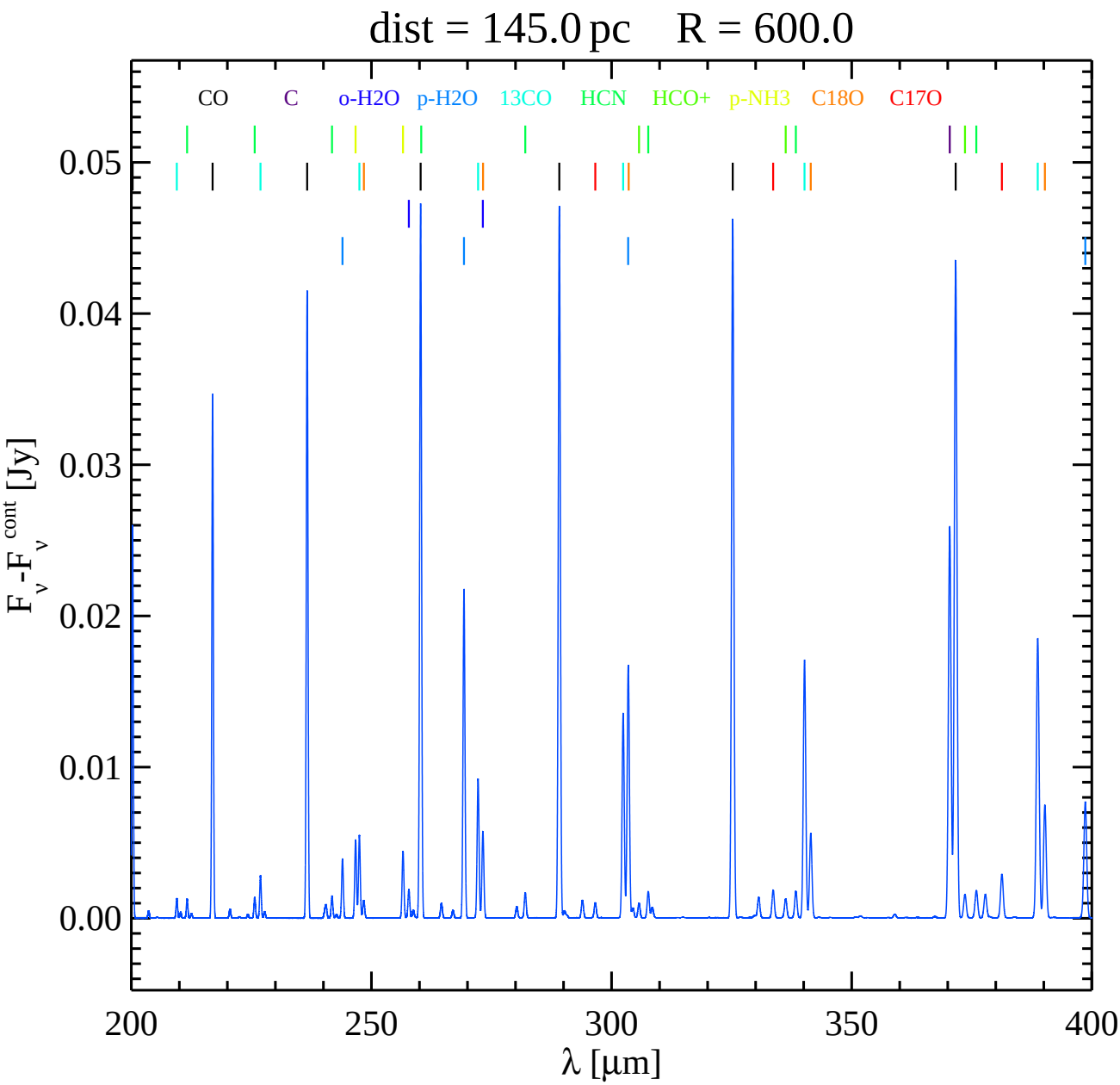

dist = 145.0 pc R = 600.0
CO
o-H2
p-H2
Fe+
0.19
0.18
0.17
0.16
0.15
0.14
0.13
F_ν [Jy]
4.4
4.6
4.8
5.0
5.2
5.4
λ [μm]

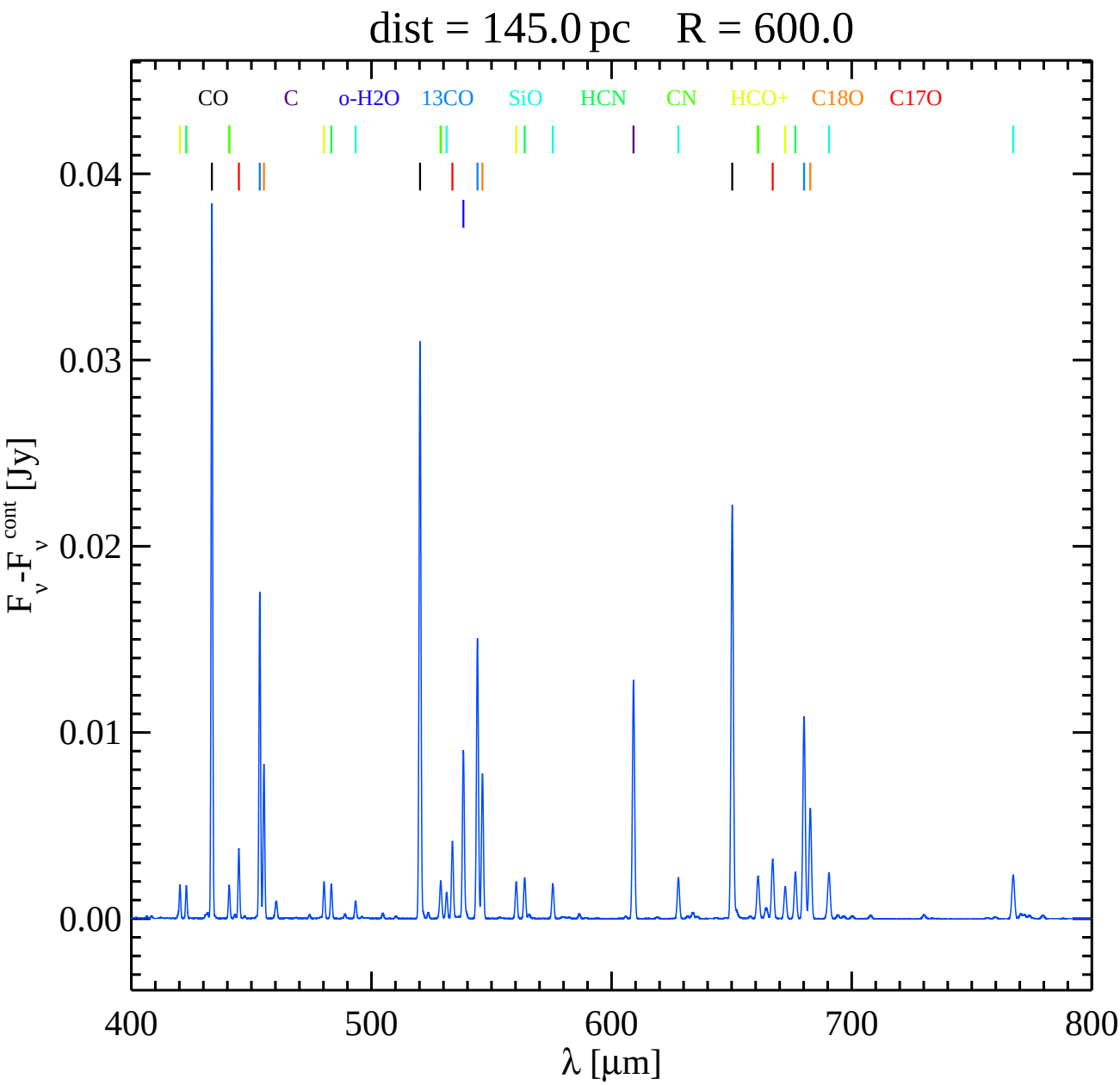

dist = 145.0 pc R = 600.0
Ne+
o-H2
p-H2
Fe+
Ne++
0.08
0.07
0.06
0.05
0.04
0.03
F_ν [Jy]
10
12
14
16
18
20
λ [μm]

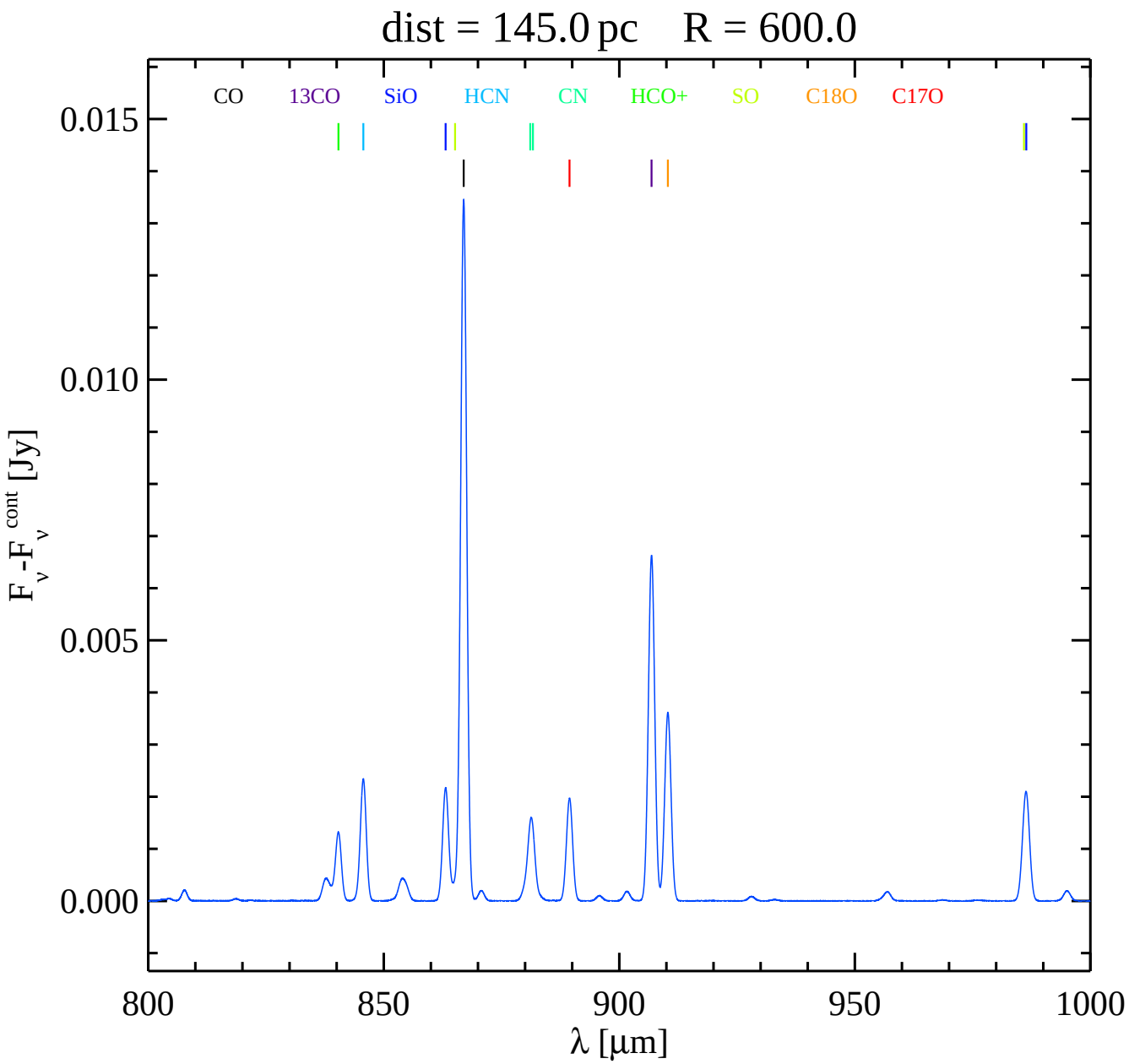

dist = 145.0 pc R = 600.0
Ne+
o-H2
p-H2
Fe+
Ne++
0.0015
0.0010
0.0005
0.0000
F_ν -F_ν^cont [Jy]
10
12
14
16
18
20
λ [μm]

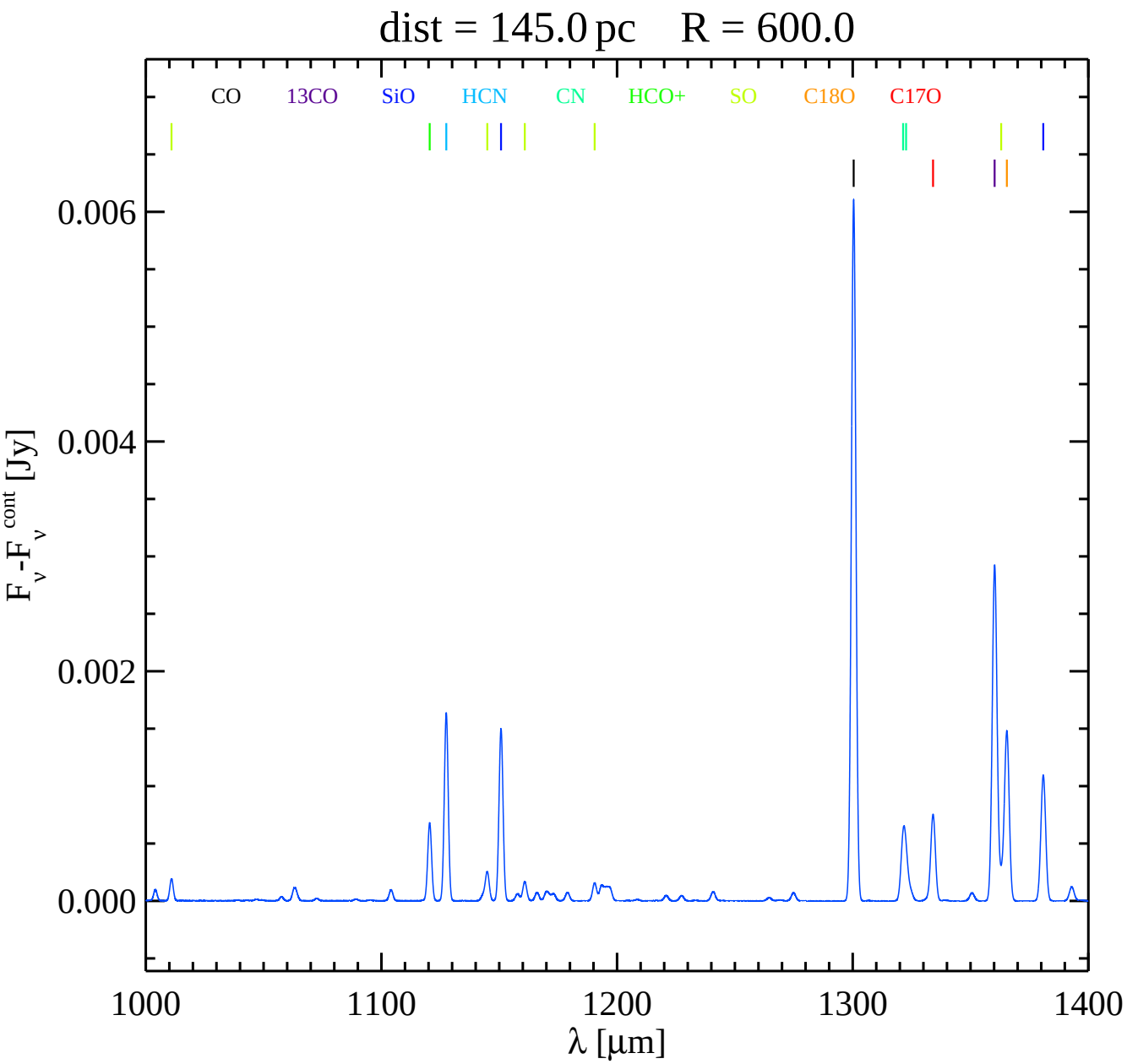

dist = 145.0 pc R = 600.0
o-H2O
Si+
p-H2
Fe+
p-H2O
OH
S
Ar++
1.0
0.8
0.6
0.4
0.2
0.0
F_ν [Jy]
20
22
24
26
28
30
32
34
λ [μm]

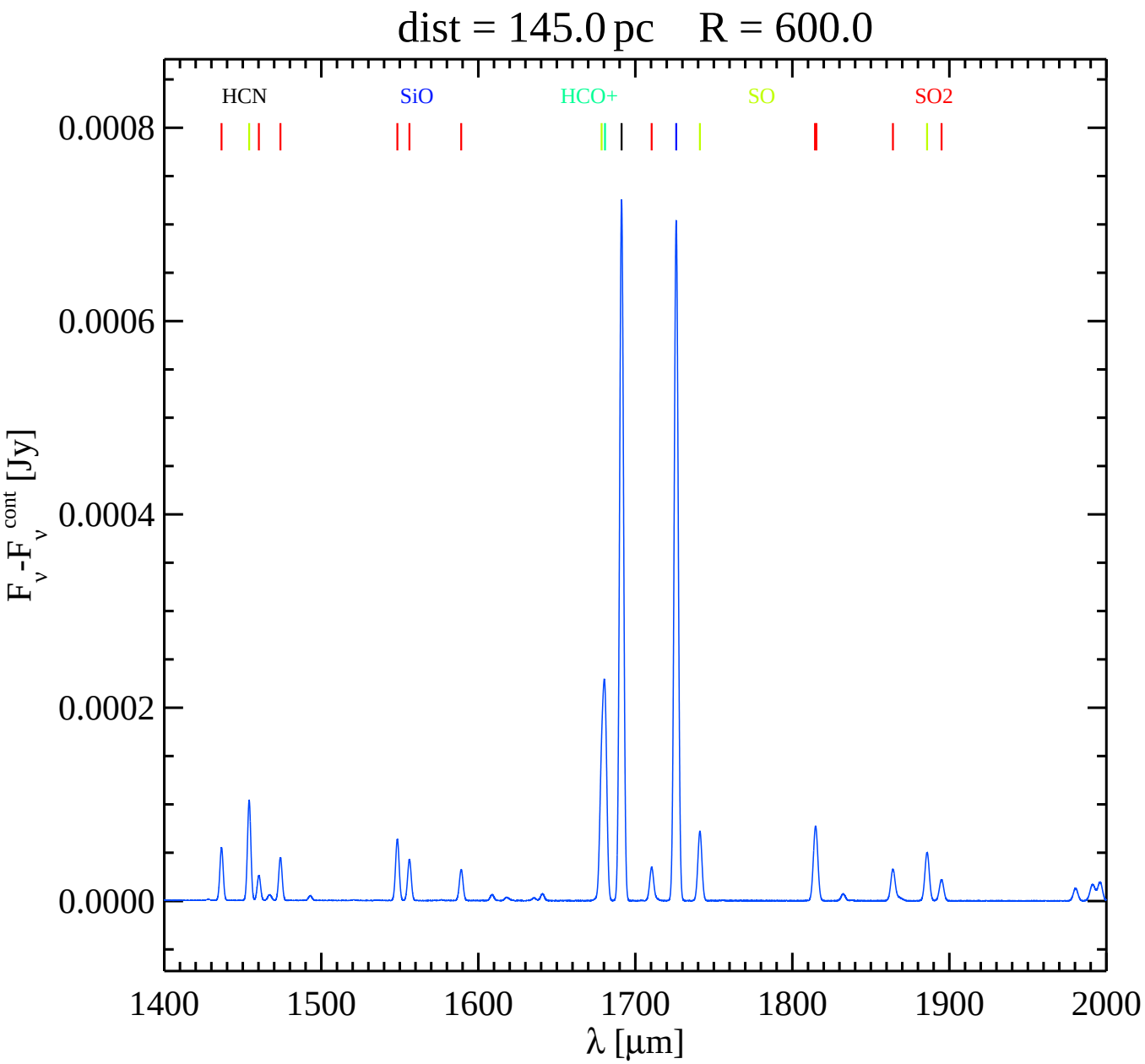

dist = 145.0 pc R = 600.0
o-H2O
Si+
p-H2
Fe+
p-H2O
OH
S
Ar++
0.0020
0.0015
0.0010
0.0005
0.0000
F_ν -F_ν^cont [Jy]
20
22
24
26
28
30
32
34
λ [μm]

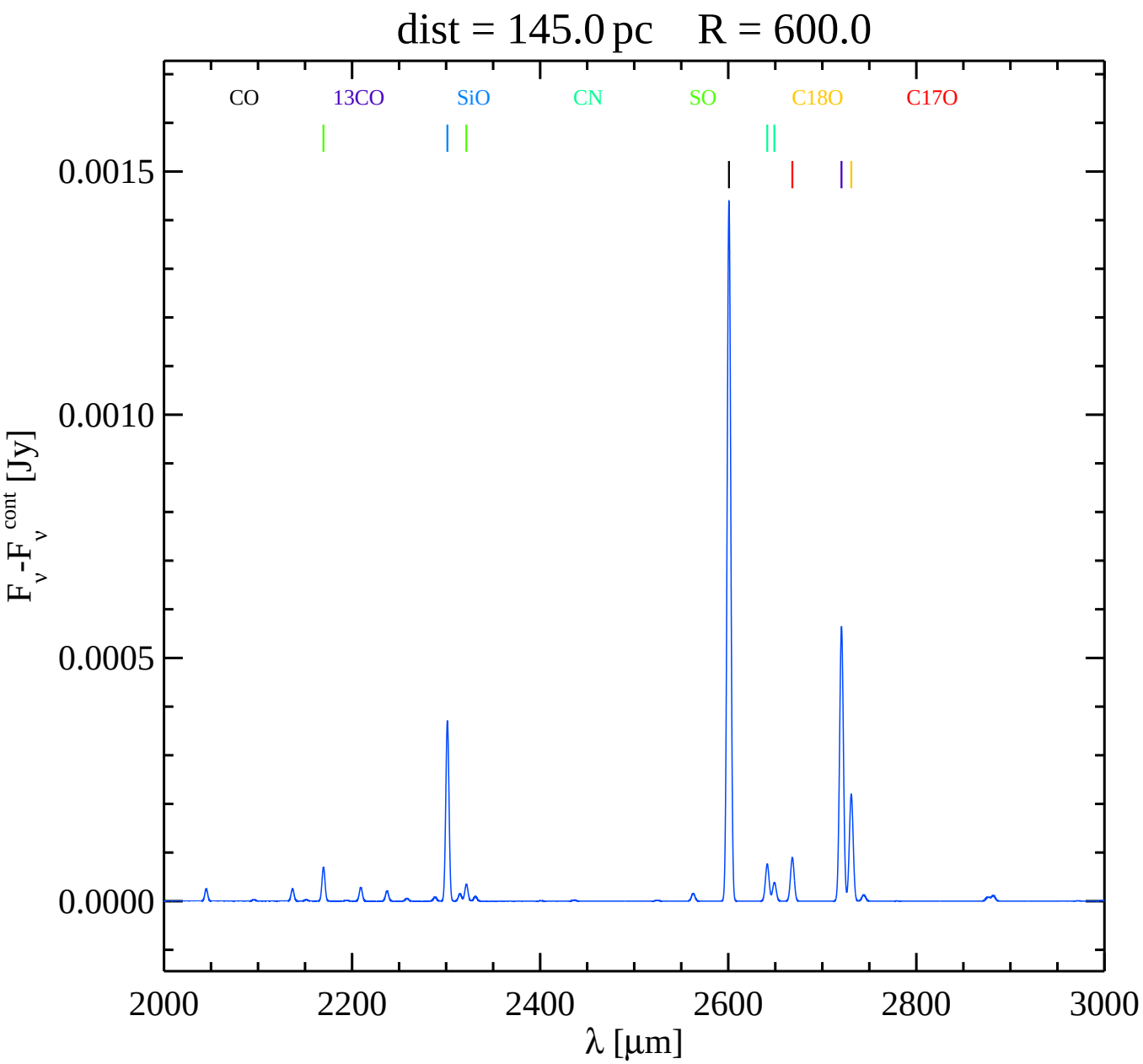

dist = 145.0 pc R = 600.0
CO
C
o-H2O
p-H2O
13CO
HCN
HCO+
p-NH3
C18O
C17O
0.05
0.04
0.03
0.02
0.01
0.00
F_ν -F_ν^cont [Jy]
200
250
300
350
400
λ [μm]

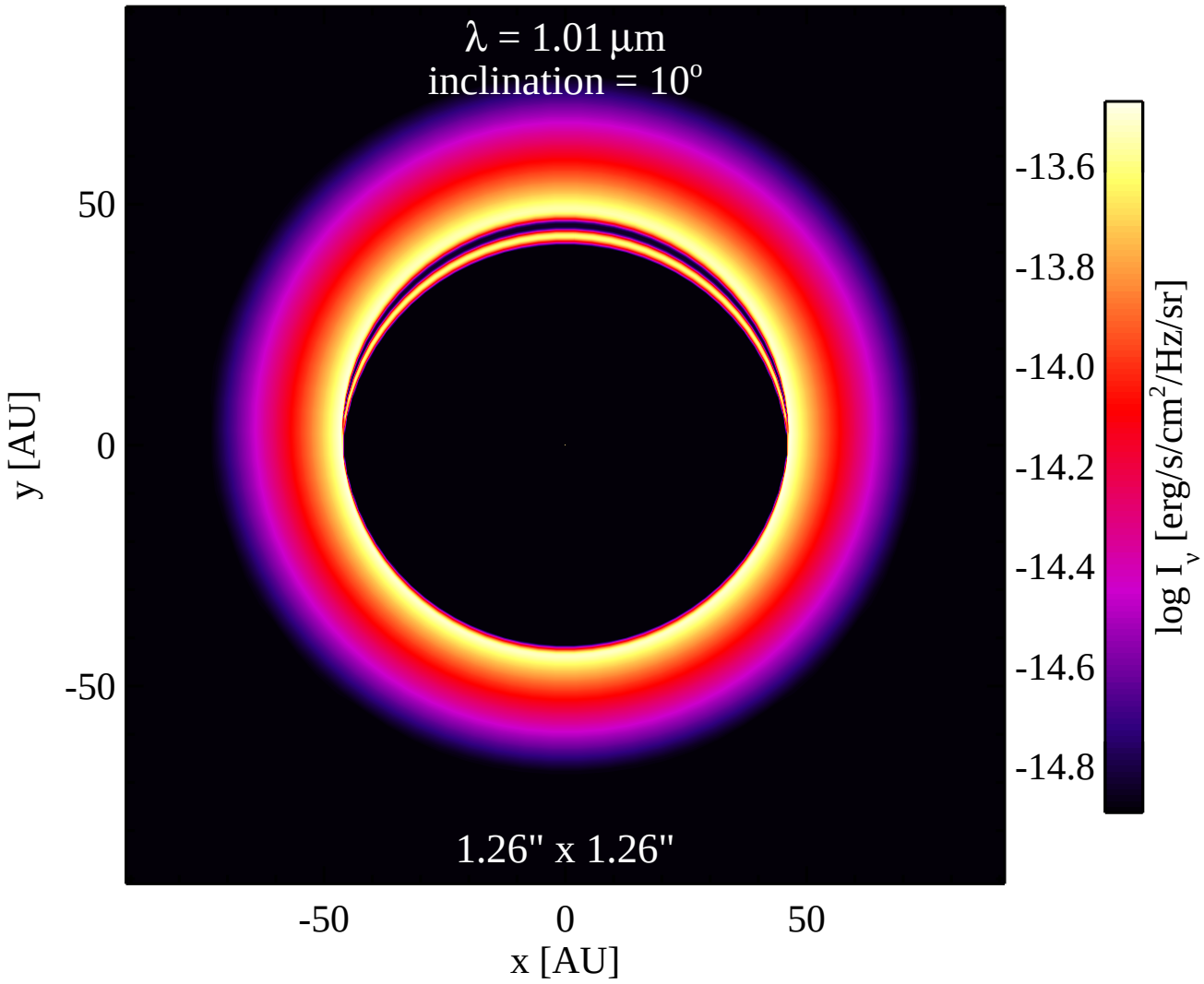

dist = 145.0 pc R = 600.0
CO
C
o-H2O
13CO
SiO
HCN
CN
HCO+
C18O
C17O
0.04
0.03
0.02
0.01
0.00
F_ν -F_ν^cont [Jy]
400
500
600
700
800
λ [μm]

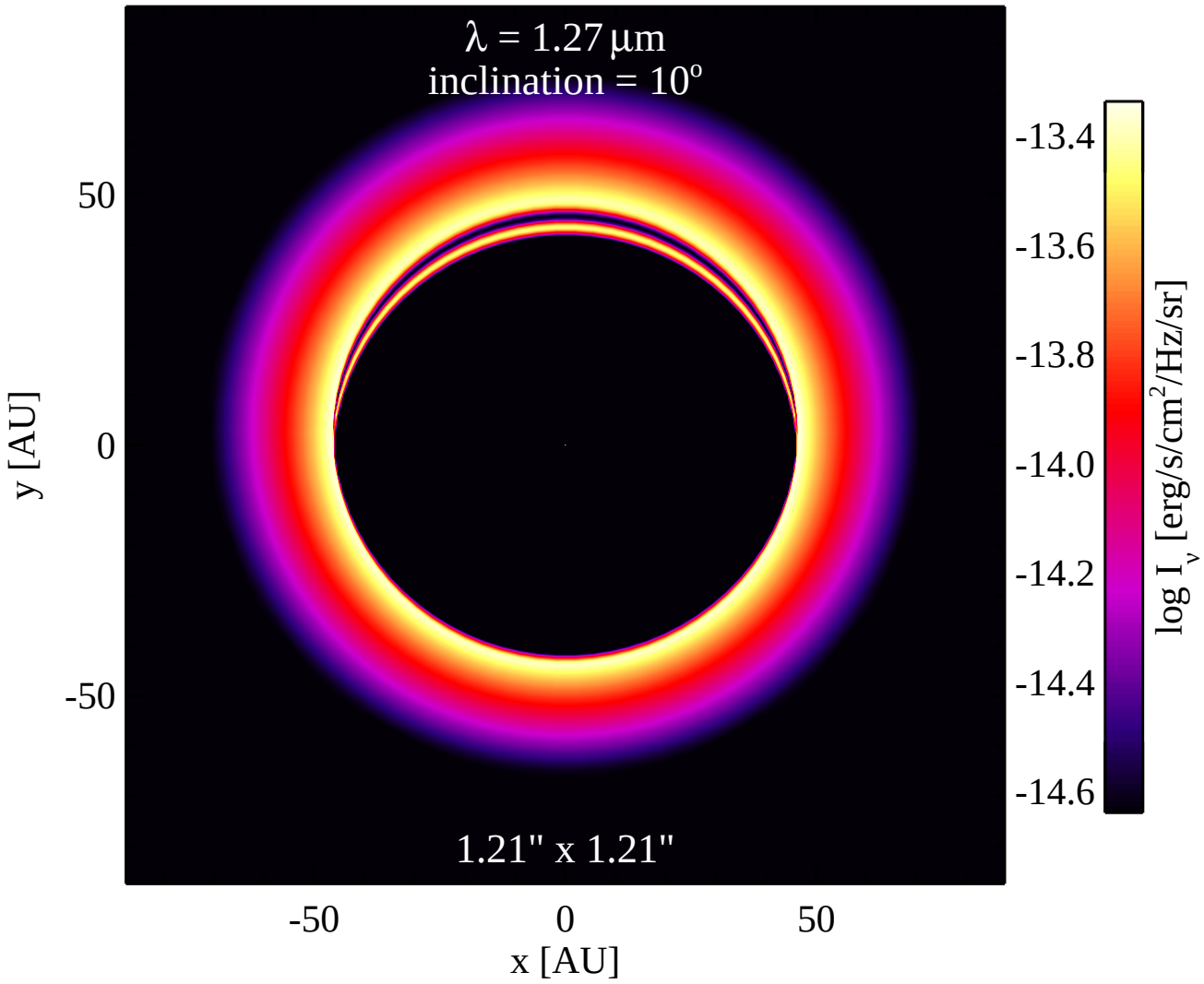

dist = 145.0 pc R = 600.0
CO
13CO
SiO
HCN
CN
HCO+
SO
C18O
C17O
0.015
0.010
0.005
0.000
F_ν - F_ν^cont [Jy]
800
850
900
950
1000
λ [μm]

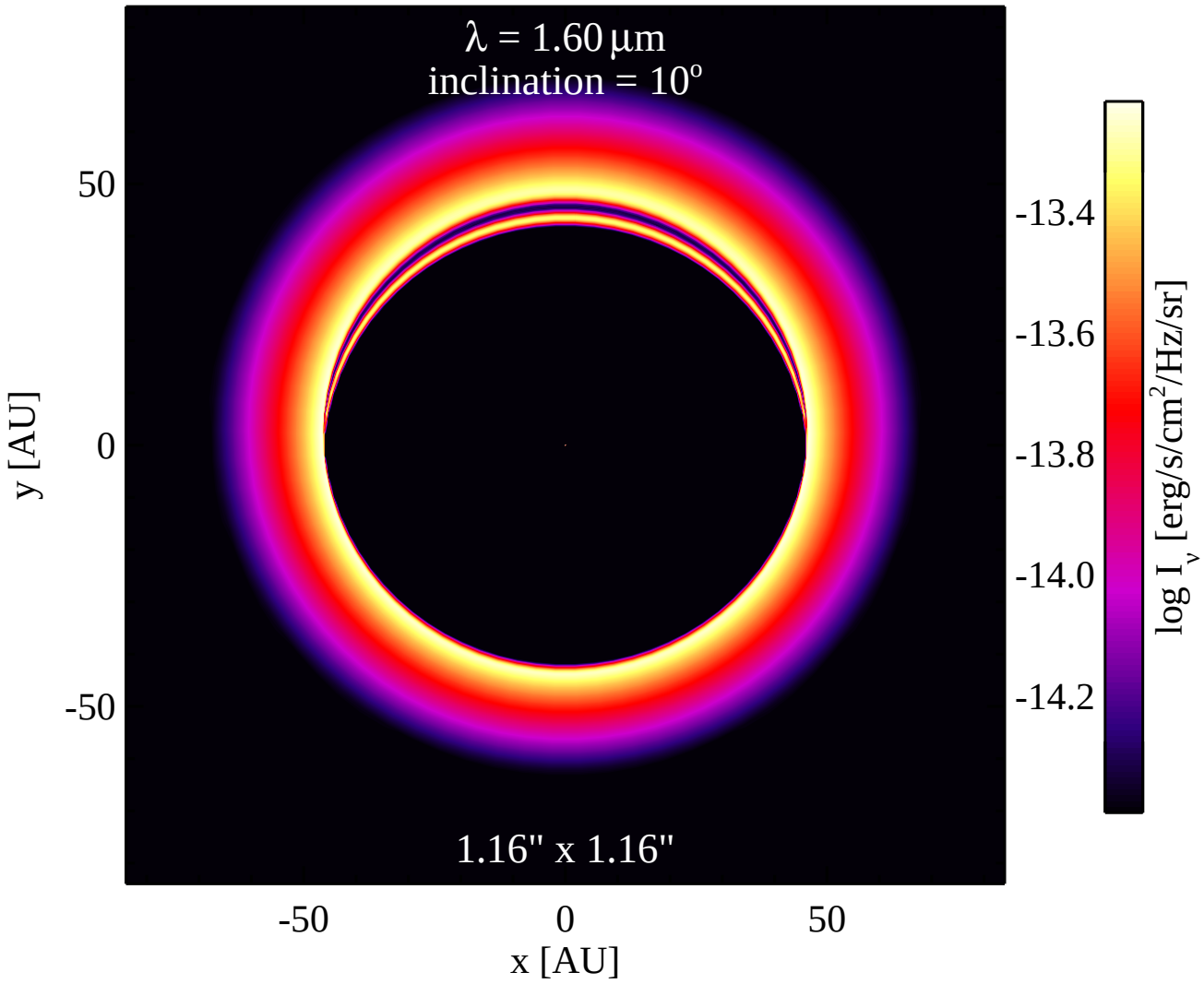

dist = 145.0 pc R = 600.0
CO
13CO
SiO
HCN
CN
HCO+
SO
C18O
C17O
0.006
0.004
0.002
0.000
F_ν -F_ν^cont [Jy]
1000
1100
1200
1300
1400
λ [μm]

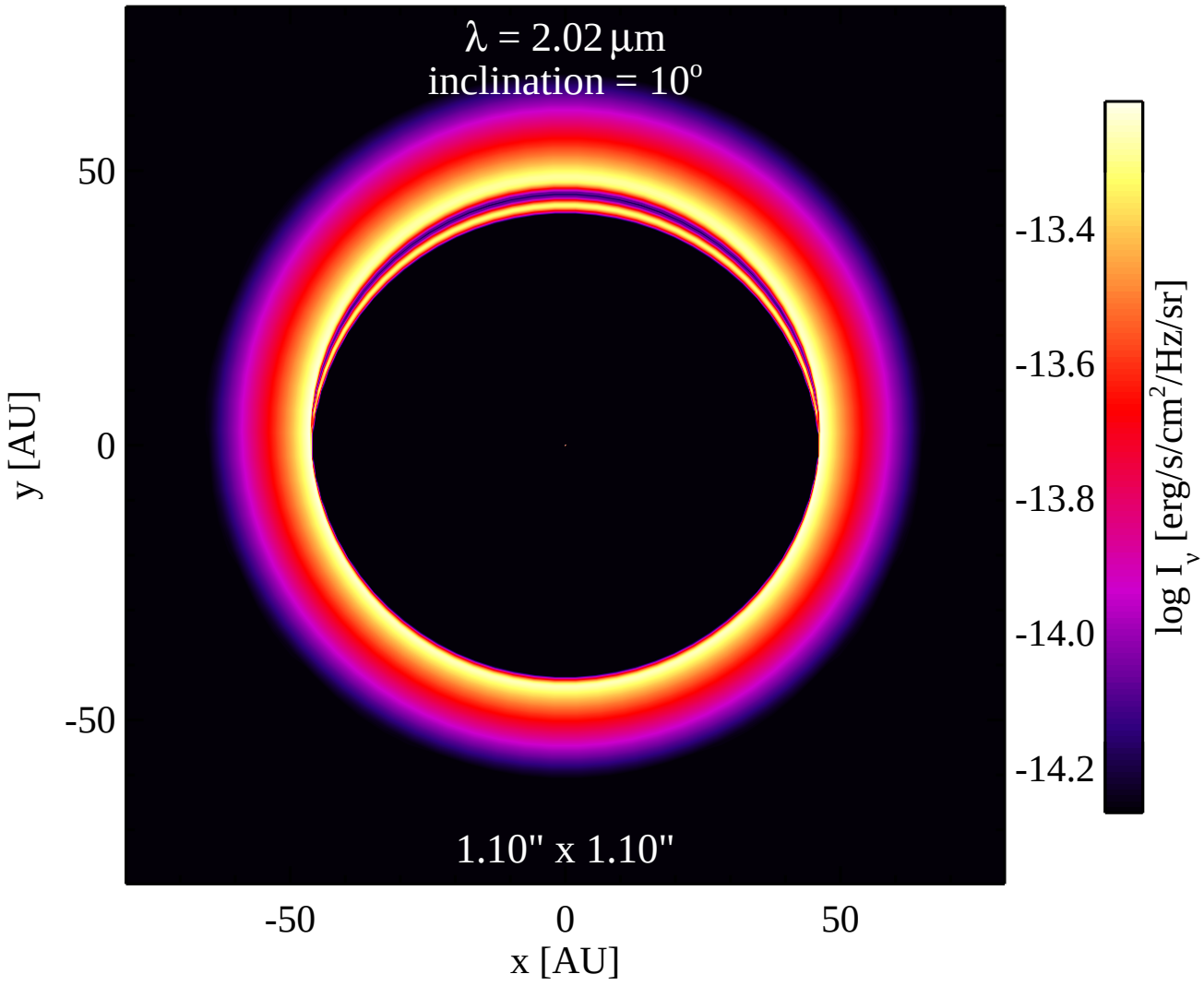

dist = 145.0 pc R = 600.0
HCN
SiO
HCO+
SO
SO2
0.0008
0.0006
0.0004
0.0002
0.0000
F_ν - F_ν^cont [Jy]
1400
1500
1600
1700
1800
1900
2000
λ [μm]

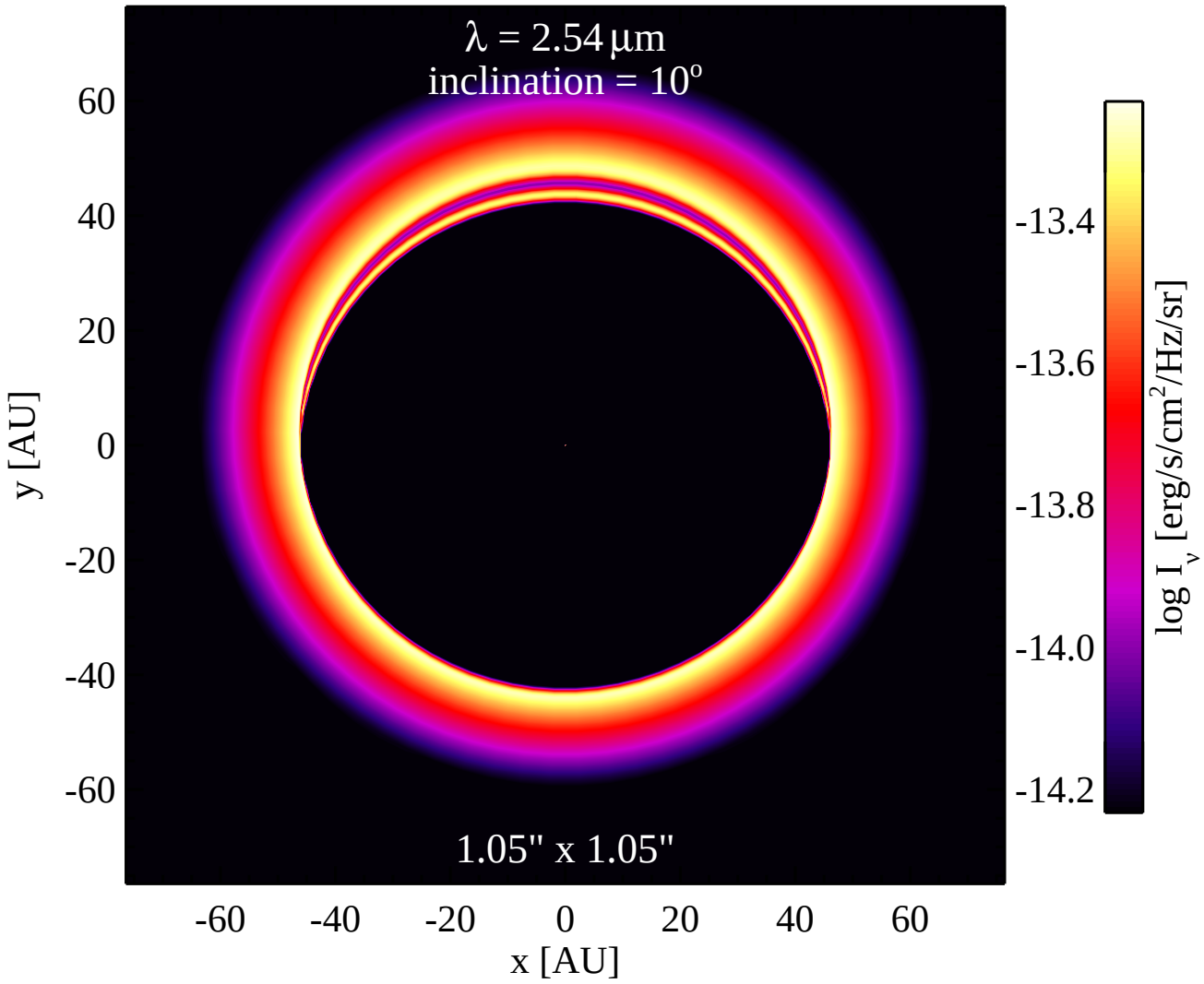

dist = 145.0 pc R = 600.0
CO
13CO
SiO
CN
SO
C18O
C17O
0.0015
0.0010
0.0005
0.0000
F_ν -F_ν^cont [Jy]
2000
2200
2400
2600
2800
3000
λ [μm]

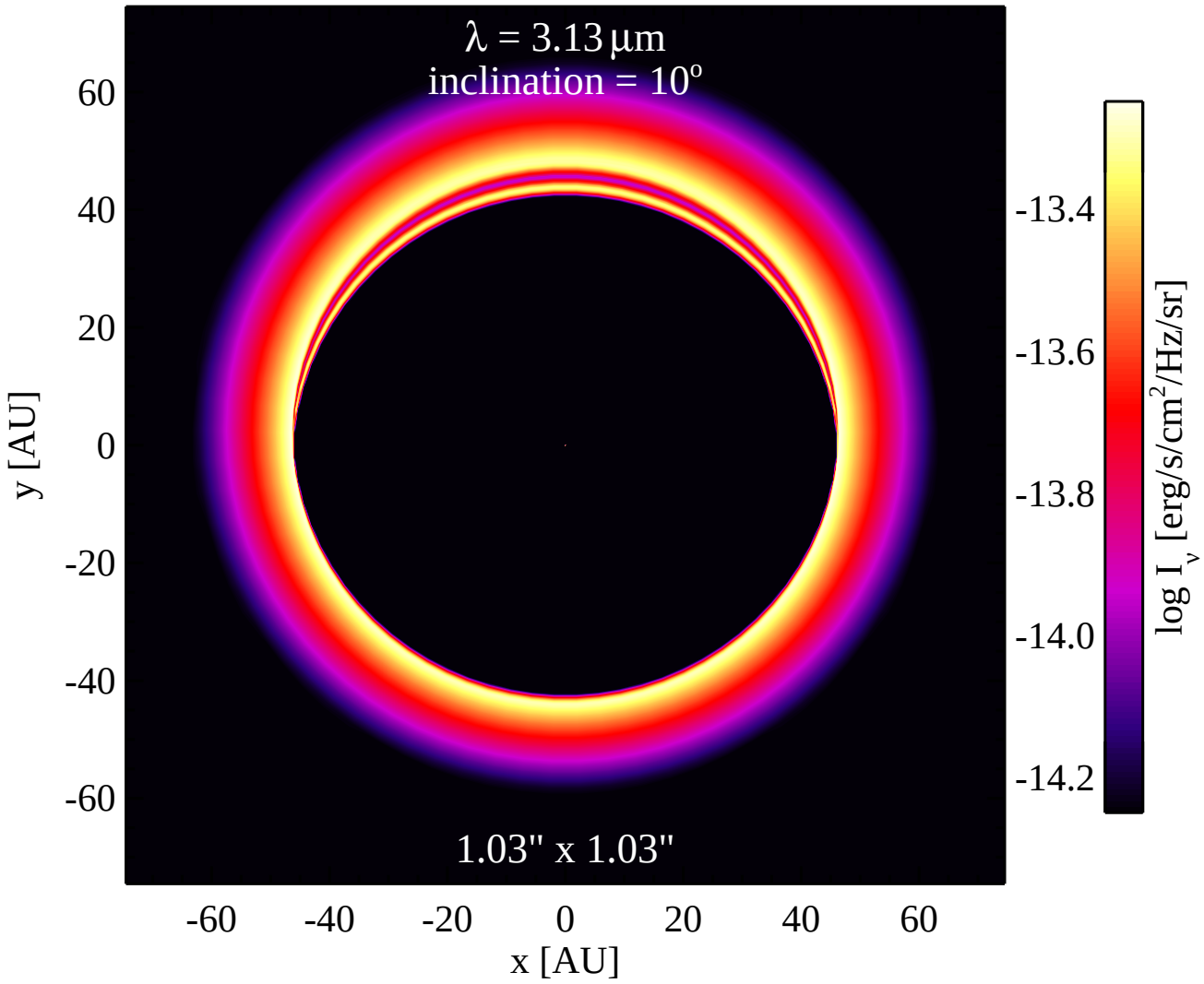

λ = 1.01 μm
inclination = 10°
1.26" x 1.26"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

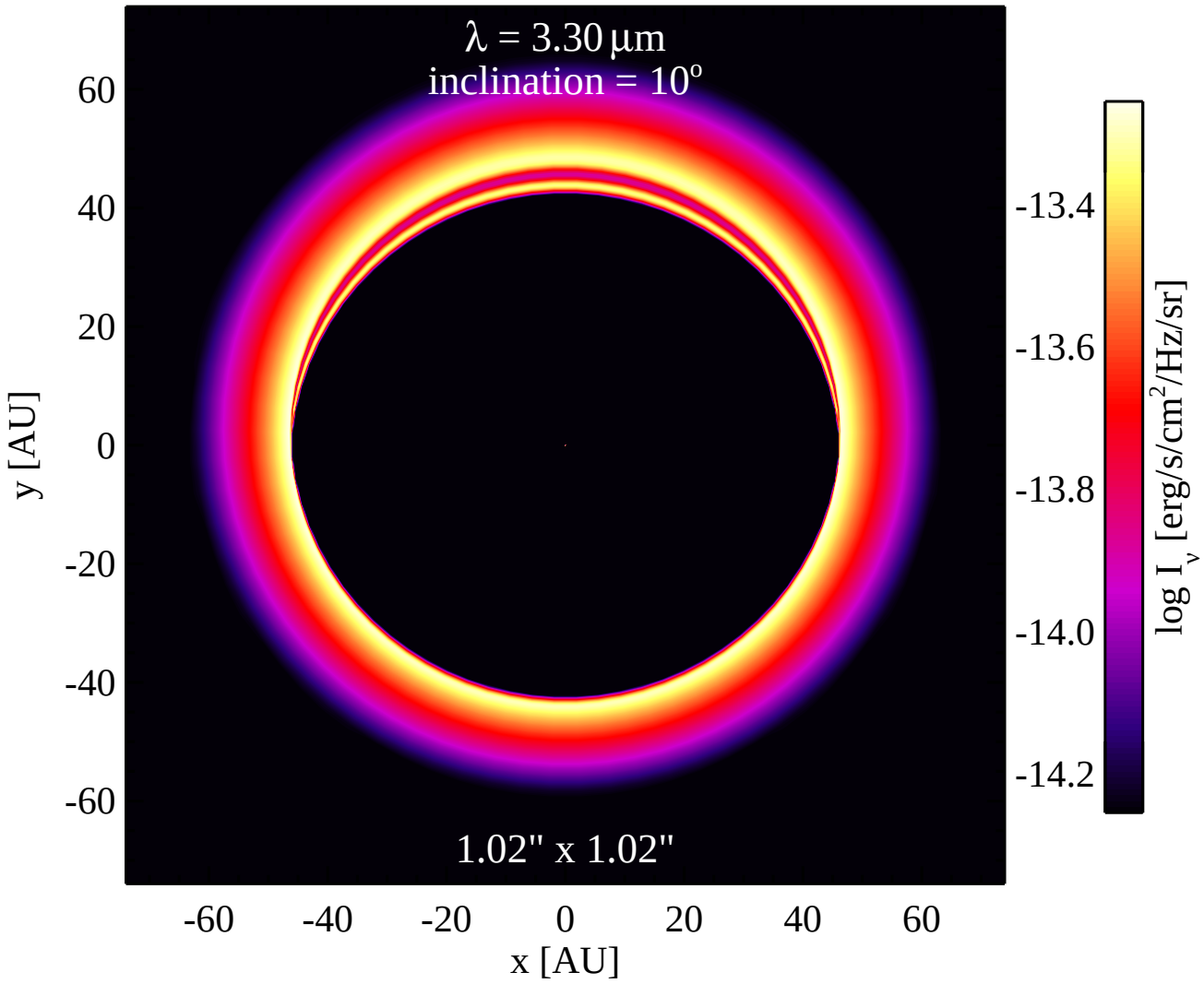

λ = 1.27 μm
inclination = 10°
1.21" x 1.21"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

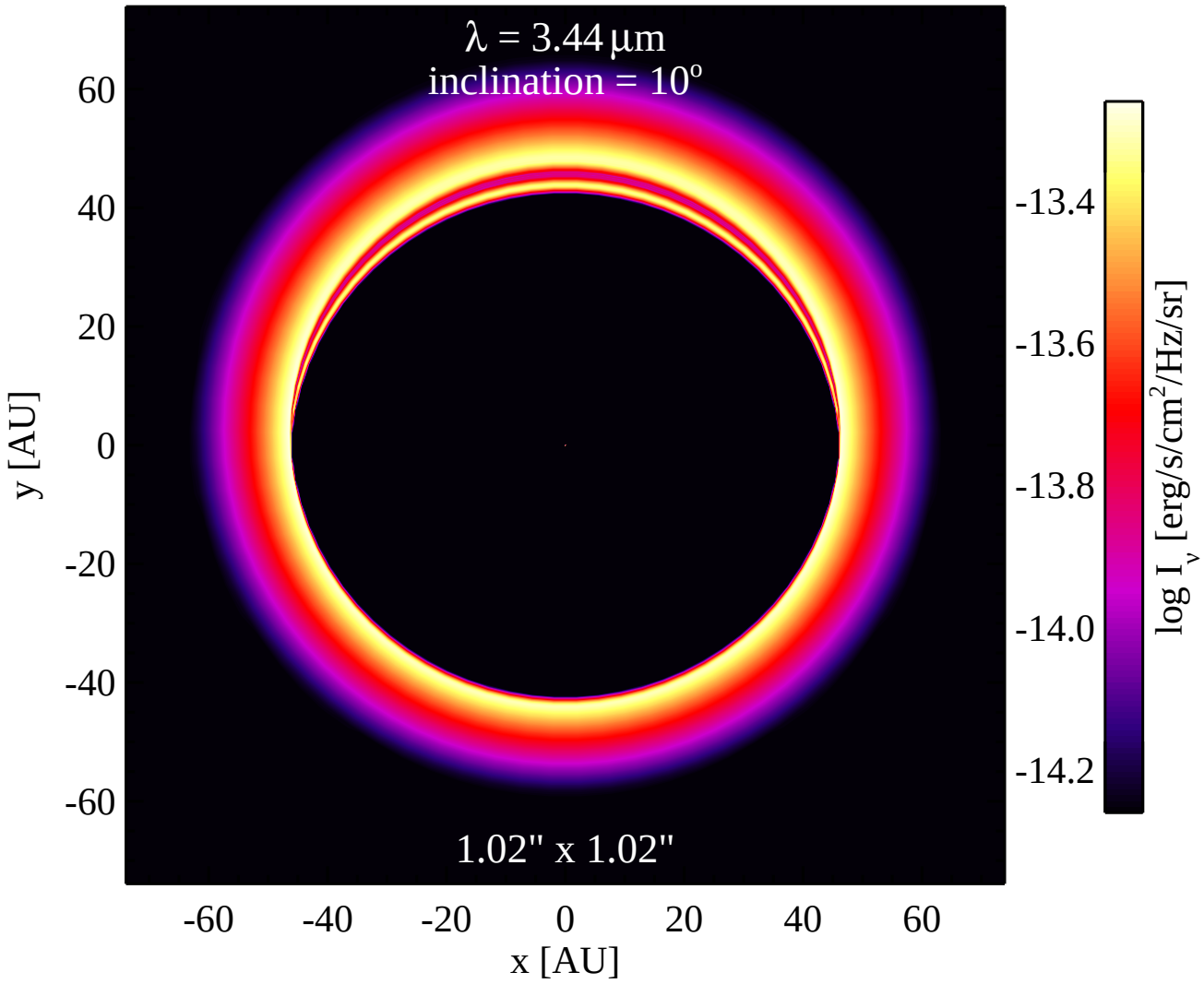

λ = 1.60 μm
inclination = 10°
1.16" x 1.16"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

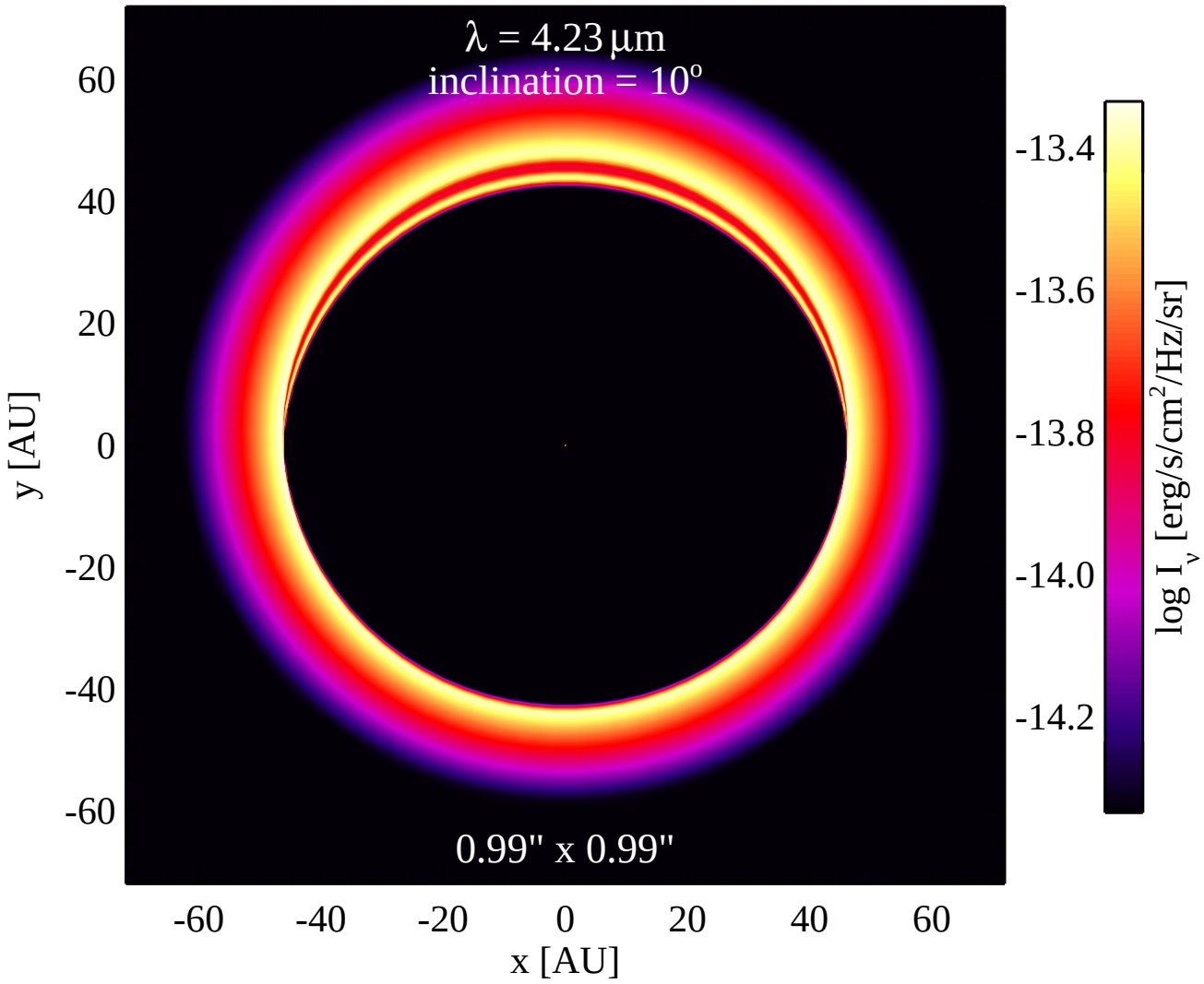

λ = 2.02 μm
inclination = 10°
1.10" x 1.10"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

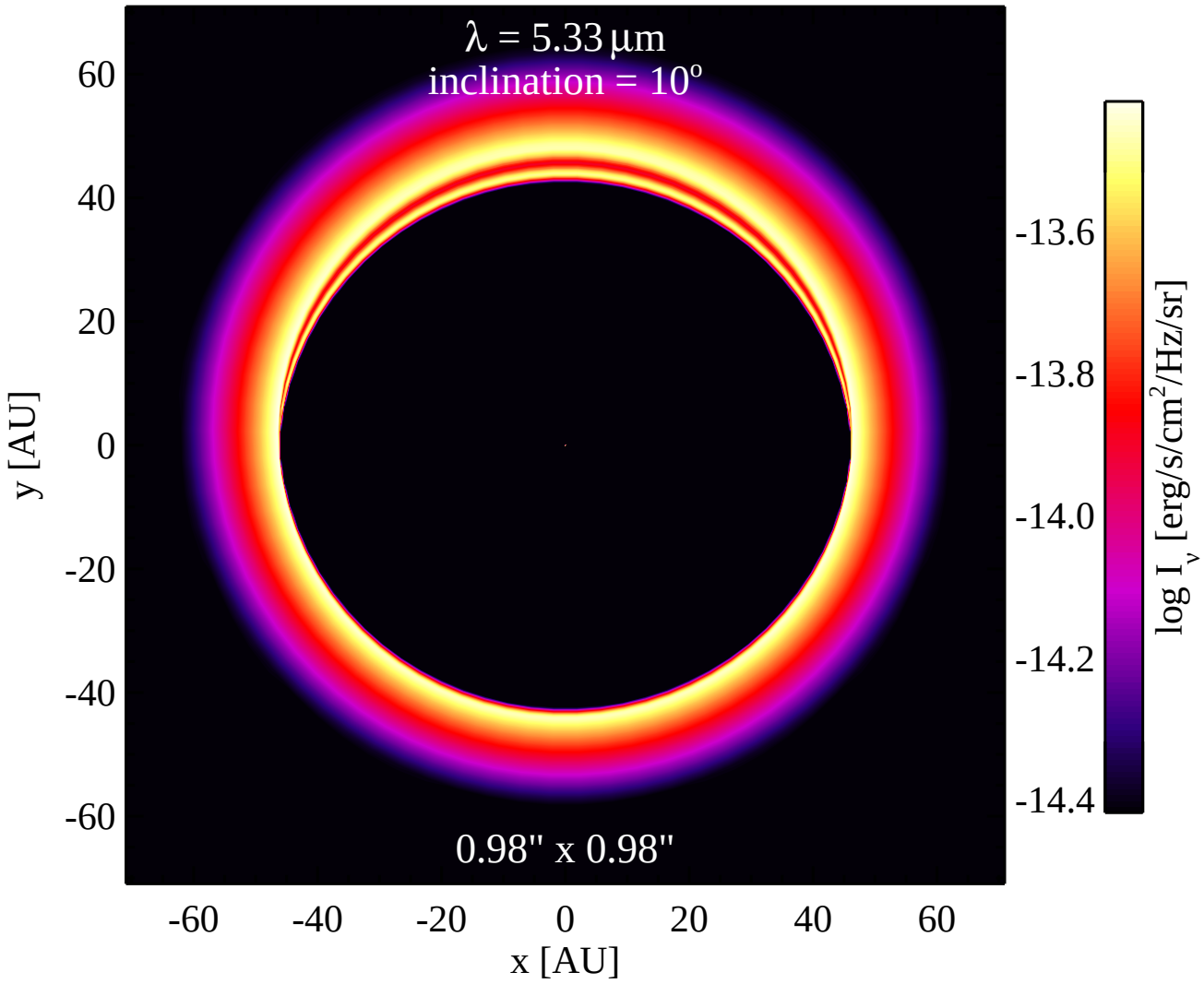

λ = 2.54 μm
inclination = 10°
1.05" x 1.05"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

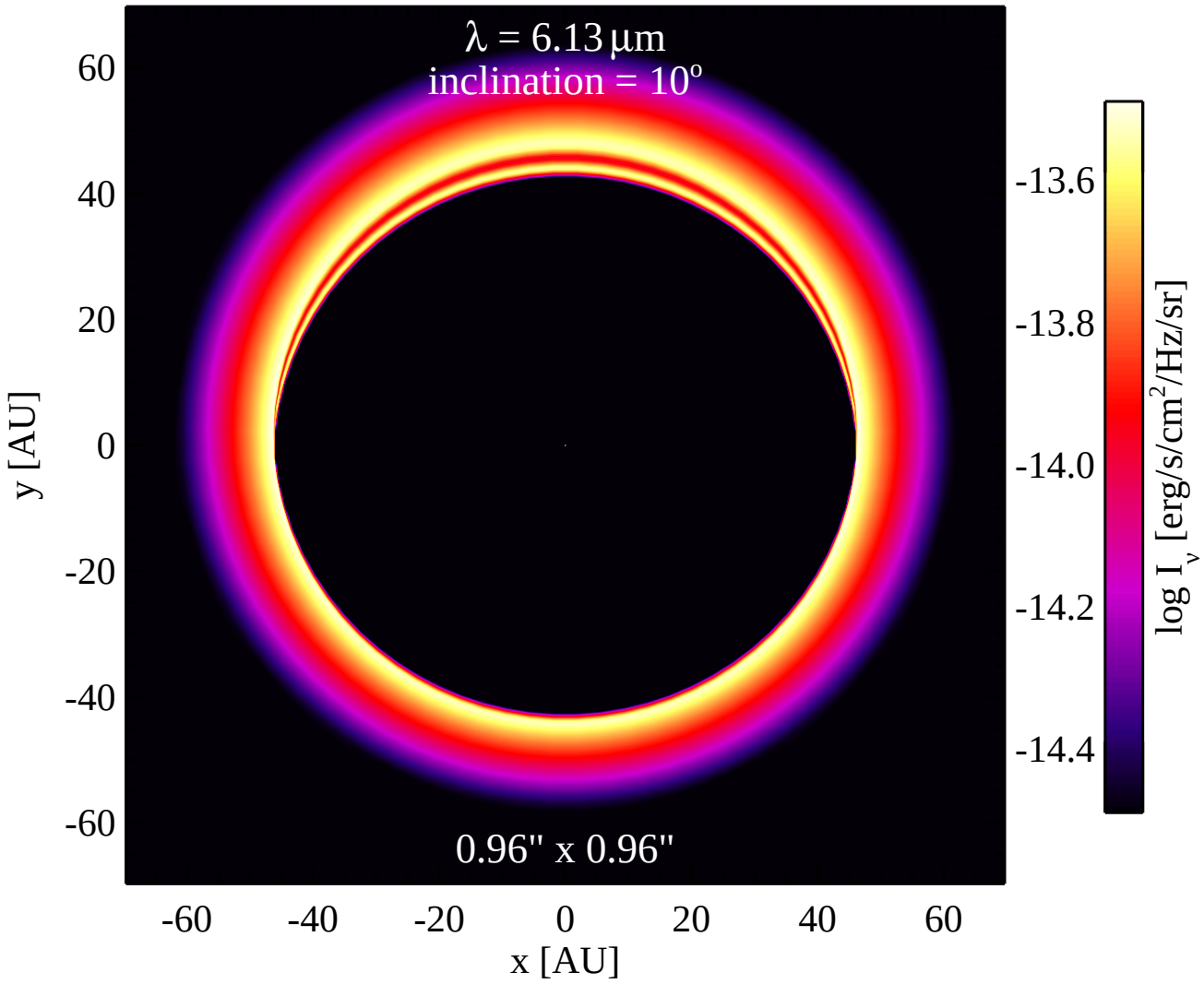

λ = 3.13 μm
inclination = 10°
1.03" x 1.03"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

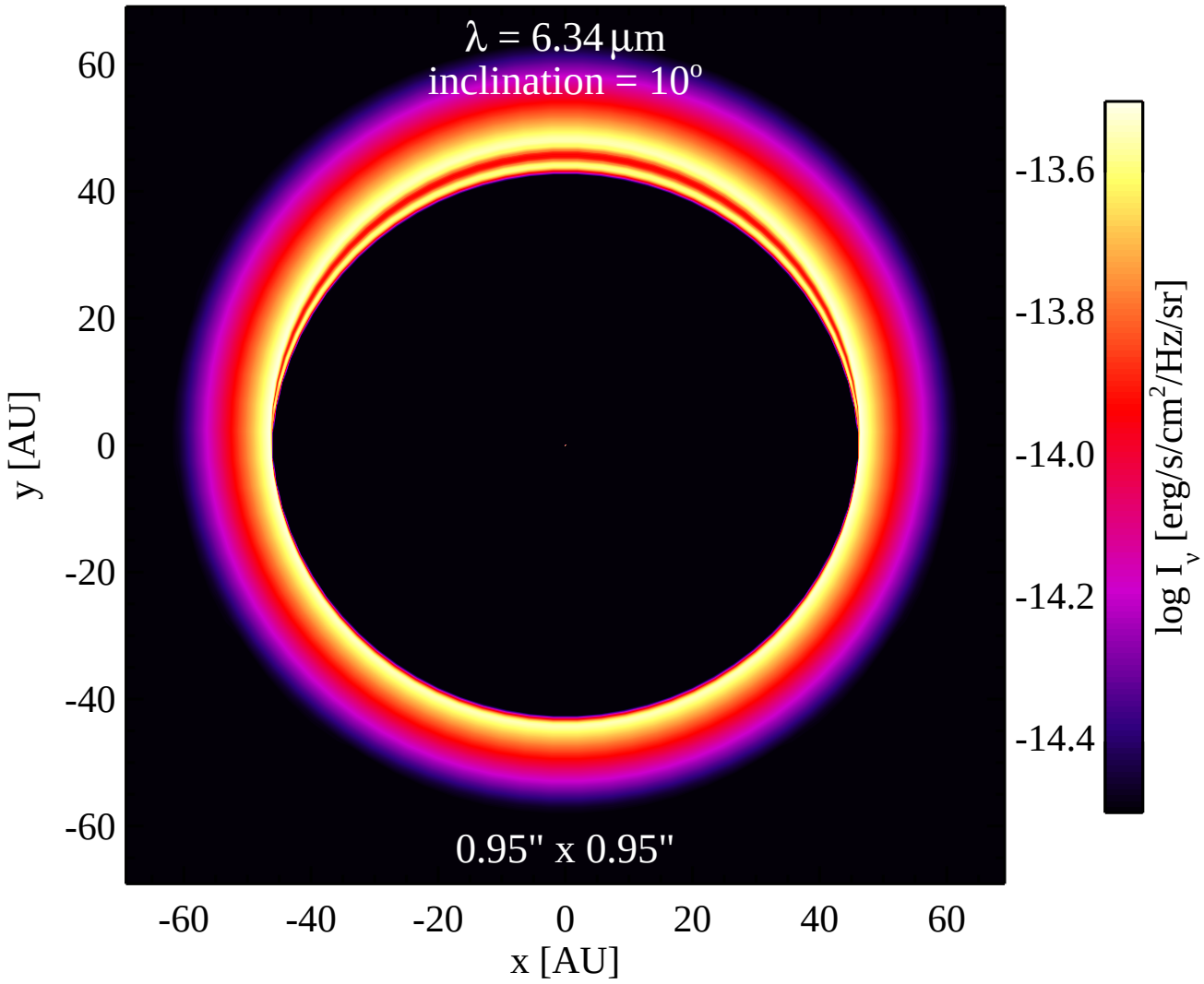

λ = 3.30 μm
inclination = 10°
1.02" x 1.02"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

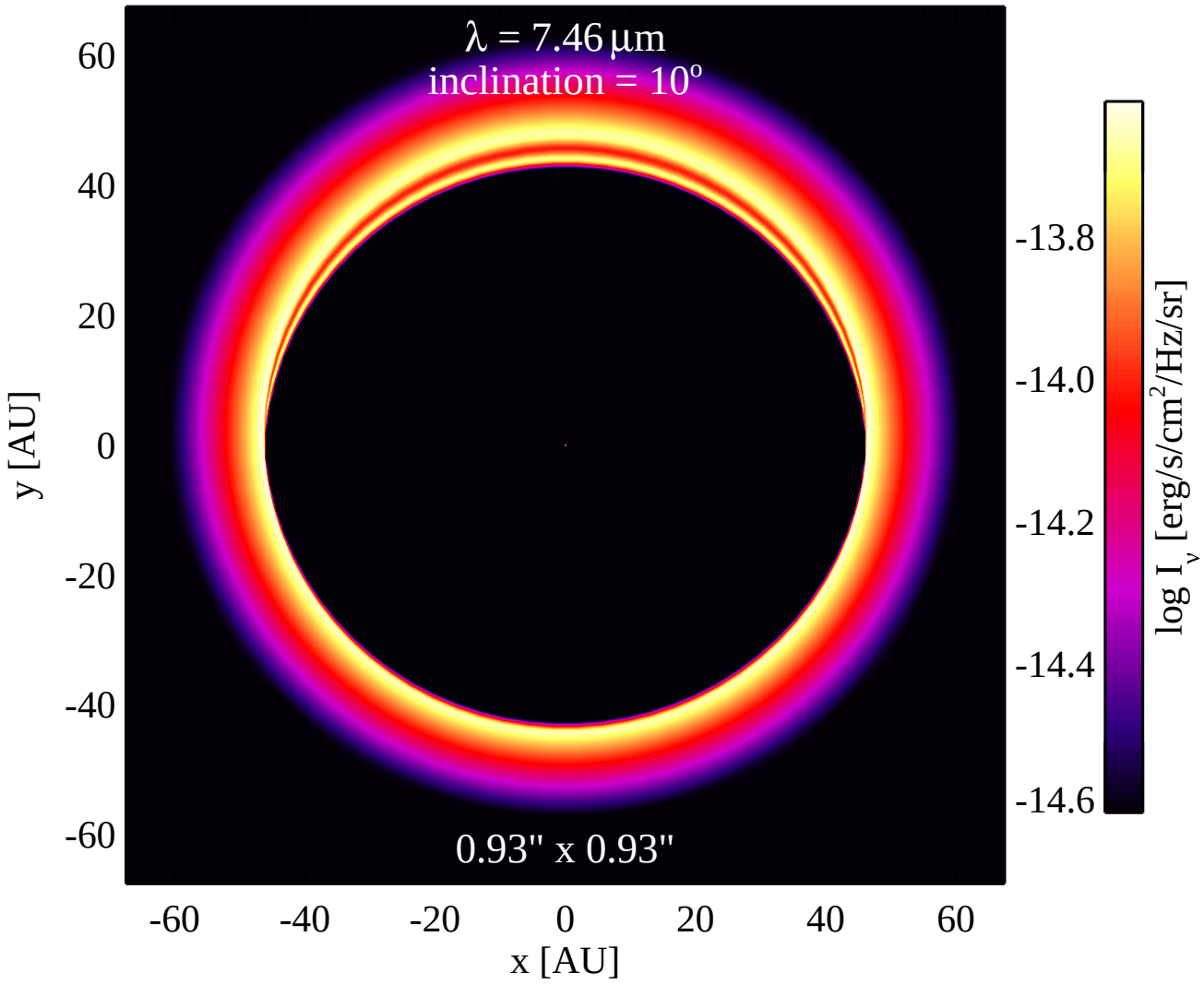

λ = 3.44 μm
inclination = 10°
1.02" x 1.02"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

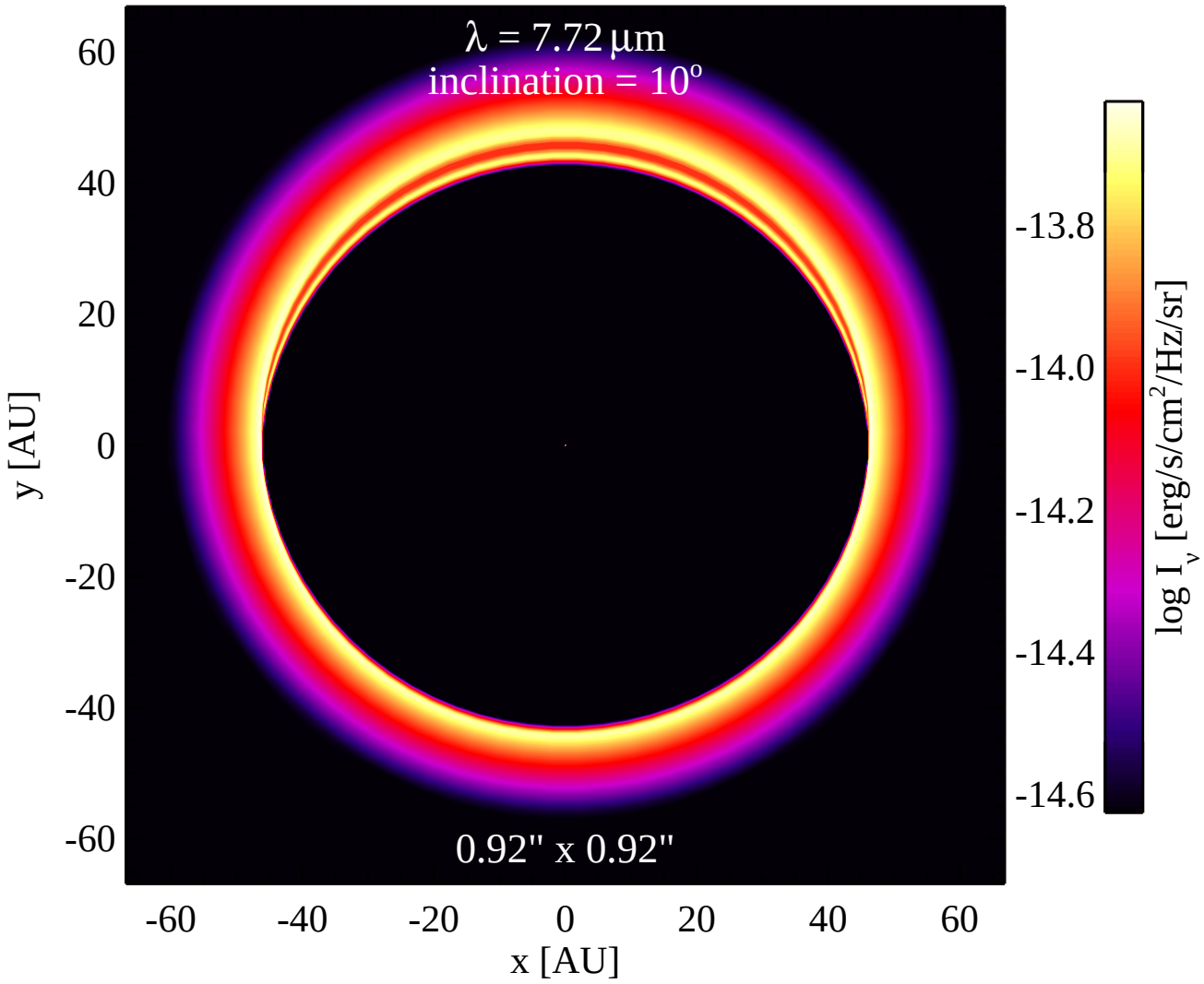

λ = 4.23 μm
inclination = 10°
0.99" x 0.99"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

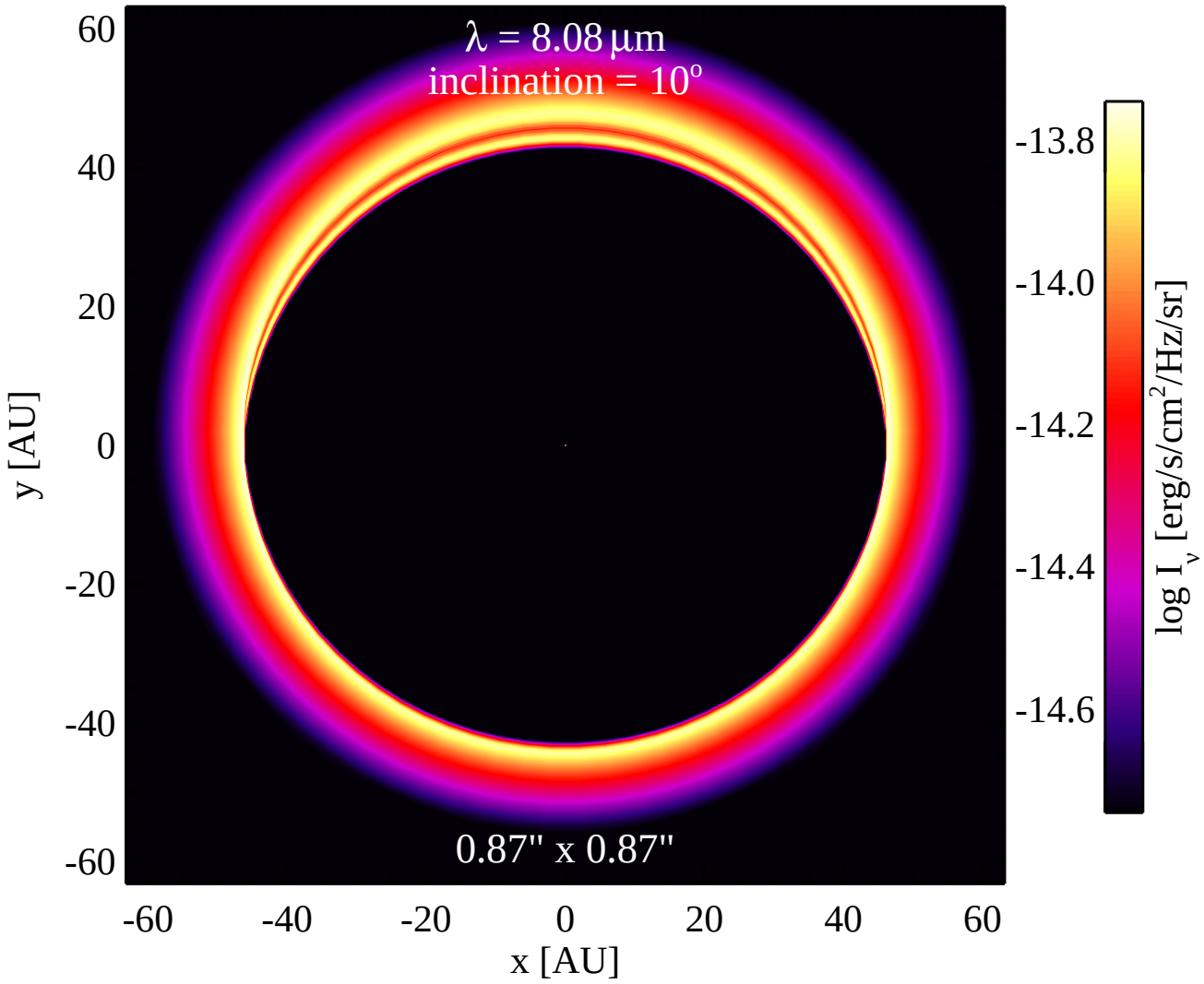

λ = 5.33 μm
inclination = 10°
0.98" x 0.98"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

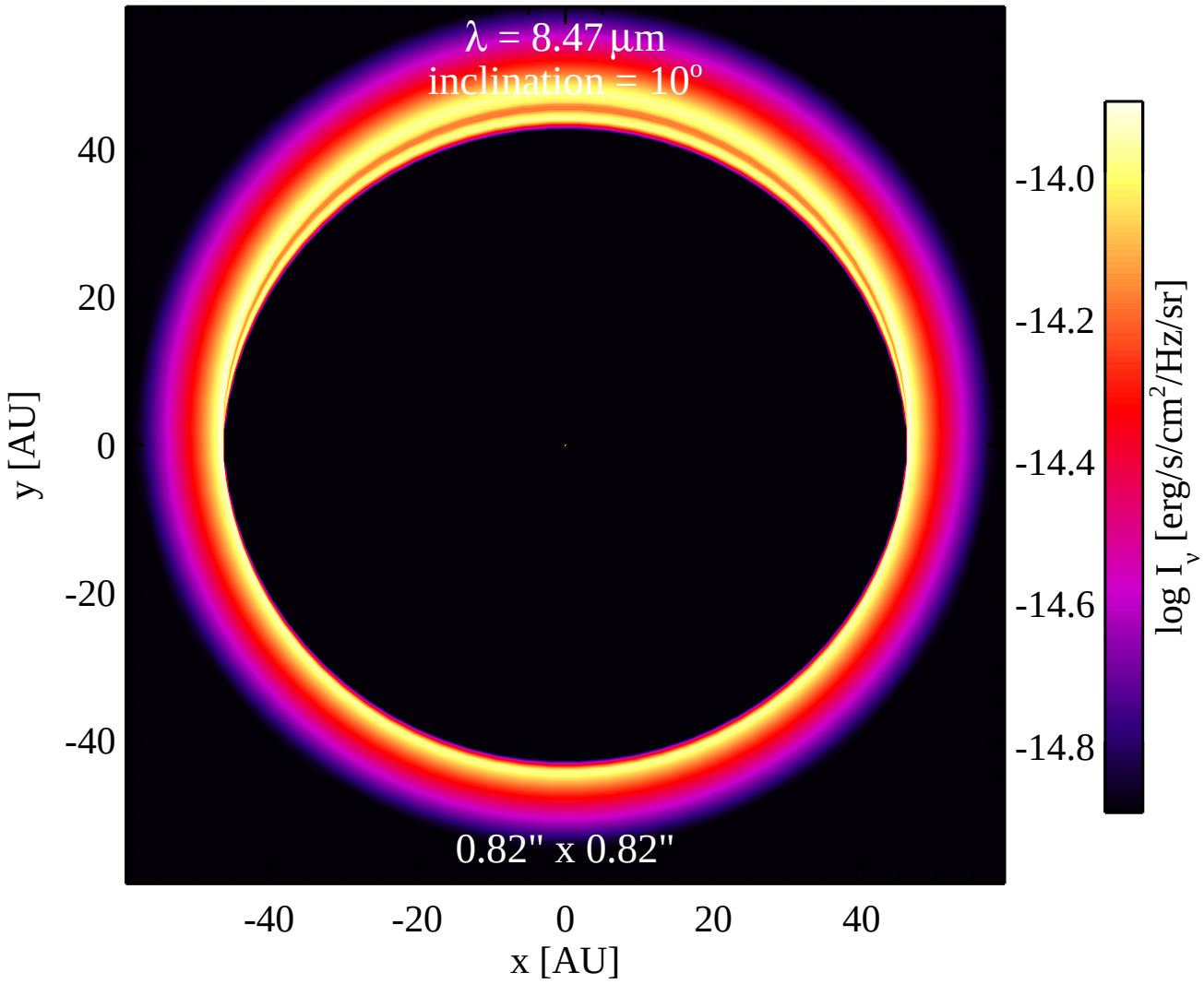

λ = 6.13 μm
inclination = 10°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

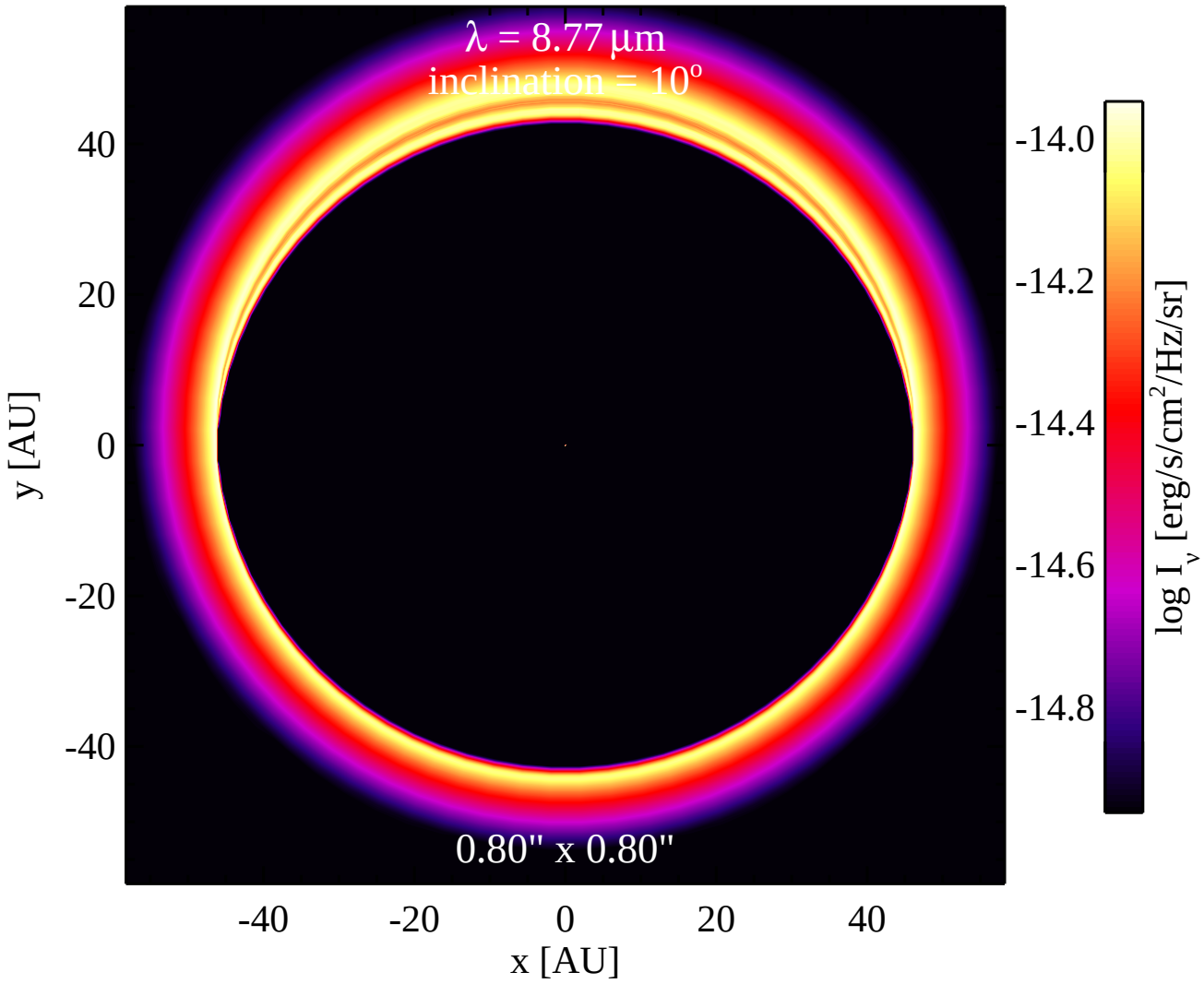

λ = 6.34 μm
inclination = 10°
0.95" x 0.95"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

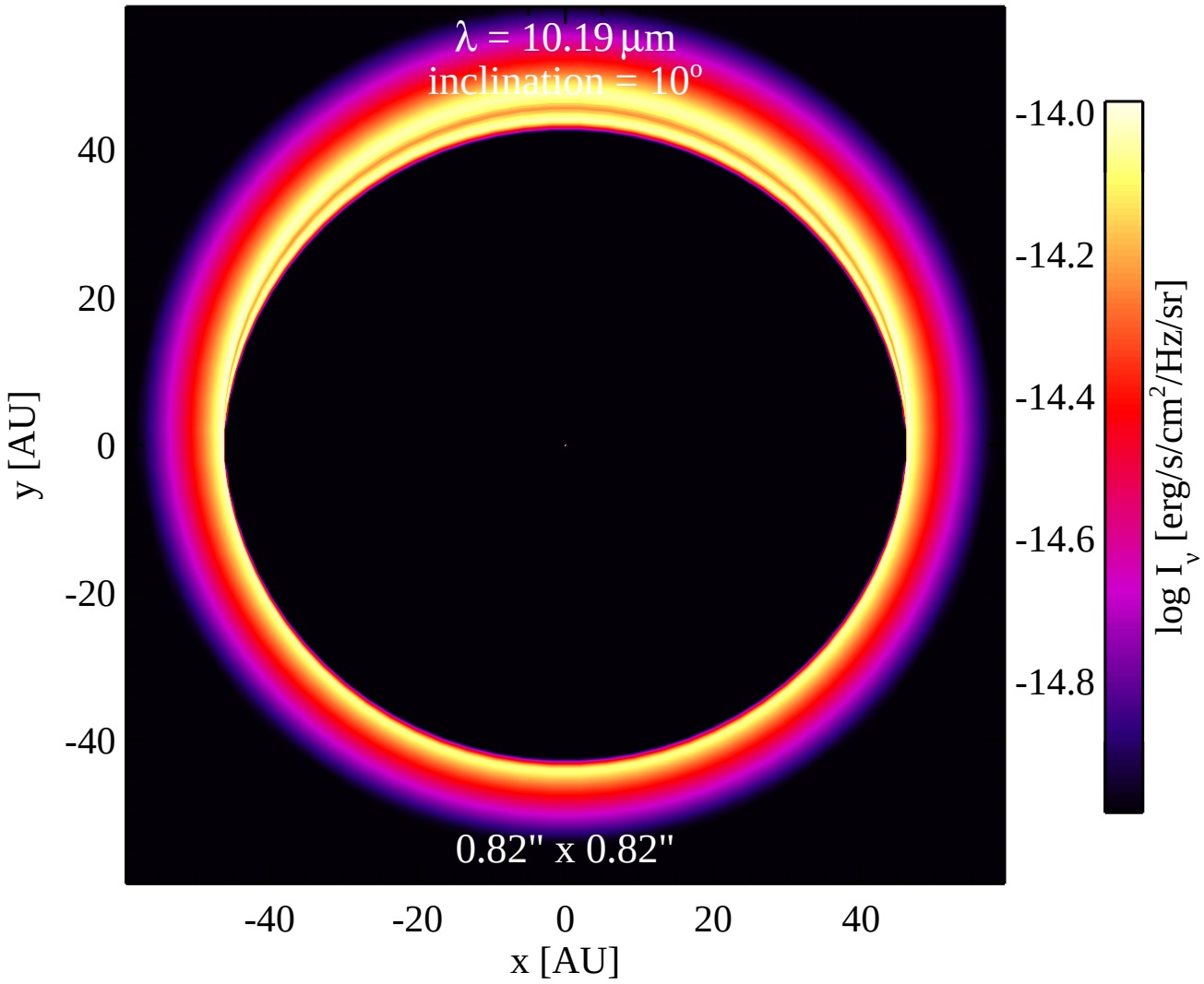

λ = 7.46 μm
inclination = 10°
0.93" x 0.93"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

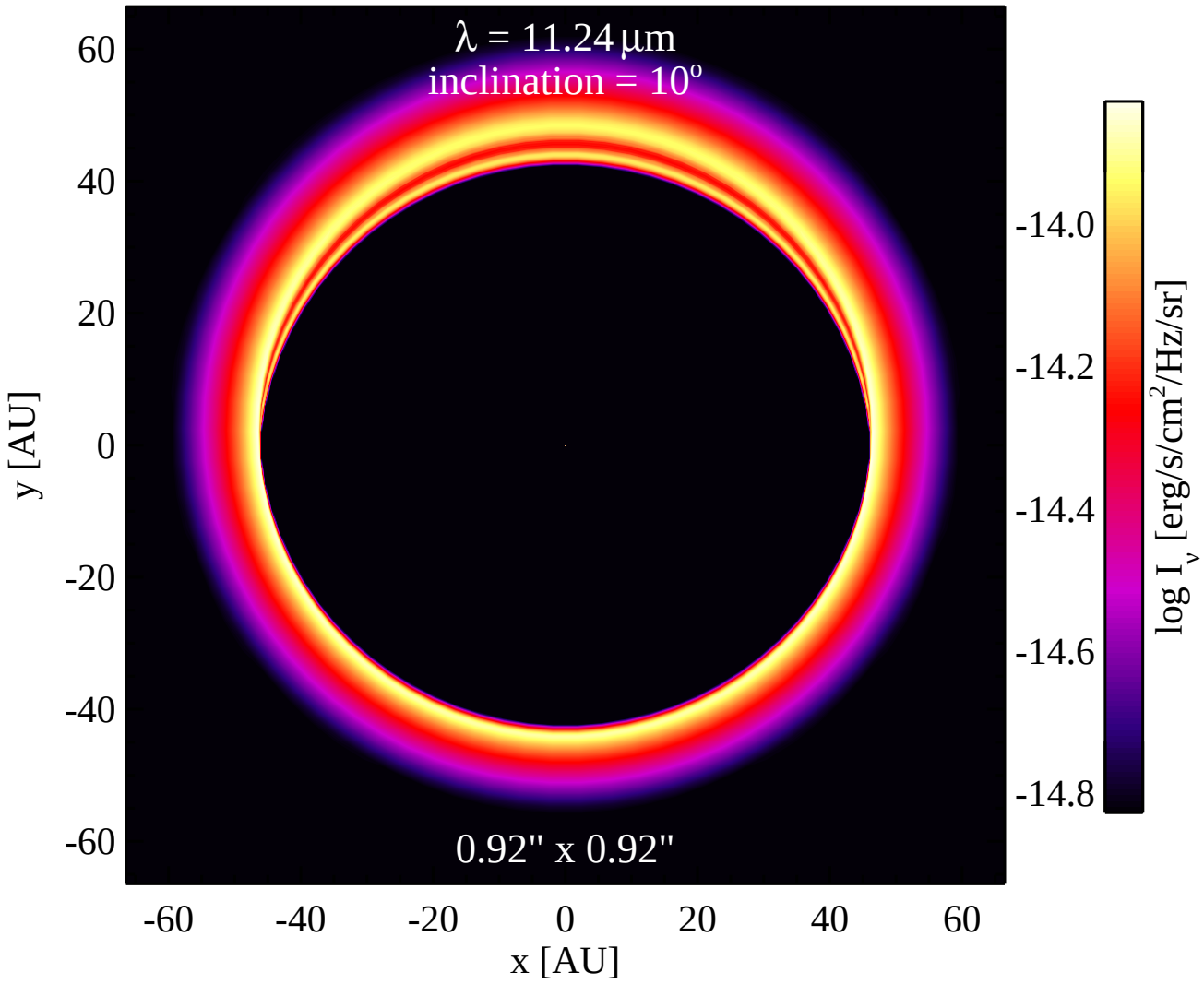

λ = 7.72 μm
inclination = 10°
0.92" x 0.92"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

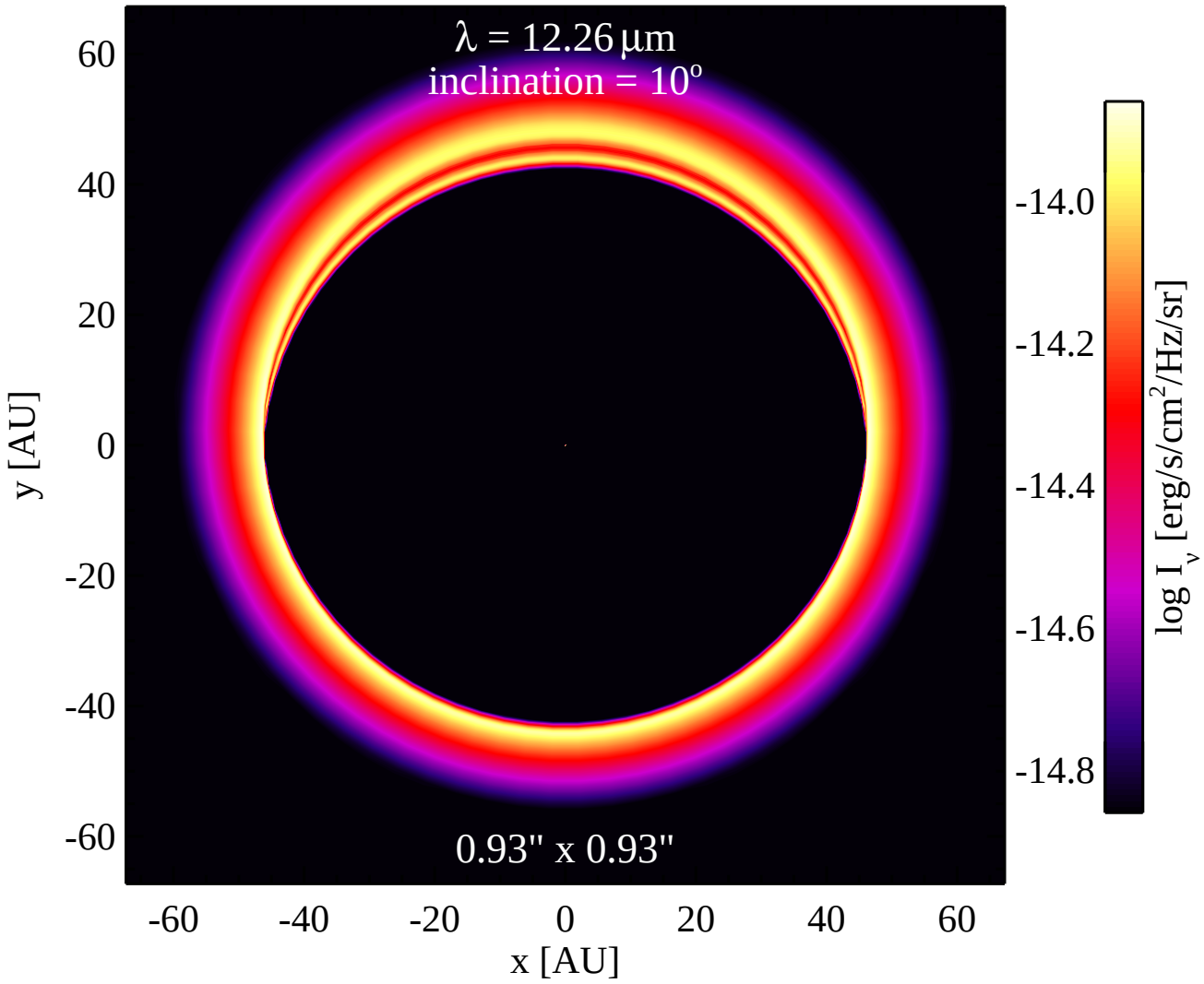

λ = 8.08 μm
inclination = 10°
0.87" x 0.87"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

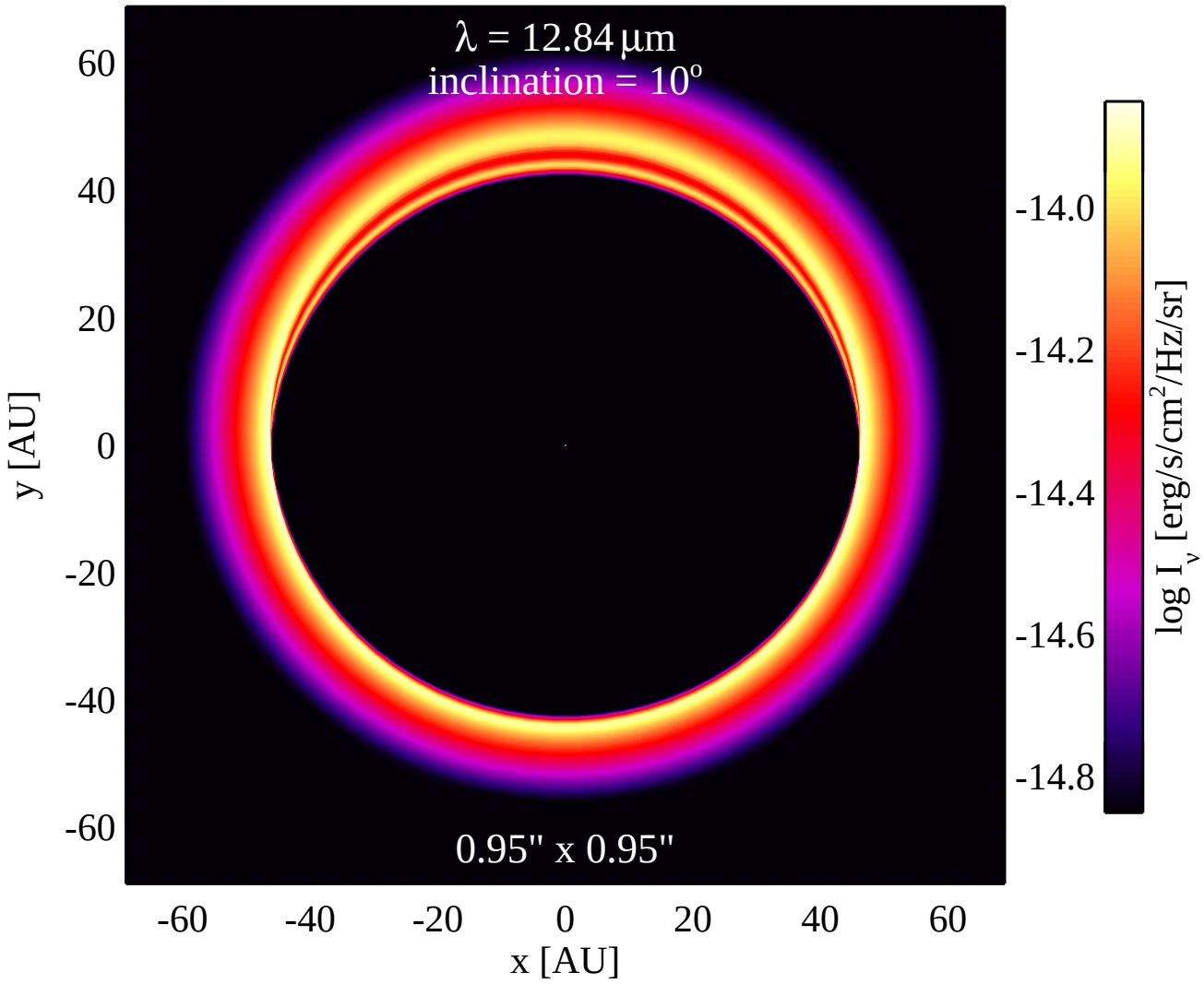

λ = 8.47 μm
inclination = 10°
0.82" x 0.82"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

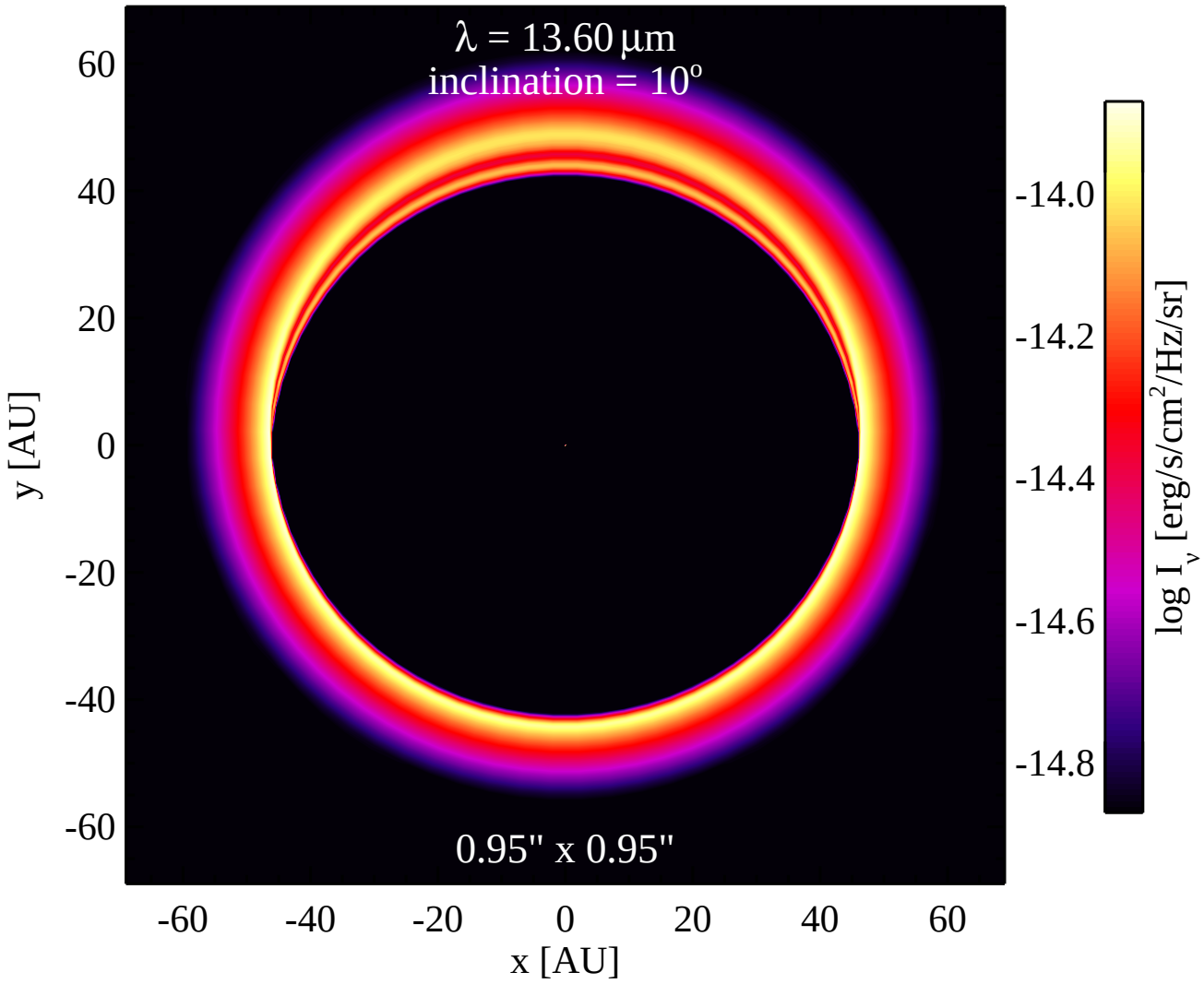

λ = 8.77 μm
inclination = 10°
0.80" x 0.80"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

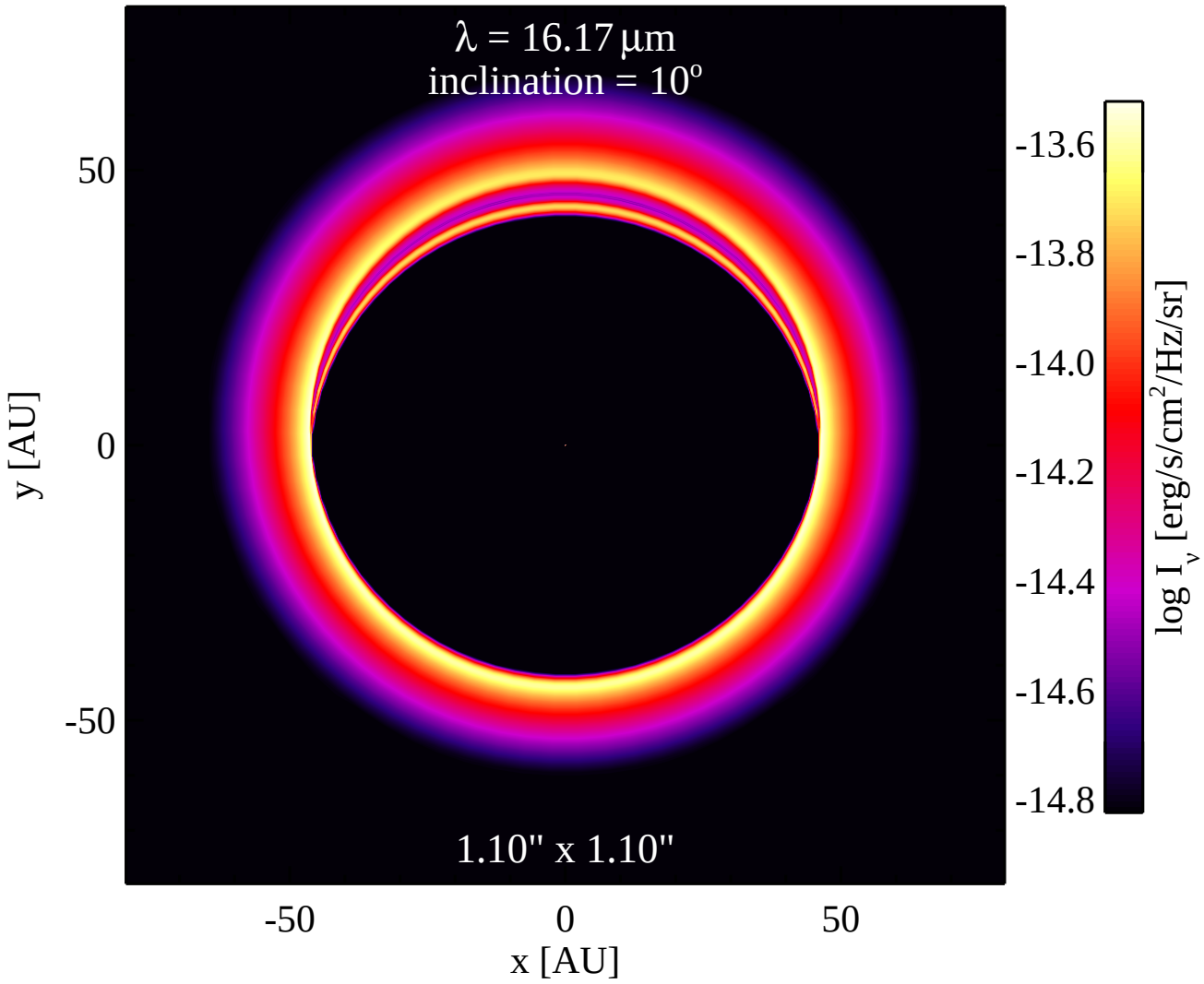

λ = 10.19 μm
inclination = 10°
0.82" x 0.82"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

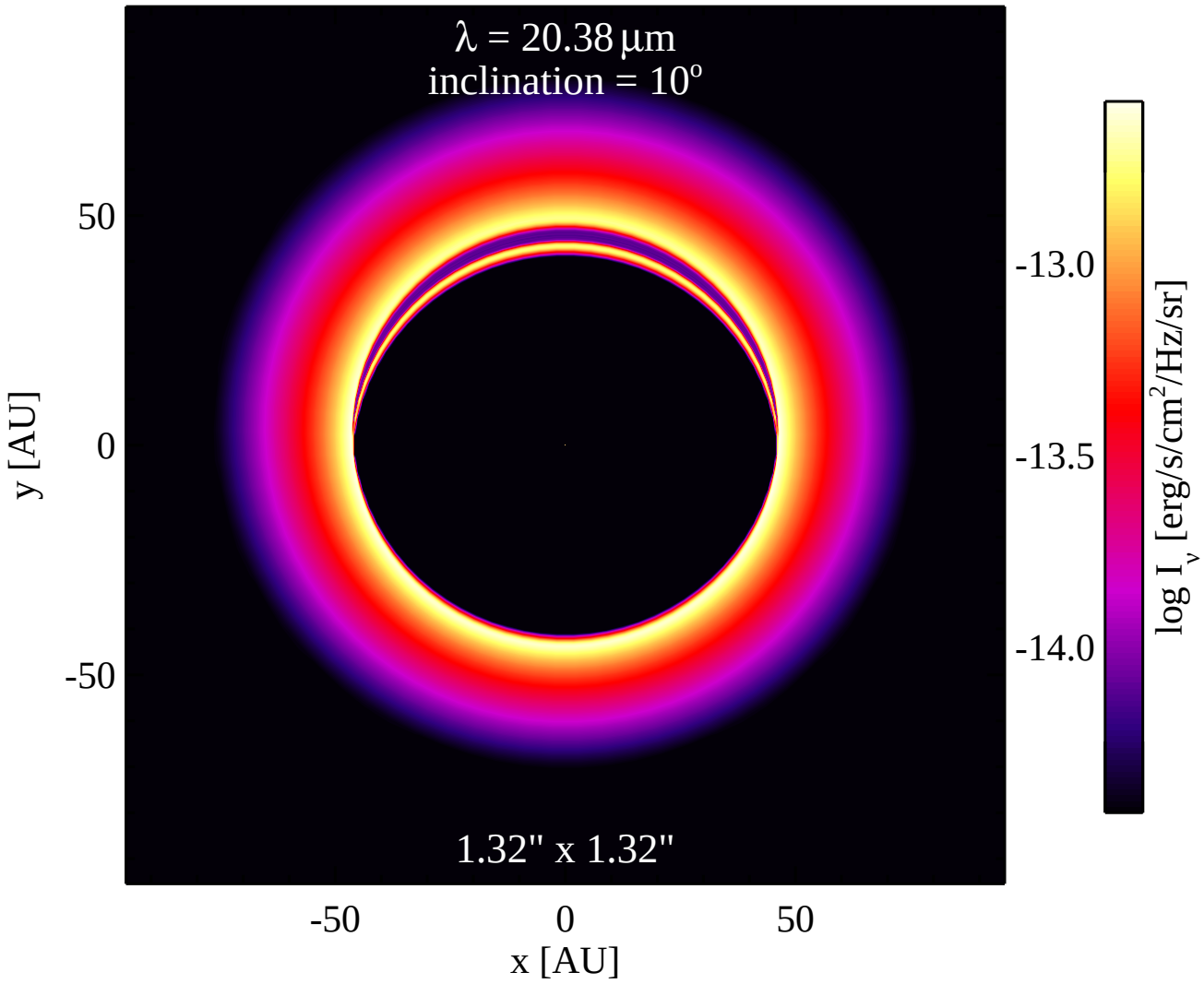

λ = 11.24 μm
inclination = 10°
0.92" x 0.92"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

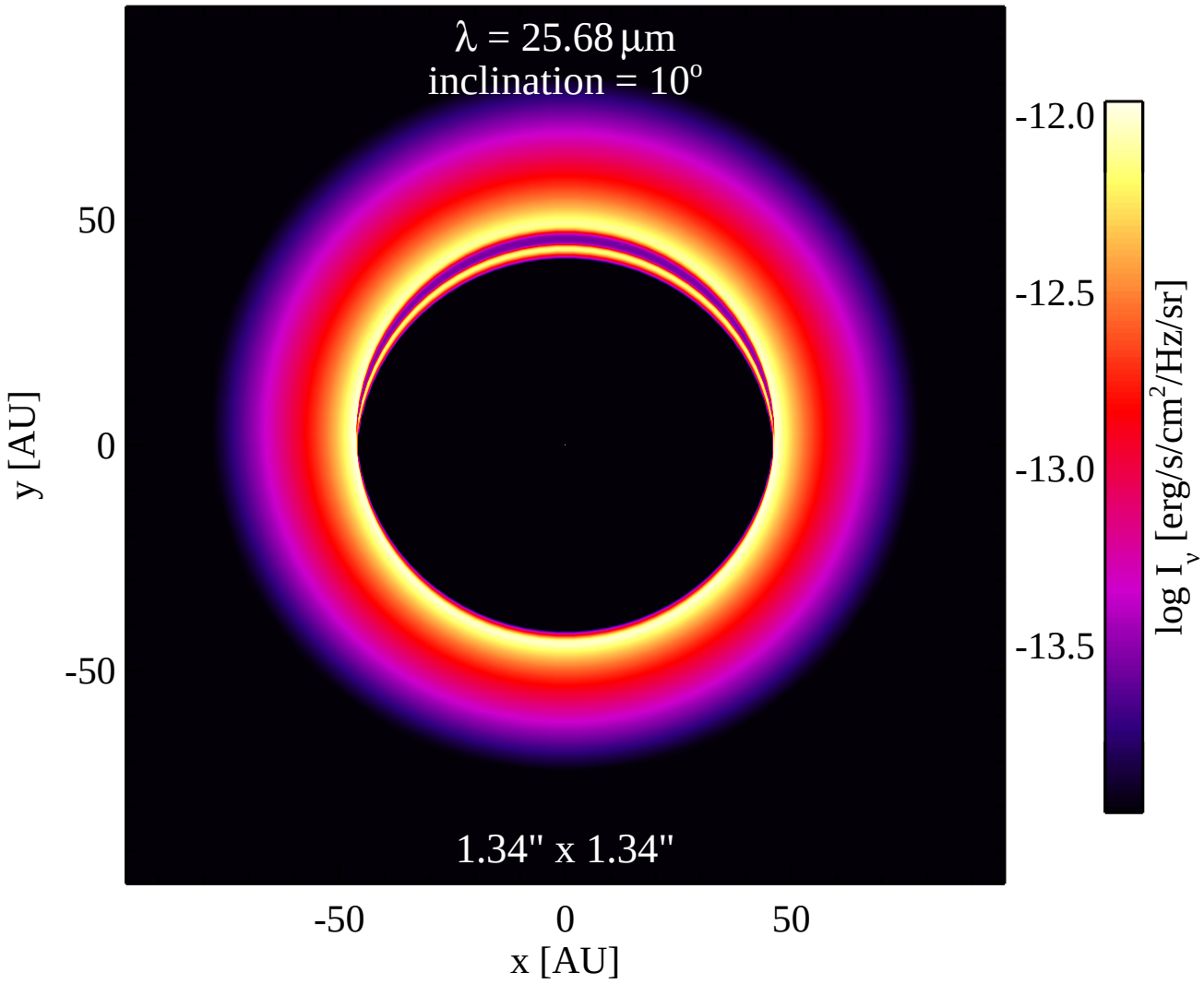

λ = 12.26 μm
inclination = 10°
0.93" x 0.93"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

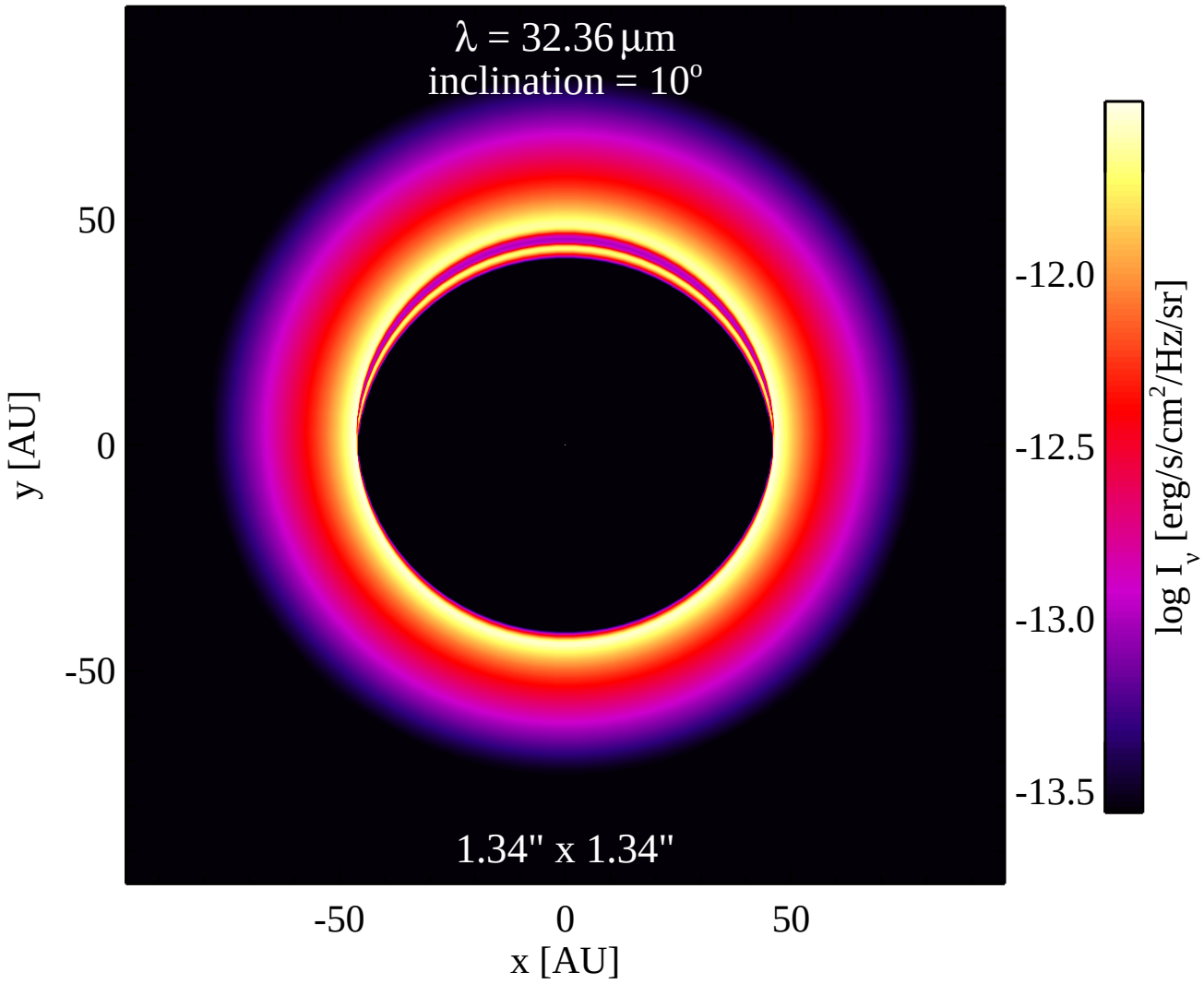

λ = 12.84 μm
inclination = 10°
0.95" x 0.95"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

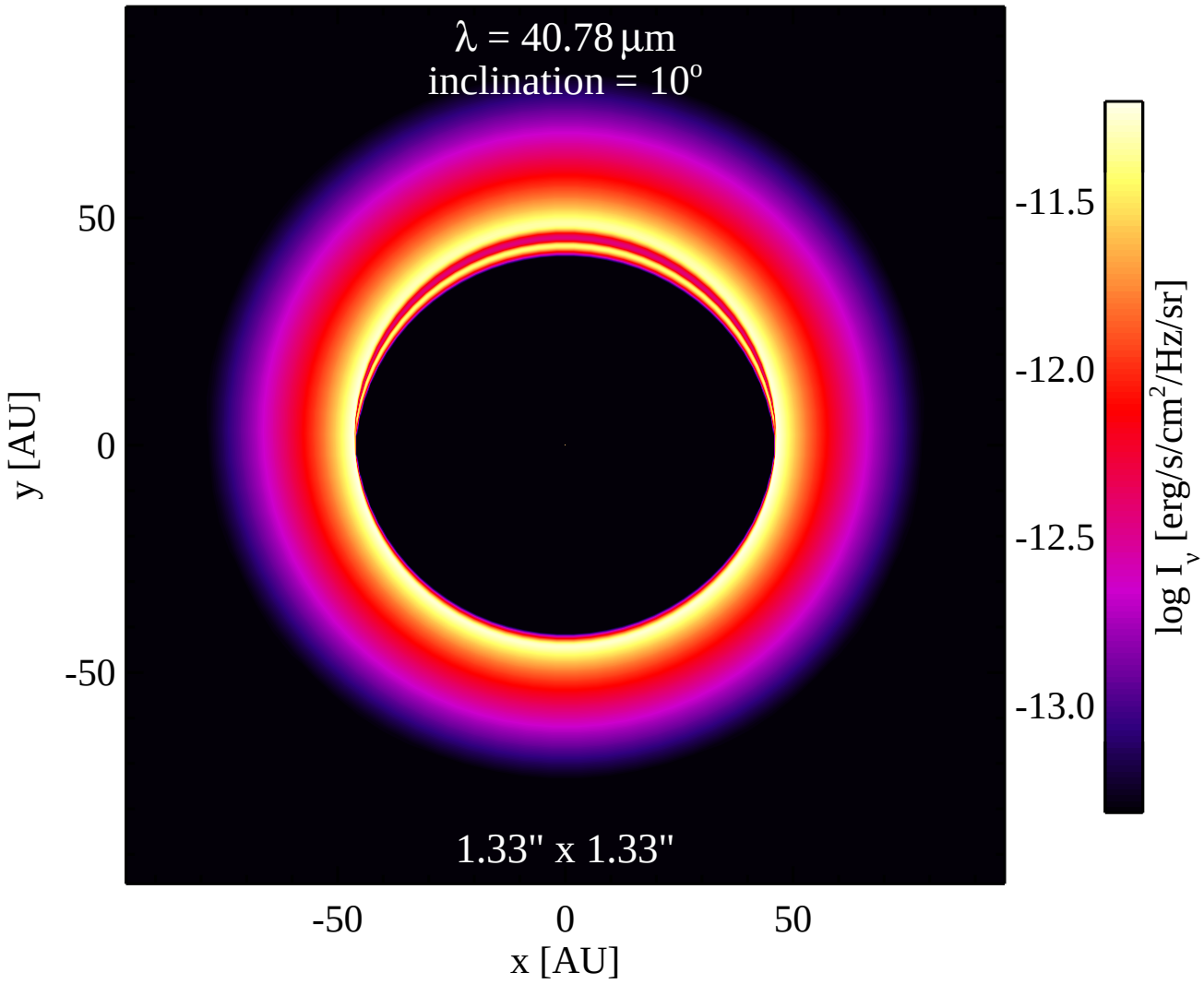

λ = 13.60 μm
inclination = 10°
0.95" x 0.95"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

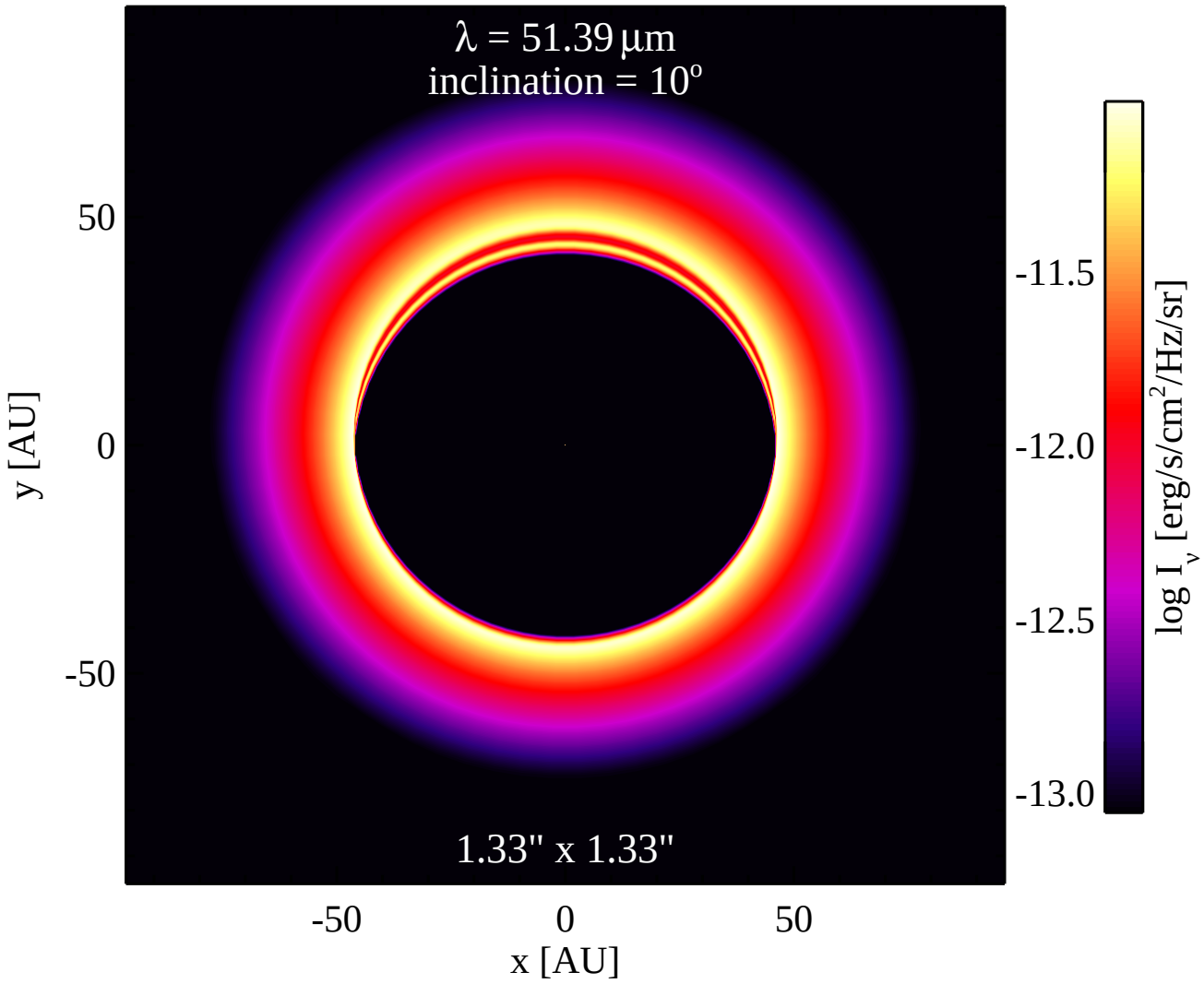

λ = 16.17 μm
inclination = 10°
1.10" x 1.10"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

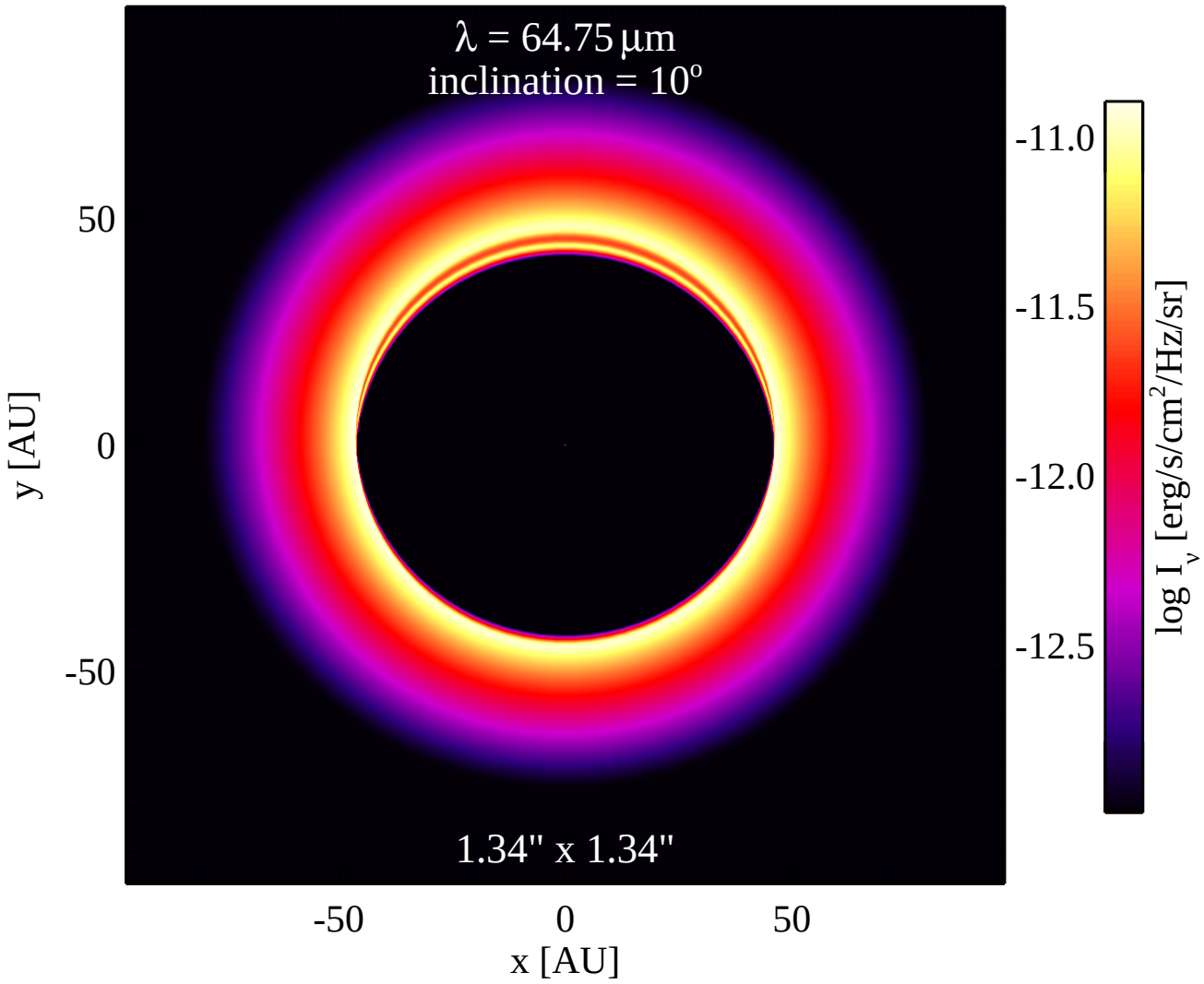

λ = 20.38 μm
inclination = 10°
1.32" x 1.32"
50
0
-50
y [AU]
-50
0
50
x [AU]
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

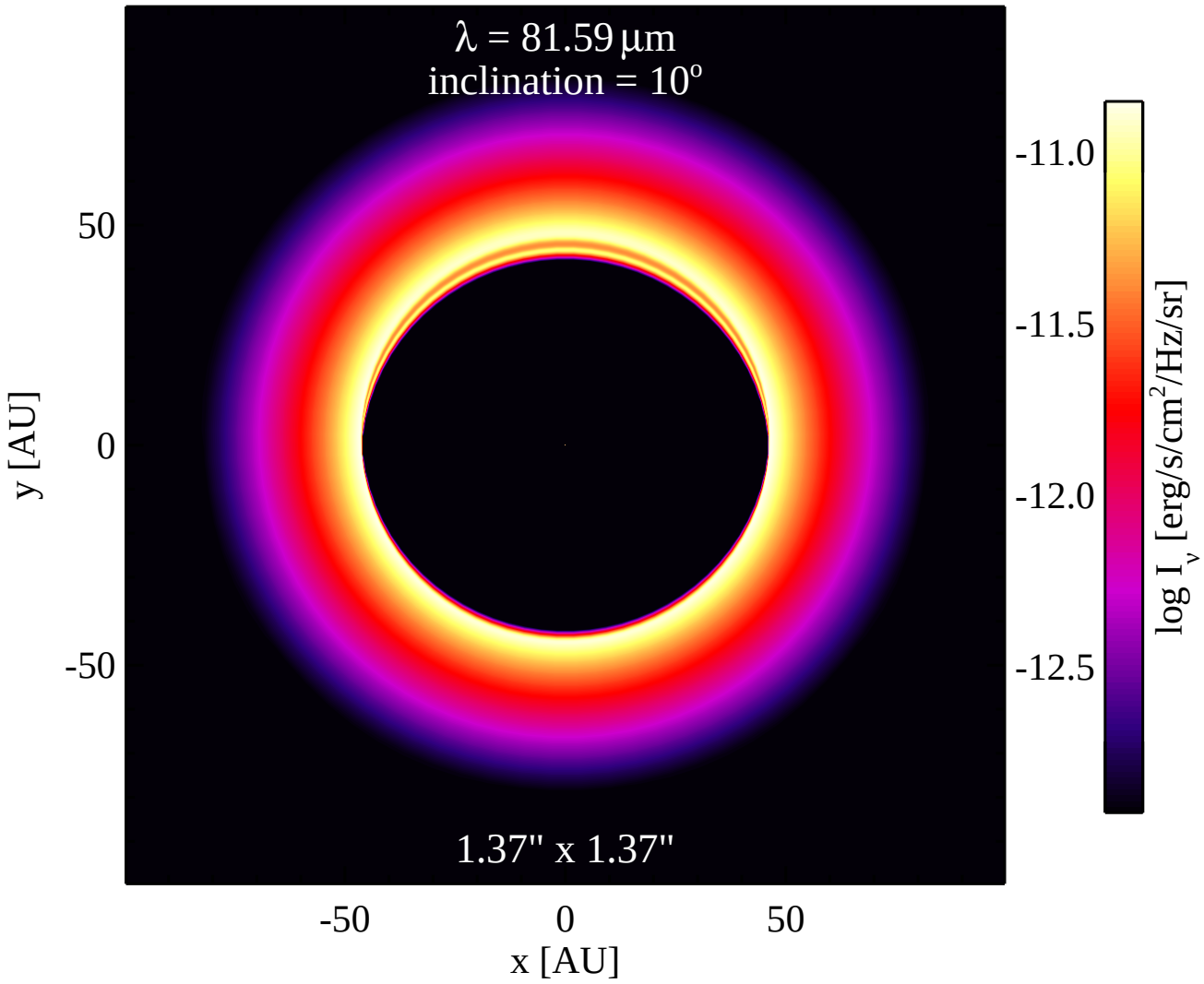

λ = 25.68 μm
inclination = 10°
1.34" x 1.34"
50
0
-50
y [AU]
-50
0
50
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

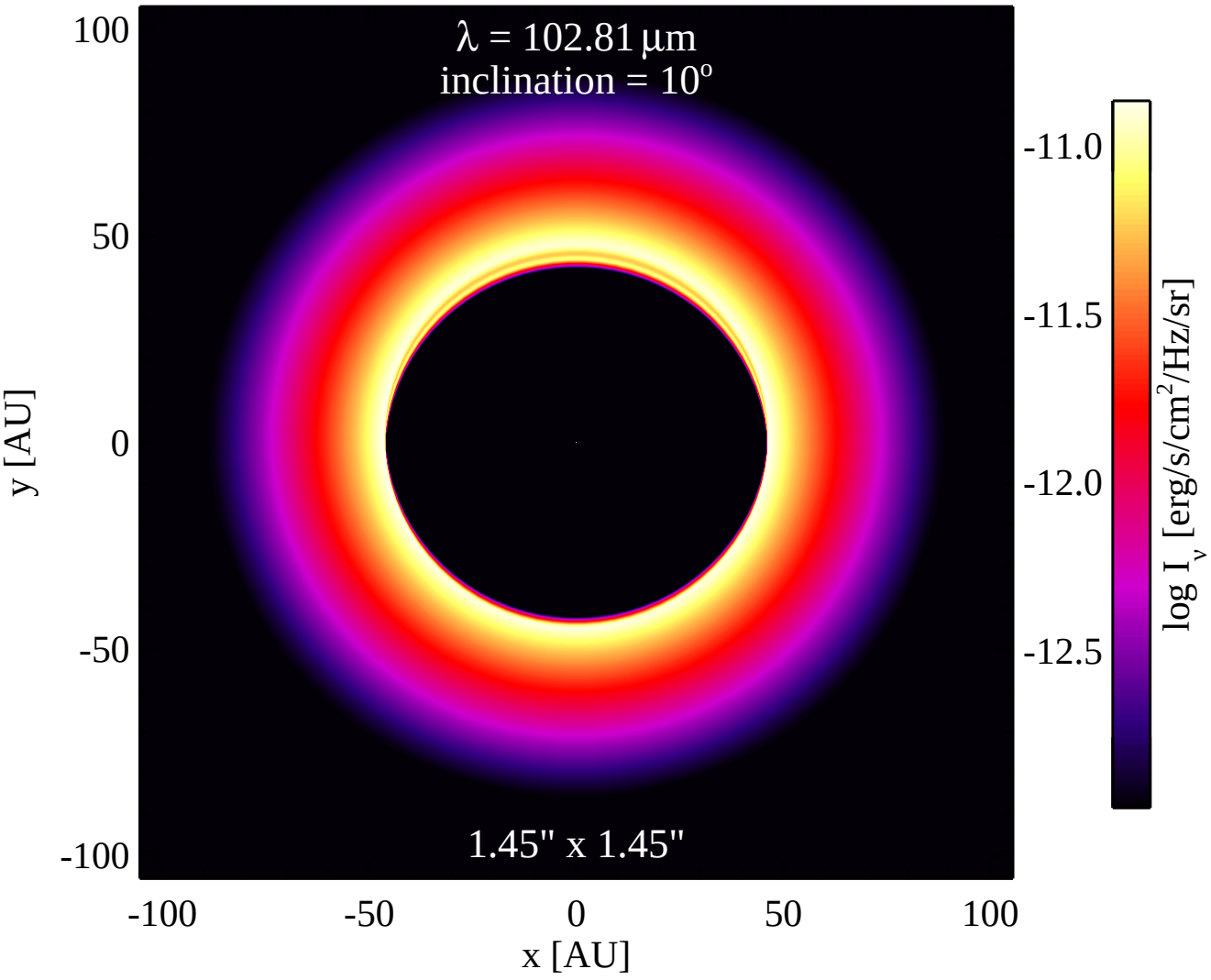

λ = 32.36 μm
inclination = 10°
1.34" x 1.34"
50
0
-50
y [AU]
-50
0
50
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

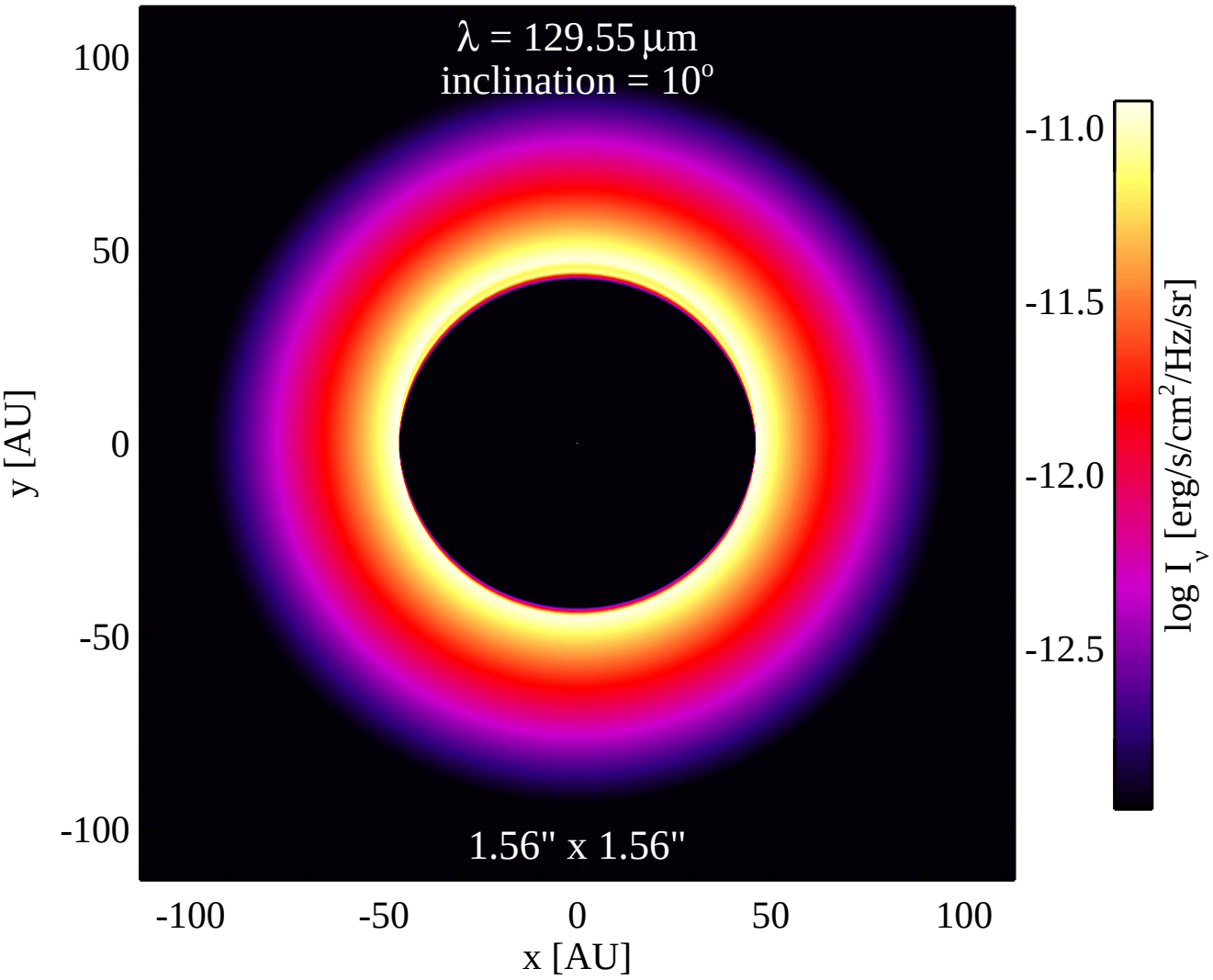

λ = 40.78 μm
inclination = 10°
1.33" x 1.33"
50
0
-50
y [AU]
-50
0
50
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

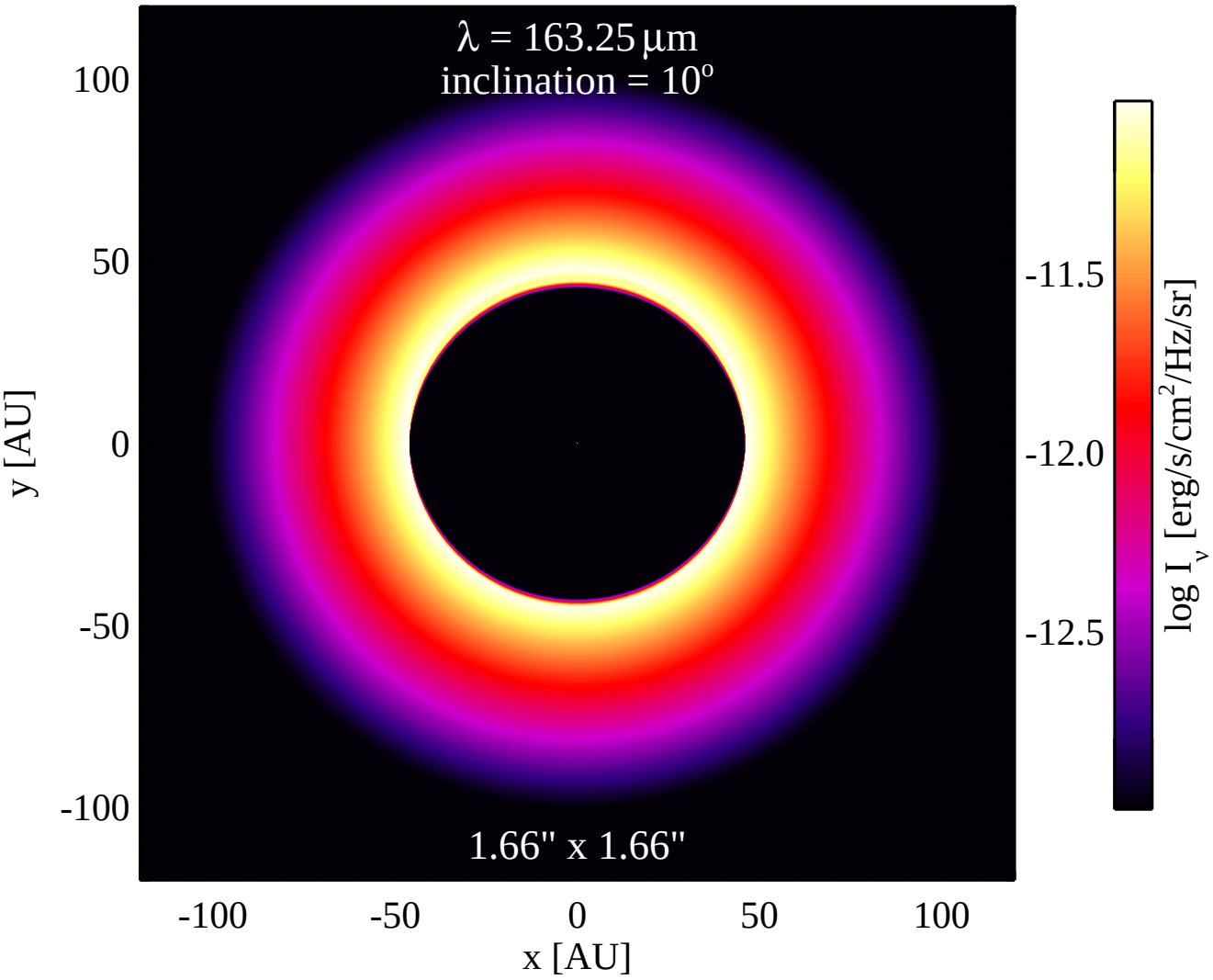

λ = 51.39 μm
inclination = 10°
1.33" x 1.33"
50
0
-50
y [AU]
-50
0
50
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

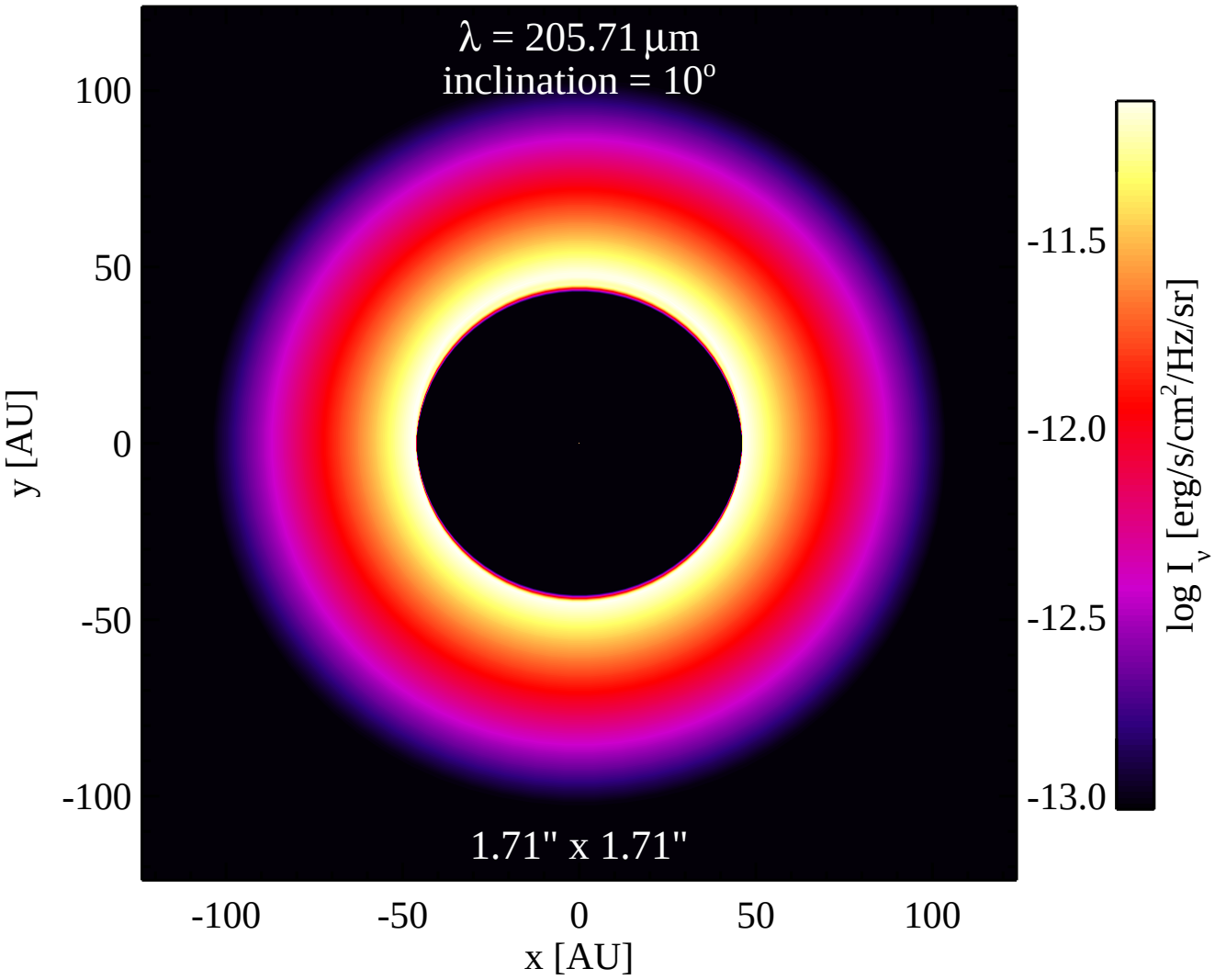

λ = 64.75 μm
inclination = 10°
1.34" x 1.34"
50
0
-50
y [AU]
-50
0
50
x [AU]
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

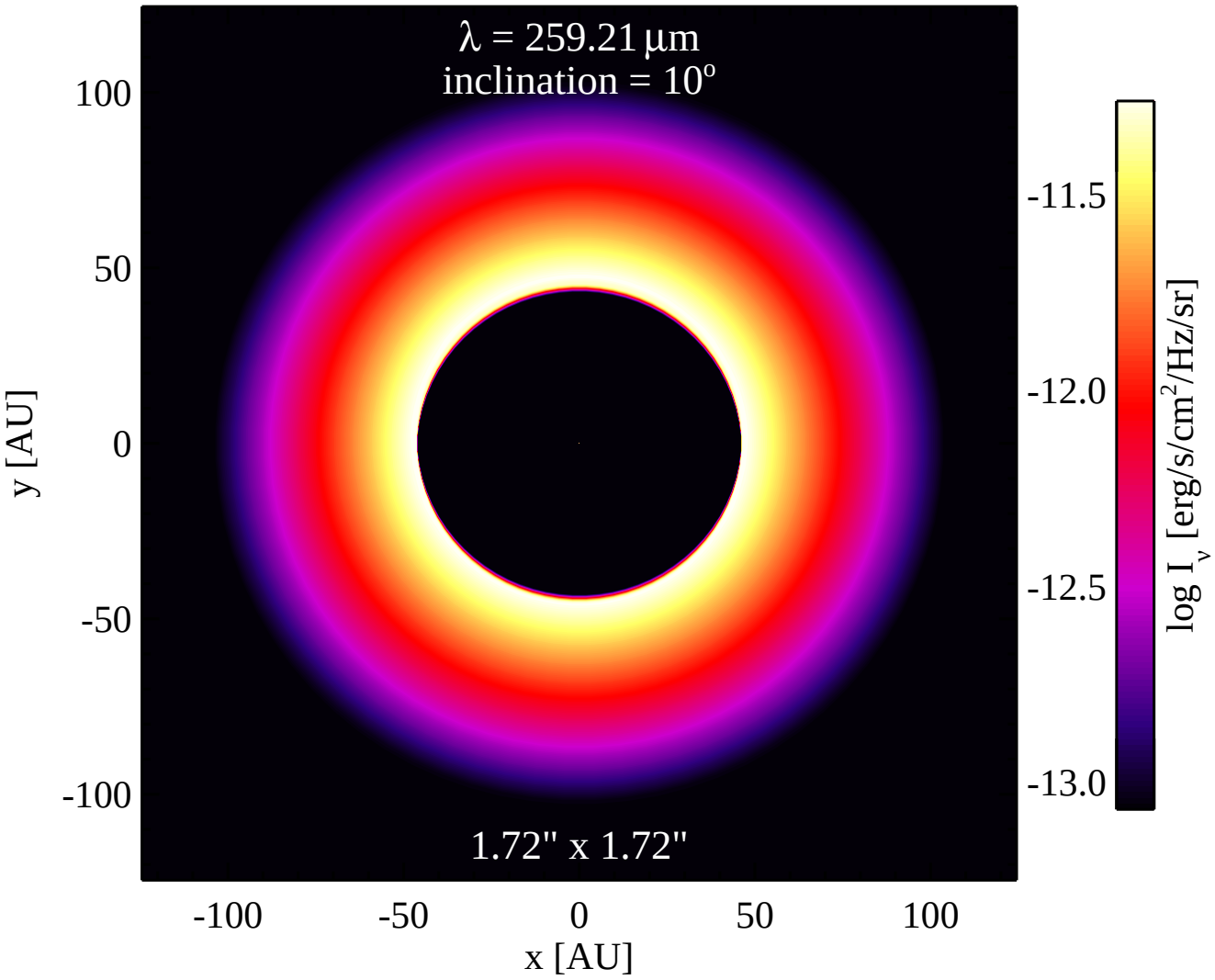

λ = 81.59 μm
inclination = 10°
1.37" x 1.37"
50
0
-50
y [AU]
-50
0
50
x [AU]
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

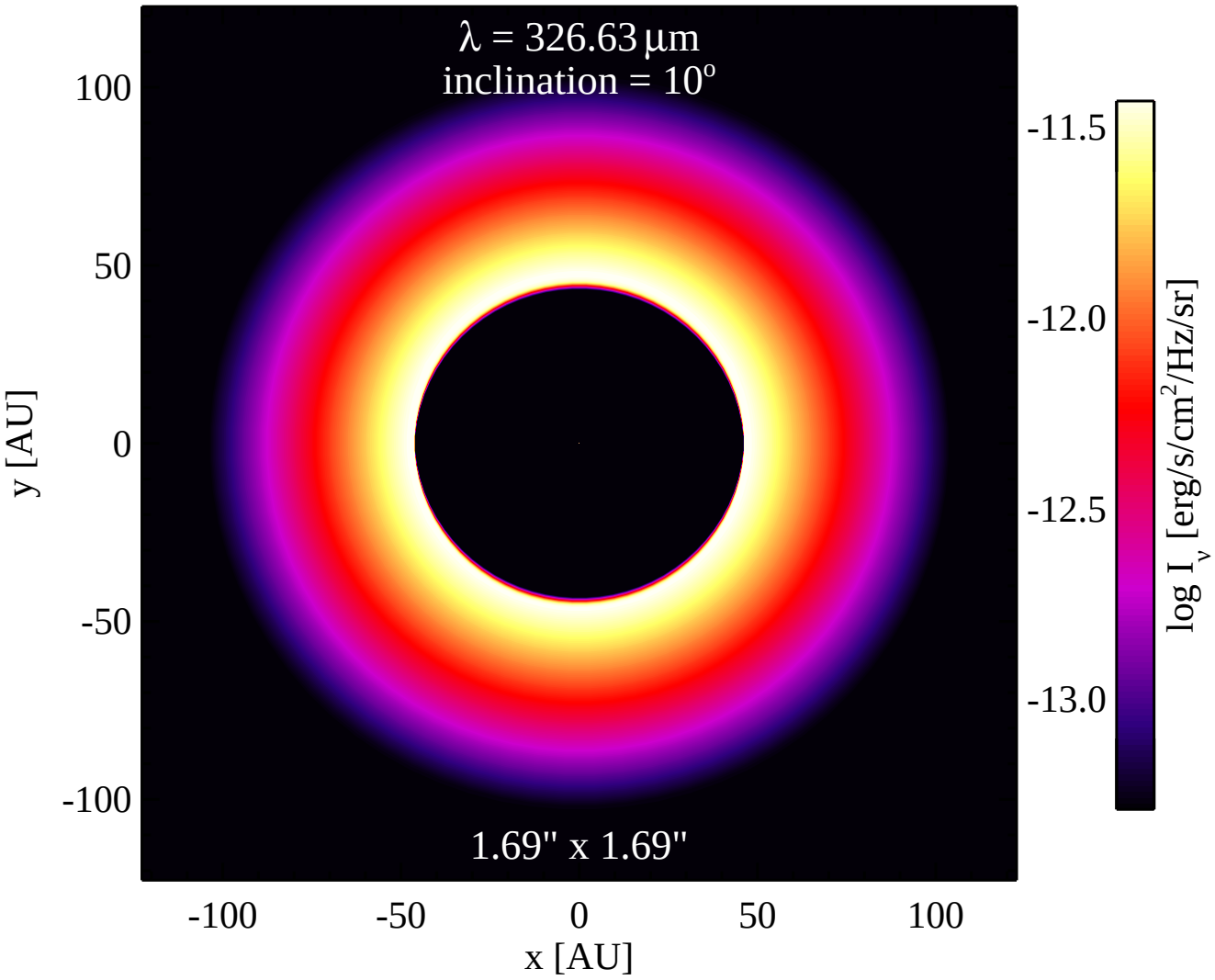

λ = 102.81 μm
inclination = 10°
1.45" x 1.45"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

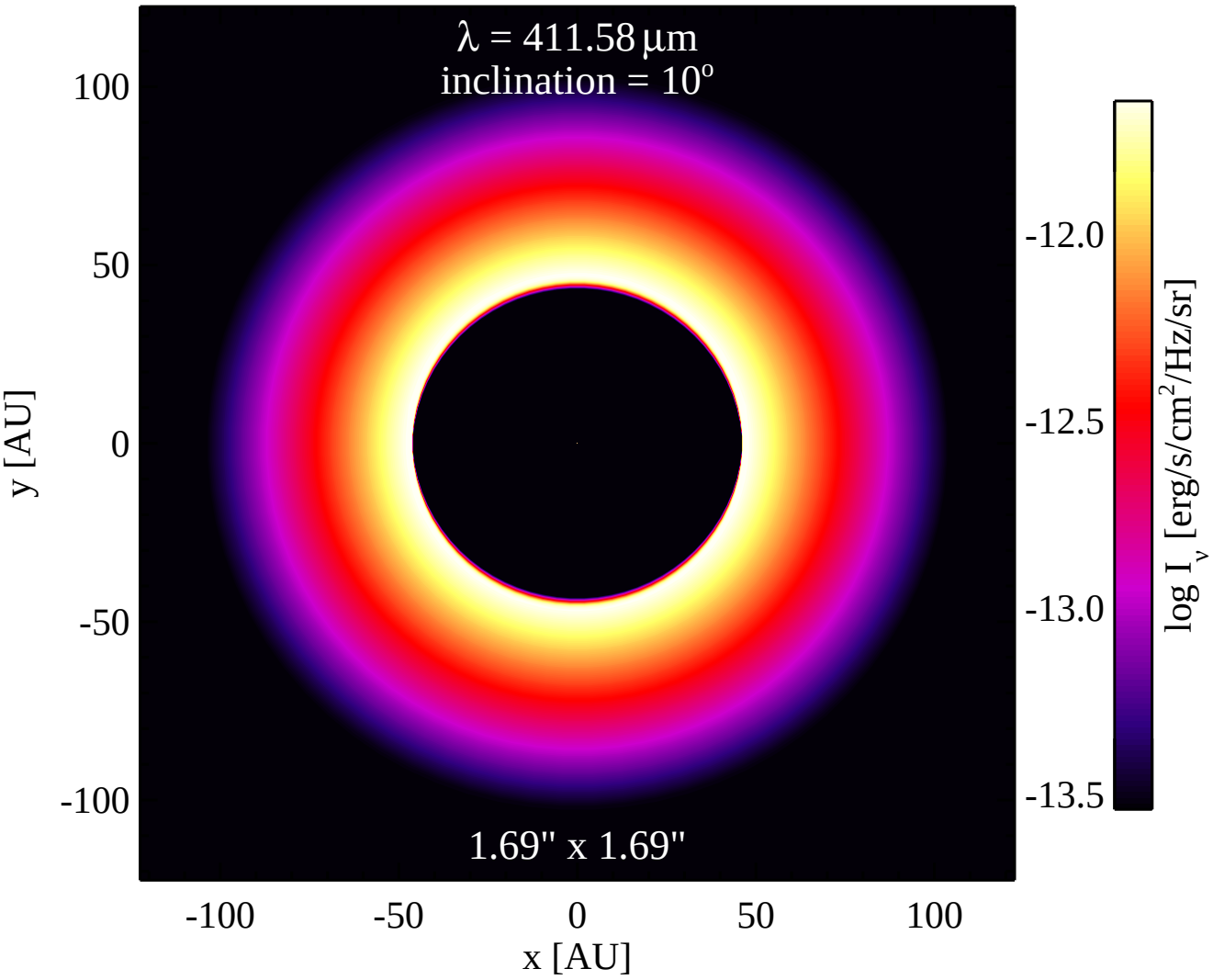

λ = 129.55 μm
inclination = 10°
1.56" x 1.56"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

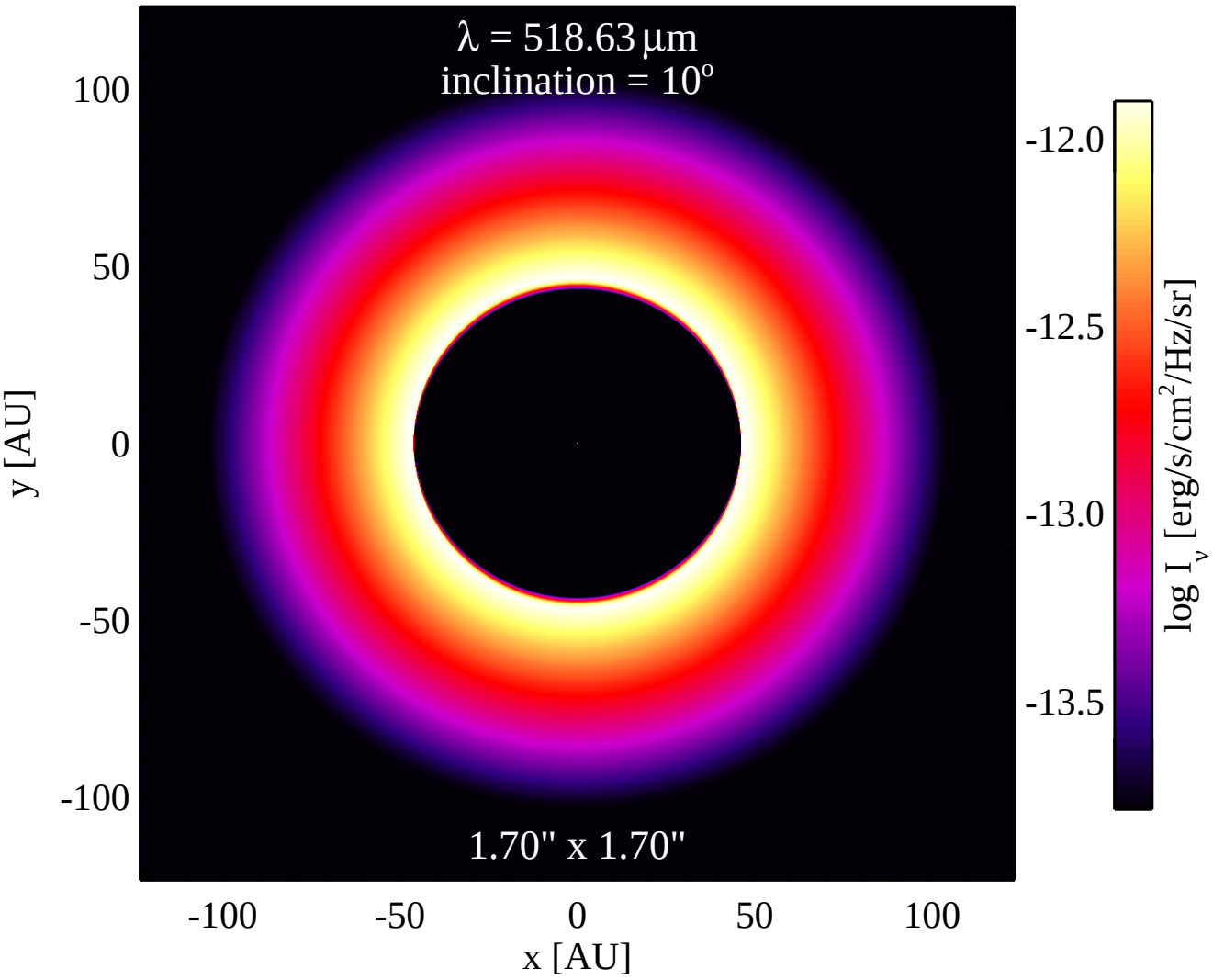

λ = 163.25 μm
inclination = 10°
1.66" x 1.66"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

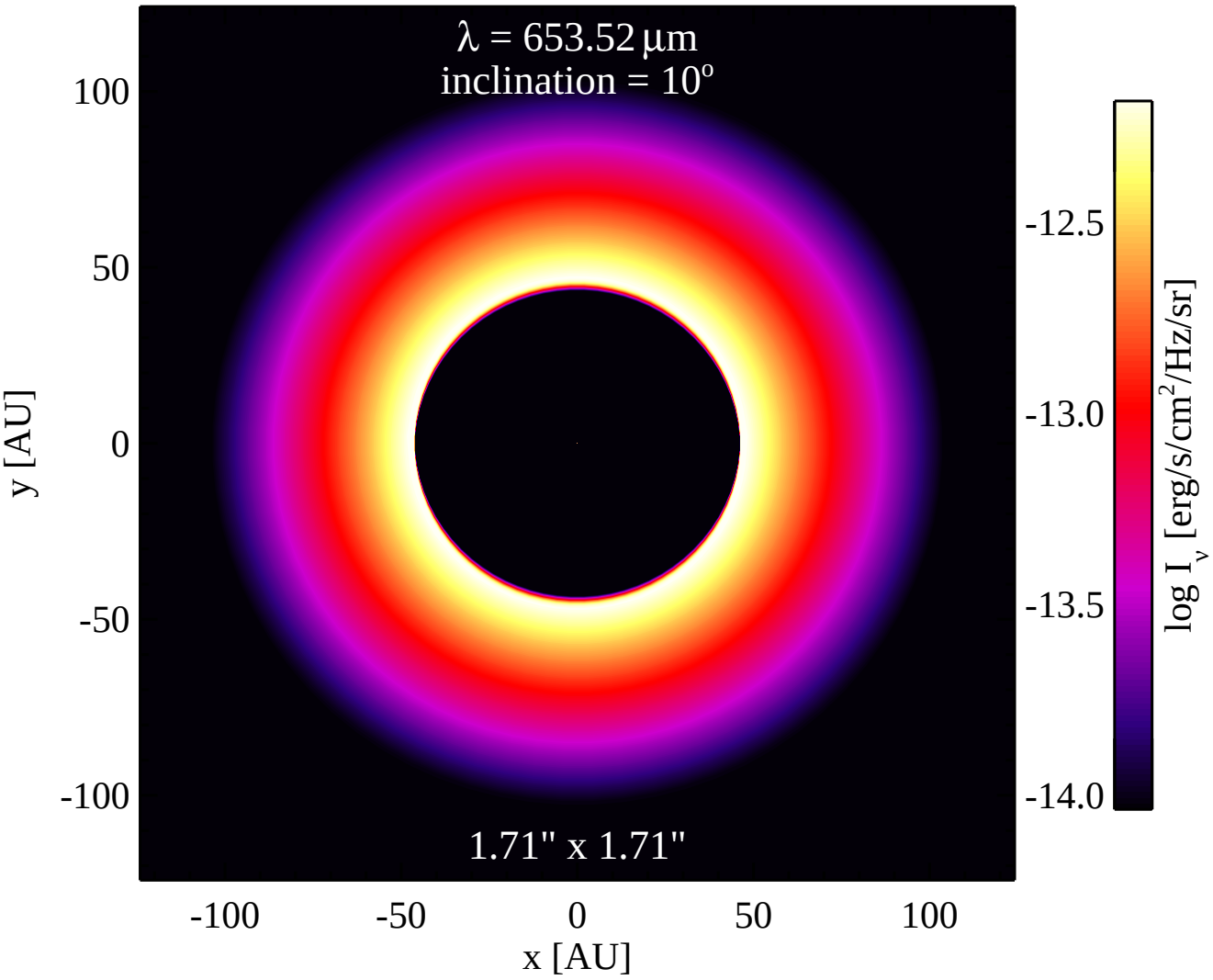

λ = 205.71 μm
inclination = 10°
1.71" x 1.71"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

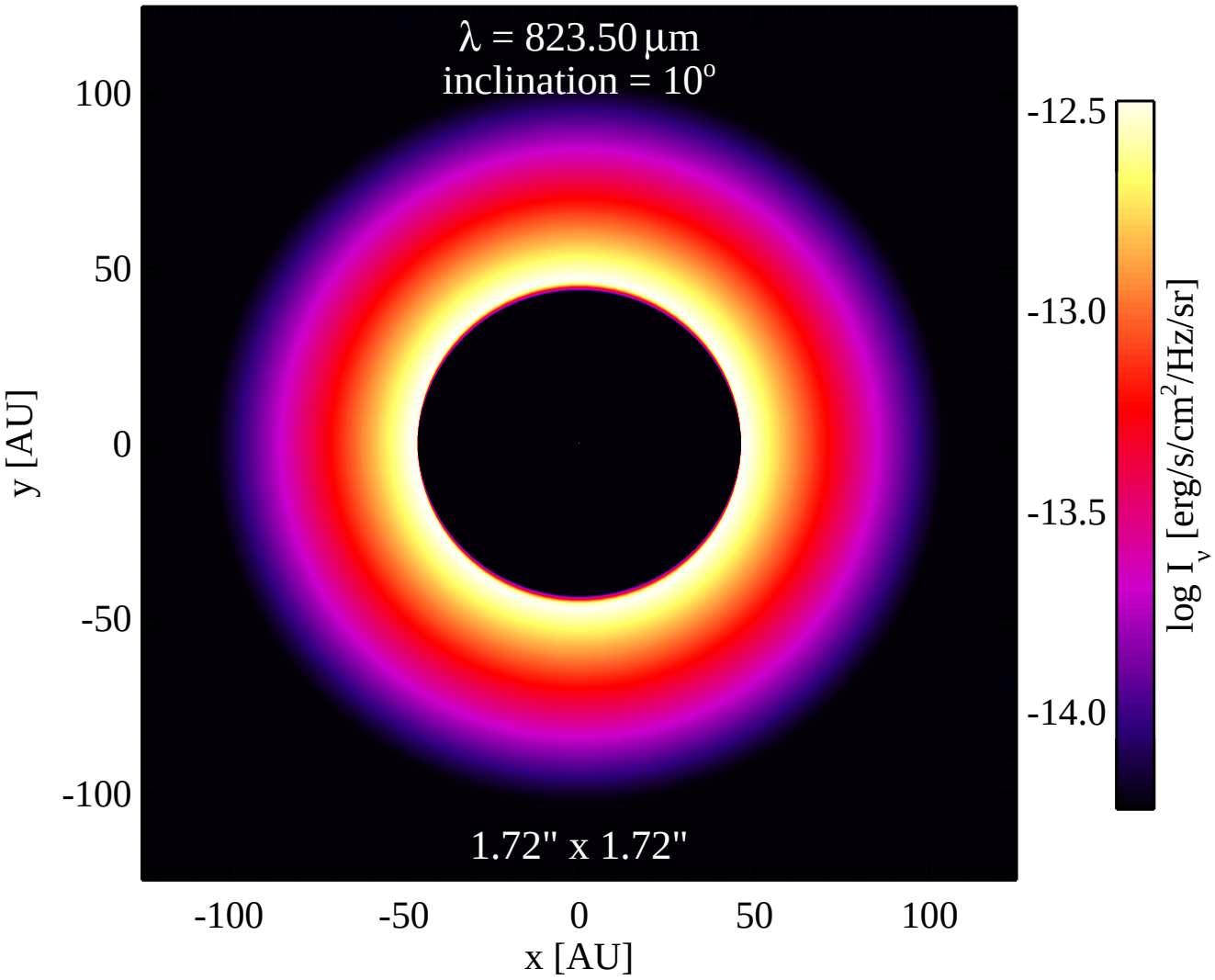

λ = 259.21 μm
inclination = 10°
1.72" x 1.72"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

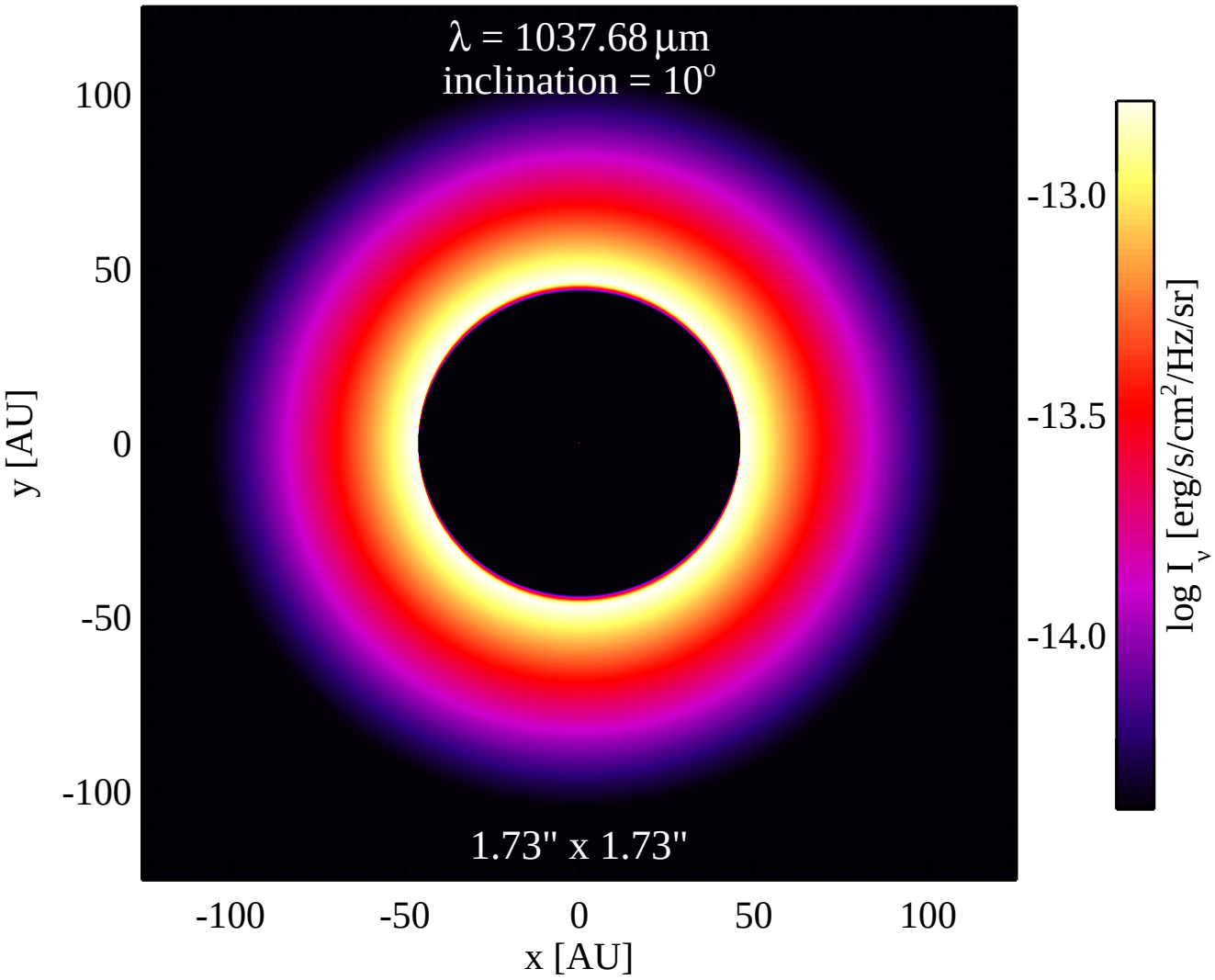

λ = 326.63 μm
inclination = 10°
1.69" x 1.69"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

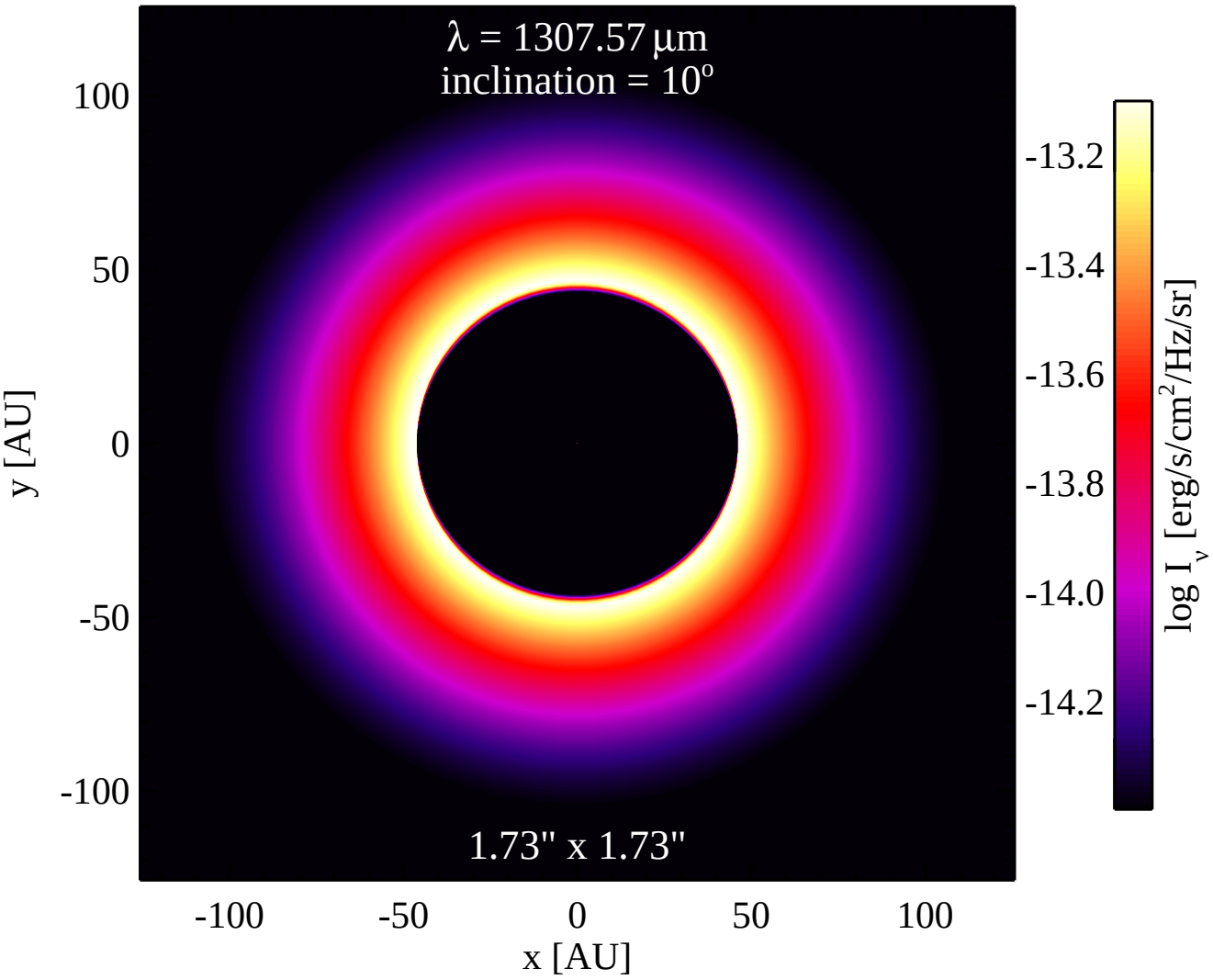

λ = 411.58 μm
inclination = 10°
1.69" x 1.69"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

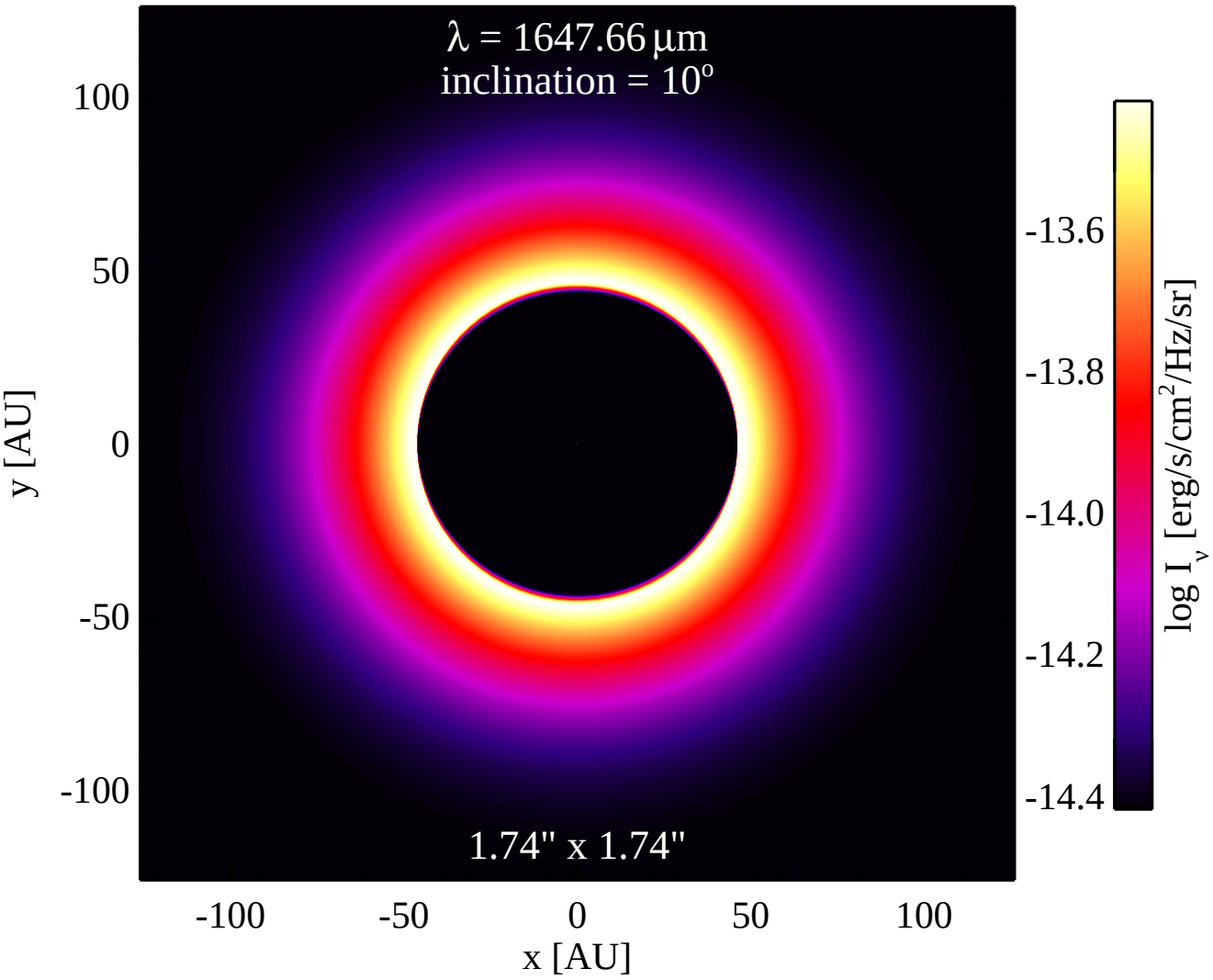

λ = 518.63 μm
inclination = 10°
1.70" x 1.70"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

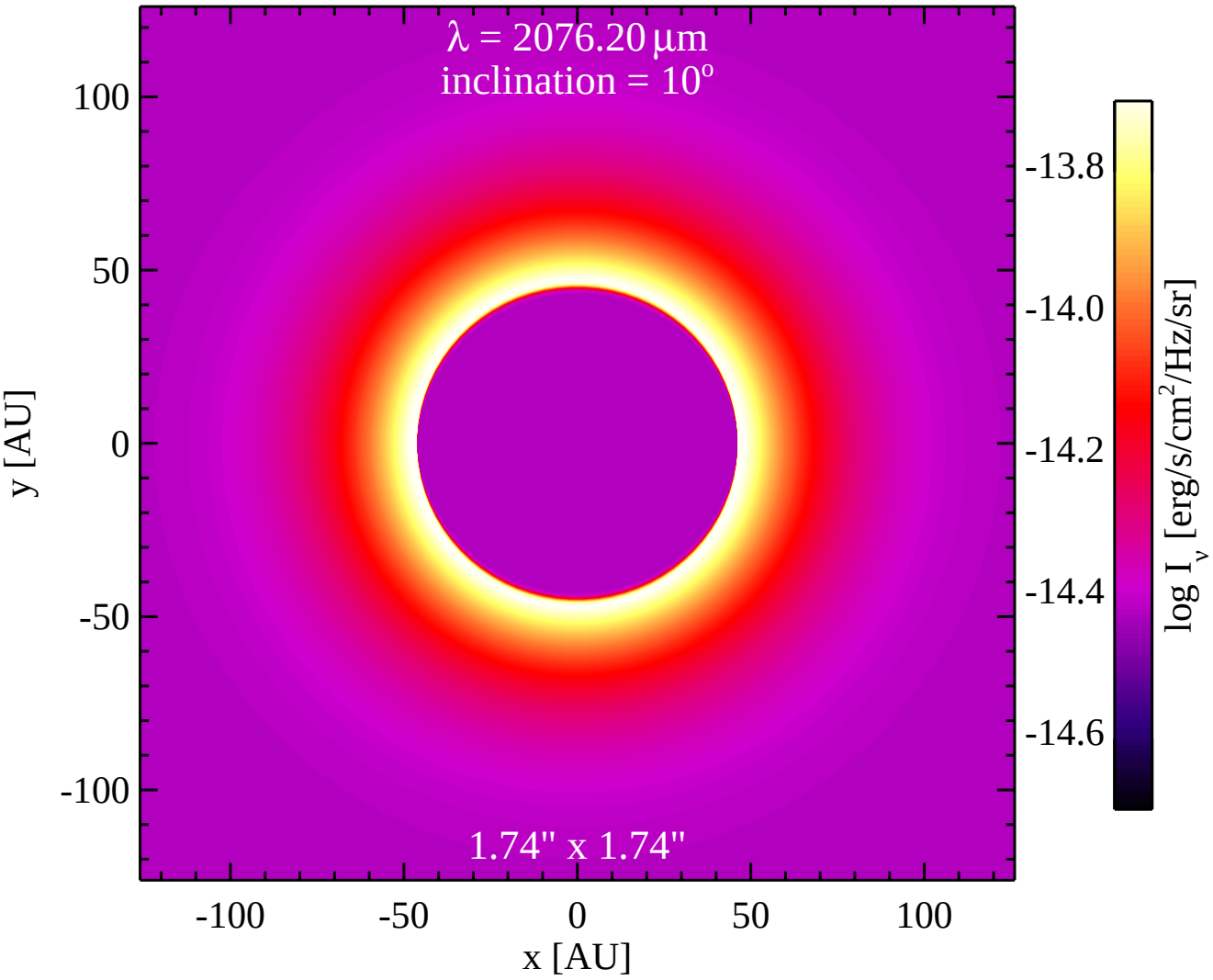

λ = 653.52 μm
inclination = 10°
1.71" x 1.71"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-12.5
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

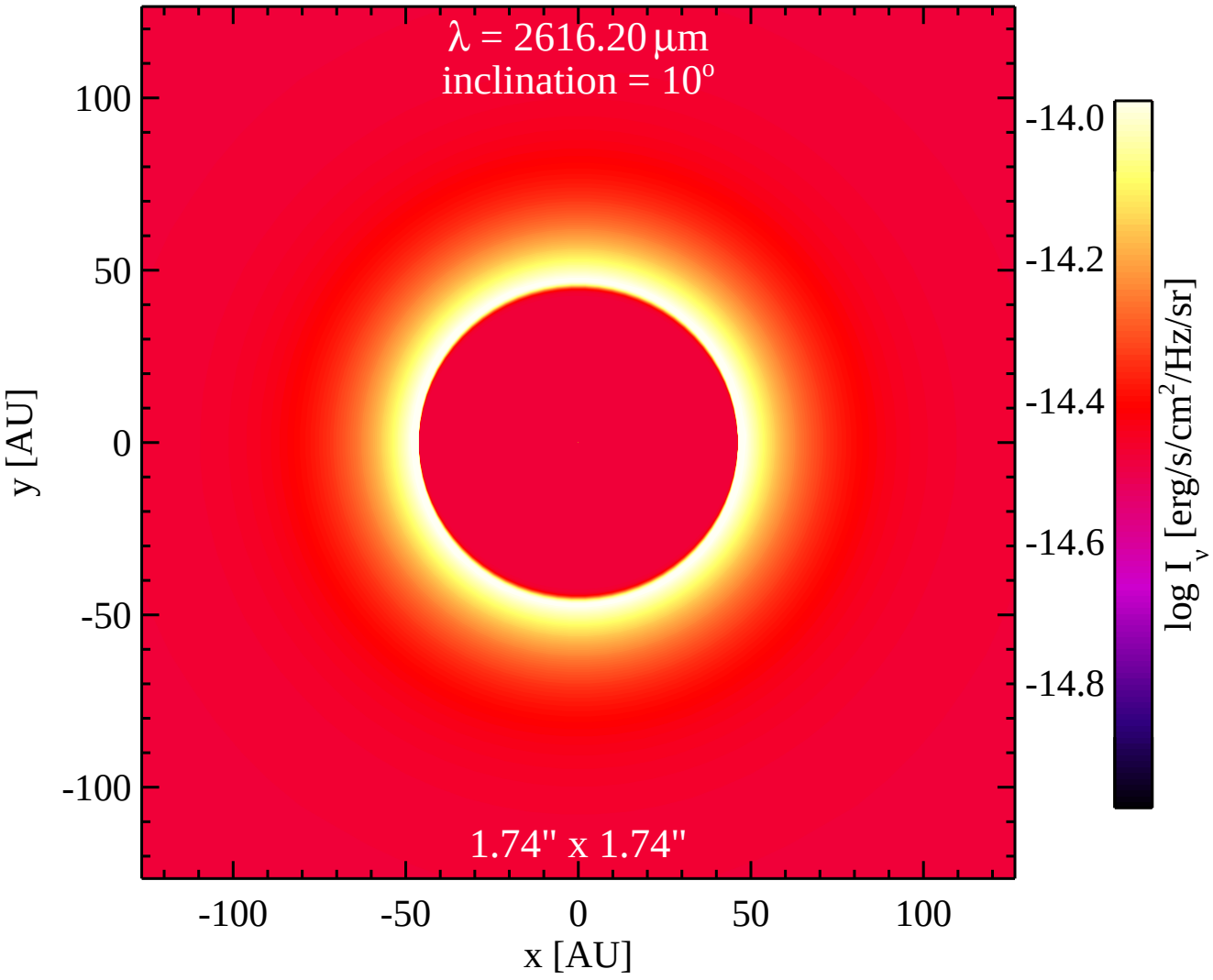

λ = 823.50 μm
inclination = 10°
1.72" x 1.72"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-12.5
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

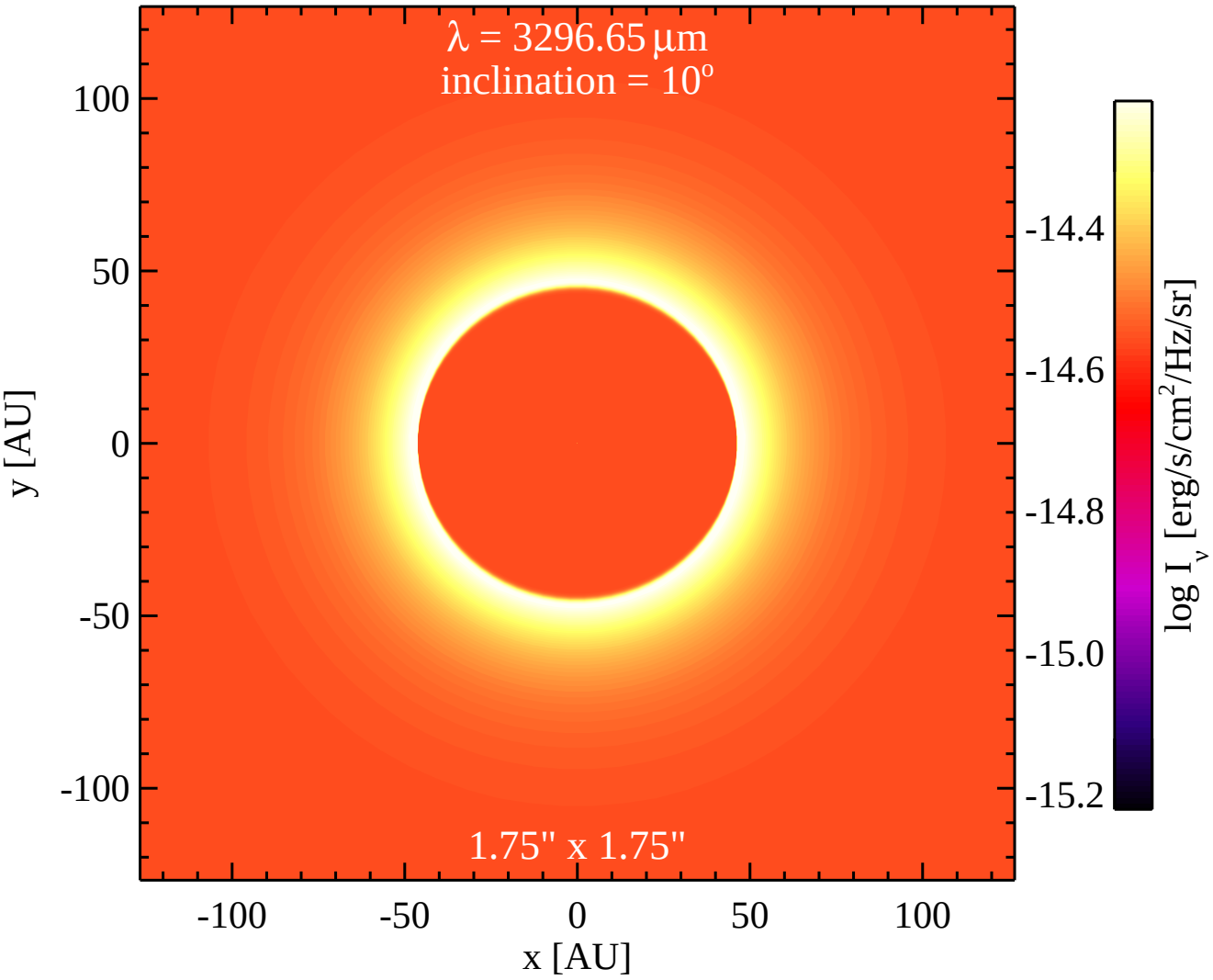

λ = 1037.68 μm
inclination = 10°
1.73" x 1.73"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

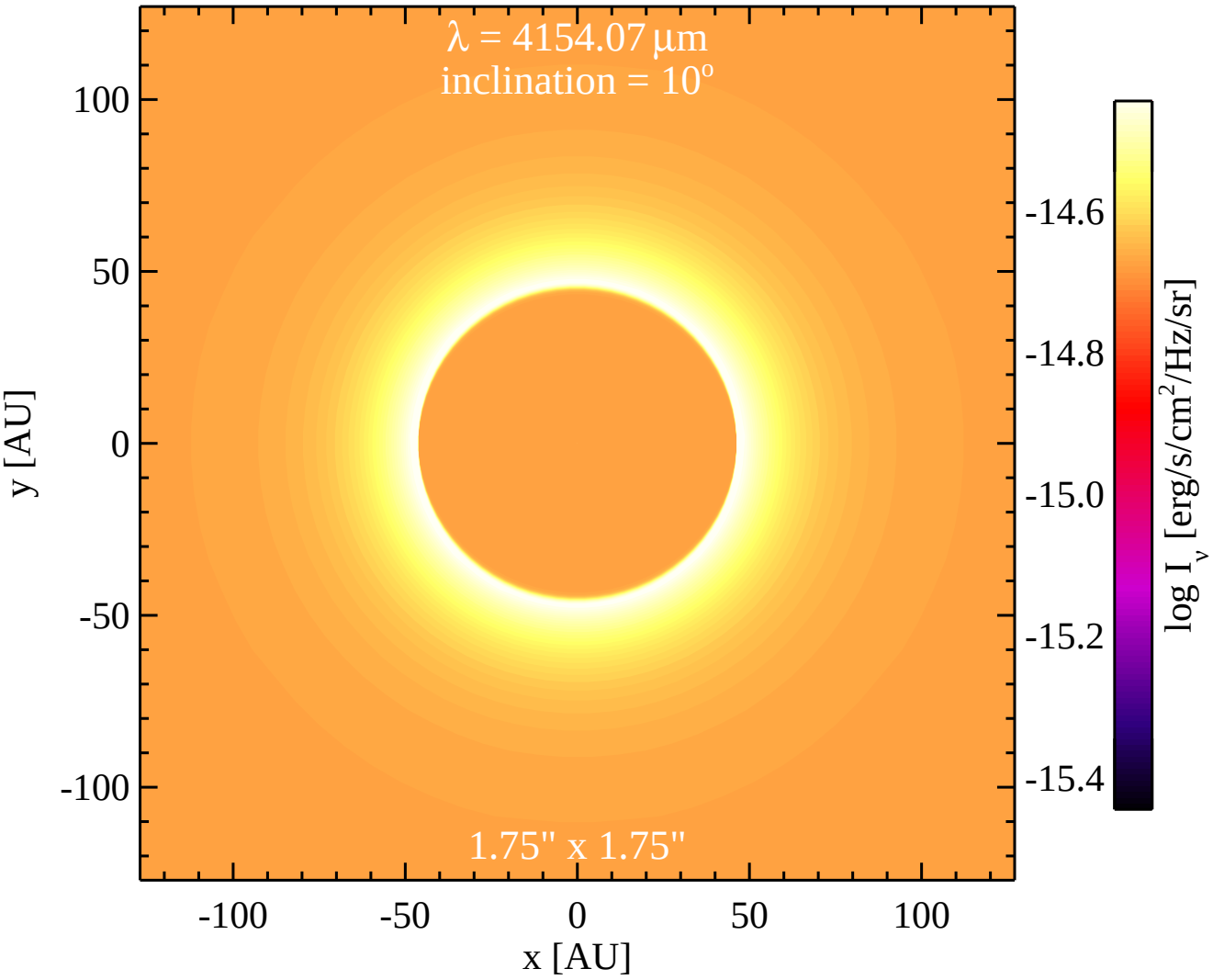

λ = 1307.57 μm
inclination = 10°
1.73" x 1.73"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-13.2
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

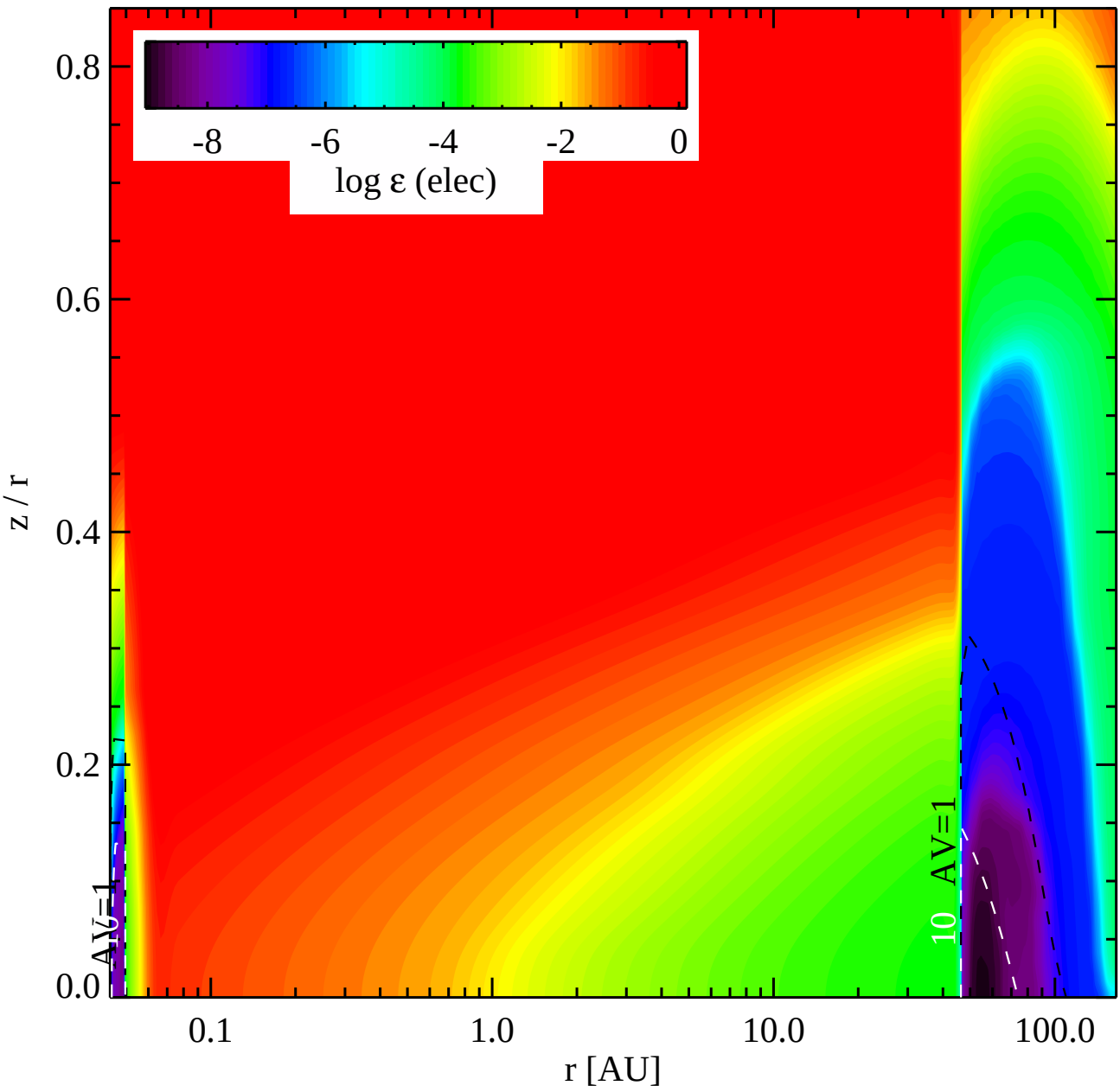

λ = 1647.66 μm
inclination = 10°
1.74" x 1.74"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

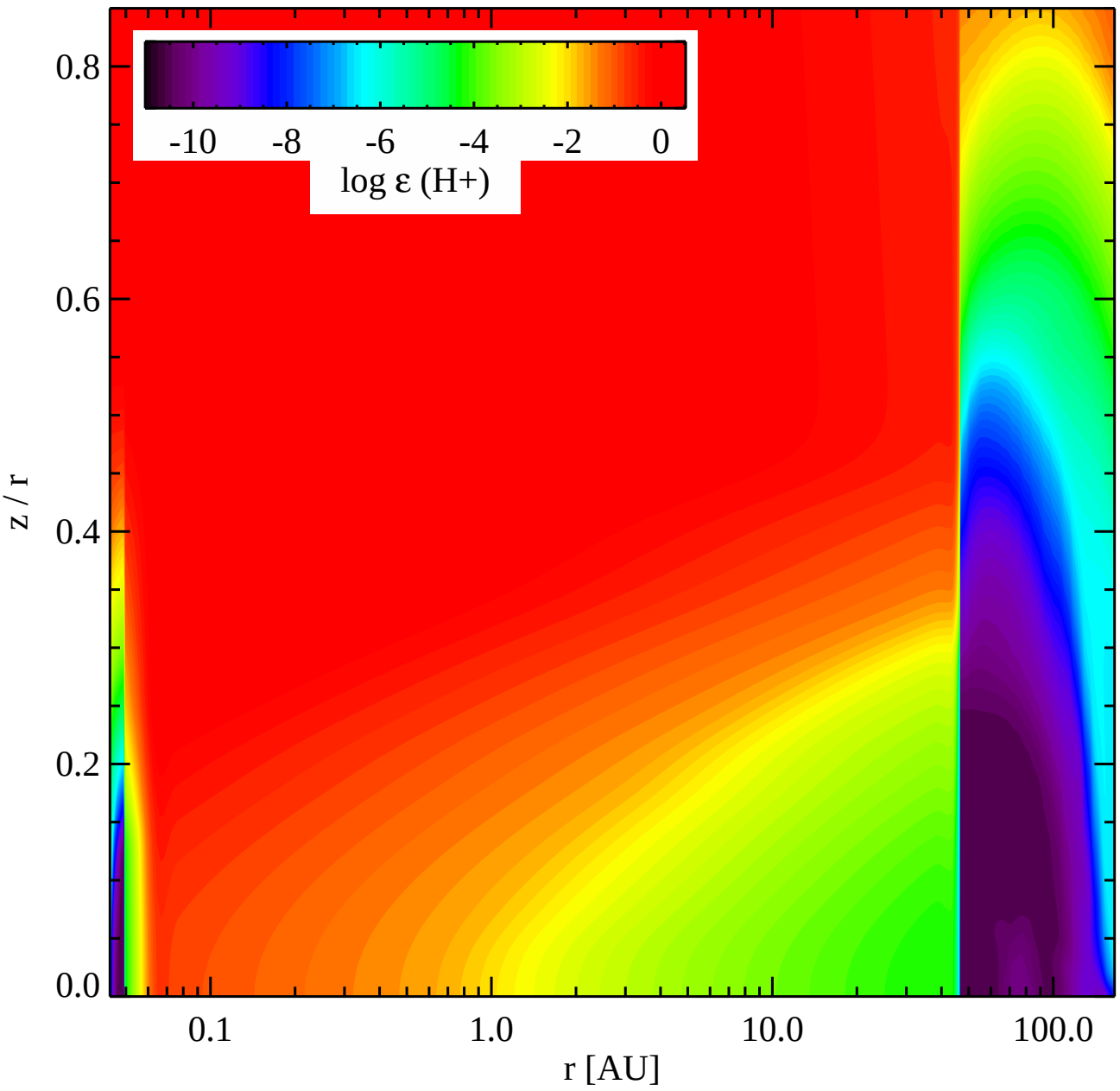

λ = 2076.20 μm
inclination = 10°
1.74" x 1.74"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

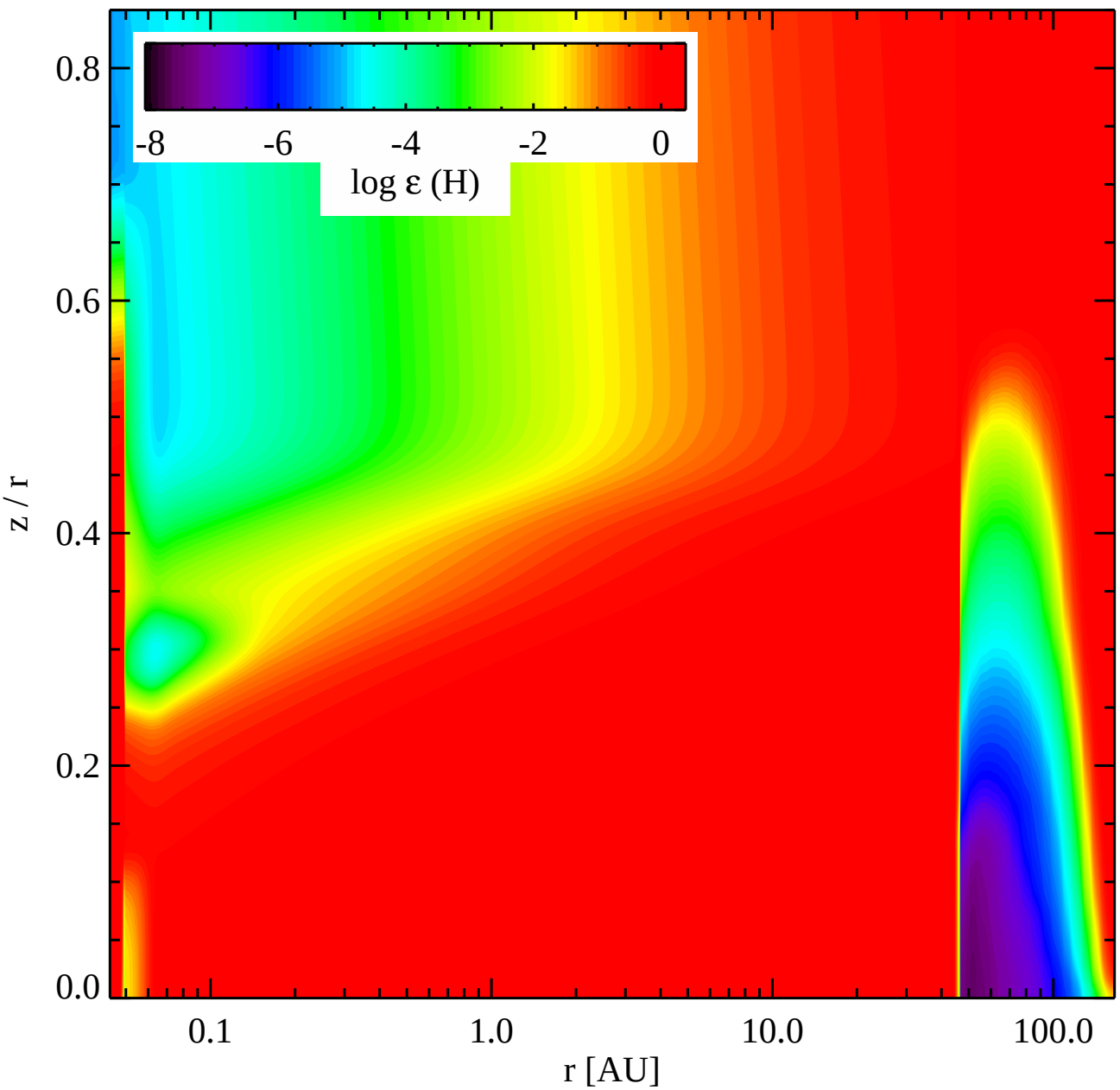

λ = 2616.20 μm
inclination = 10°
1.74" x 1.74"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-14.0
-14.2
-14.4
-14.6
-14.8
log I_ν [erg/s/cm²/Hz/sr]

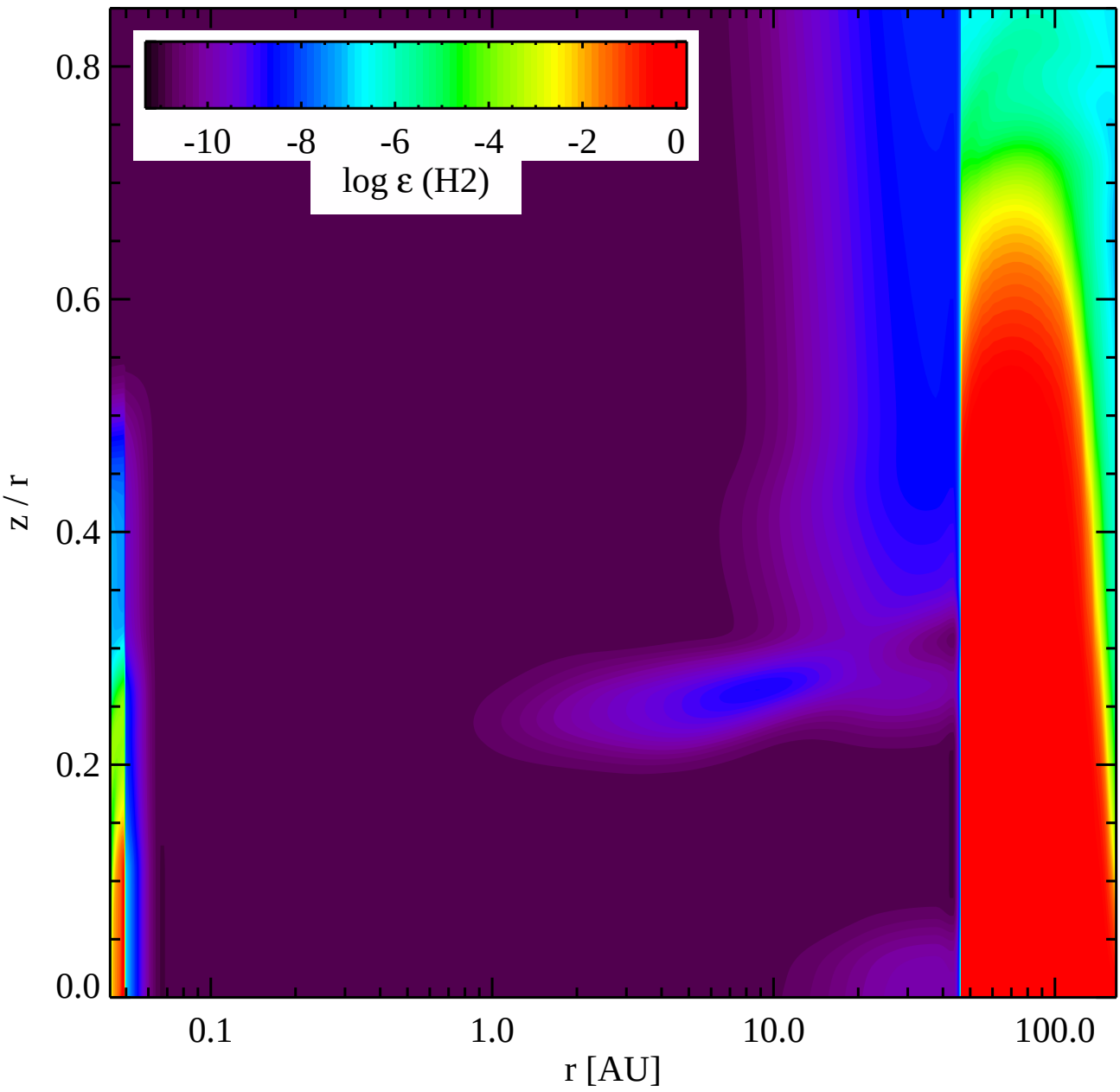

λ = 3296.65 μm
inclination = 10°
1.75" x 1.75"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-14.4
-14.6
-14.8
-15.0
-15.2
log I_ν [erg/s/cm²/Hz/sr]

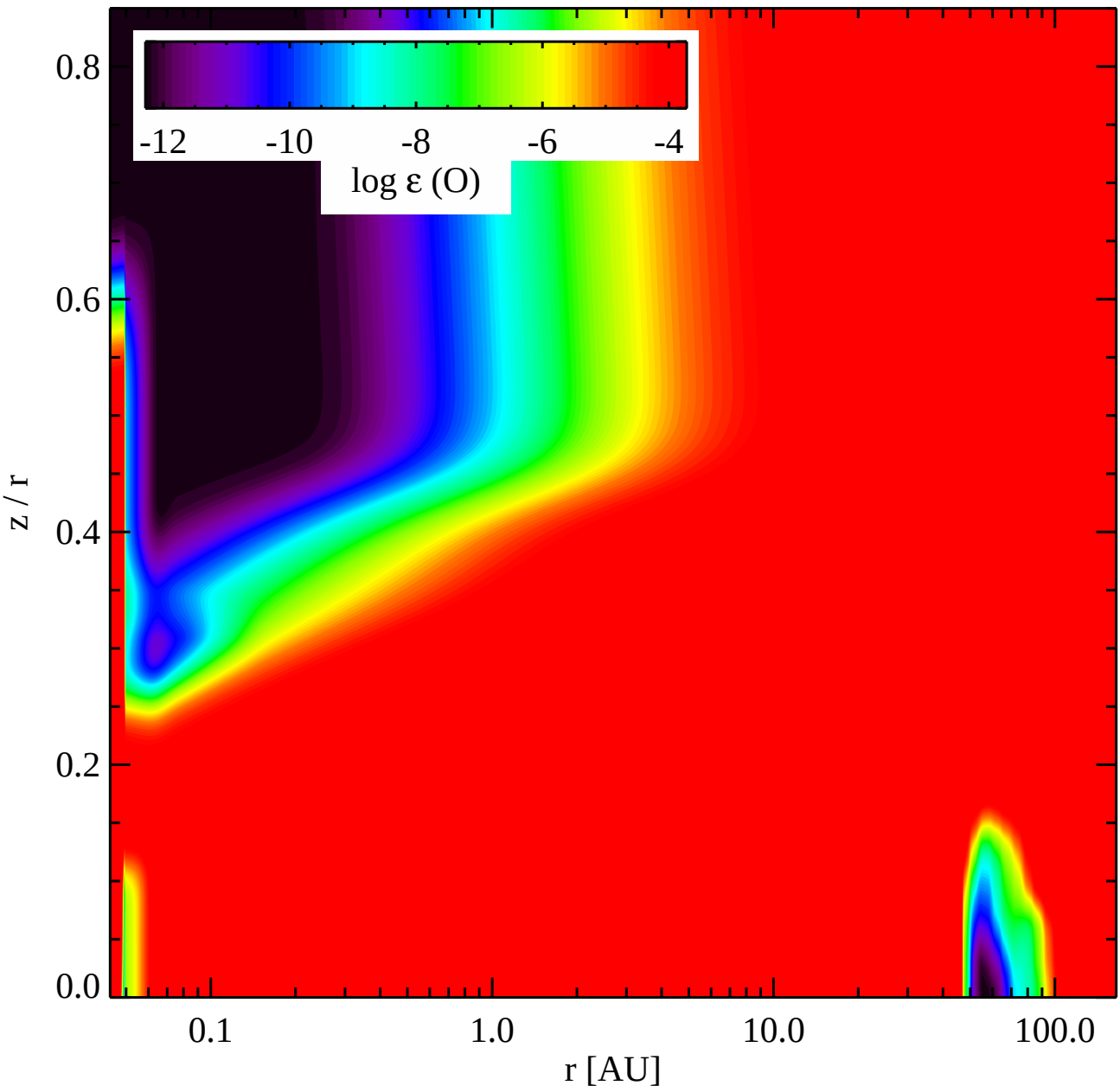

λ = 4154.07 μm
inclination = 10°
1.75" x 1.75"
100
50
0
-50
-100
y [AU]
-100
-50
0
50
100
x [AU]
-14.6
-14.8
-15.0
-15.2
-15.4
log I_ν [erg/s/cm²/Hz/sr]

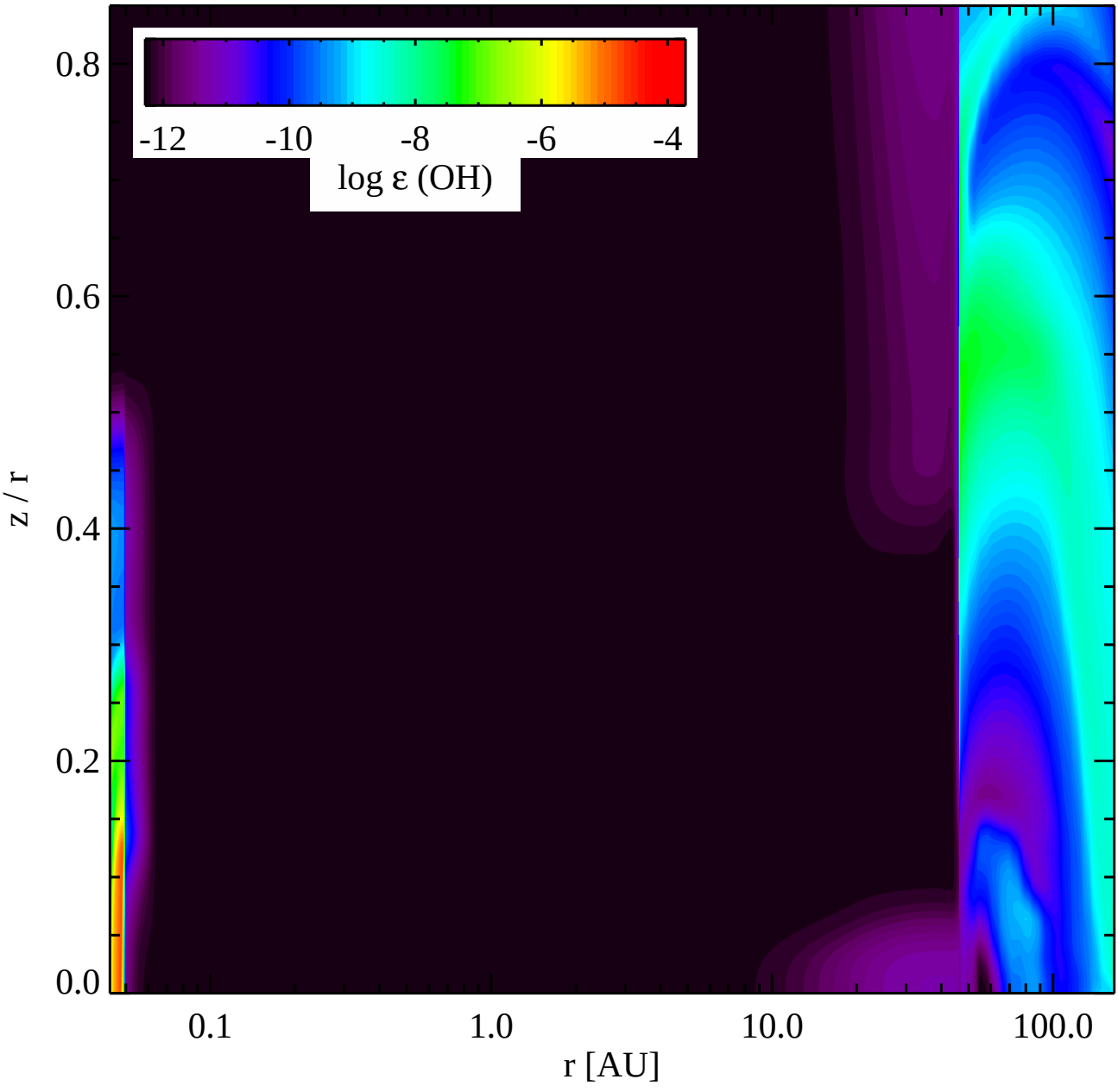

-8
-6
-4
-2
0
log ε (elec)
0.8
0.6
0.4
0.2
0.0
z / r
AV=1
AV=1
10
0.1
1.0
10.0
100.0
r [AU]

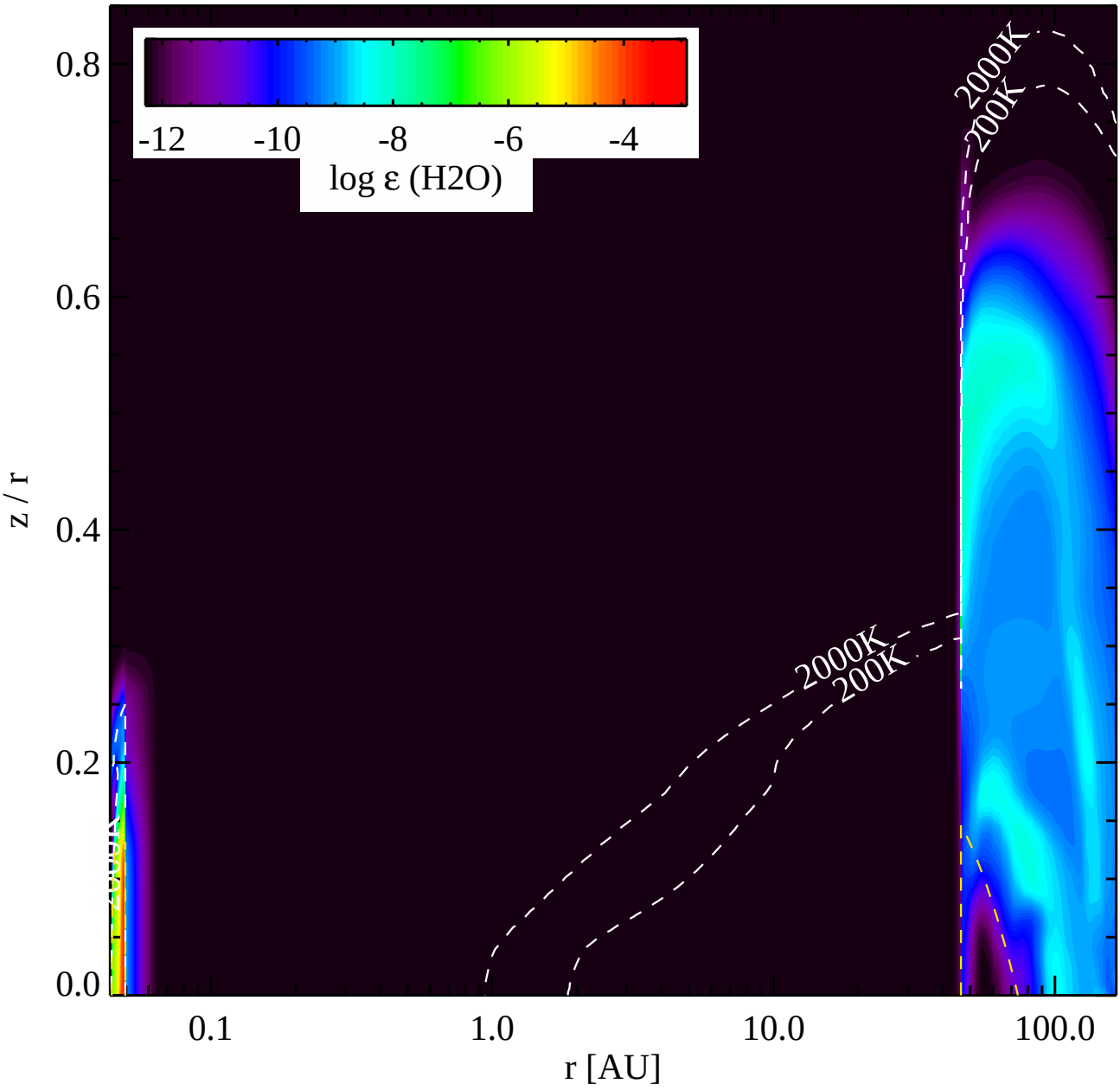

-10
-8
-6
-4
-2
0
log ε (H+)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

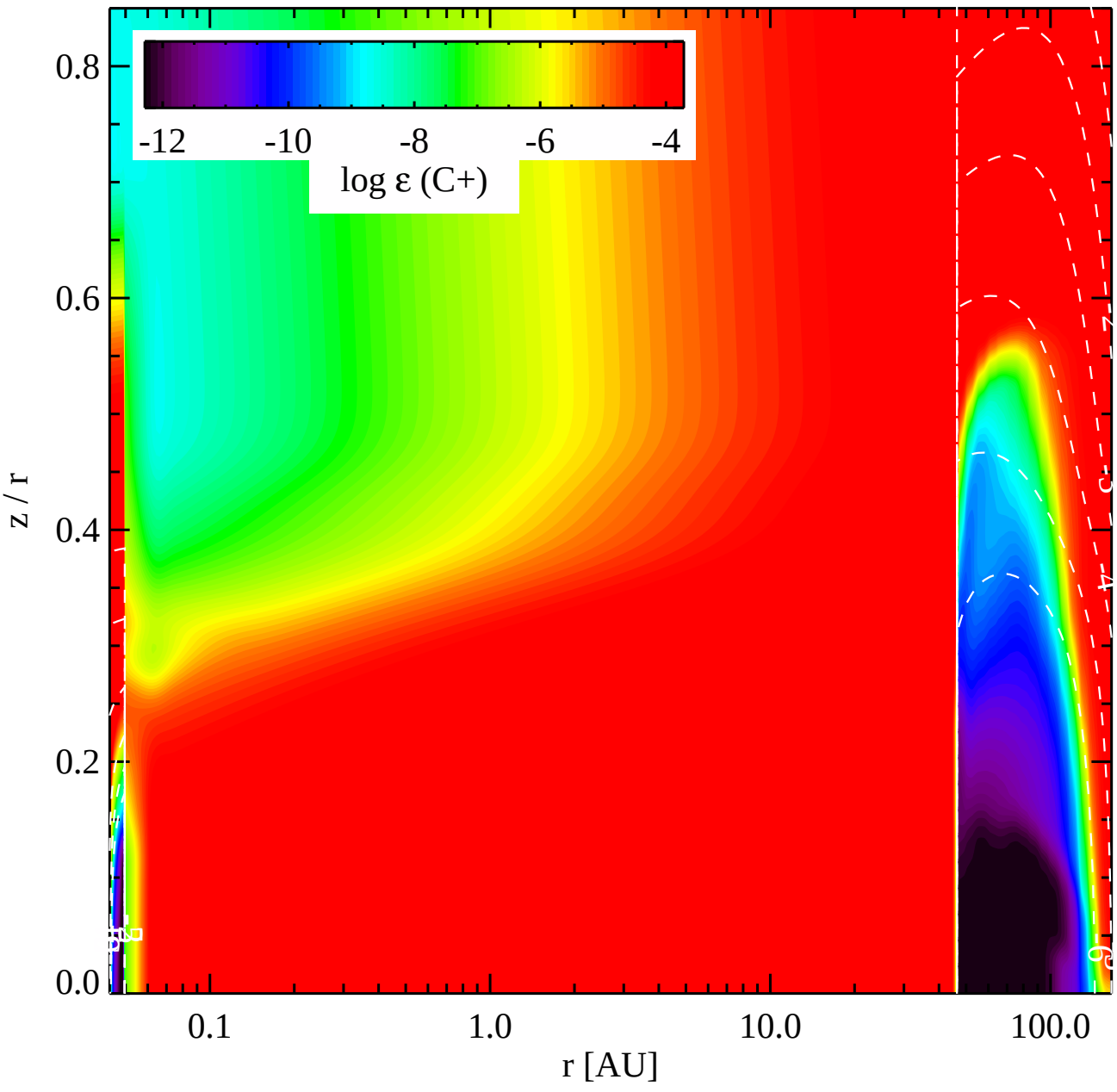

-8
-6
-4
-2
0
log ε (H)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

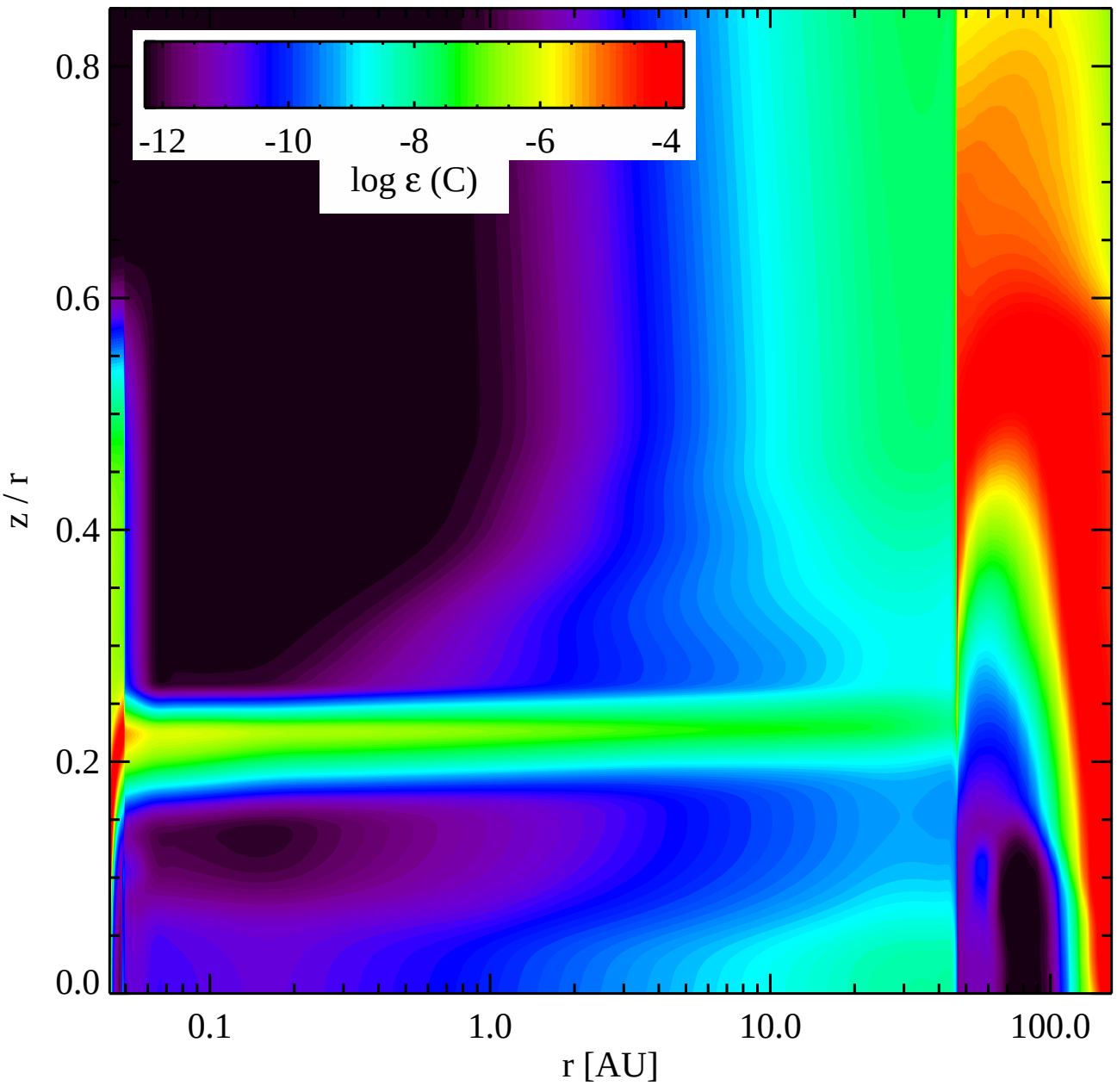

-10
-8
-6
-4
-2
0
log ε (H2)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

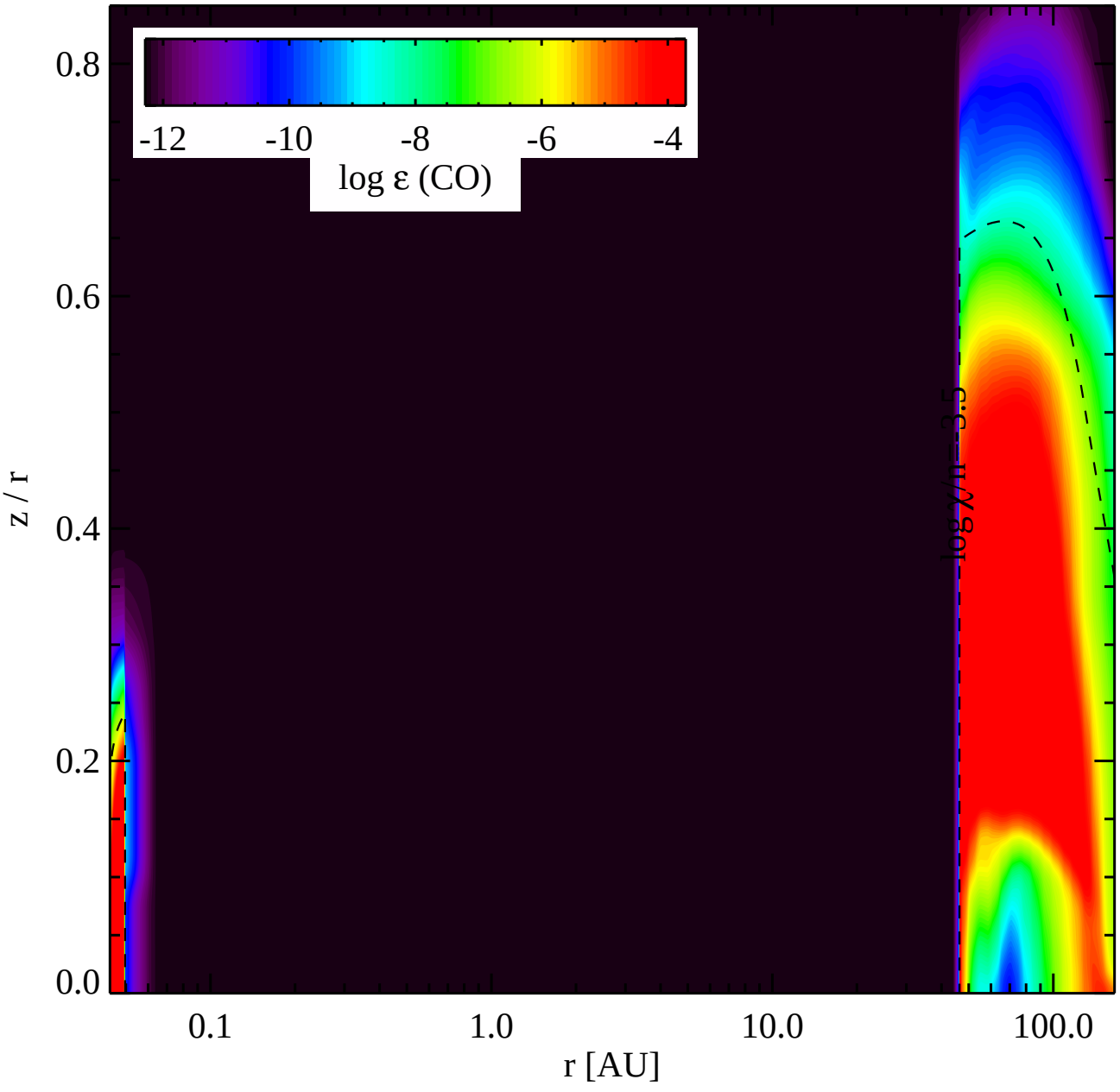

-12
-10
-8
-6
-4
log ε (O)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

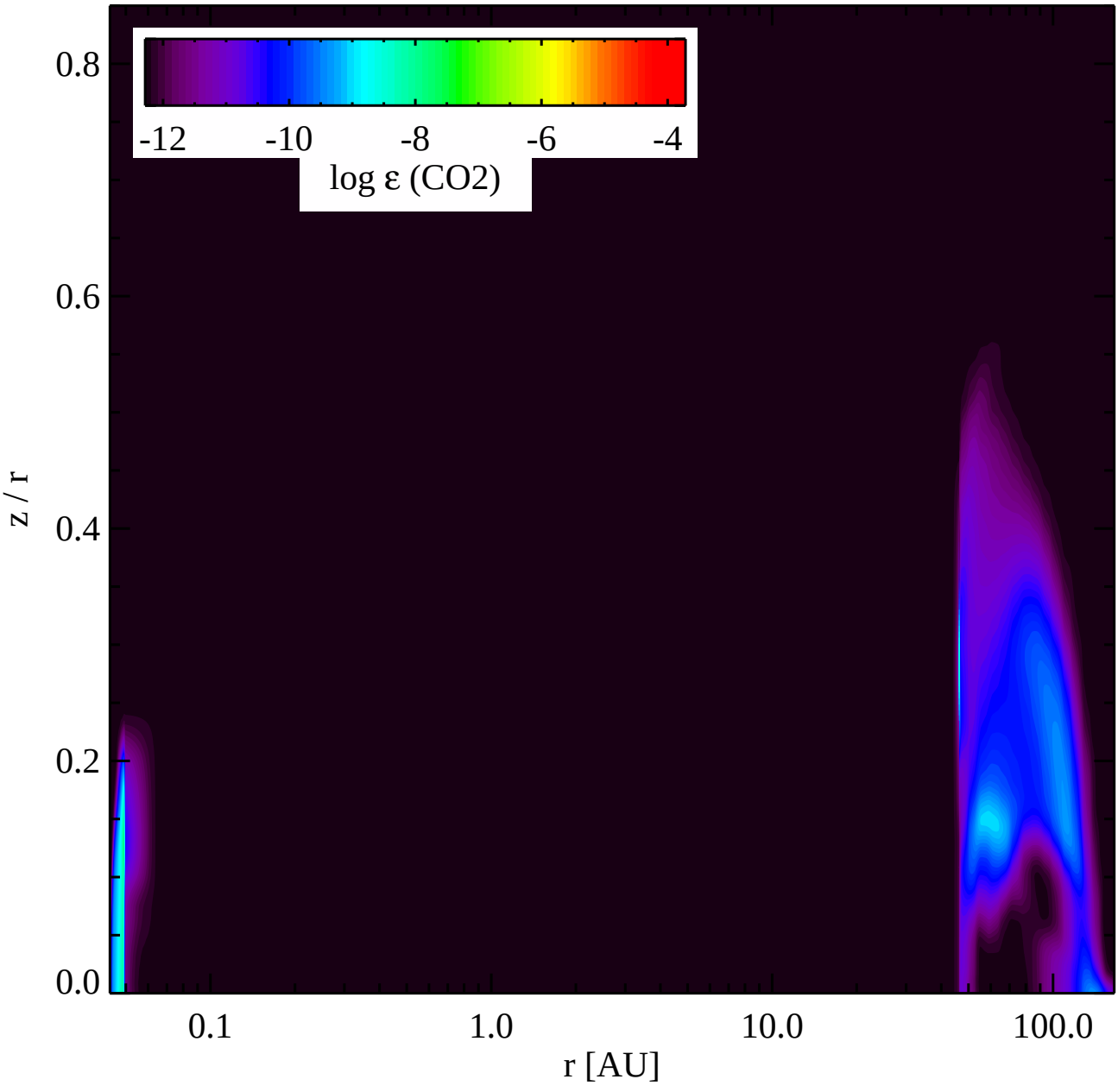

-12
-10
-8
-6
-4
log ε (OH)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

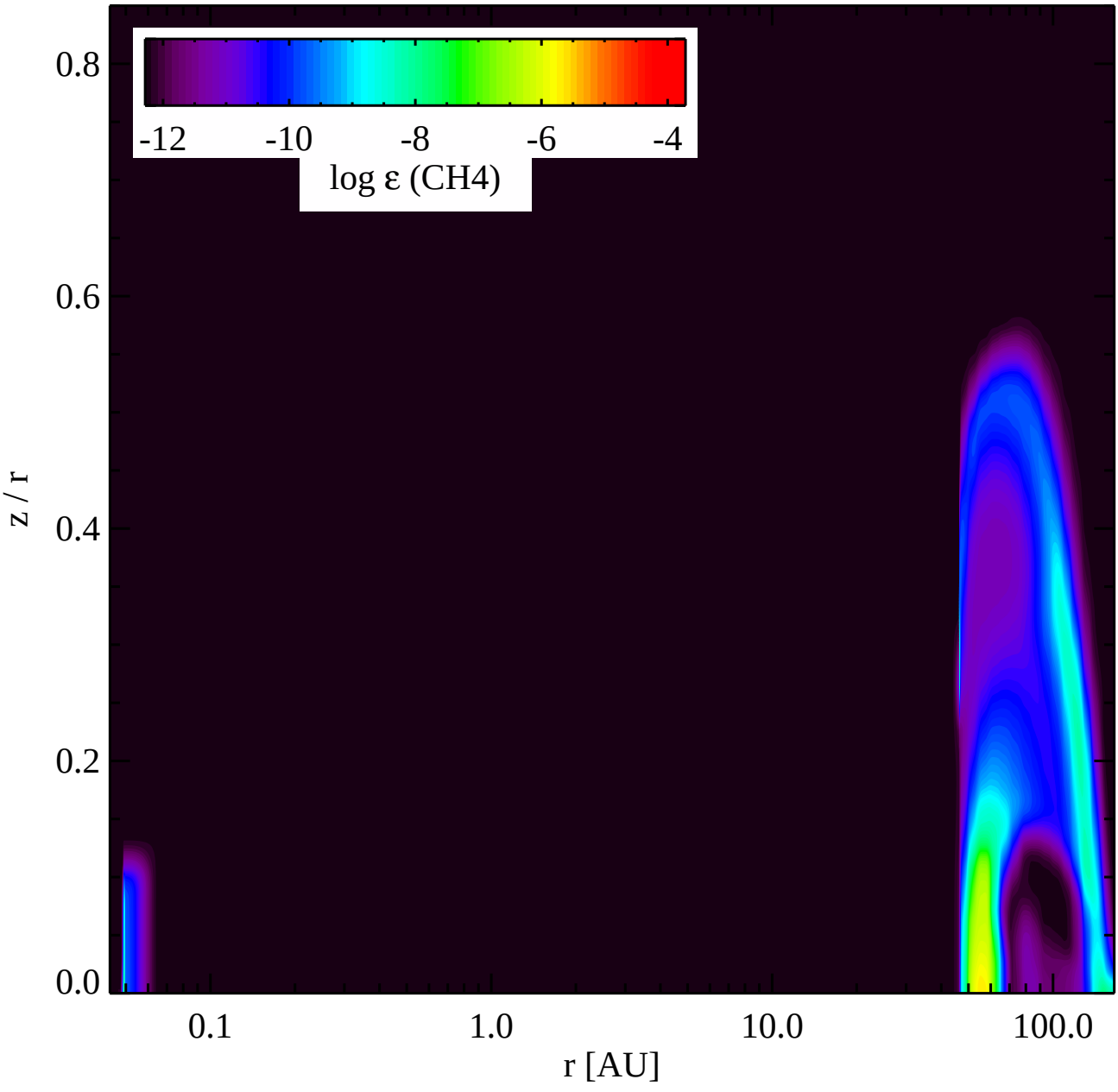

-12
-10
-8
-6
-4
log ε (H2O)
2000K
200K
2000K
200K
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

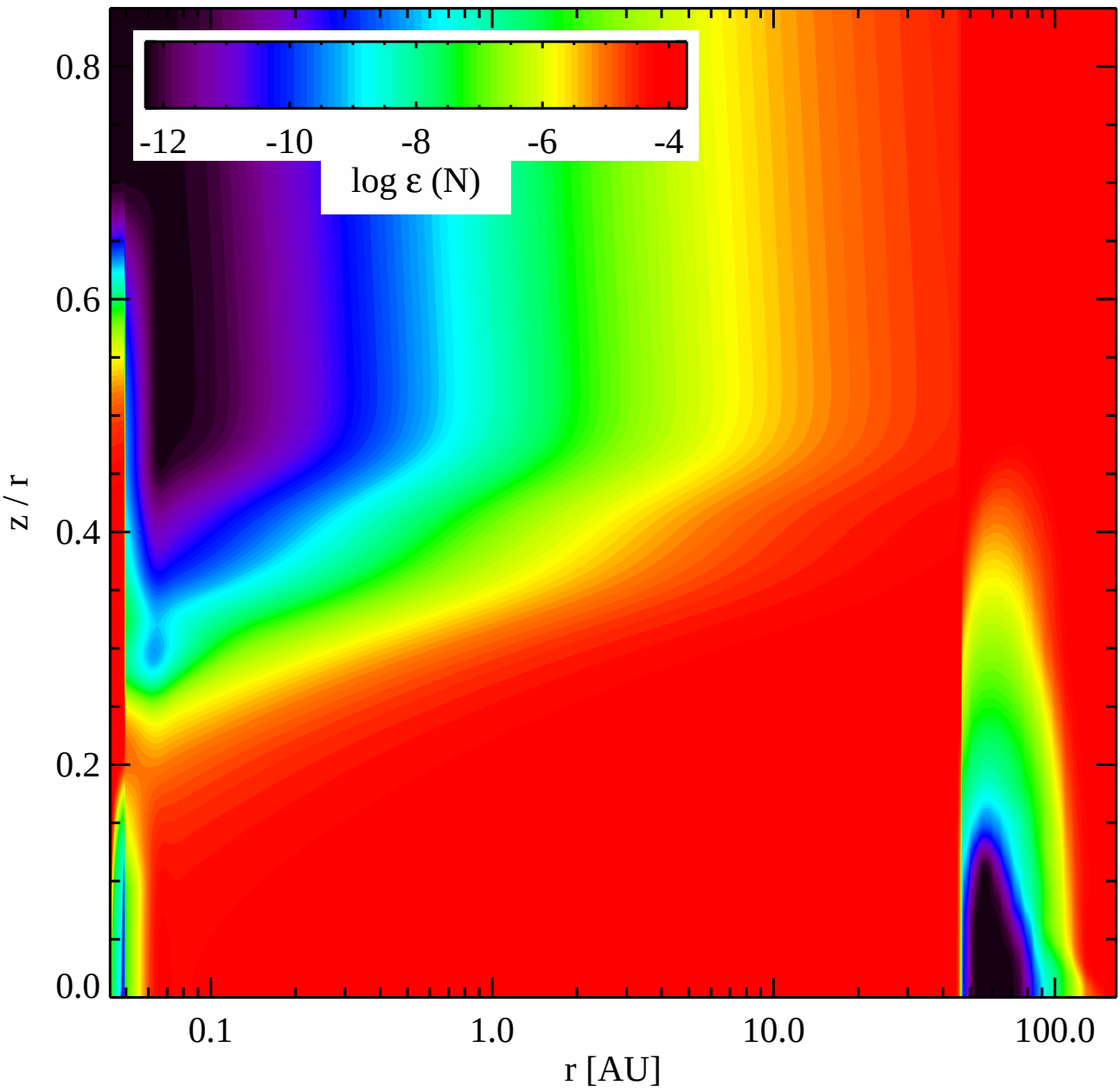

-12
-10
-8
-6
-4
log ε (C+)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

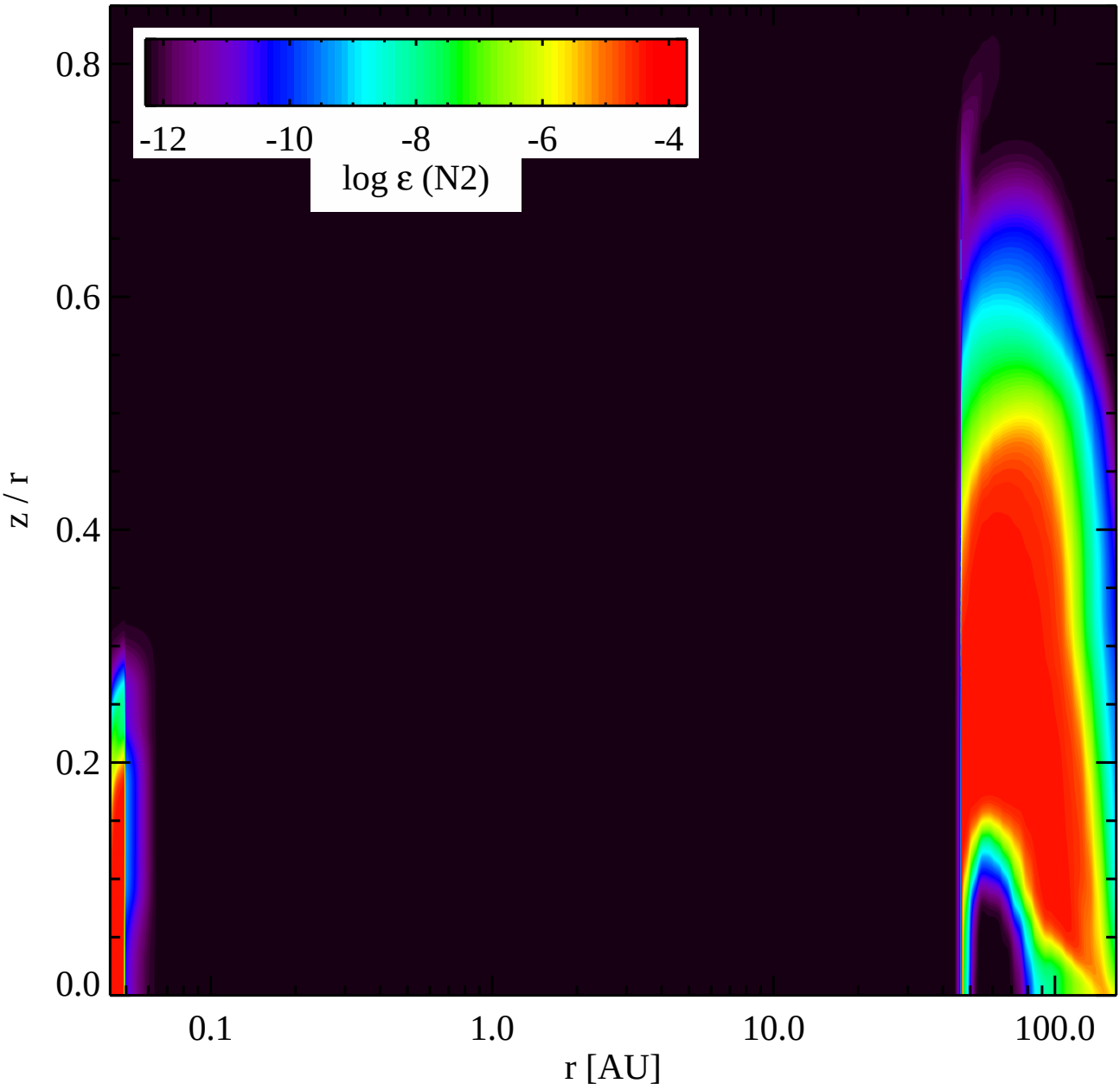

-12
-10
-8
-6
-4
log ε (C)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

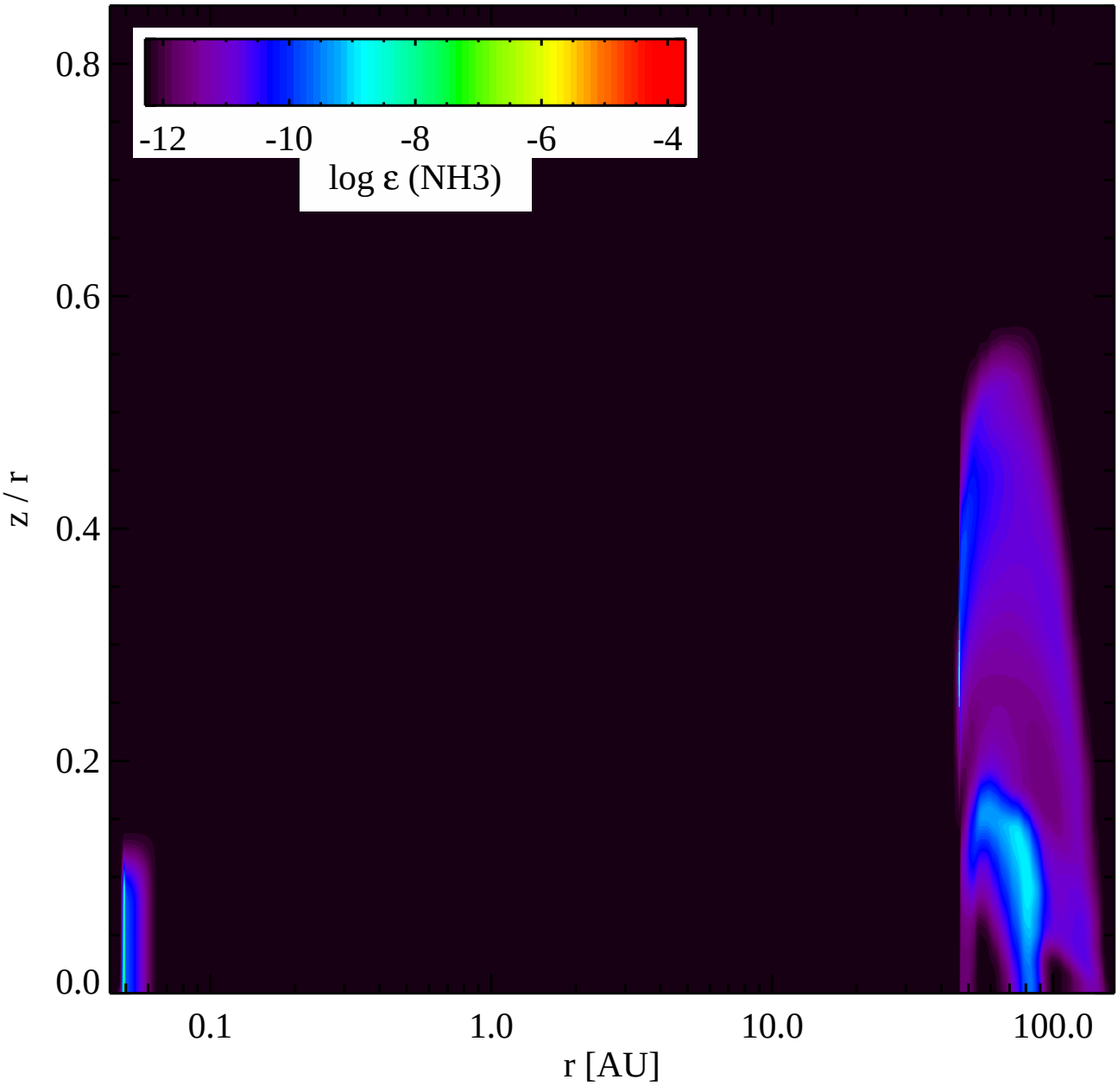

-12
-10
-8
-6
-4
log ε (CO)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
log Σ/Σ0=-3.5

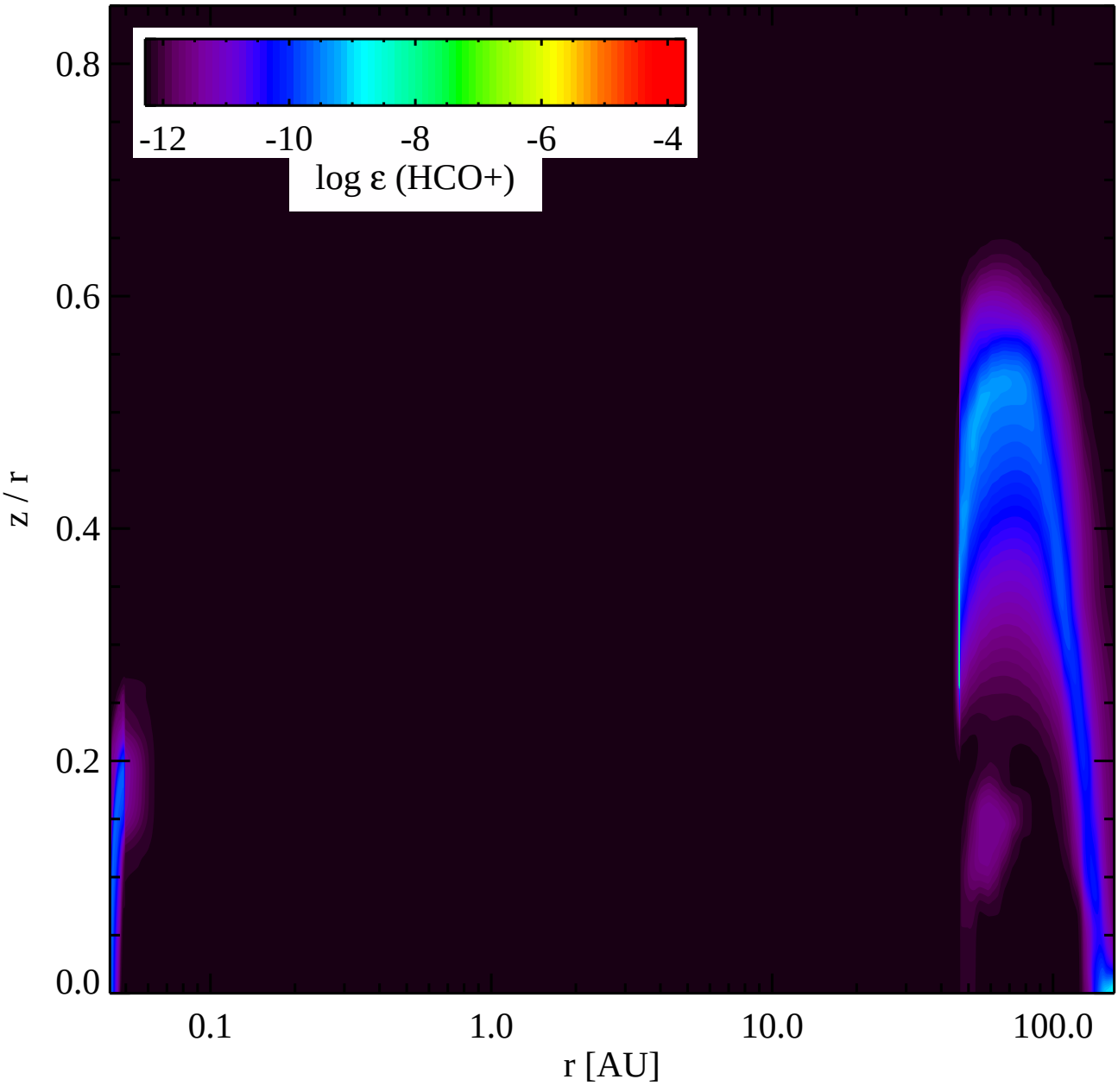

-12
-10
-8
-6
-4
log ε (CO2)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

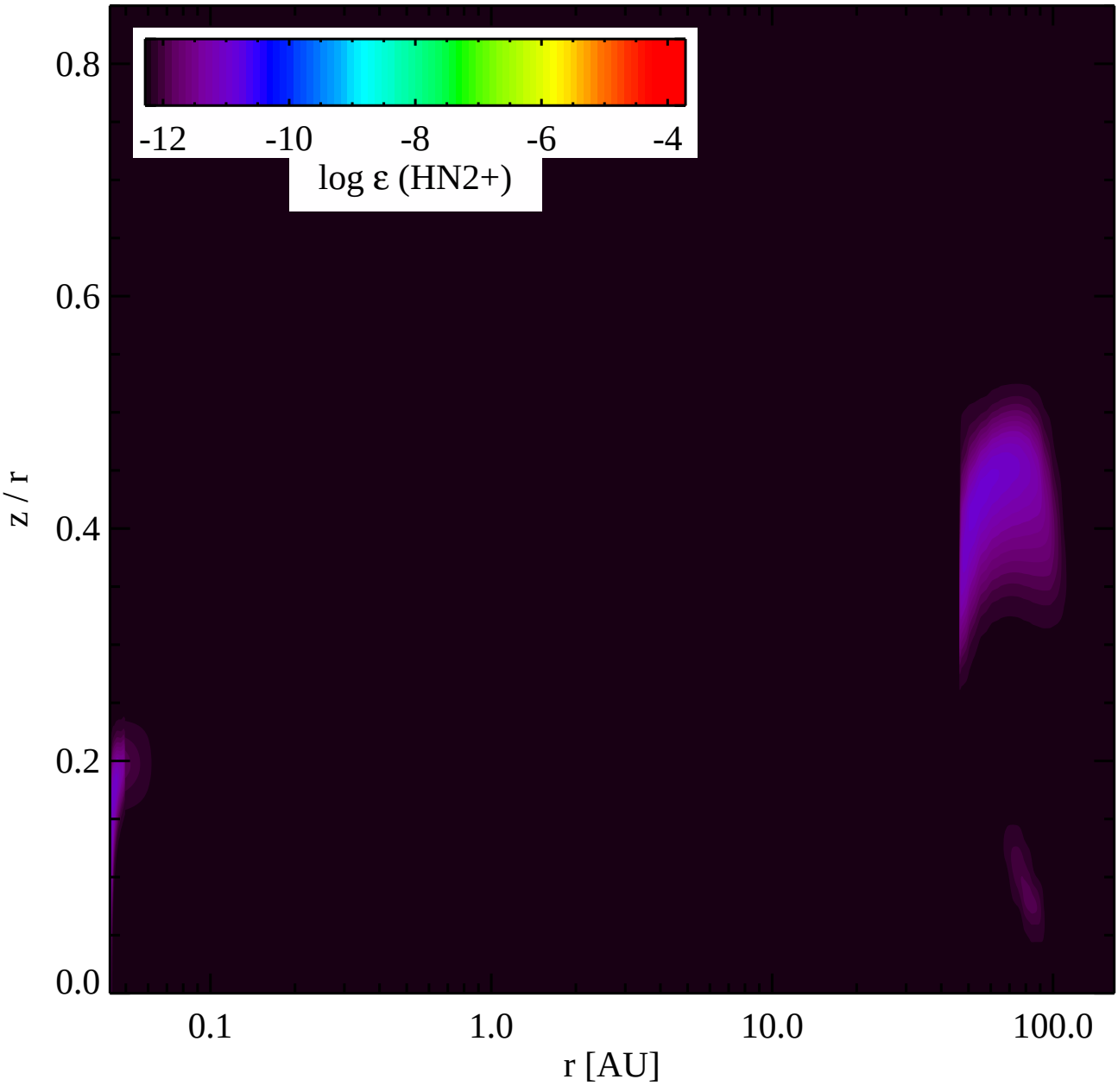

-12
-10
-8
-6
-4
log ε (CH4)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

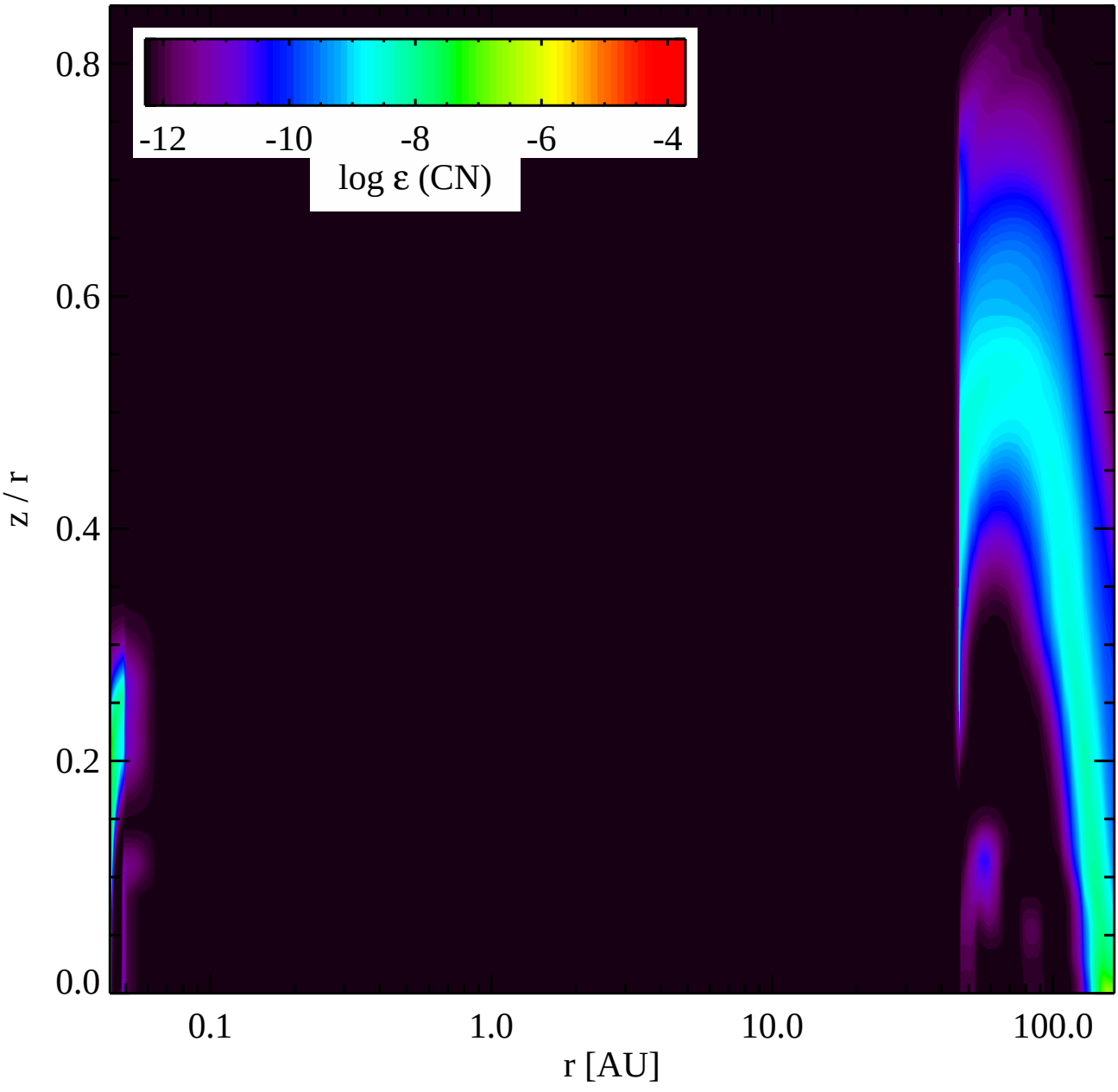

-12
-10
-8
-6
-4
log ε (N)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

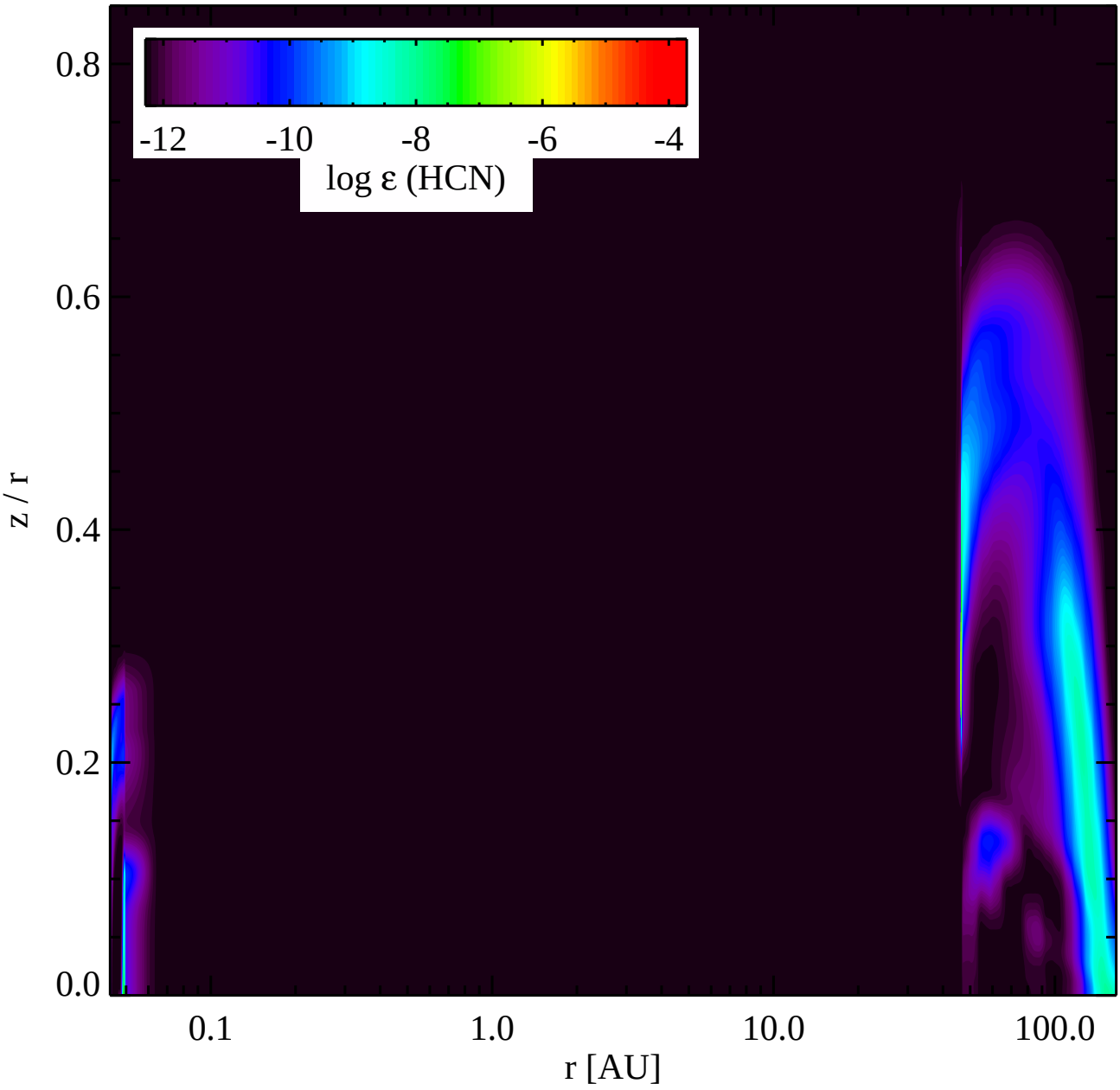

-12
-10
-8
-6
-4
log ε (N2)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

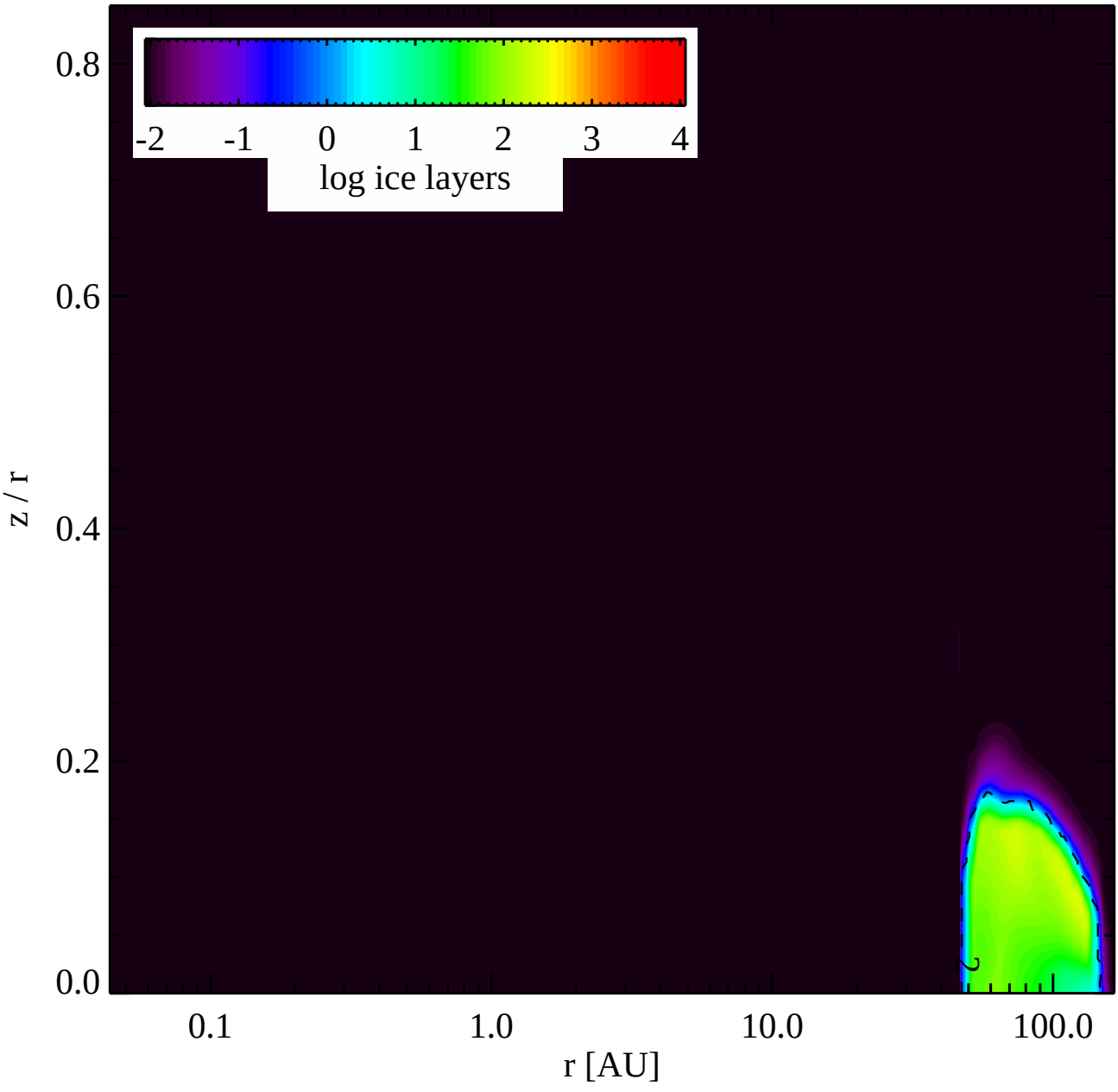

-12
-10
-8
-6
-4
log ε (NH3)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

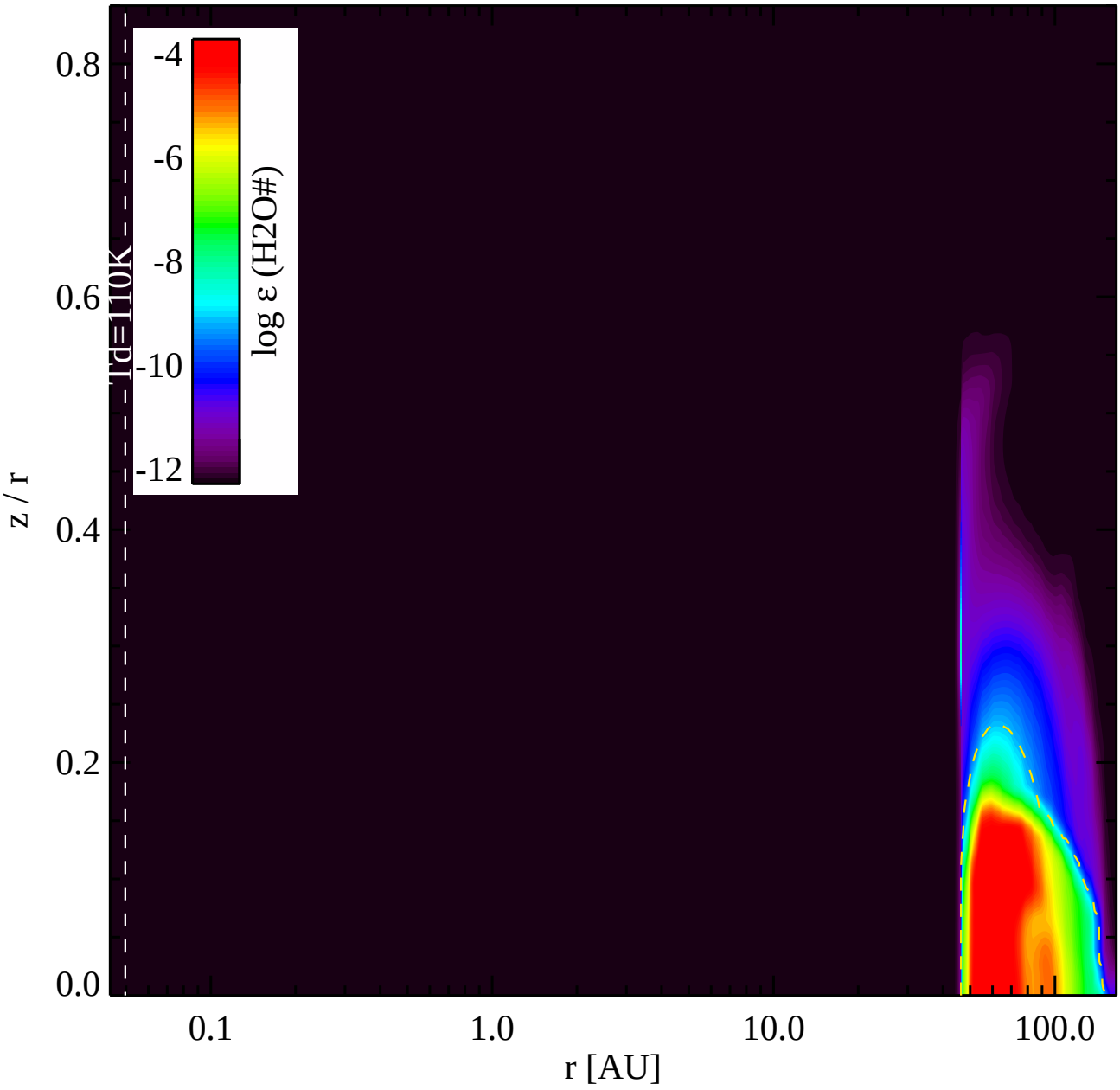

-12
-10
-8
-6
-4
log ε (HCO+)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

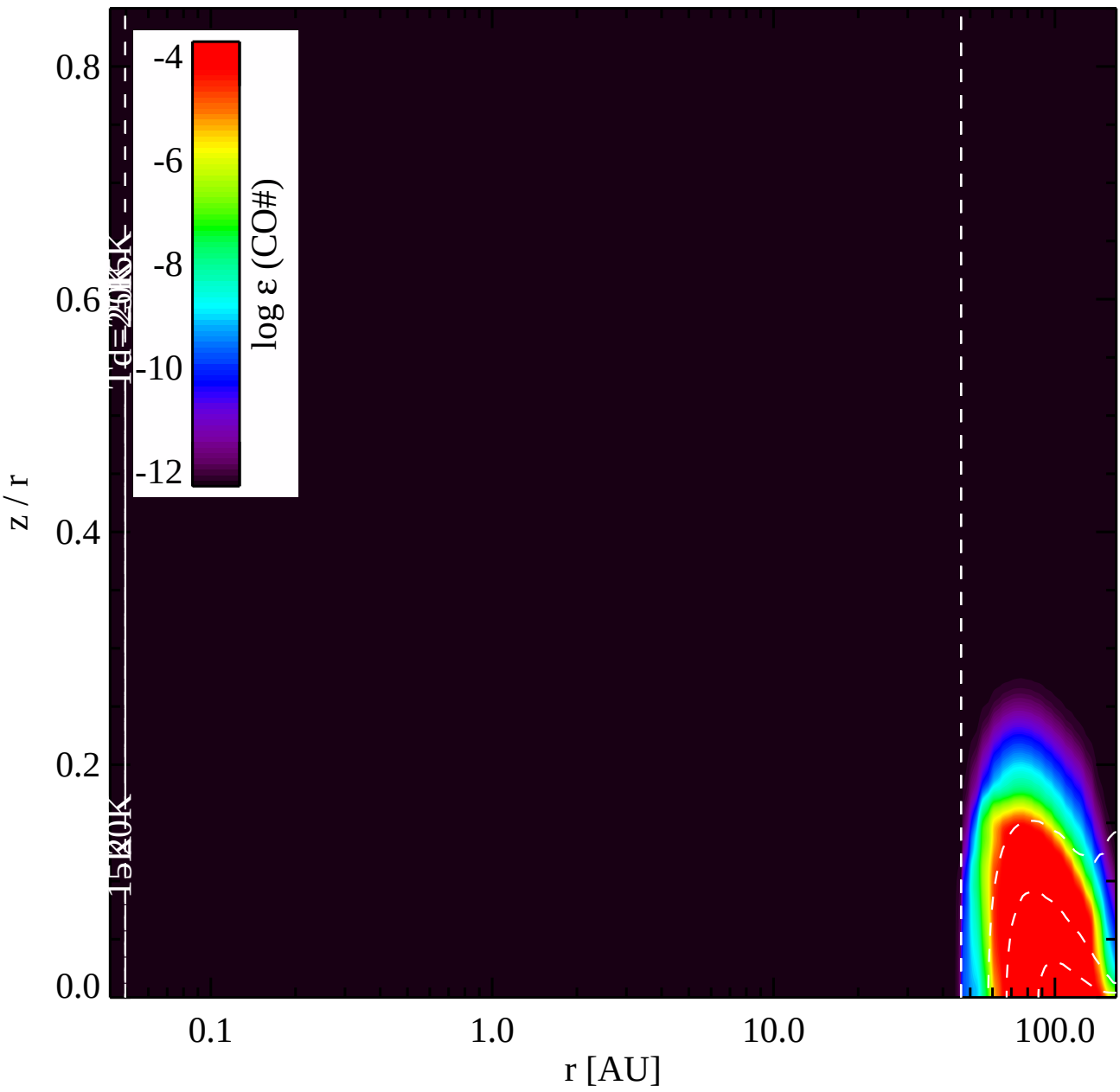

-12
-10
-8
-6
-4
log ε (HN2+)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

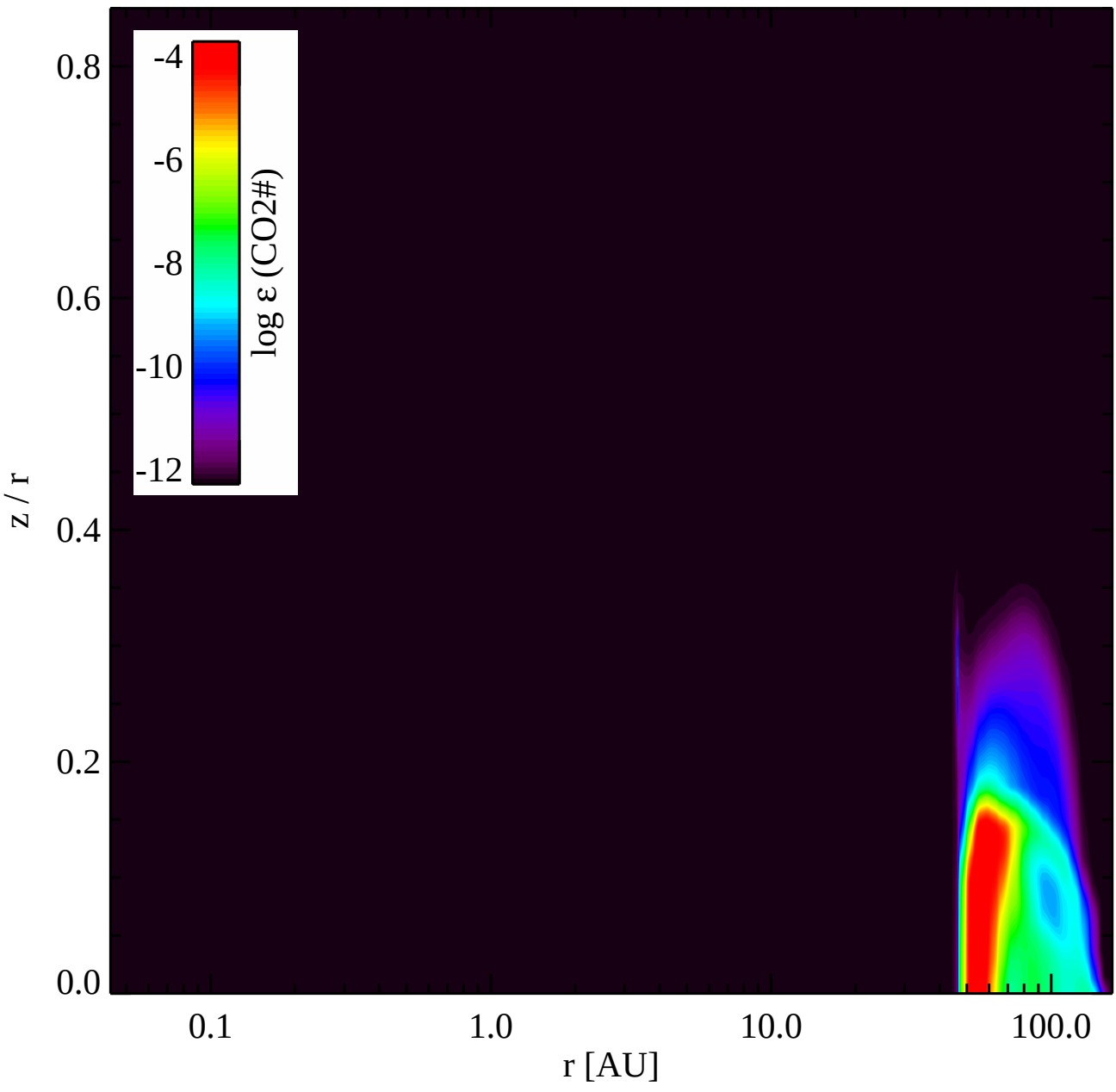

-12
-10
-8
-6
-4
log ε (CN)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

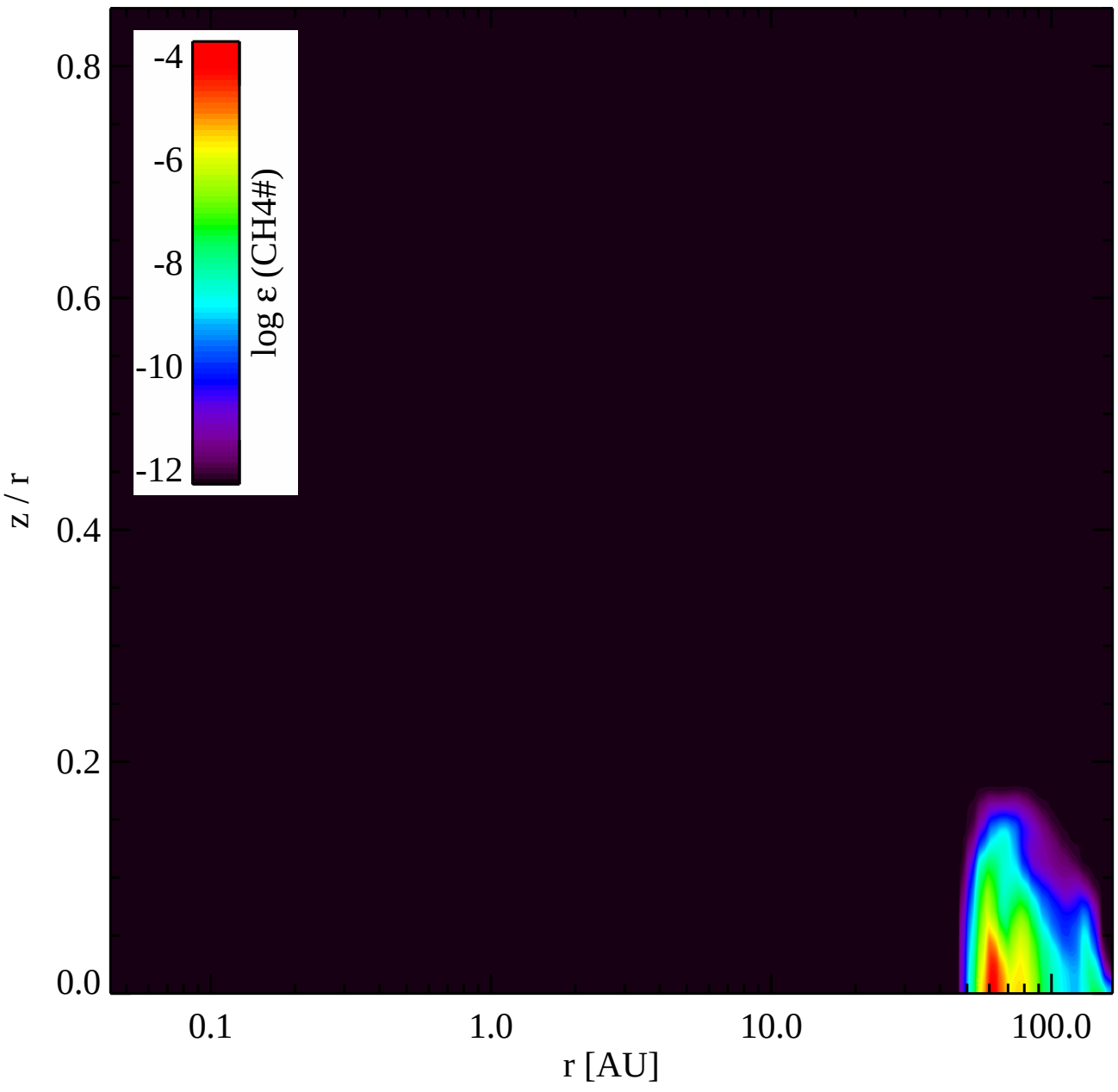

-12
-10
-8
-6
-4
log ε (HCN)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

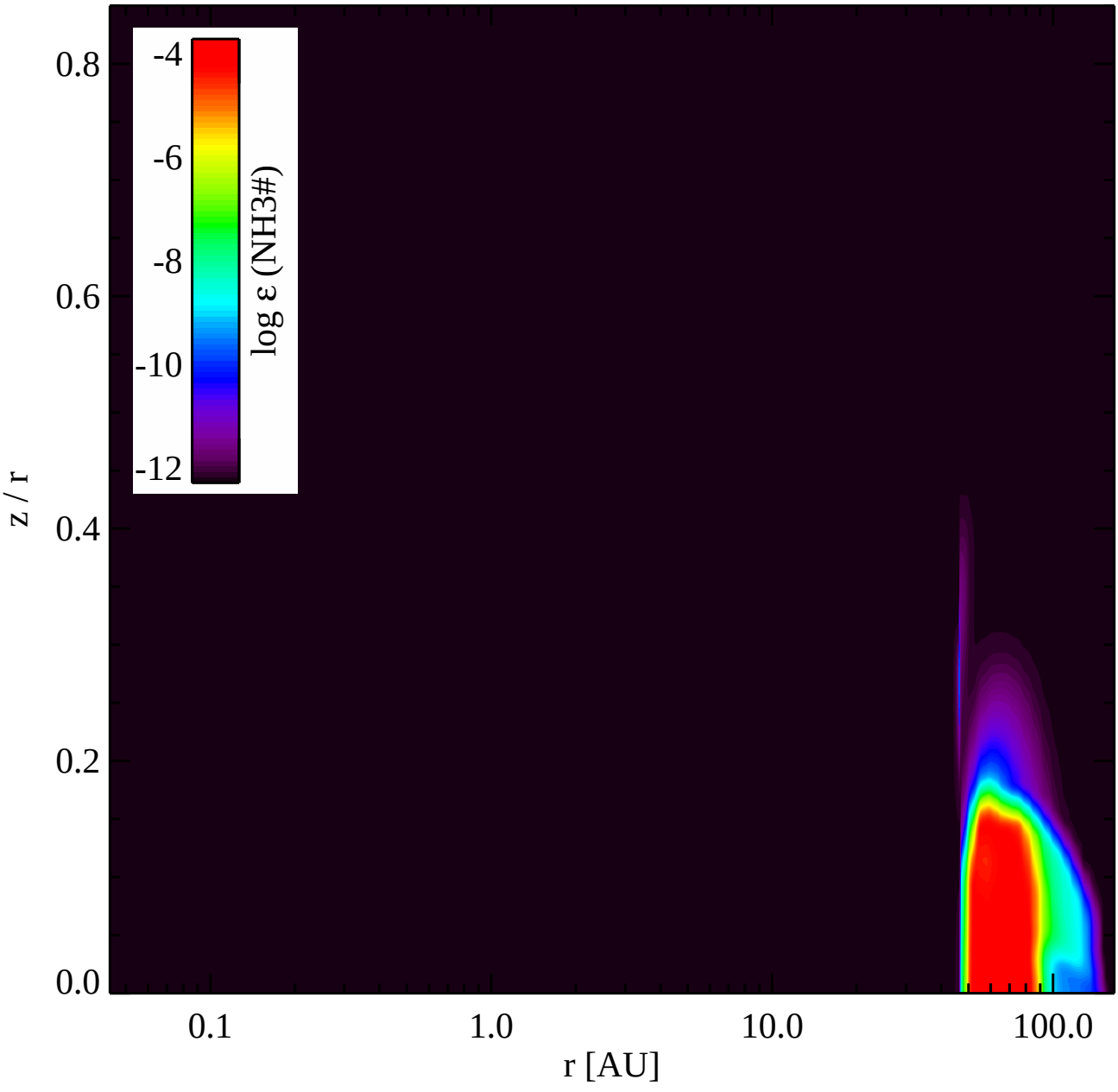

-2
-1
0
1
2
3
4
log ice layers
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

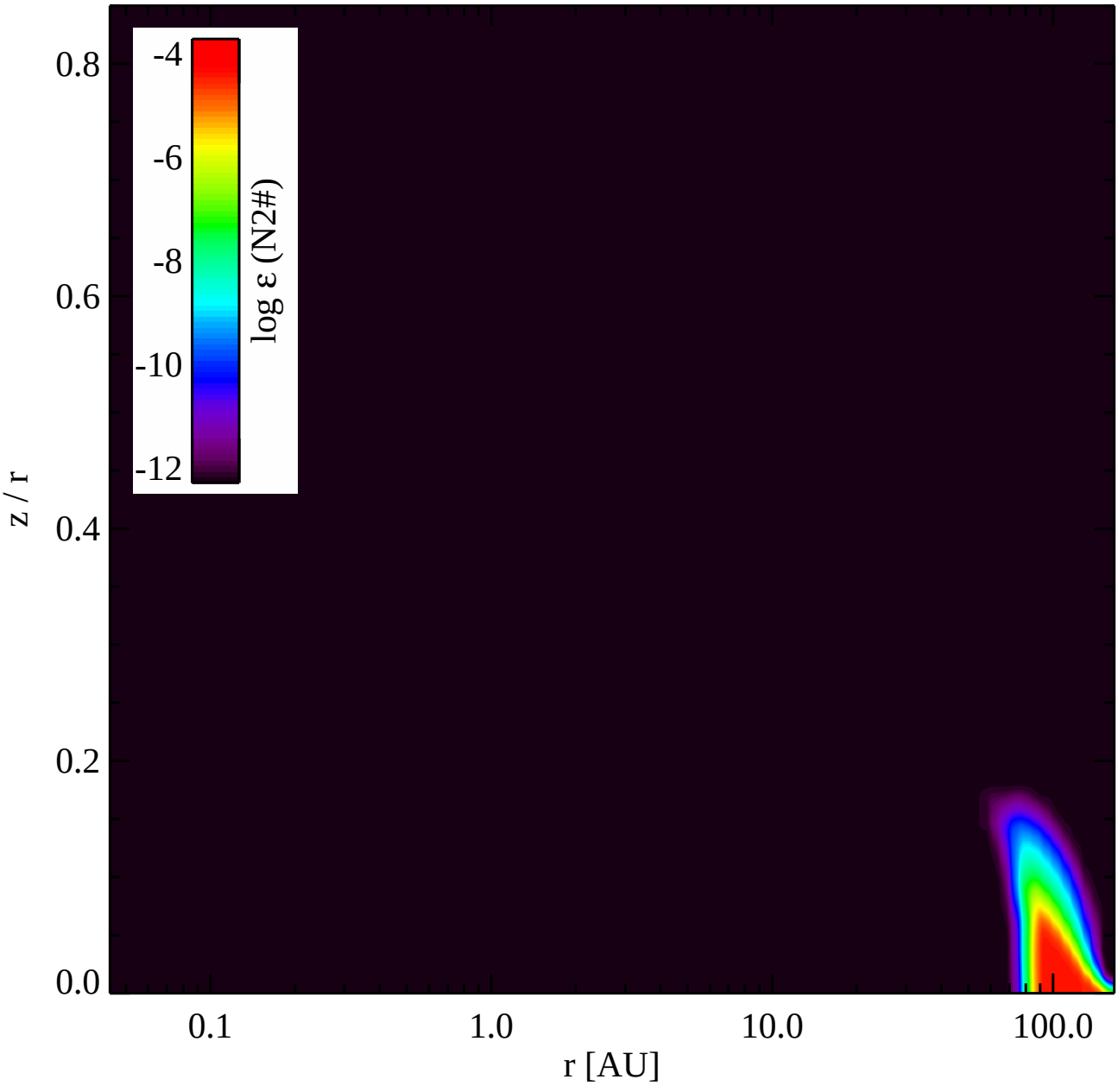

-4
-6
-8
-10
-12
log ε (H2O#)
Td=110K
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

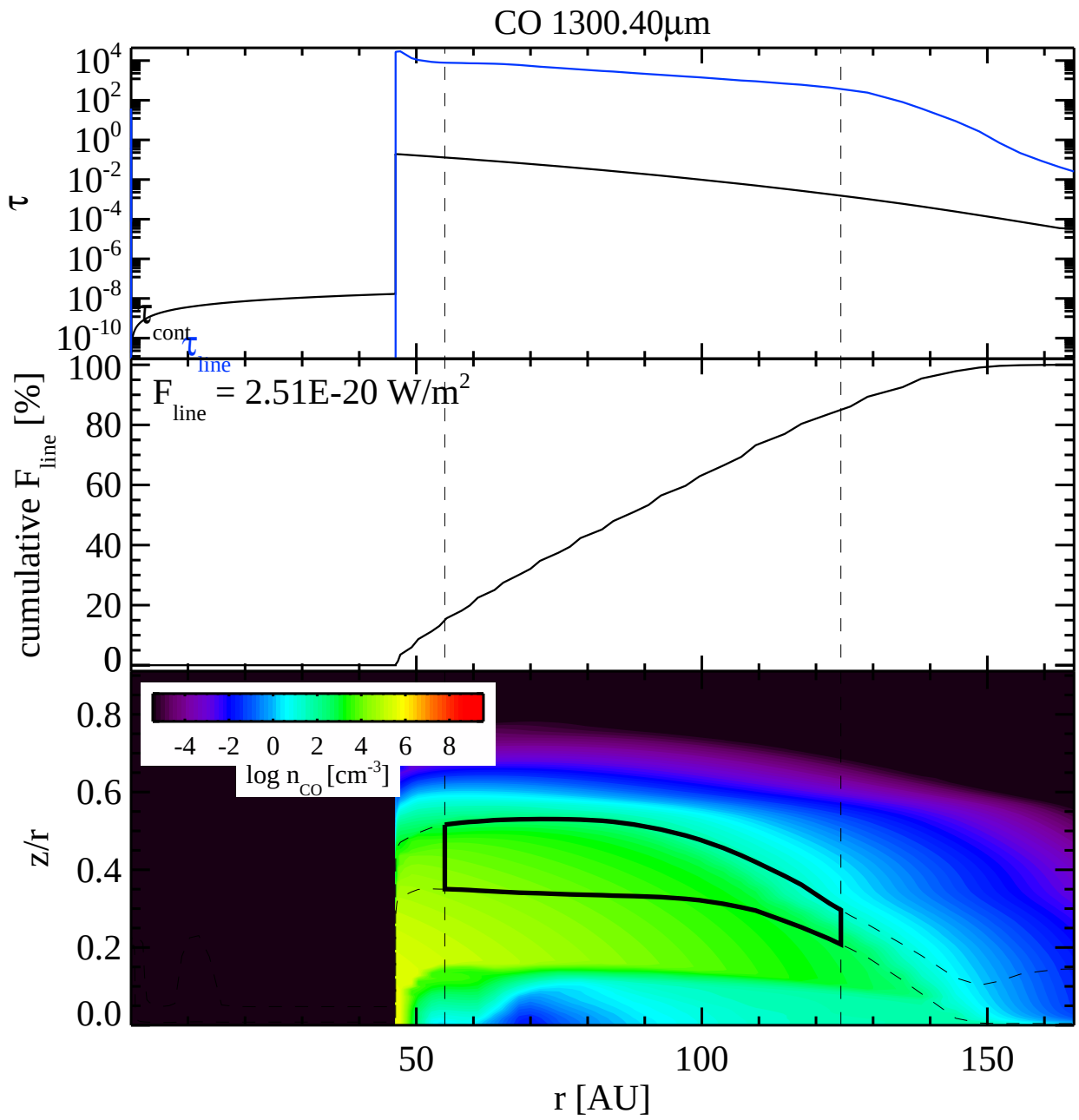

-4
-6
-8
-10
-12
log ε (CO#)
Td=20 K
150 K
0.0
0.2
0.4
0.6
0.8
z / r
0.1
1.0
10.0
100.0
r [AU]

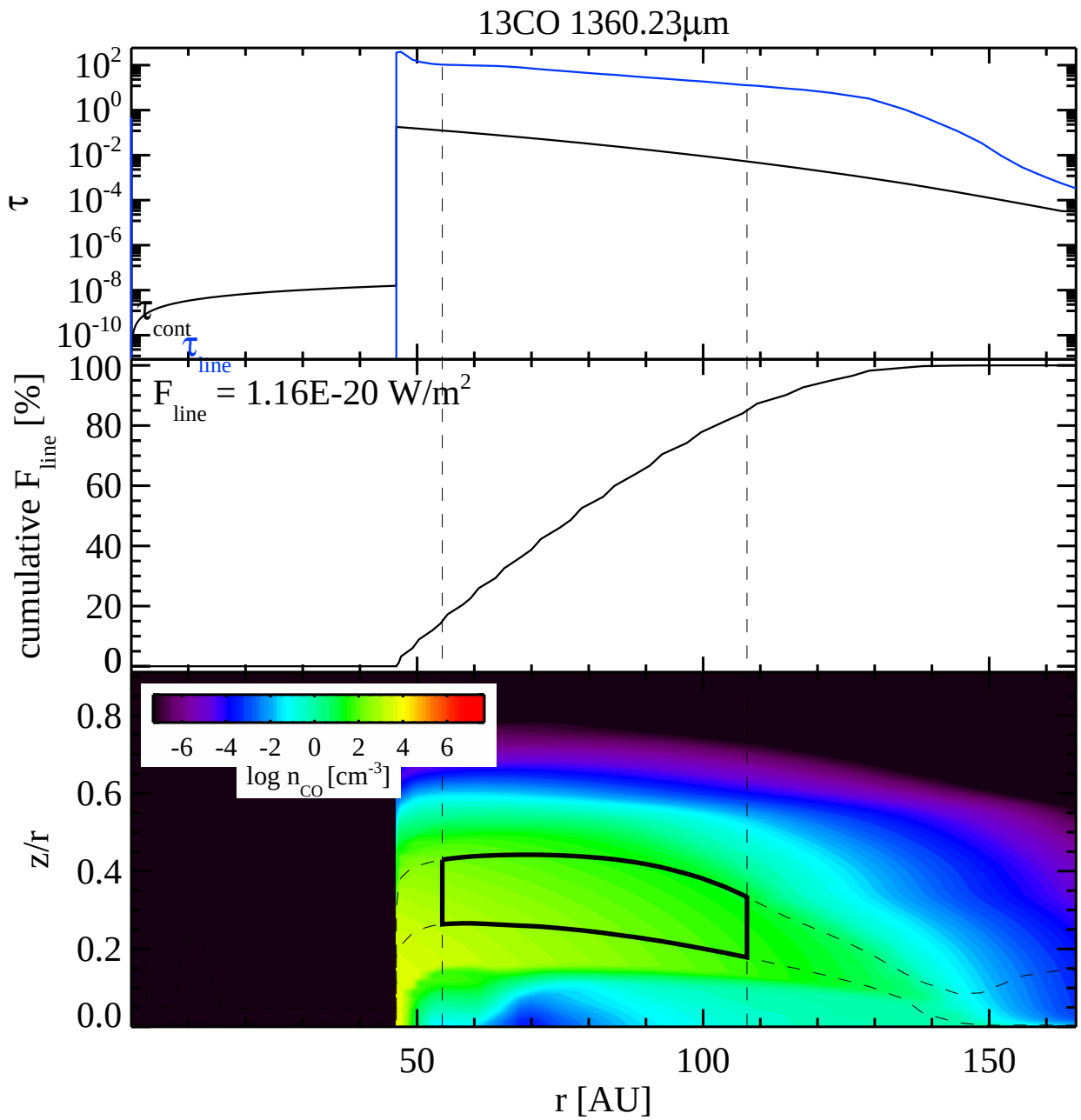

-4
-6
-8
-10
-12
log ε (CO2#)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

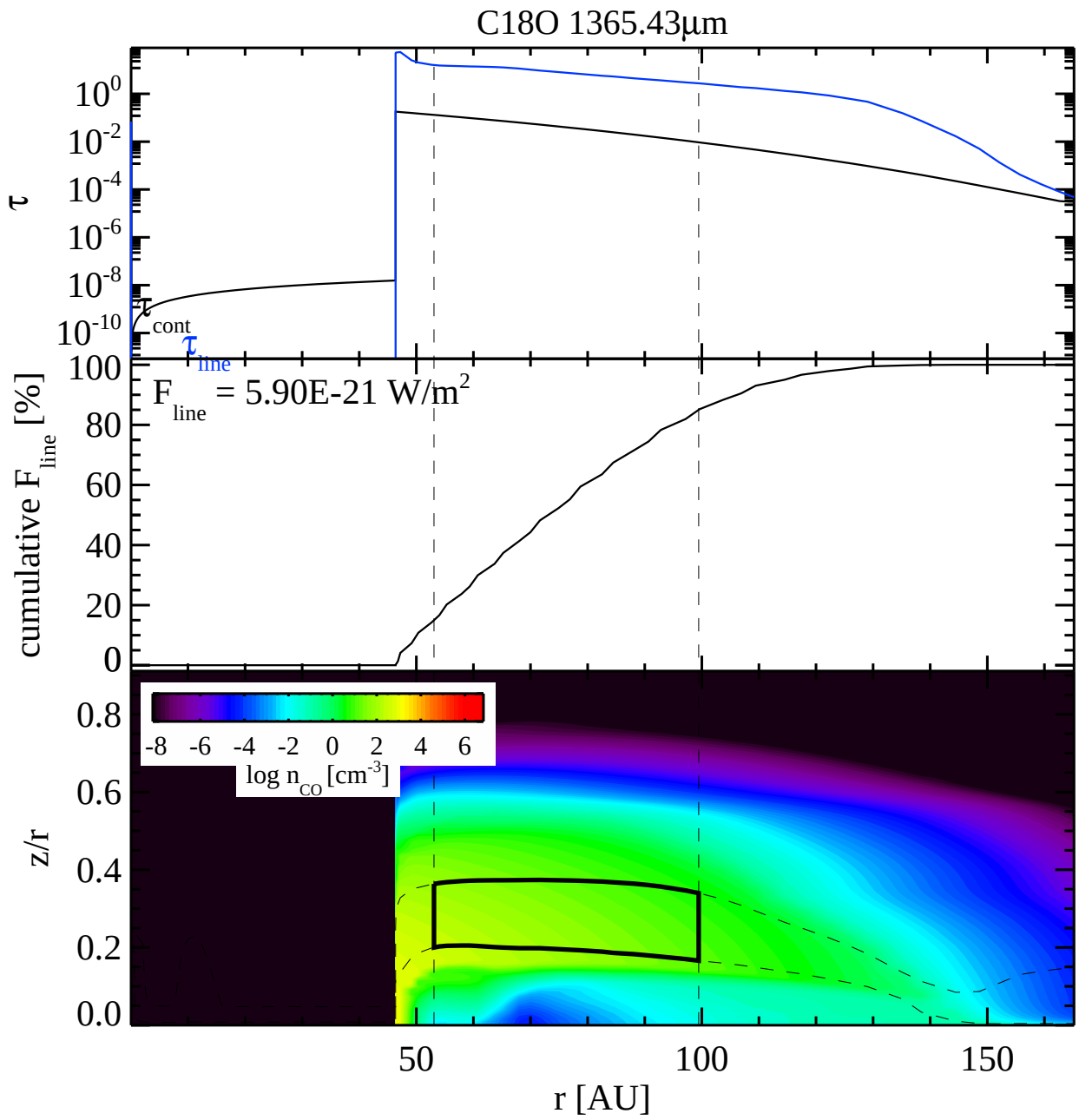

-4
-6
-8
-10
-12
log ε (CH4#)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

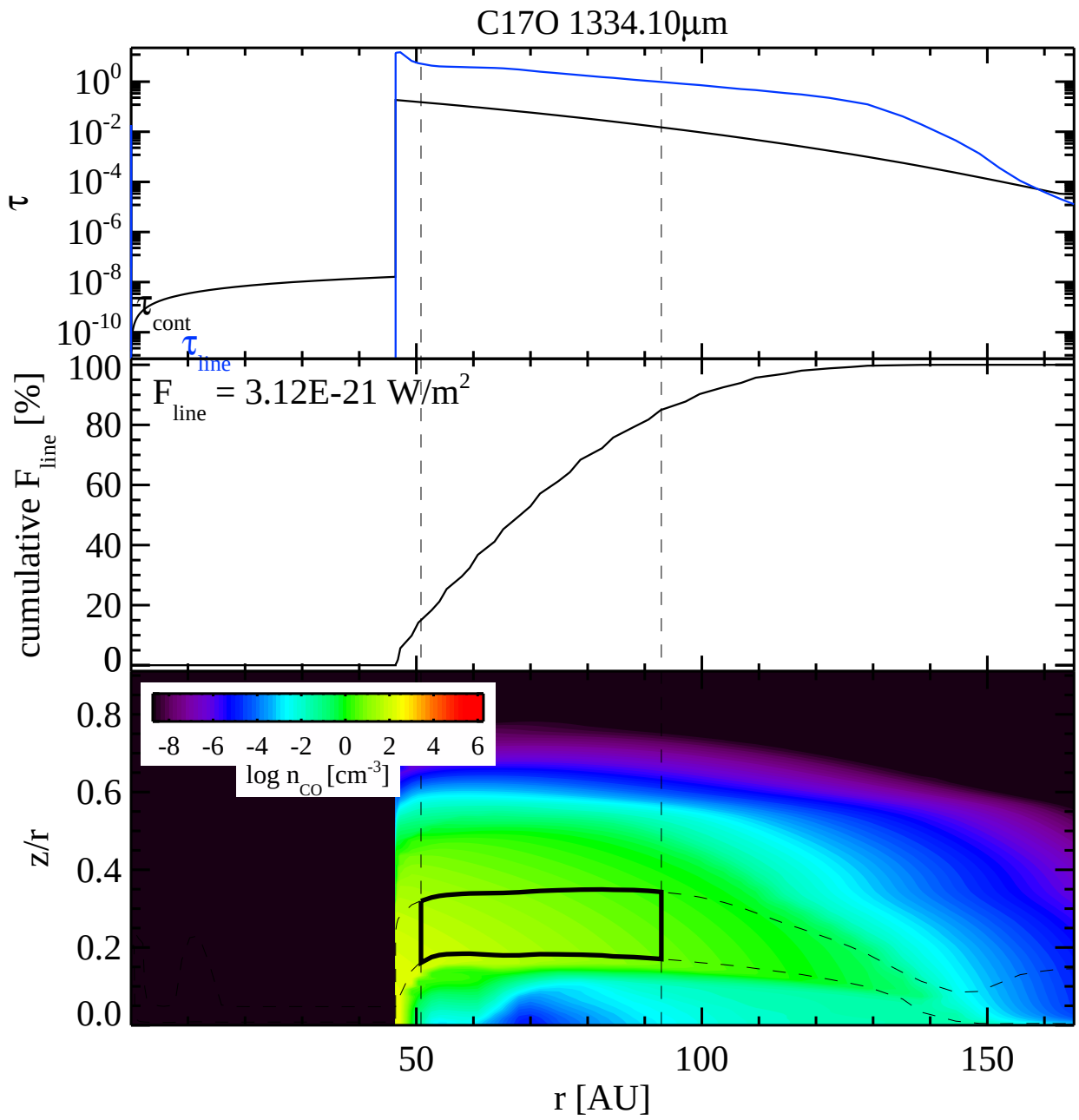

-4
-6
-8
-10
-12
log ε (NH3#)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

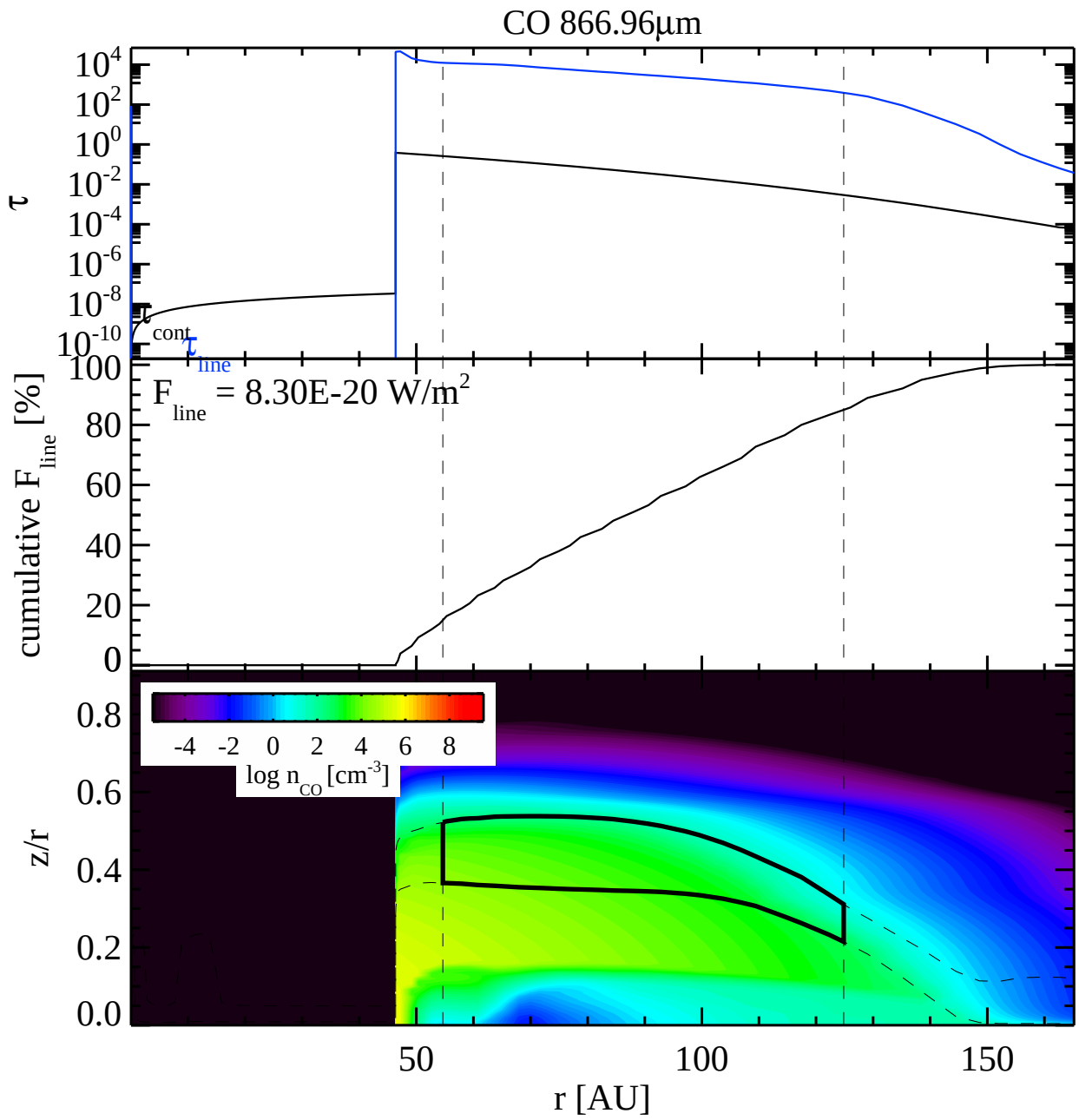

-4
-6
-8
-10
-12
log ε (N2#)
0.8
0.6
0.4
0.2
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

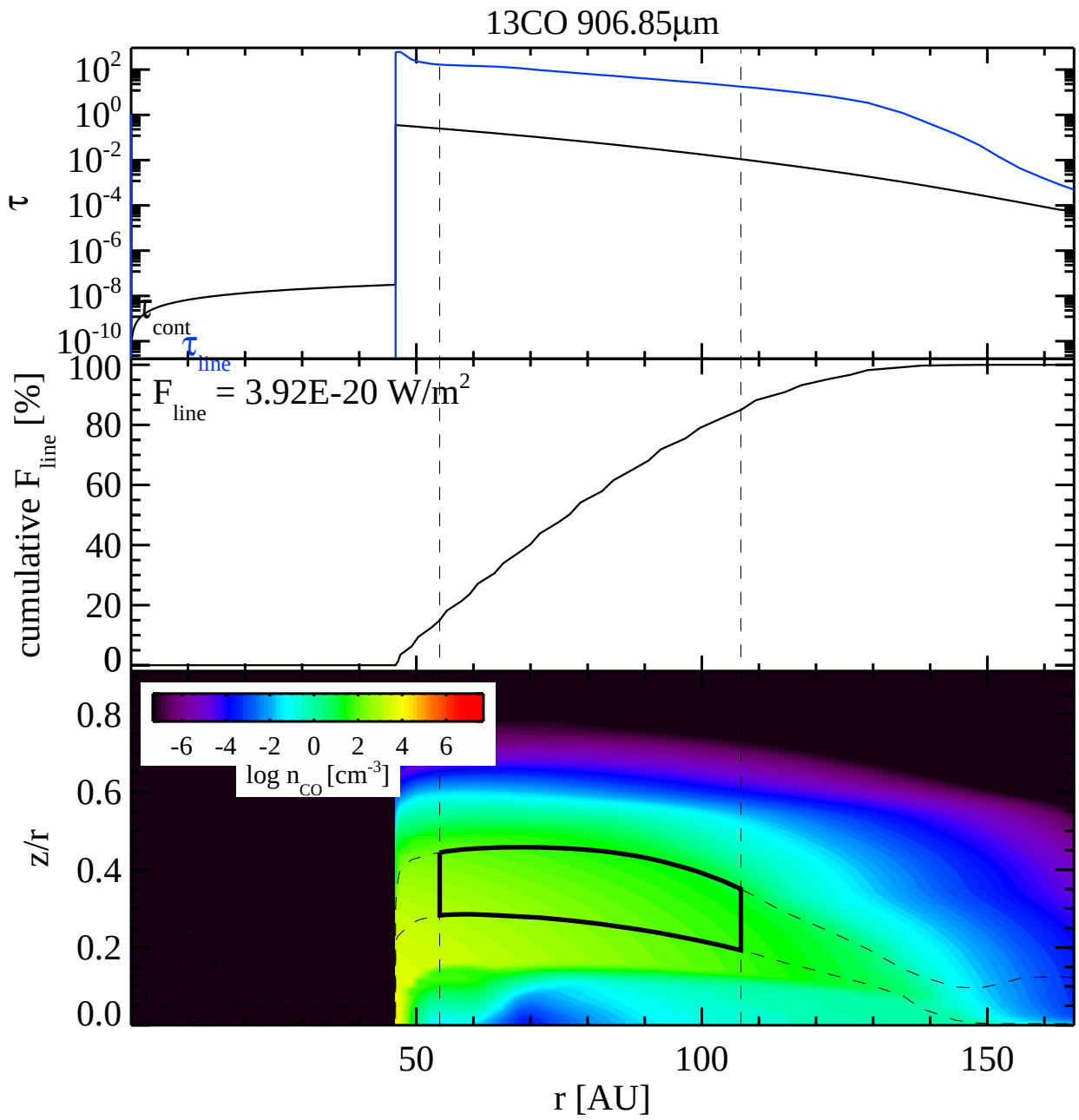

CO 1300.40µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.51E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
50
100
150
r [AU]

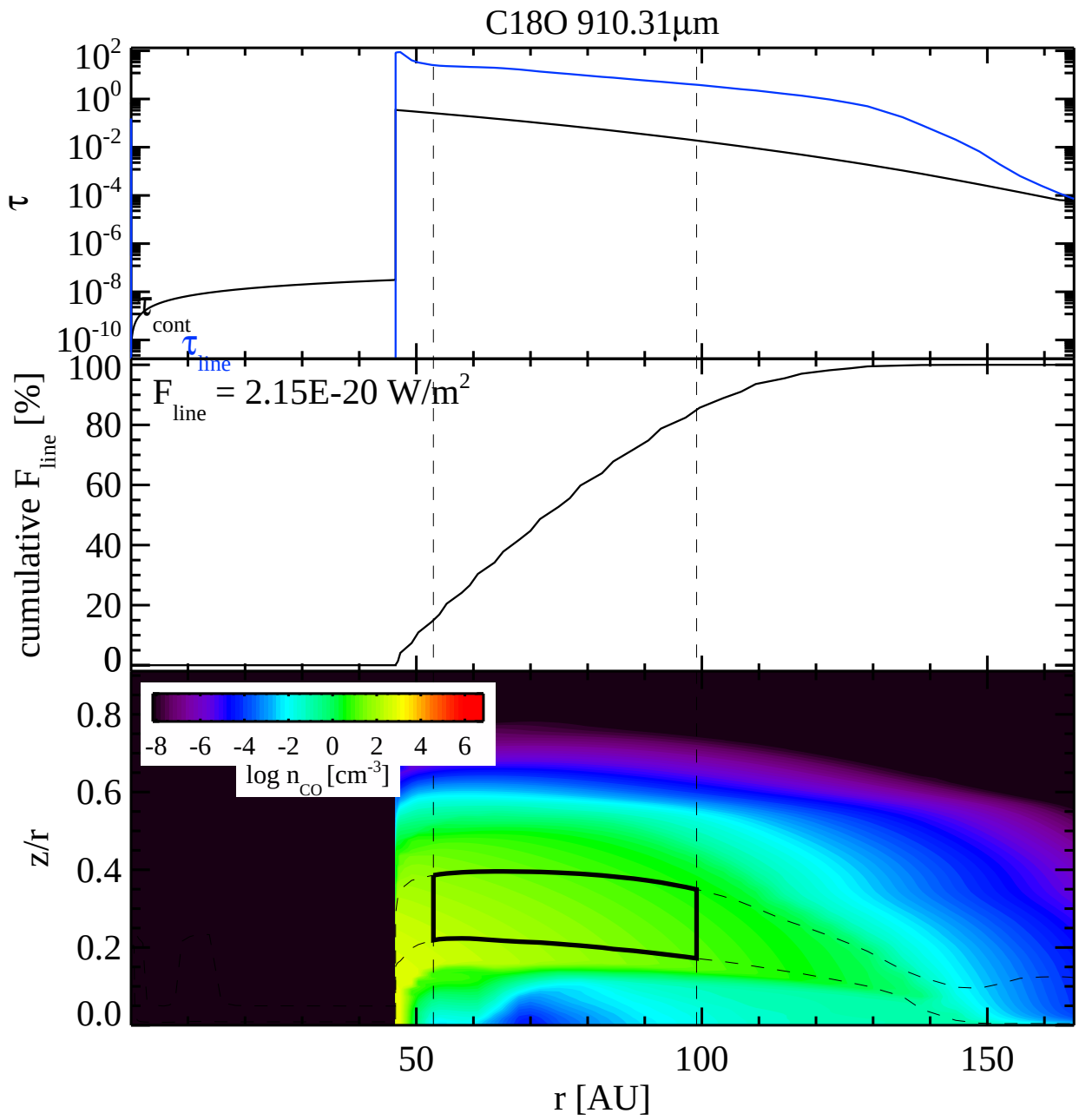

13CO 1360.23µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.16E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
50
100
150
r [AU]

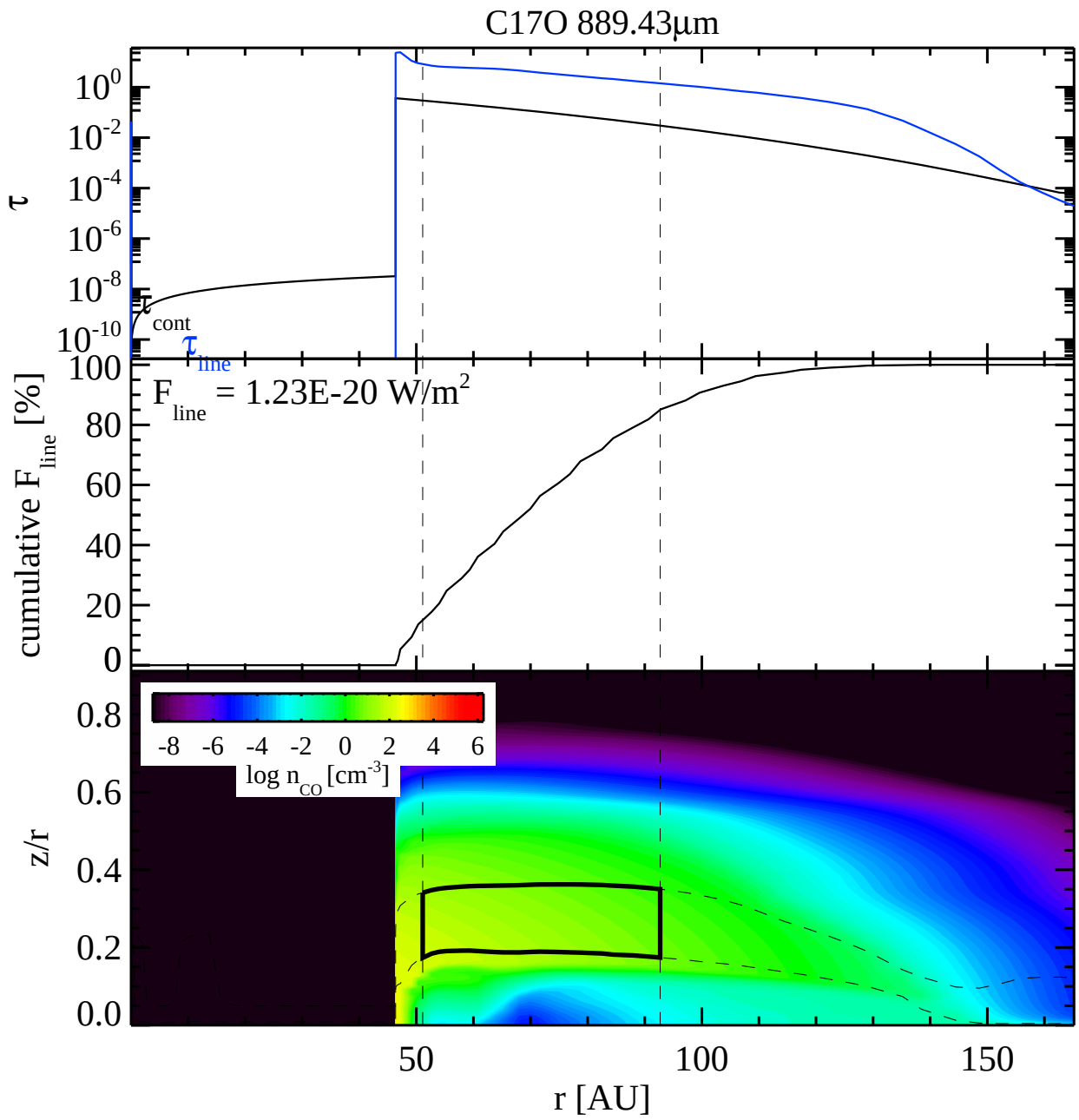

C18O 1365.43µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.90E-21 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

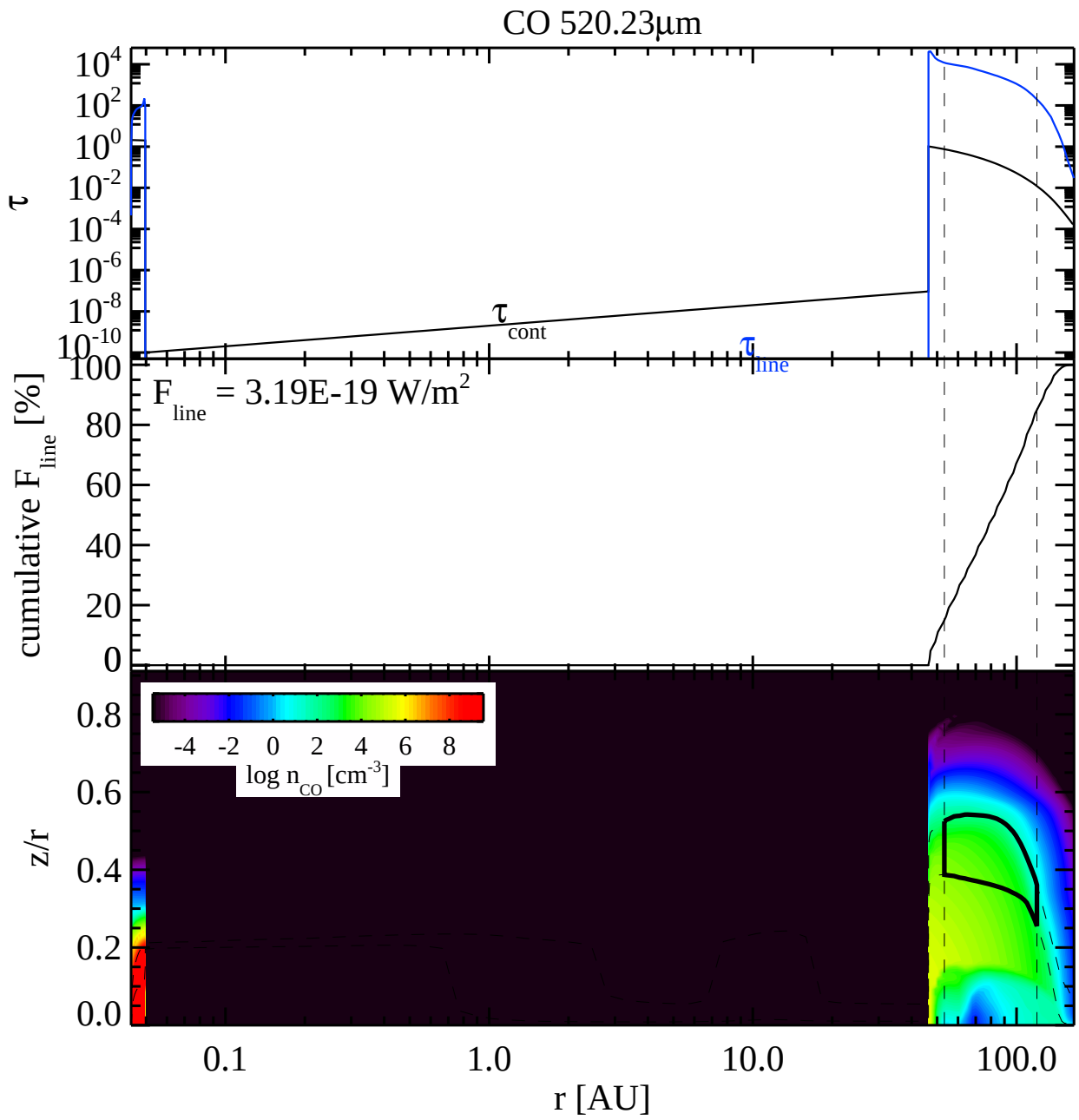

C17O 1334.10µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.12E-21 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

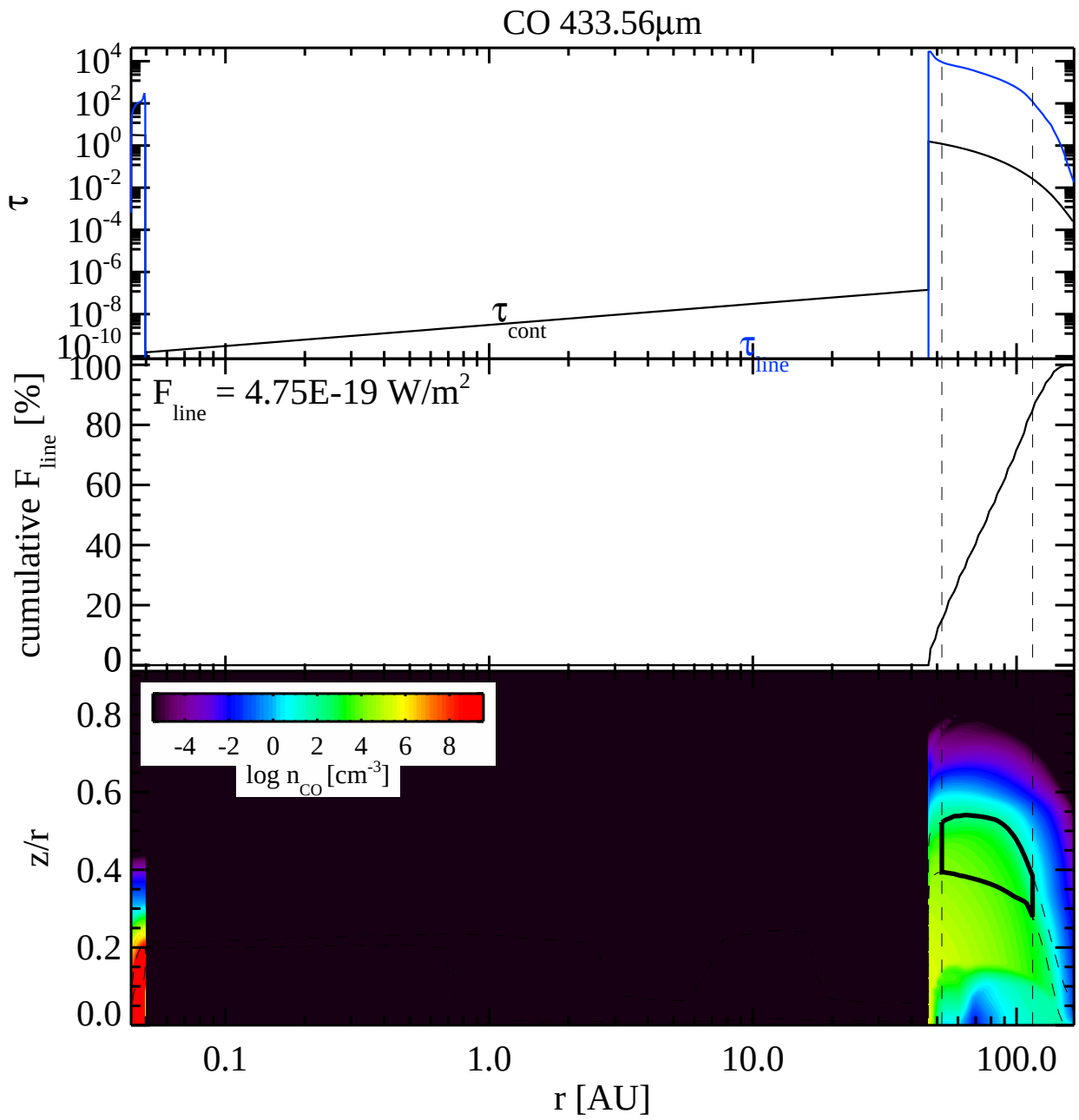

CO 866.96µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.30E-20 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

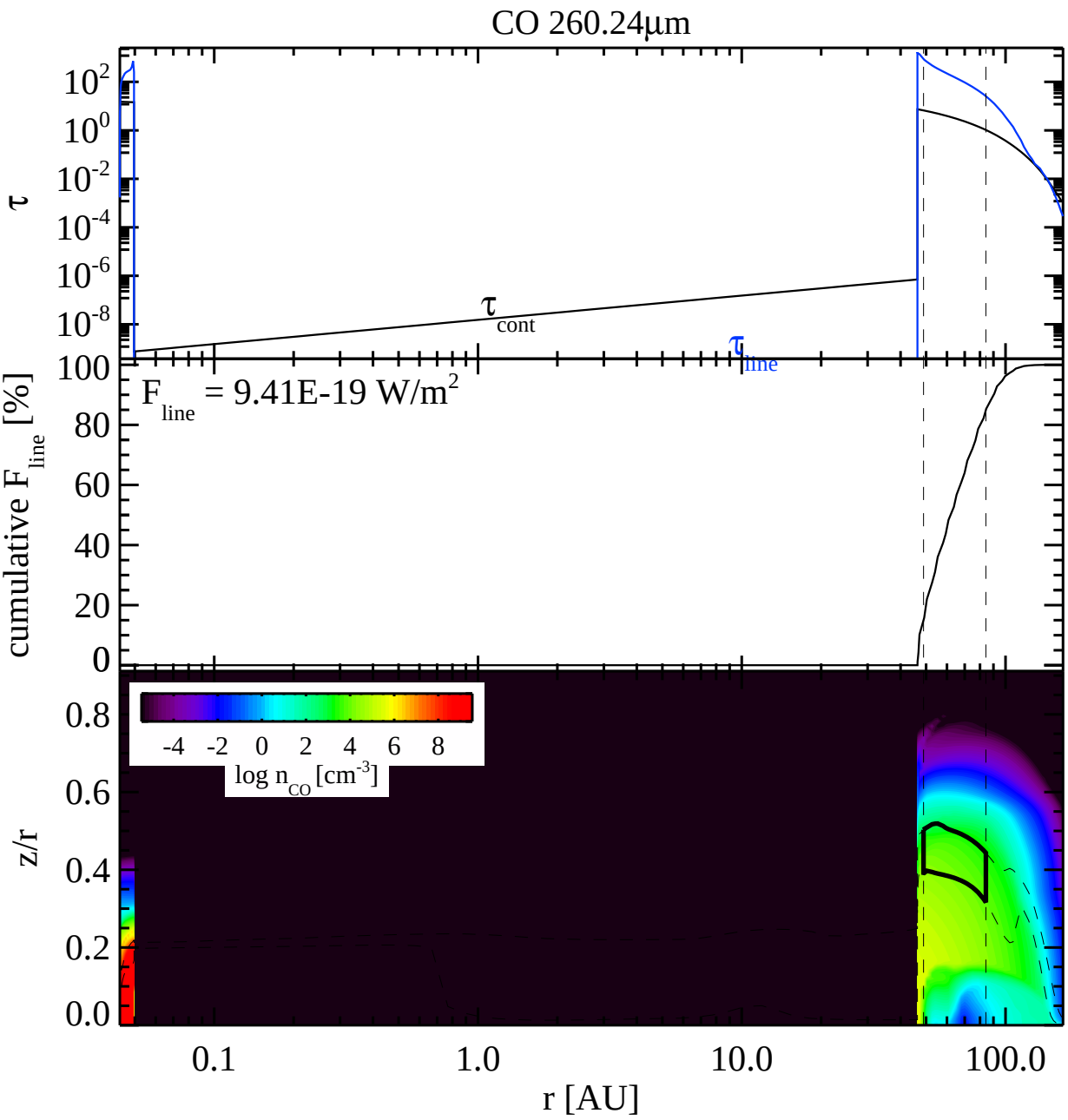

13CO 906.85µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.92E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
50
100
150
r [AU]

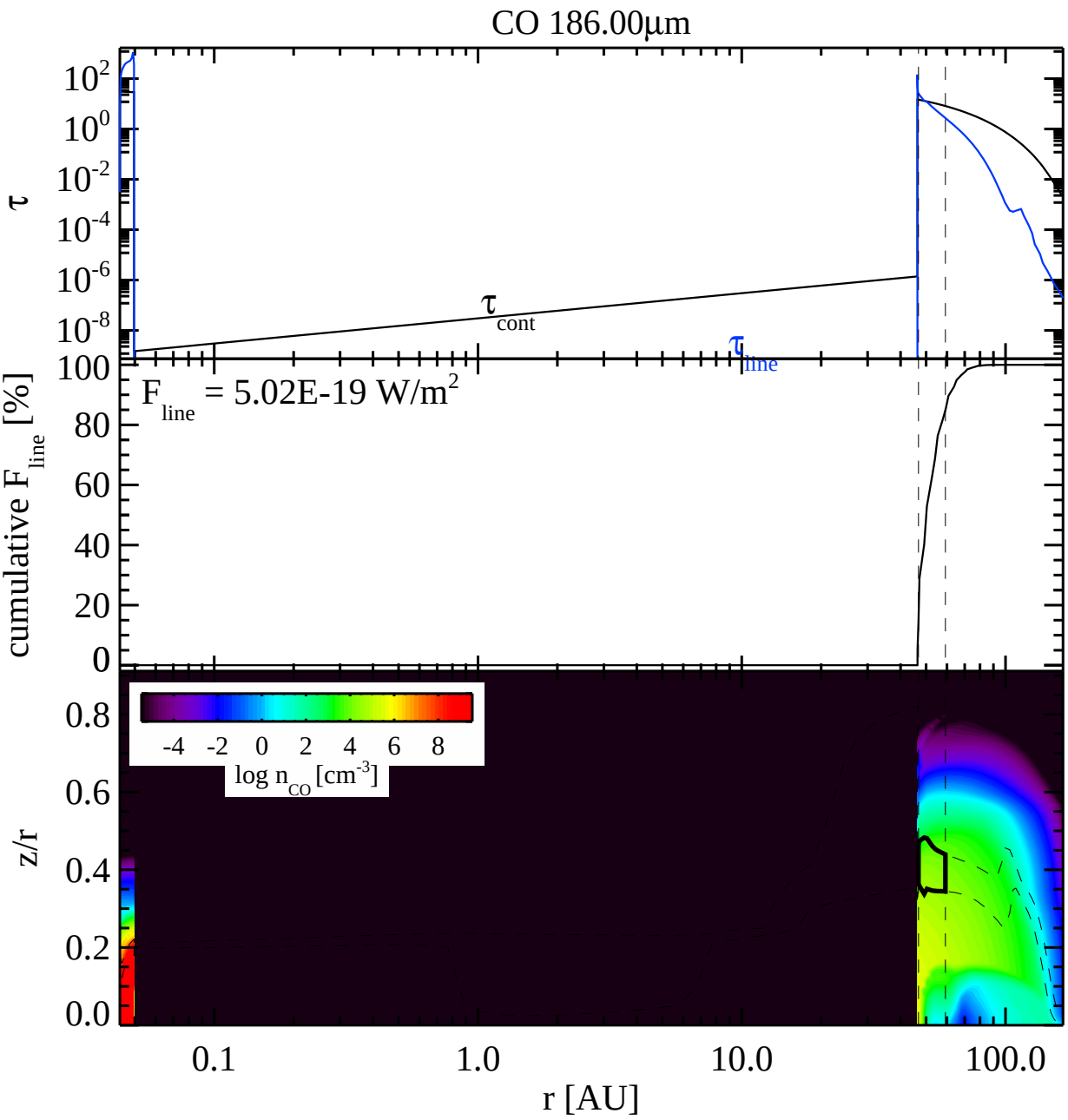

C18O 910.31µm
τ
cont
τ line
cumulative F line [%]
F line = 2.15E-20 W/m2
log n CO [cm-3]
z/r
r [AU]

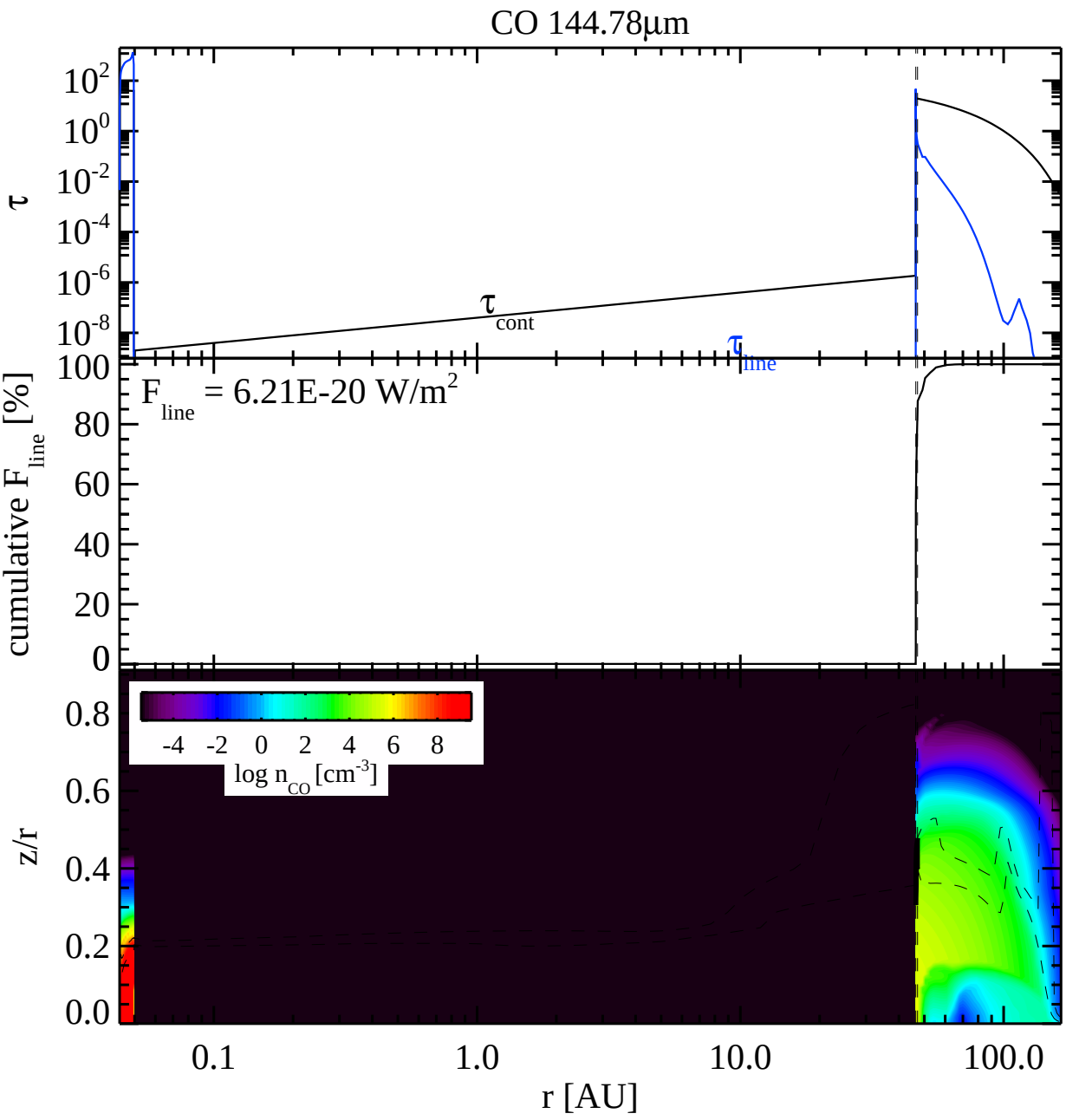

C17O 889.43µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.23E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
50
100
150
r [AU]

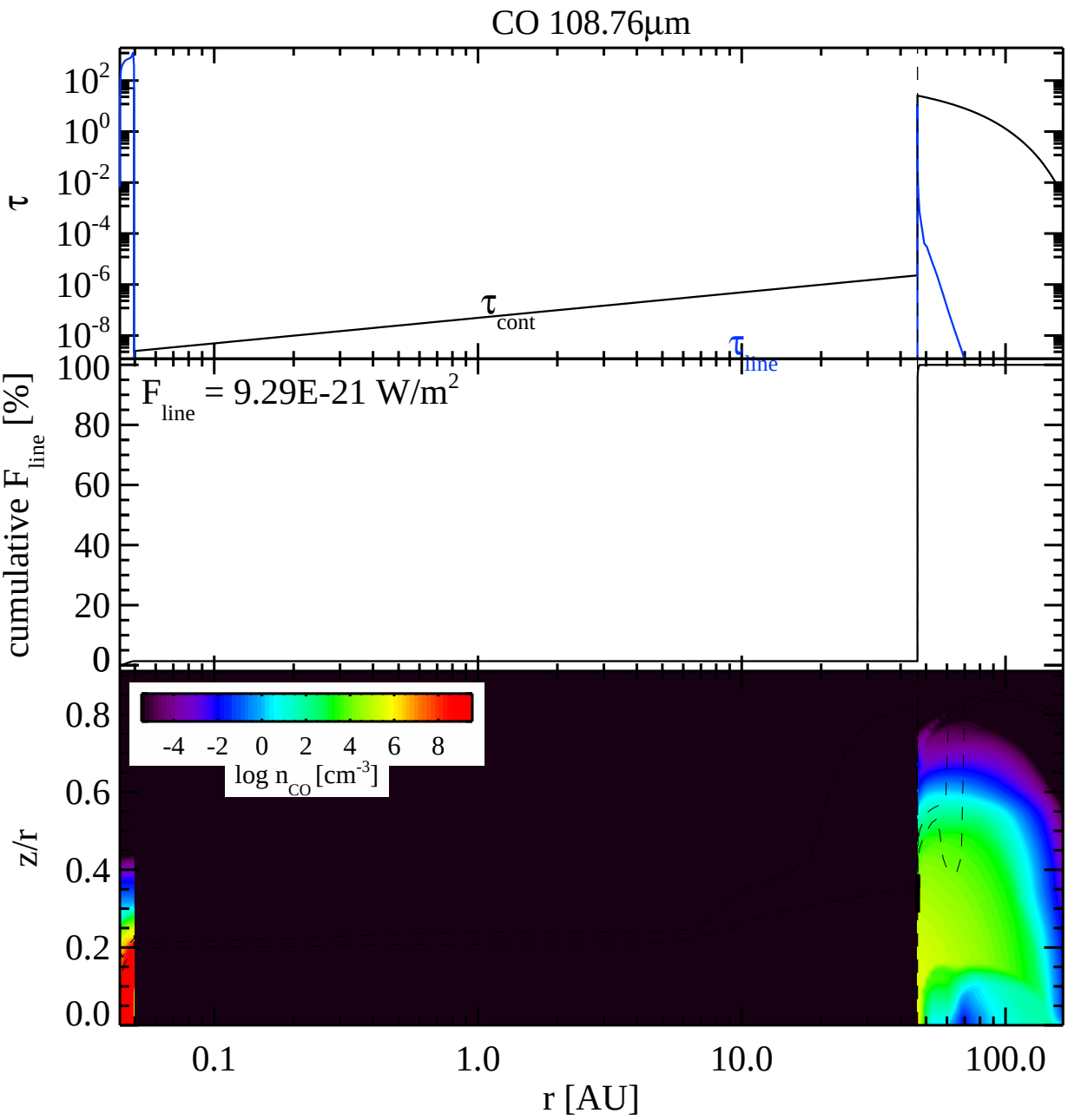

CO 520.23µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.19E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

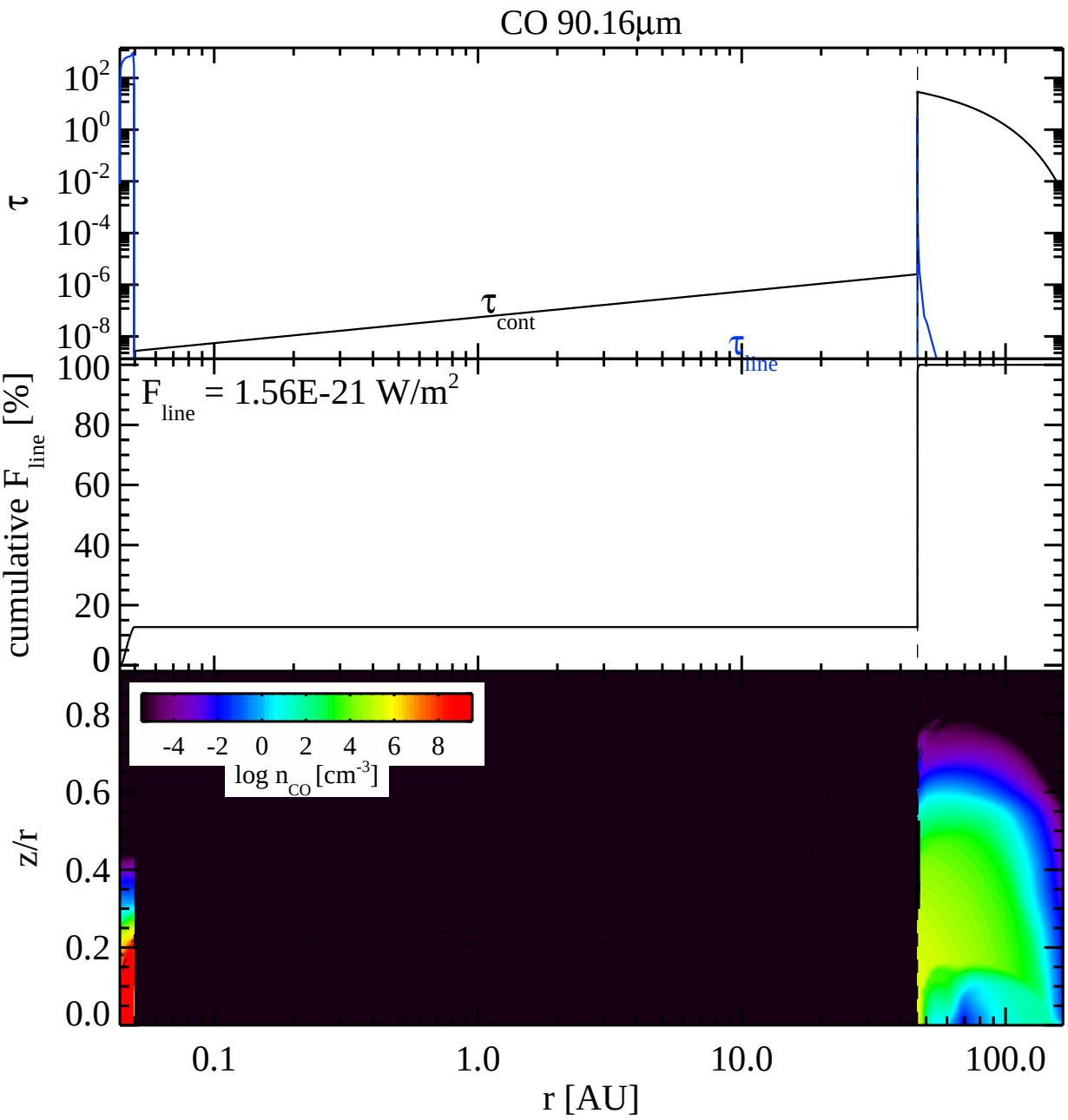

CO 433.56µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
F_{line} = 4.75E-19 W/m^2
cumulative F_{line} [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

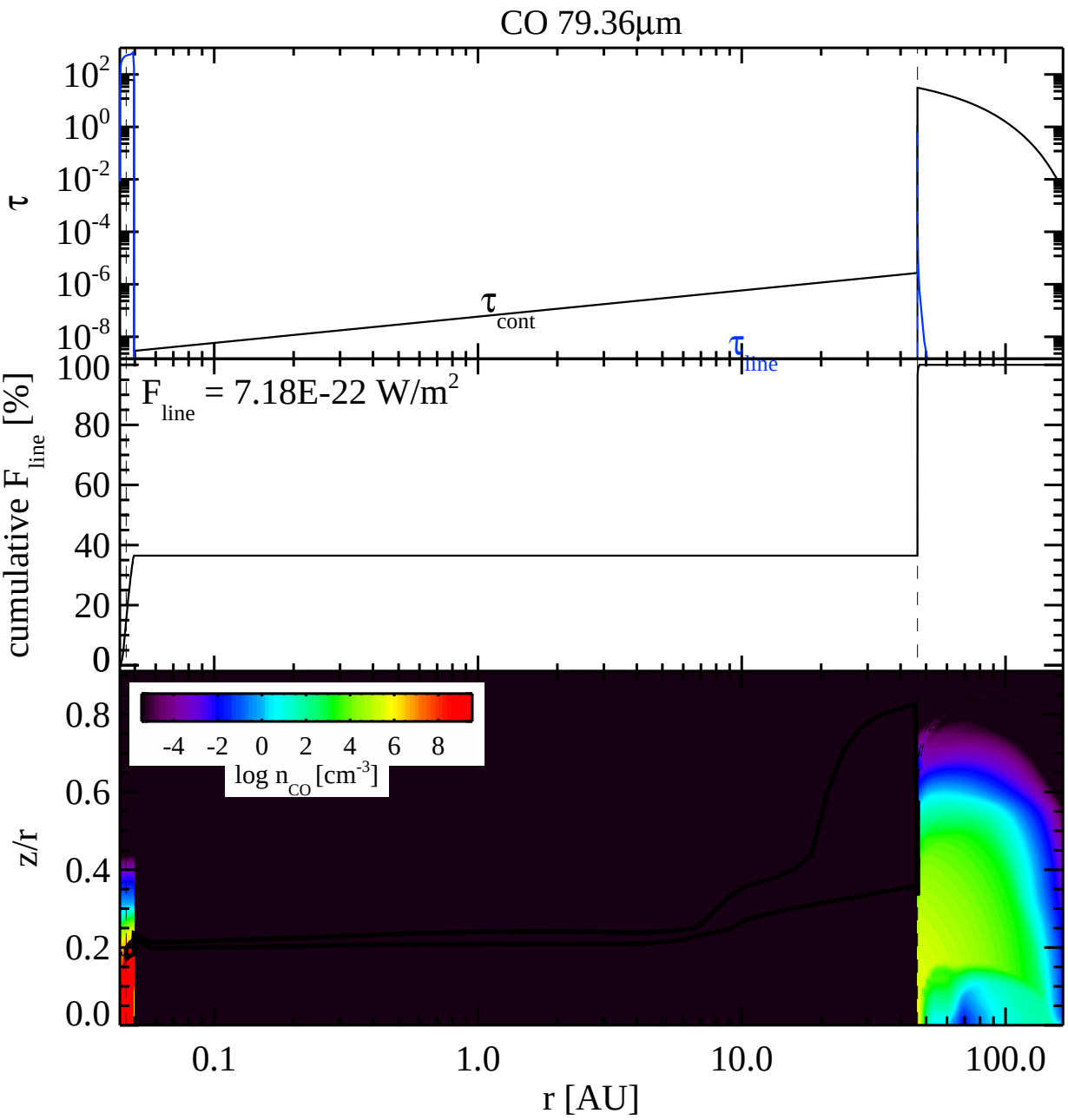

CO 260.24μm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 9.41E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

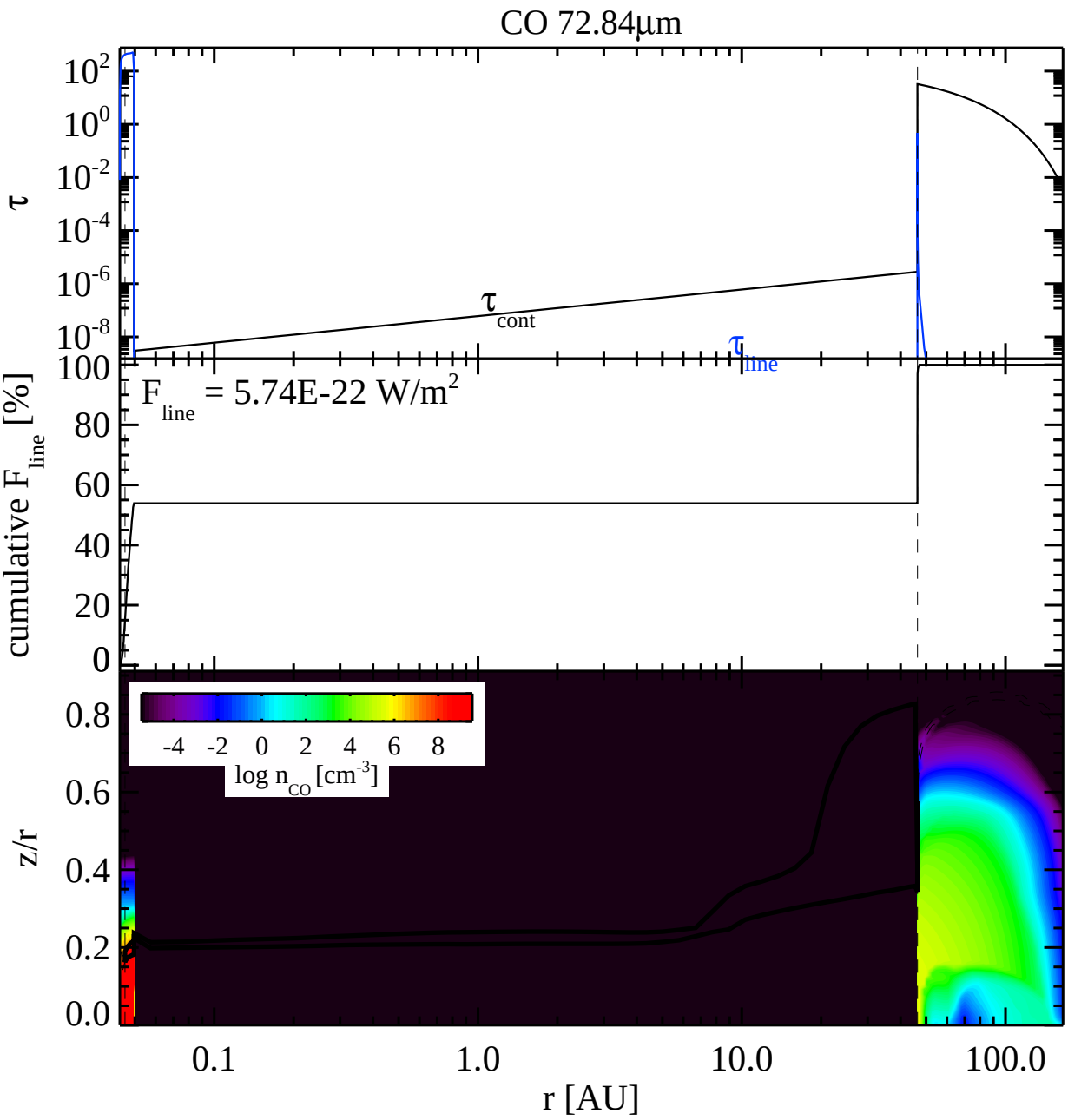

CO 186.00µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.02E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

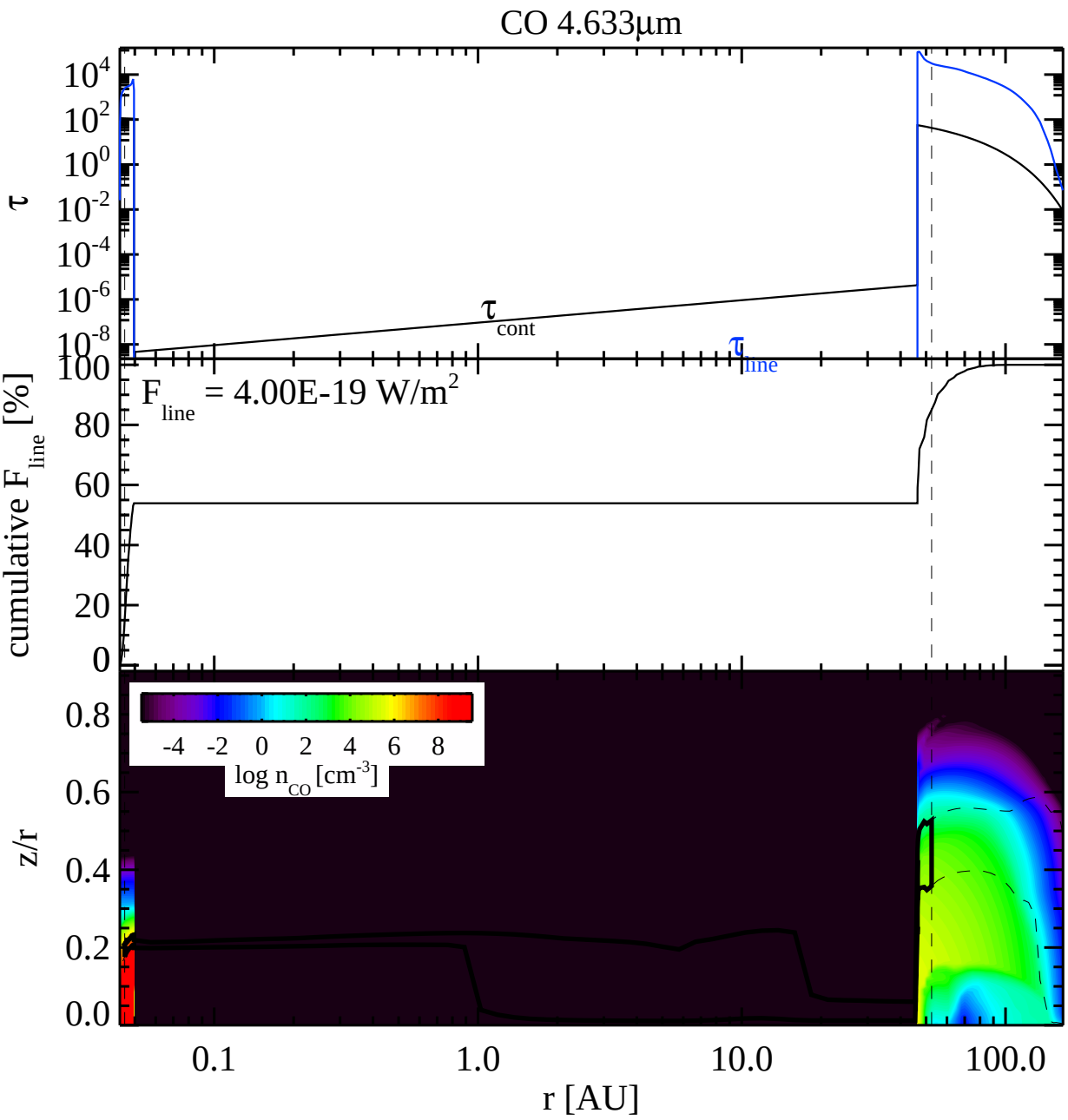

CO 144.78μm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 6.21E-20 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

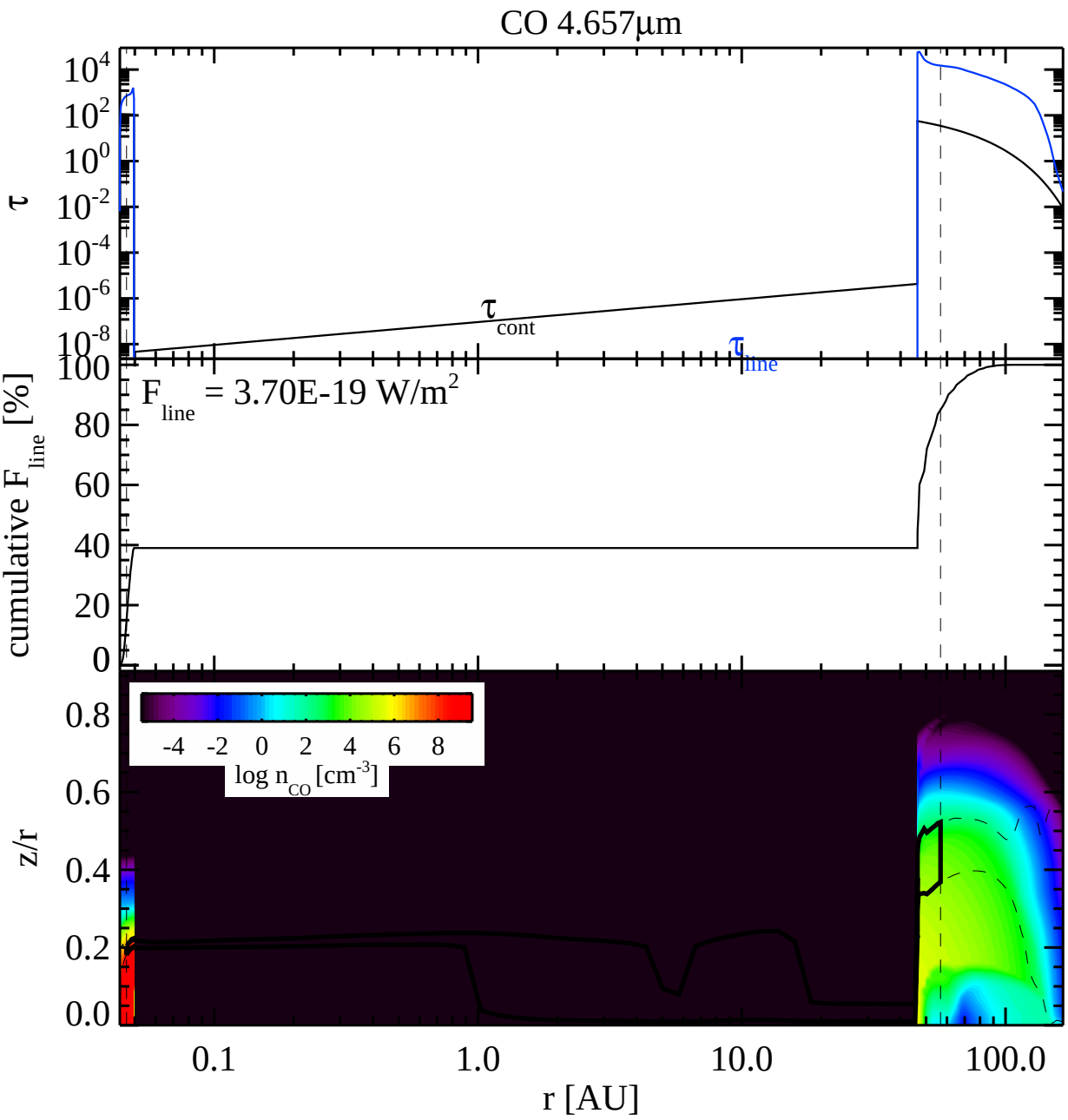

CO 108.76µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 9.29E-21 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

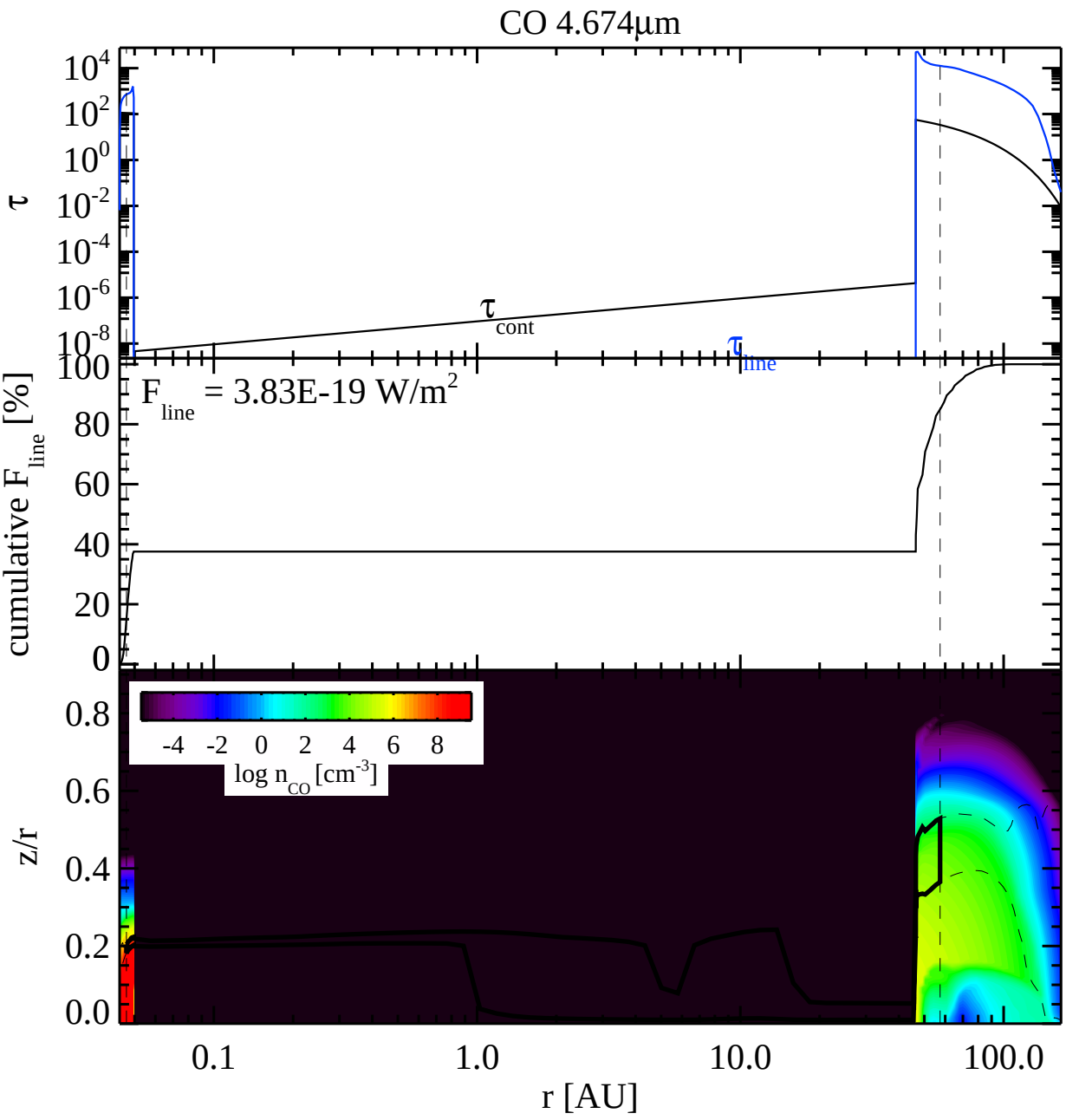

CO 90.16µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.56E-21 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

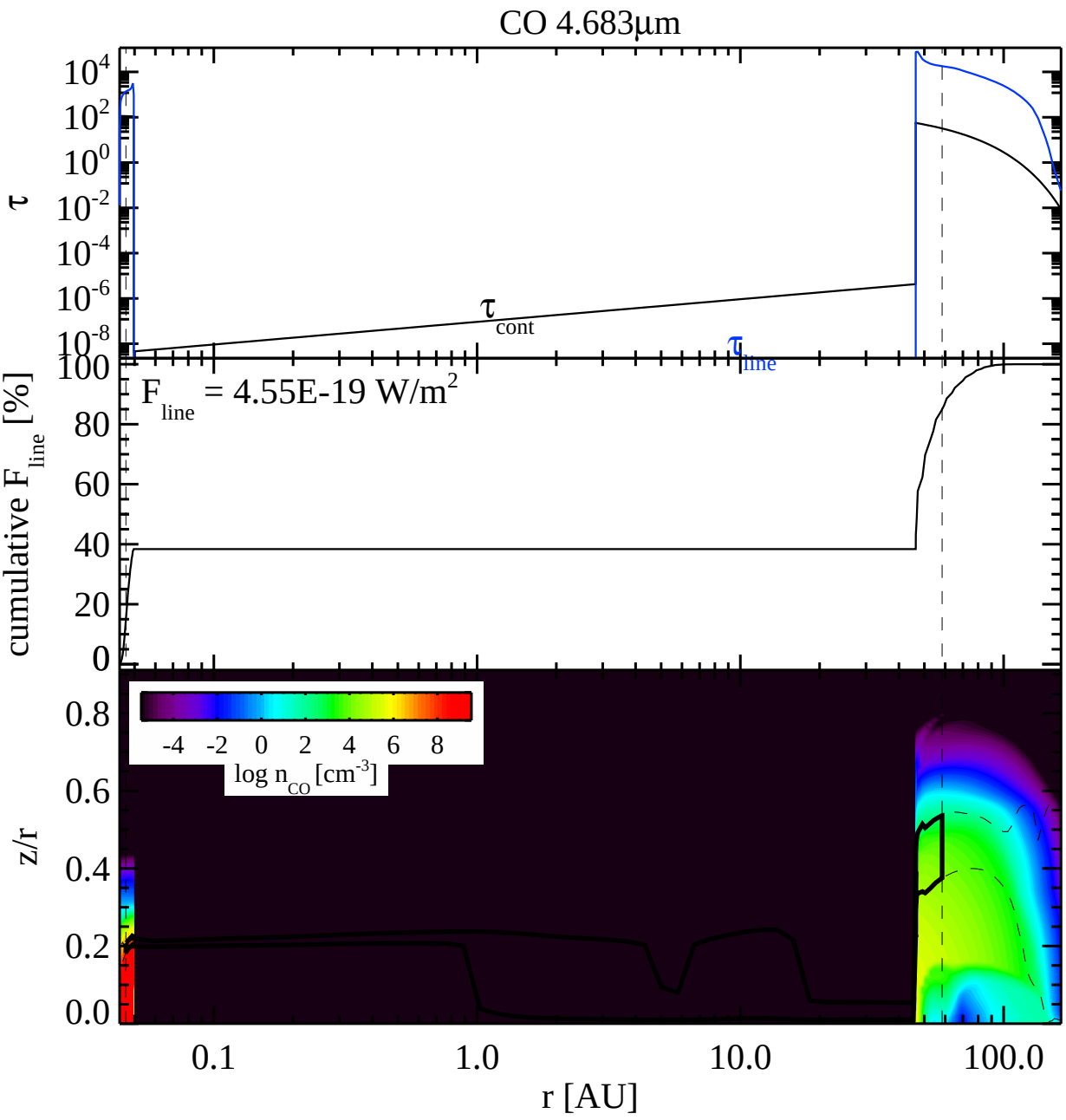

CO 79.36µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 7.18E-22 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

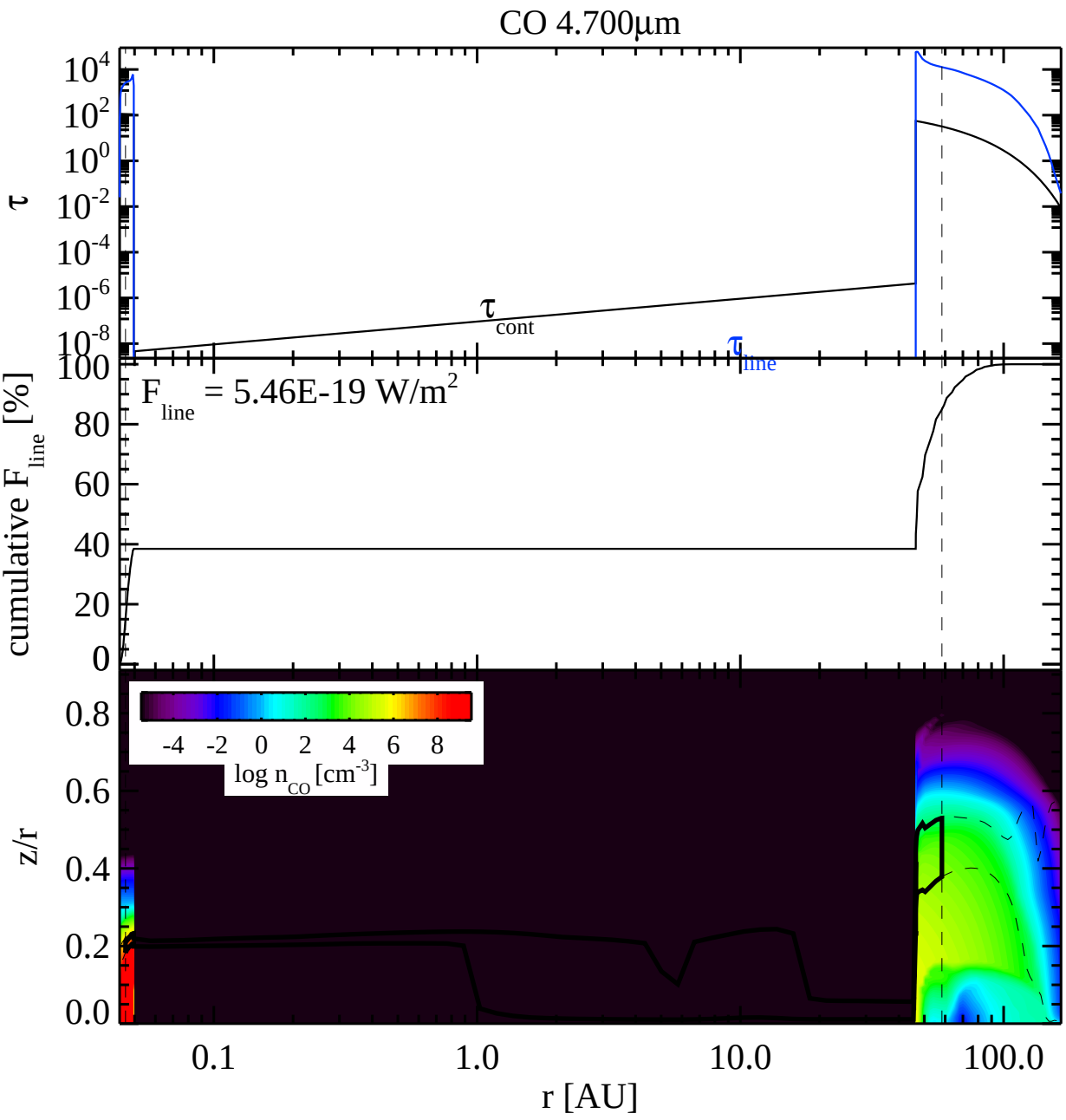

CO 72.84μm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.74E-22 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

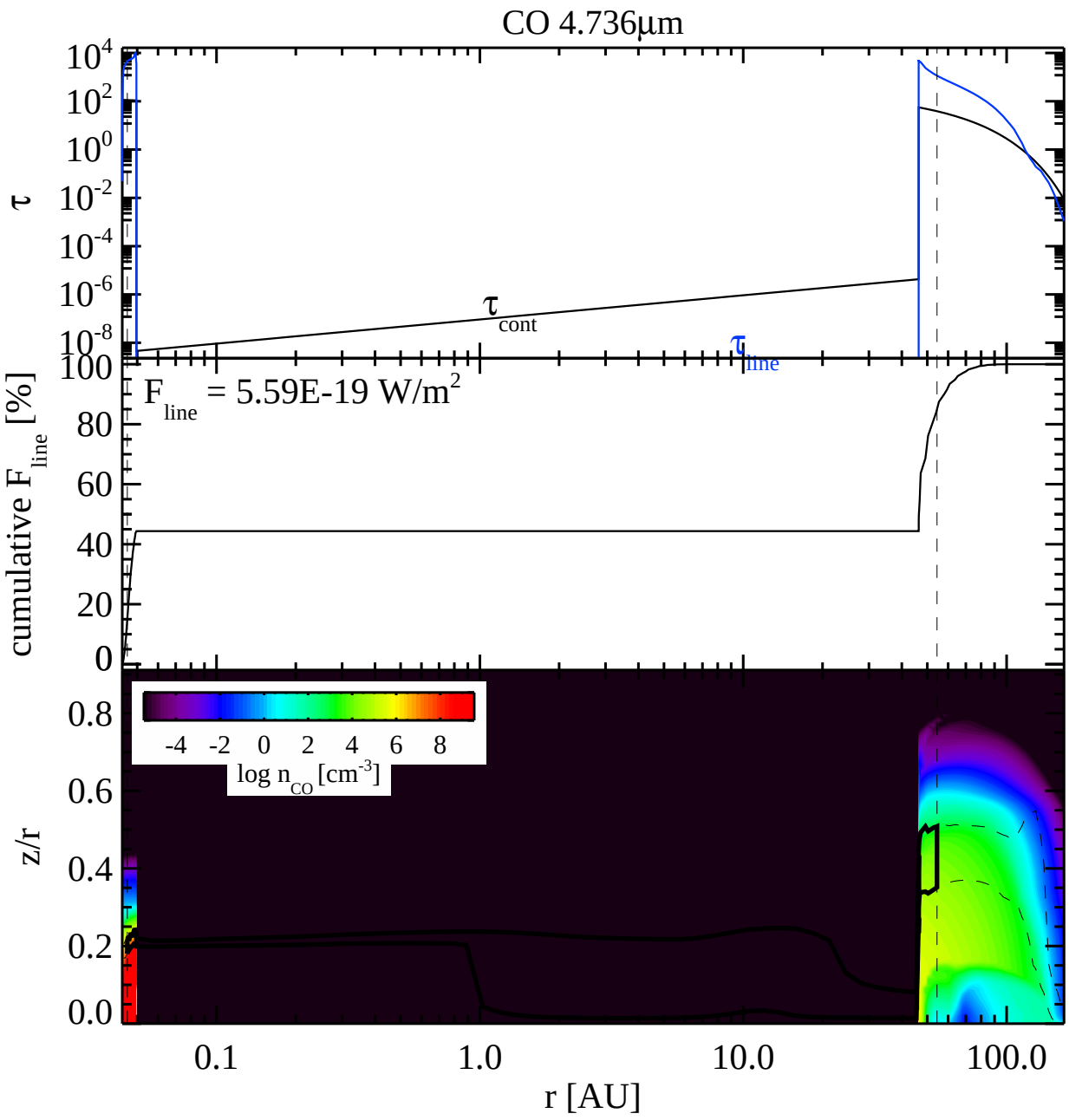

CO 4.633µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 4.00E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

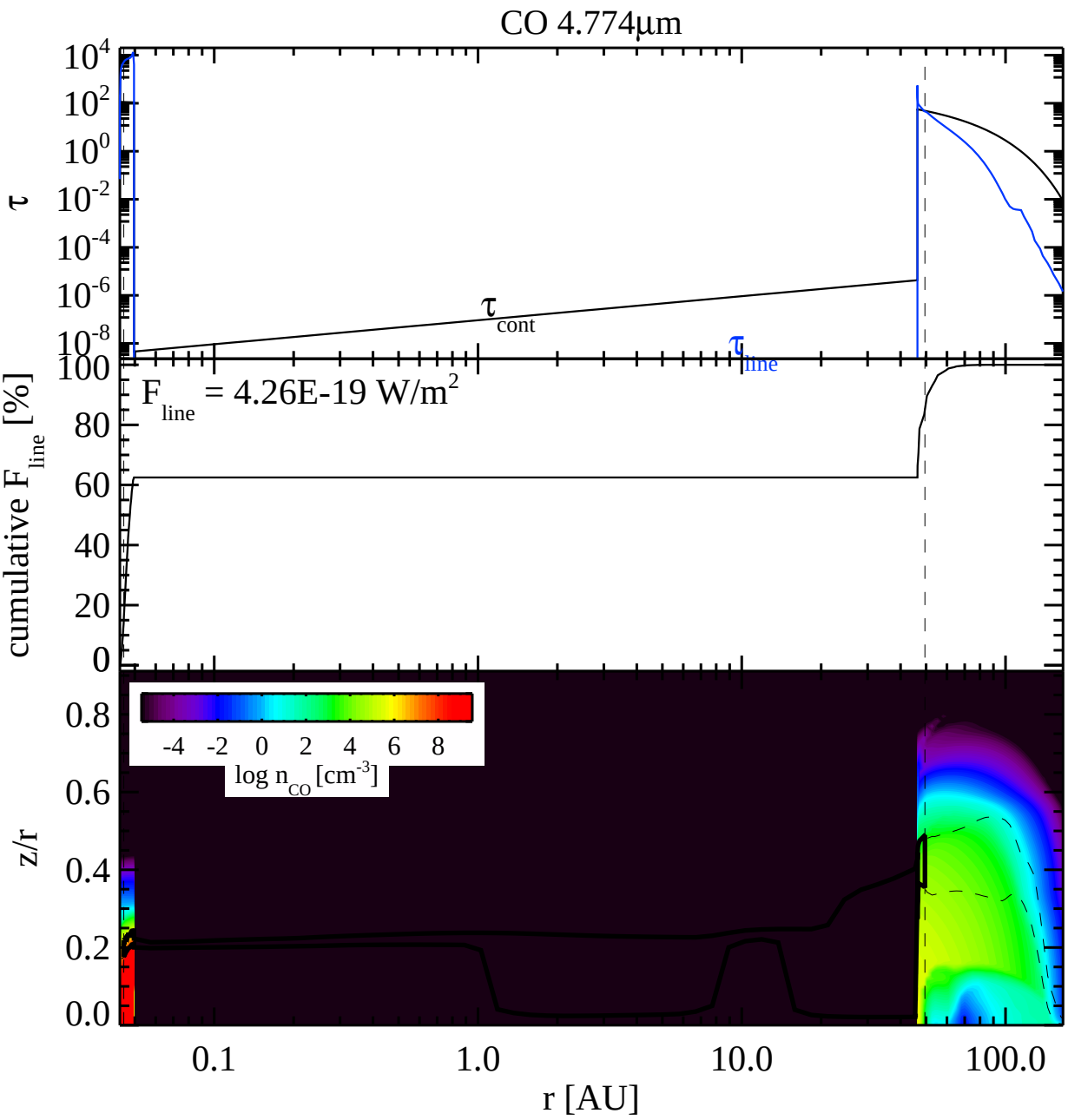

CO 4.657µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.70E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

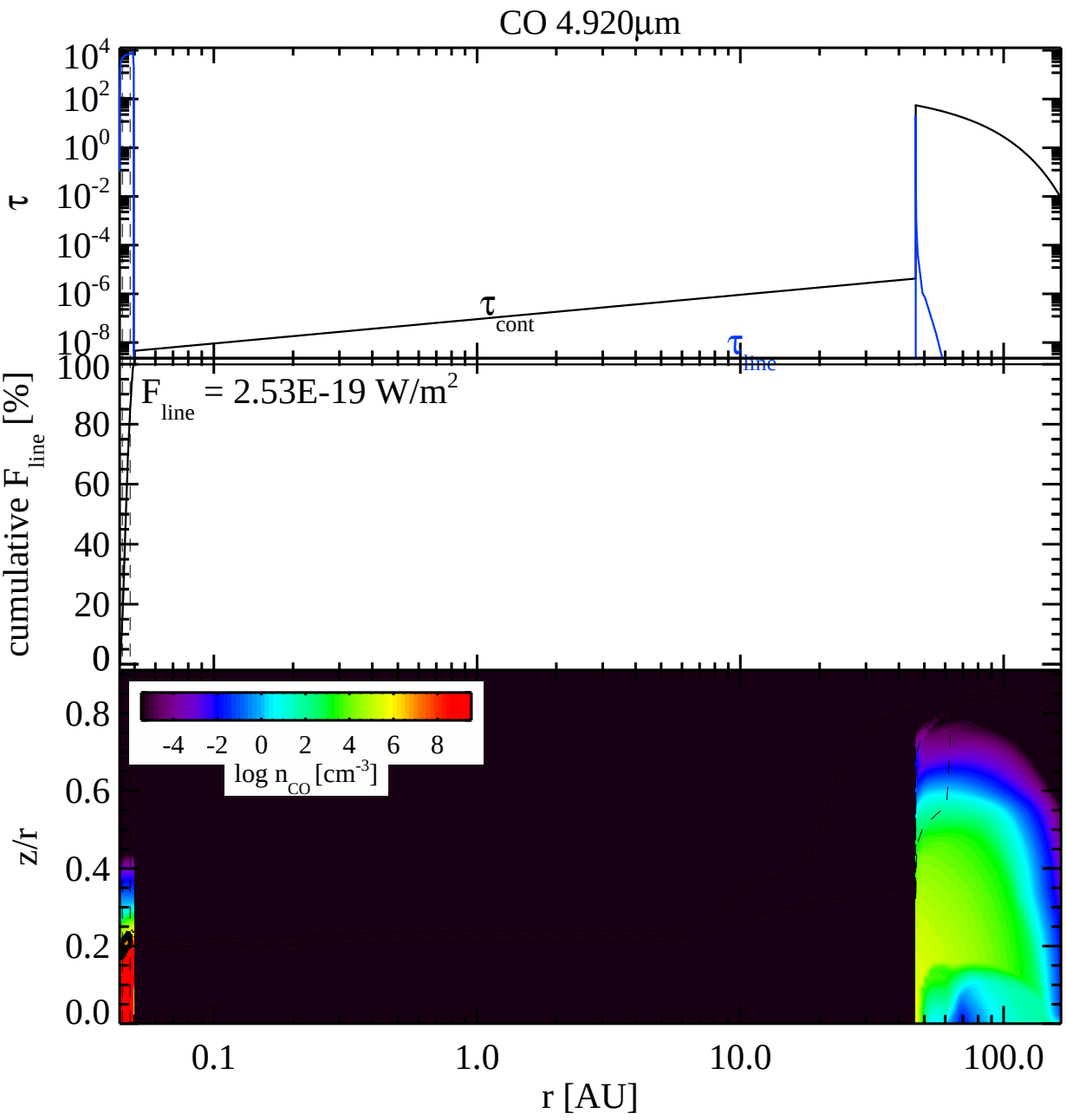

CO 4.674µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.83E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

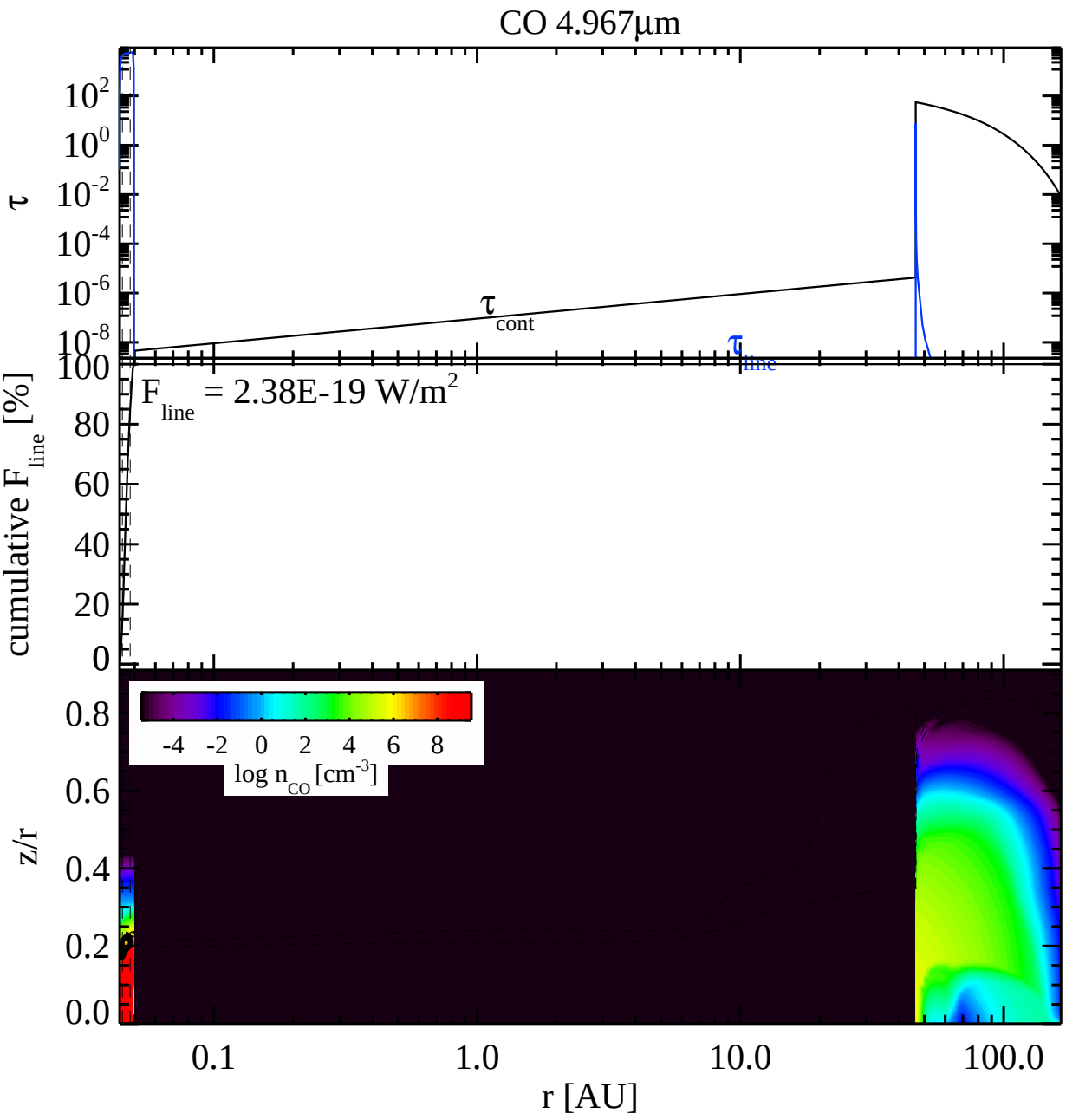

CO 4.683µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 4.55E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

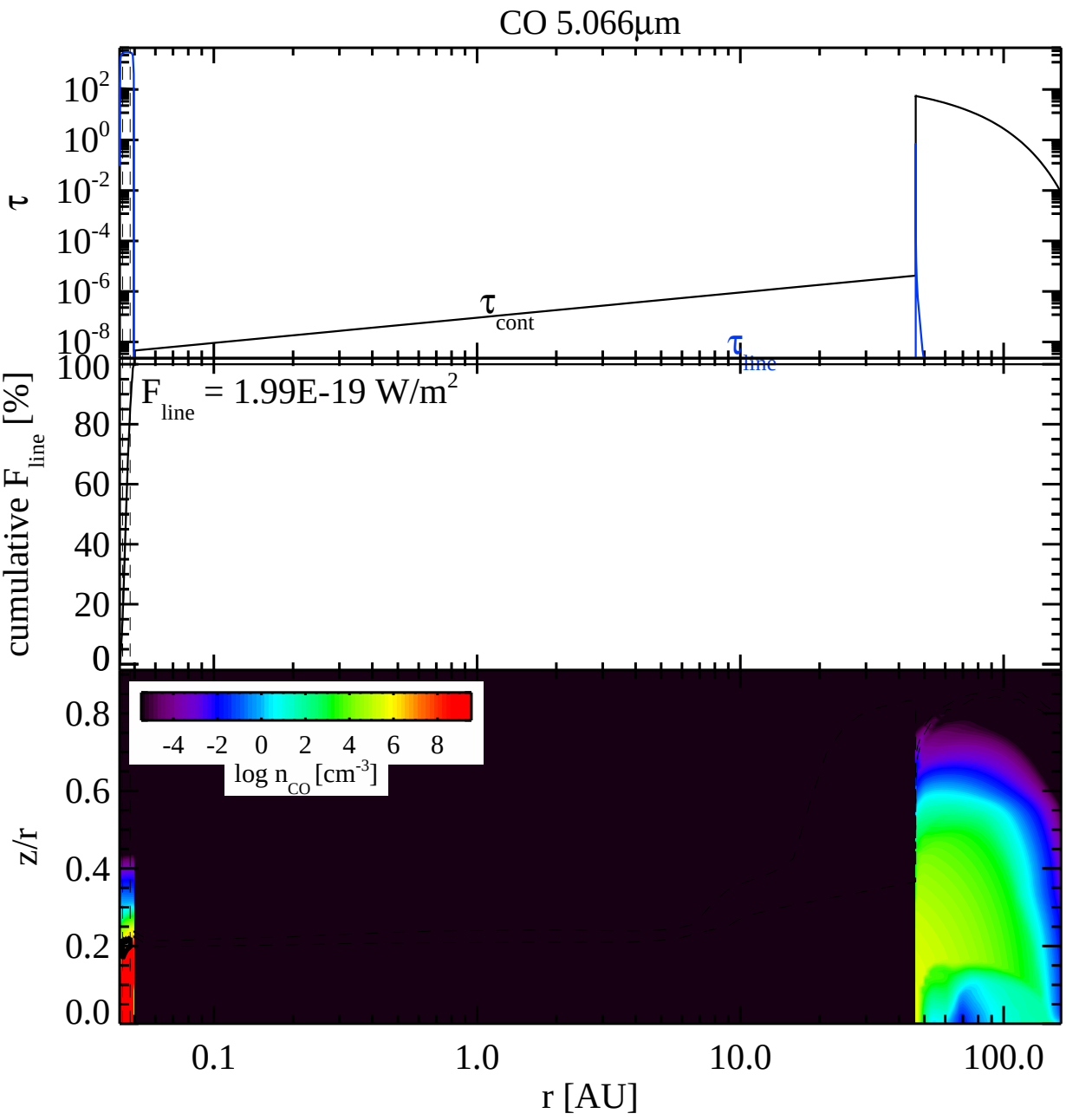

CO 4.700µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.46E-19 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

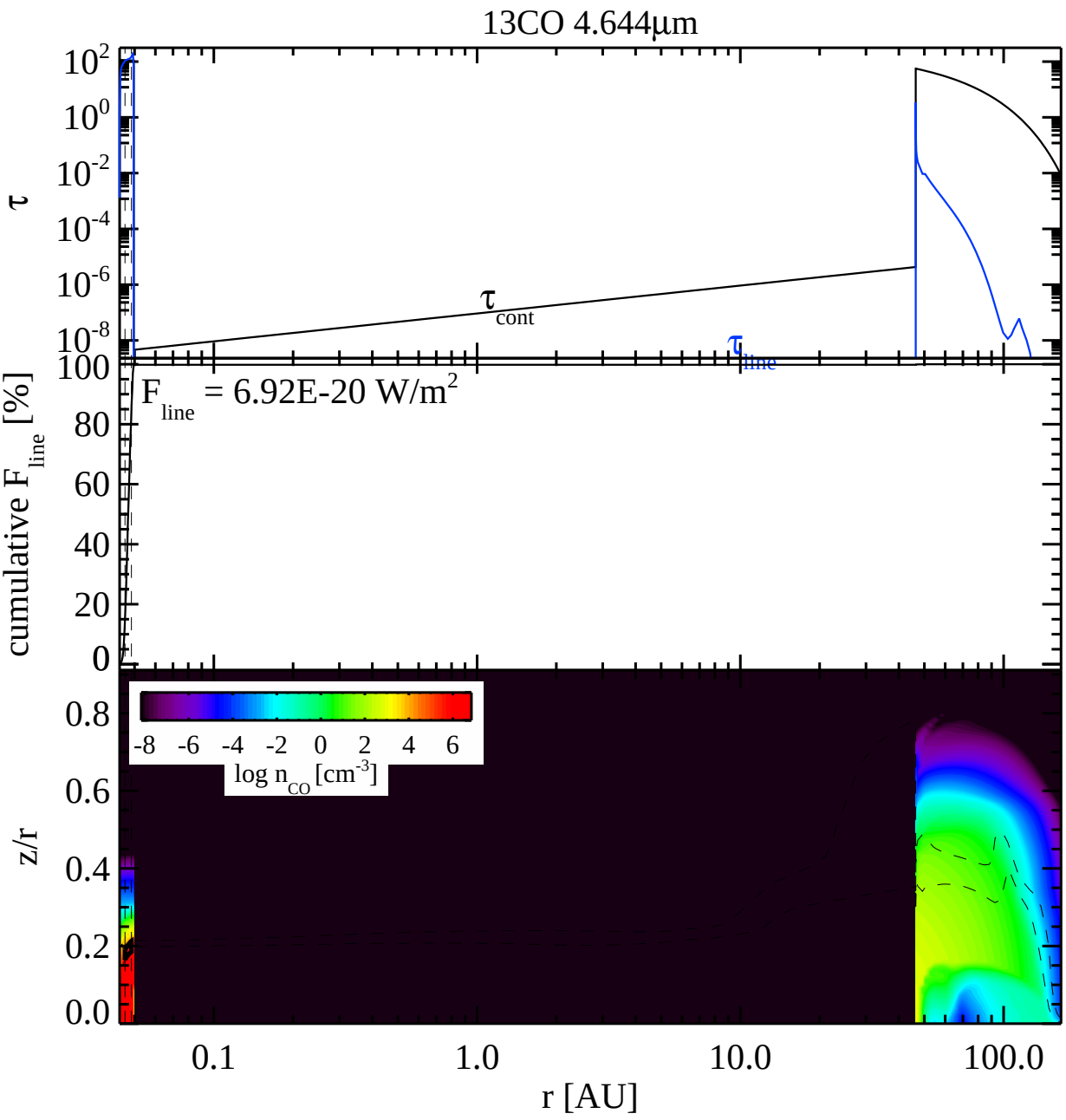

CO 4.736µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.59E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

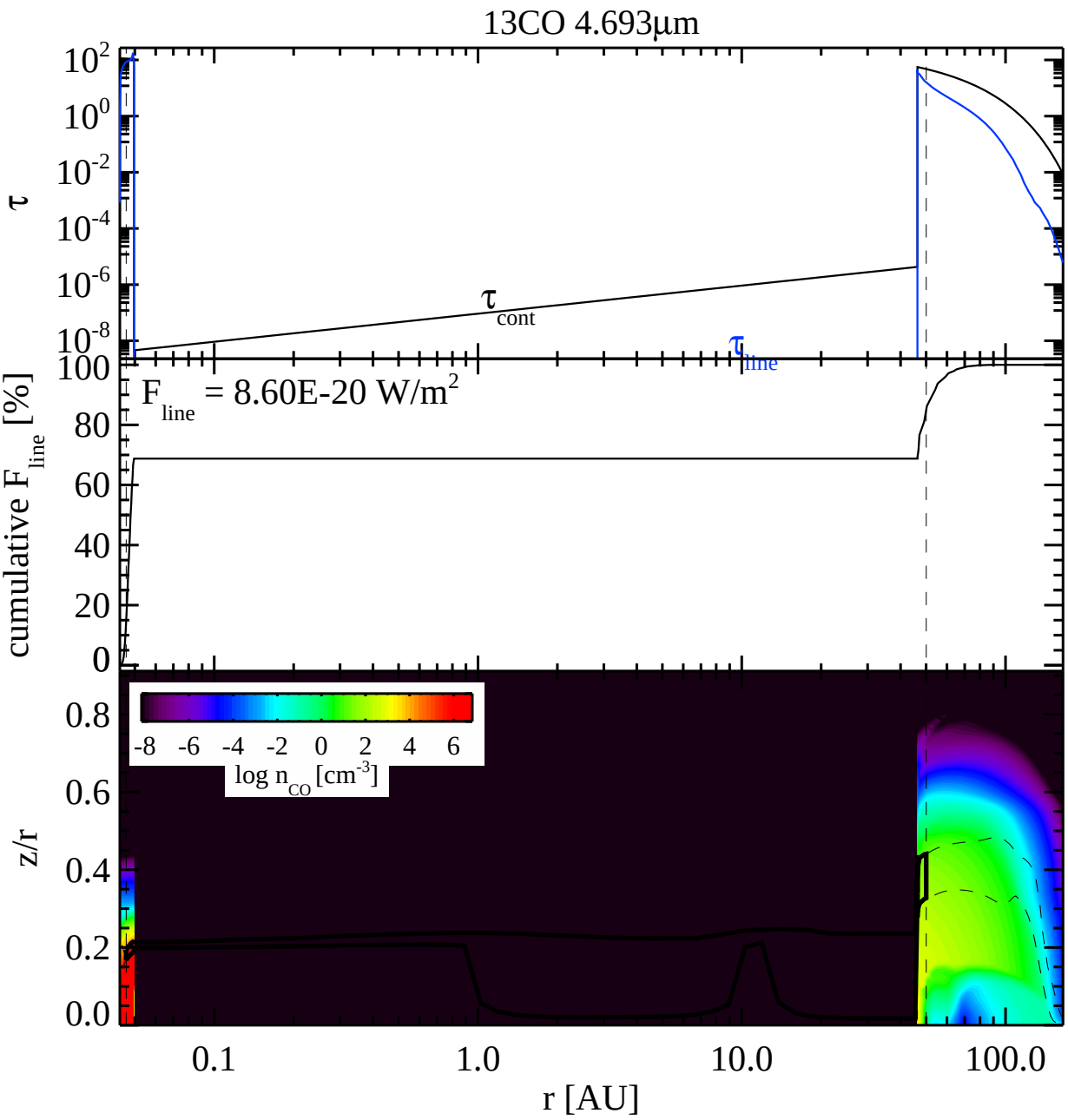

CO 4.774µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.26E-19 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

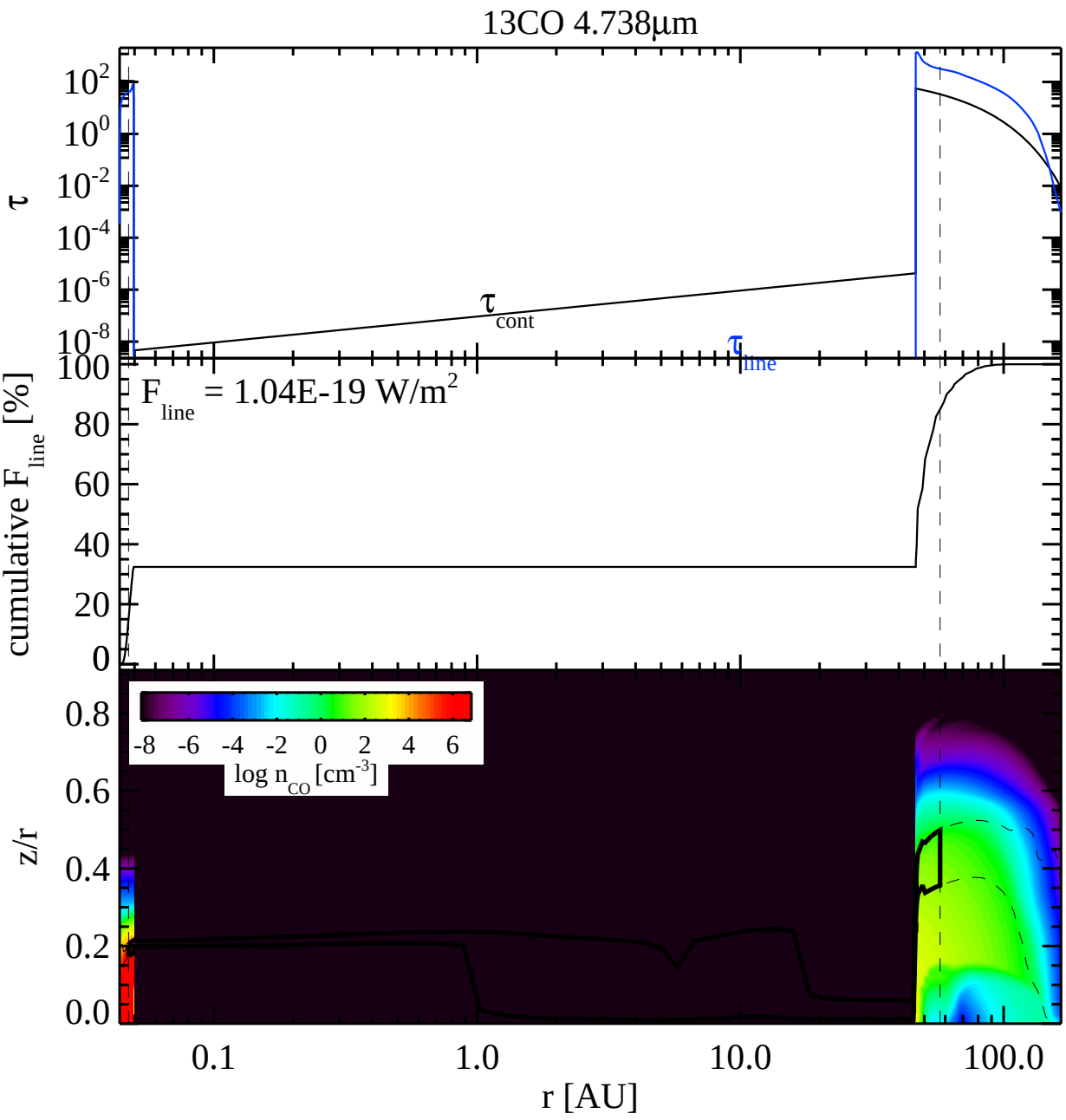

CO 4.920µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.53E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

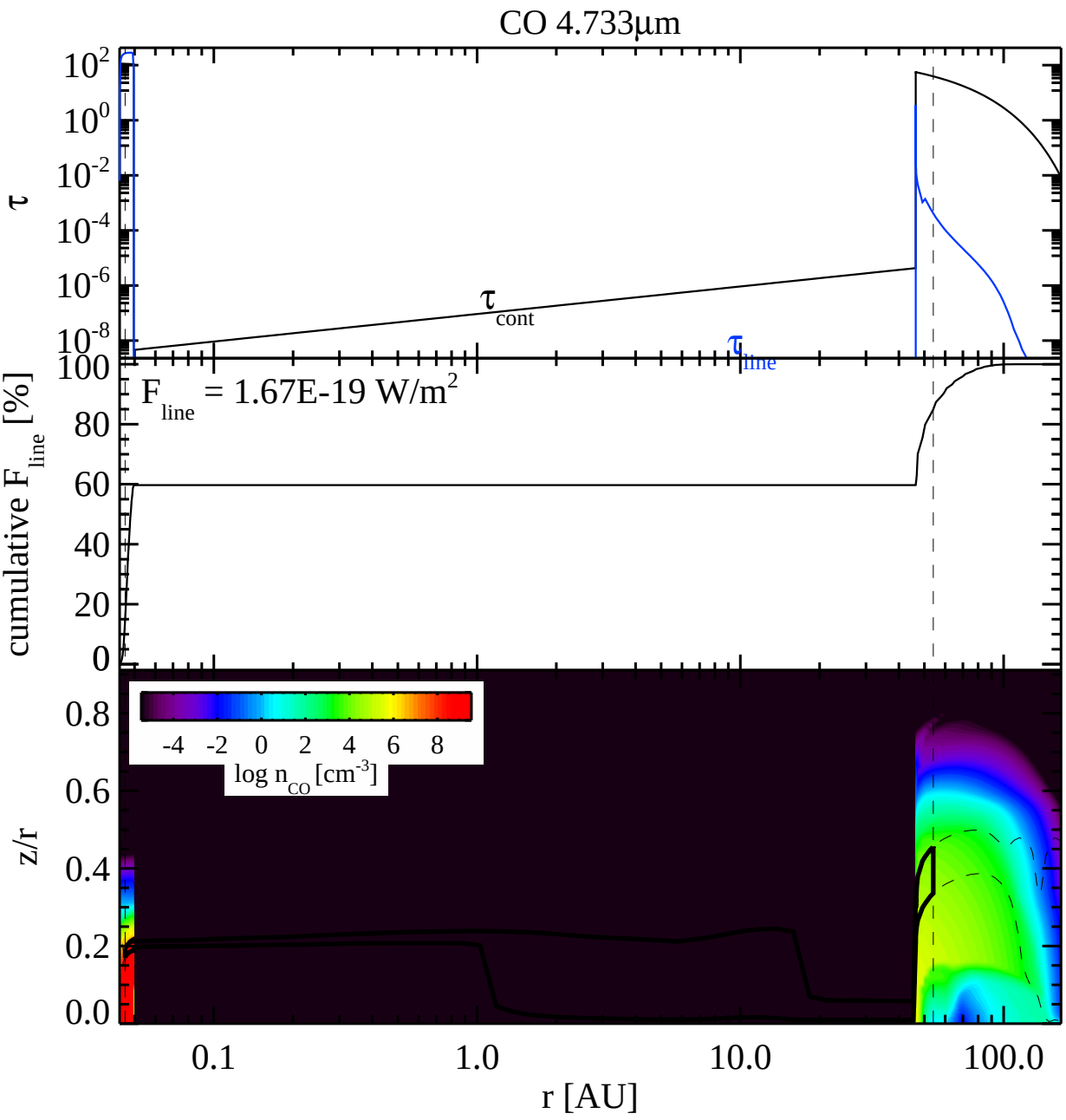

CO 4.967µm
τ
10^2
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 2.38E-19 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

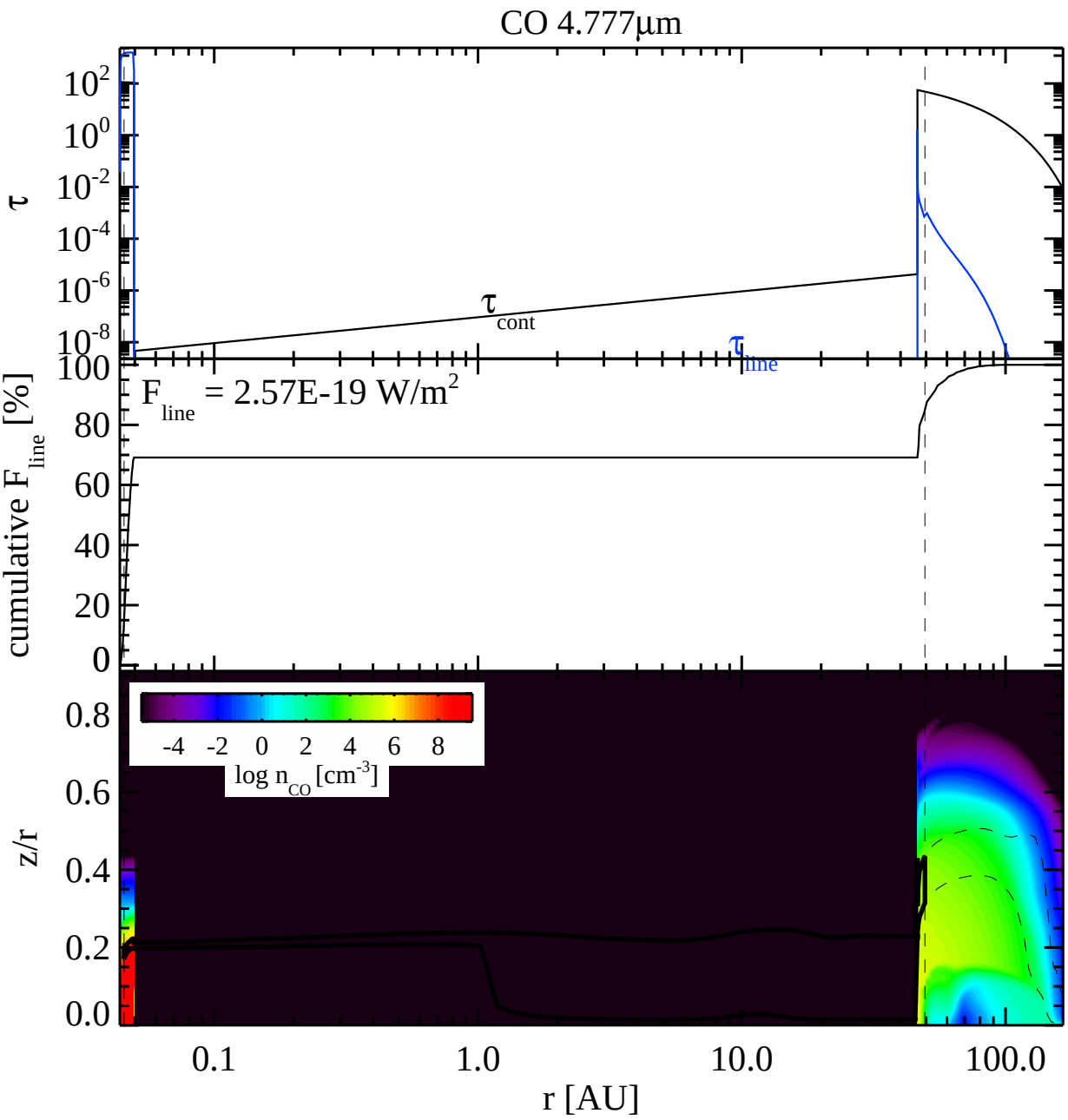

CO 5.066µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.99E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

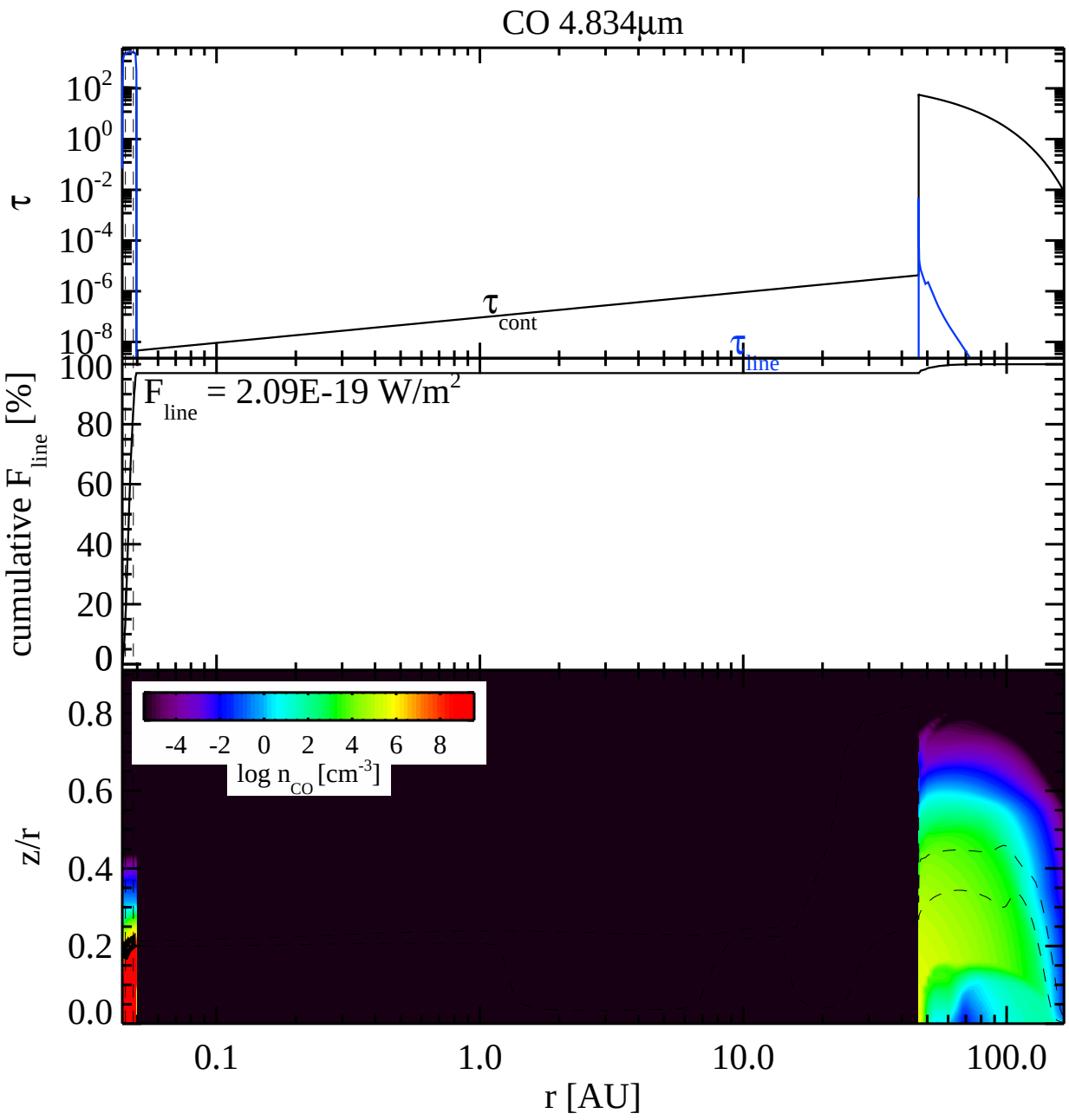

13CO 4.644µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 6.92E-20 W/m^2
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

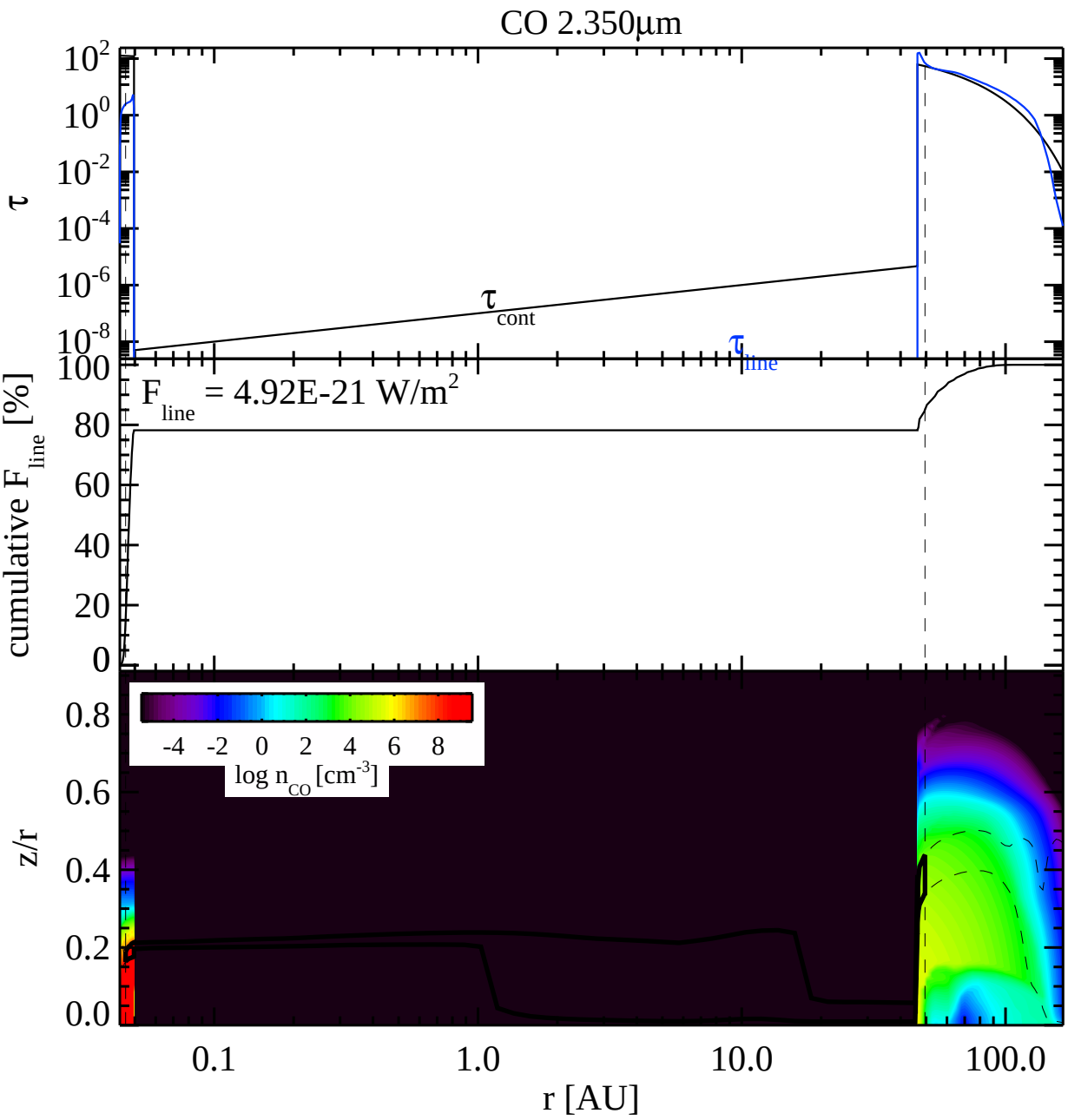

13CO 4.693µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.60E-20 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

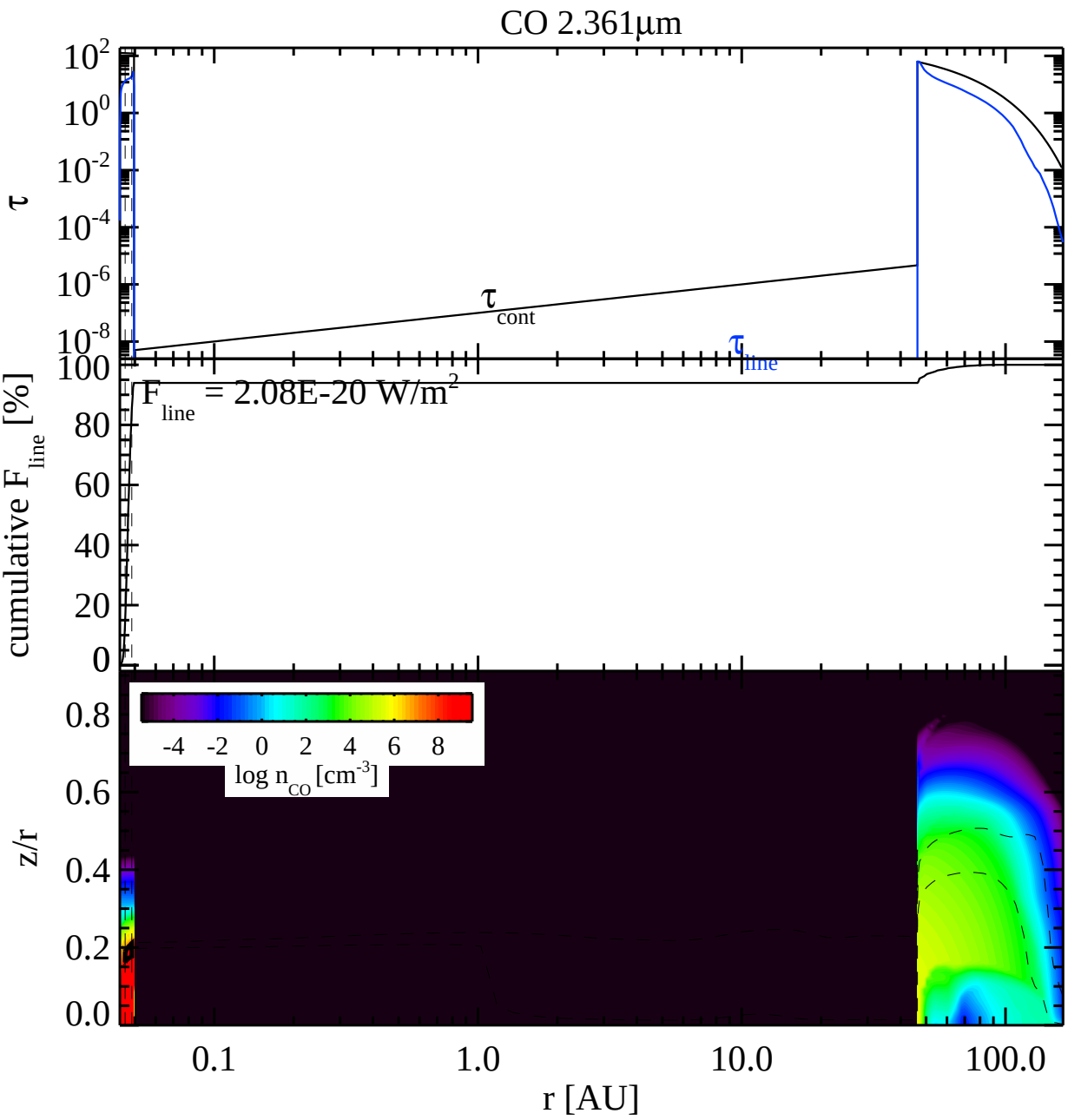

13CO 4.738µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.04E-19 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

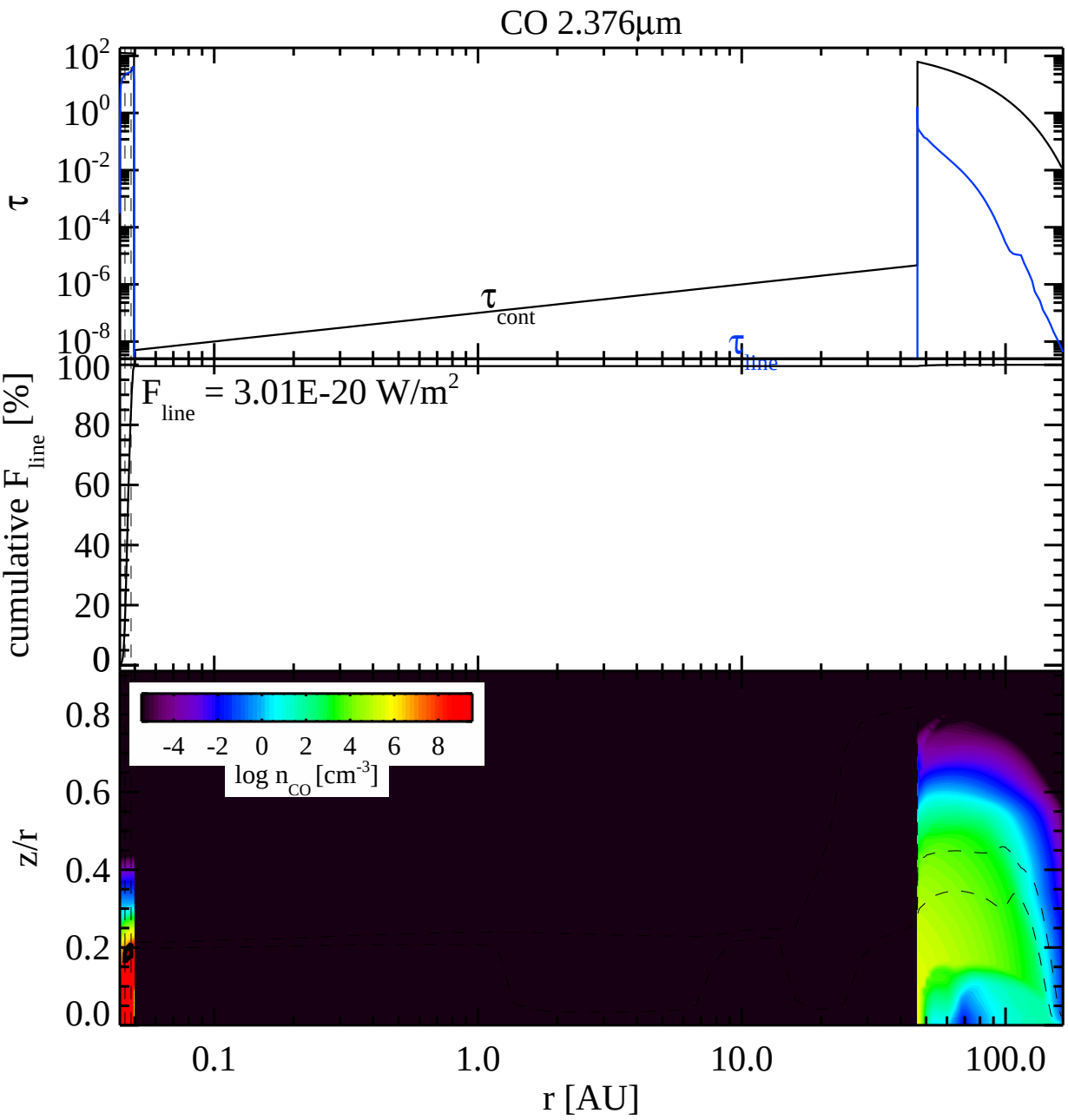

CO 4.733µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.67E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

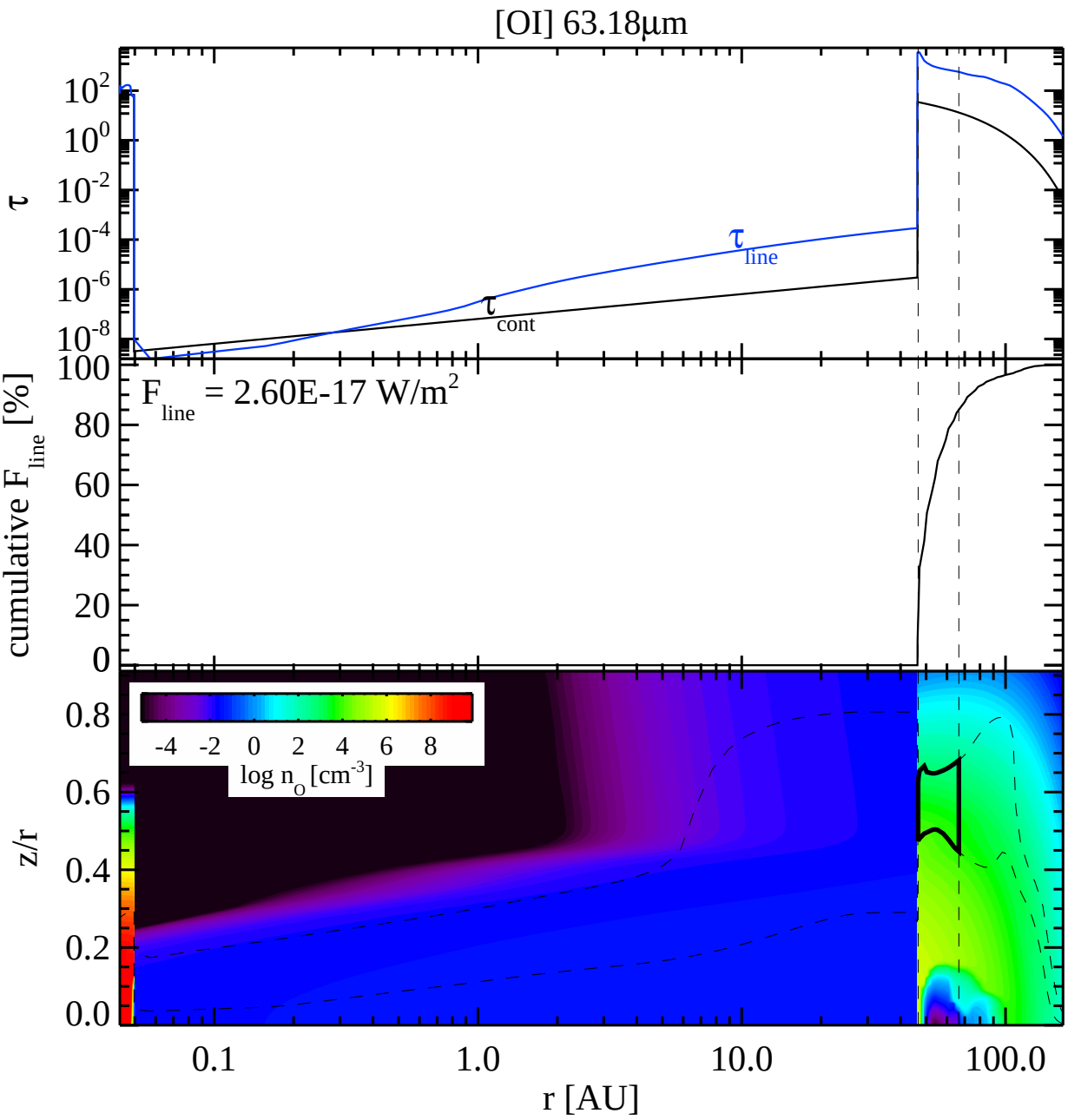

CO 4.777µm
τ
10^2
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
F line = 2.57E-19 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

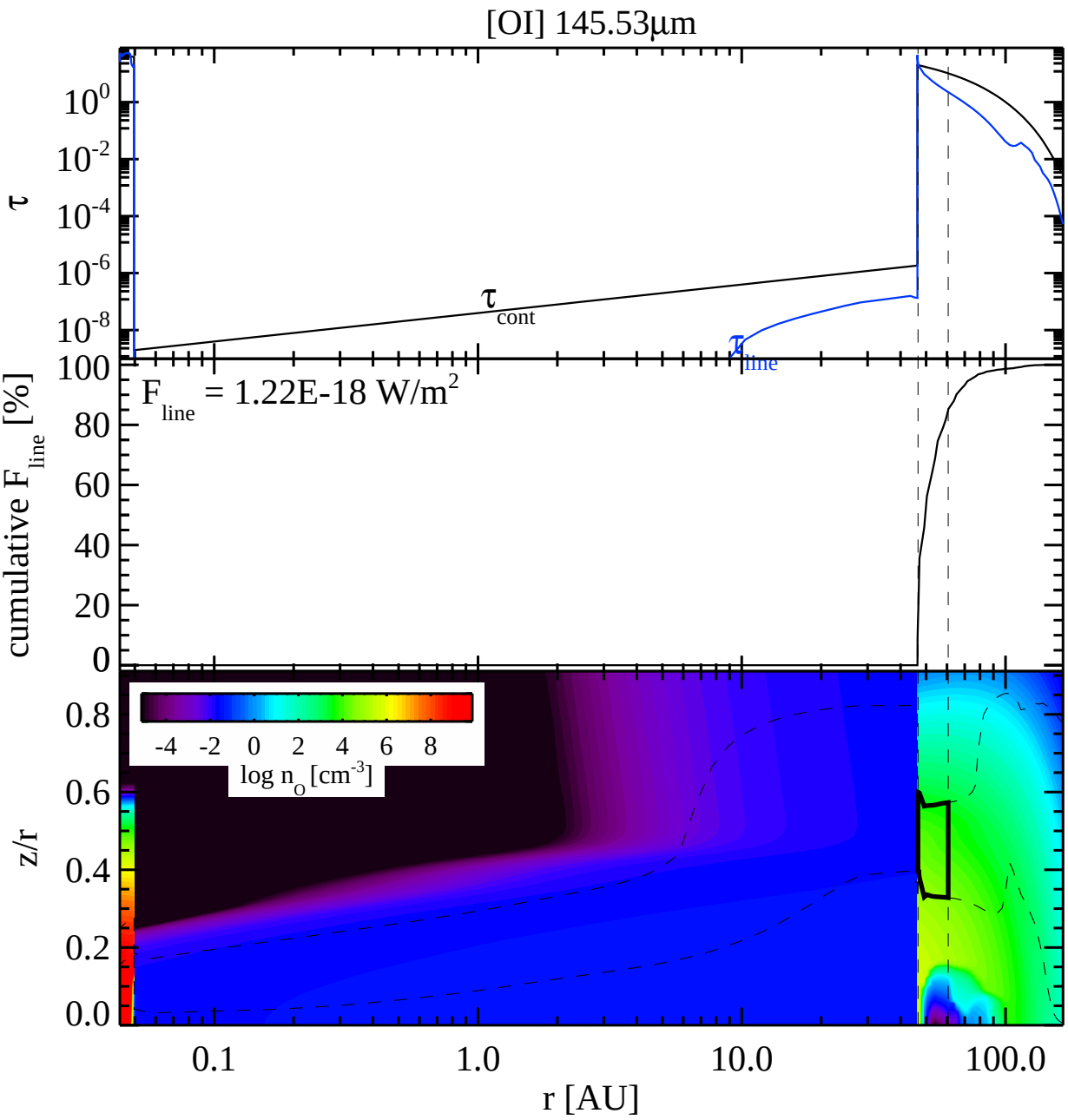

CO 4.834µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.09E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

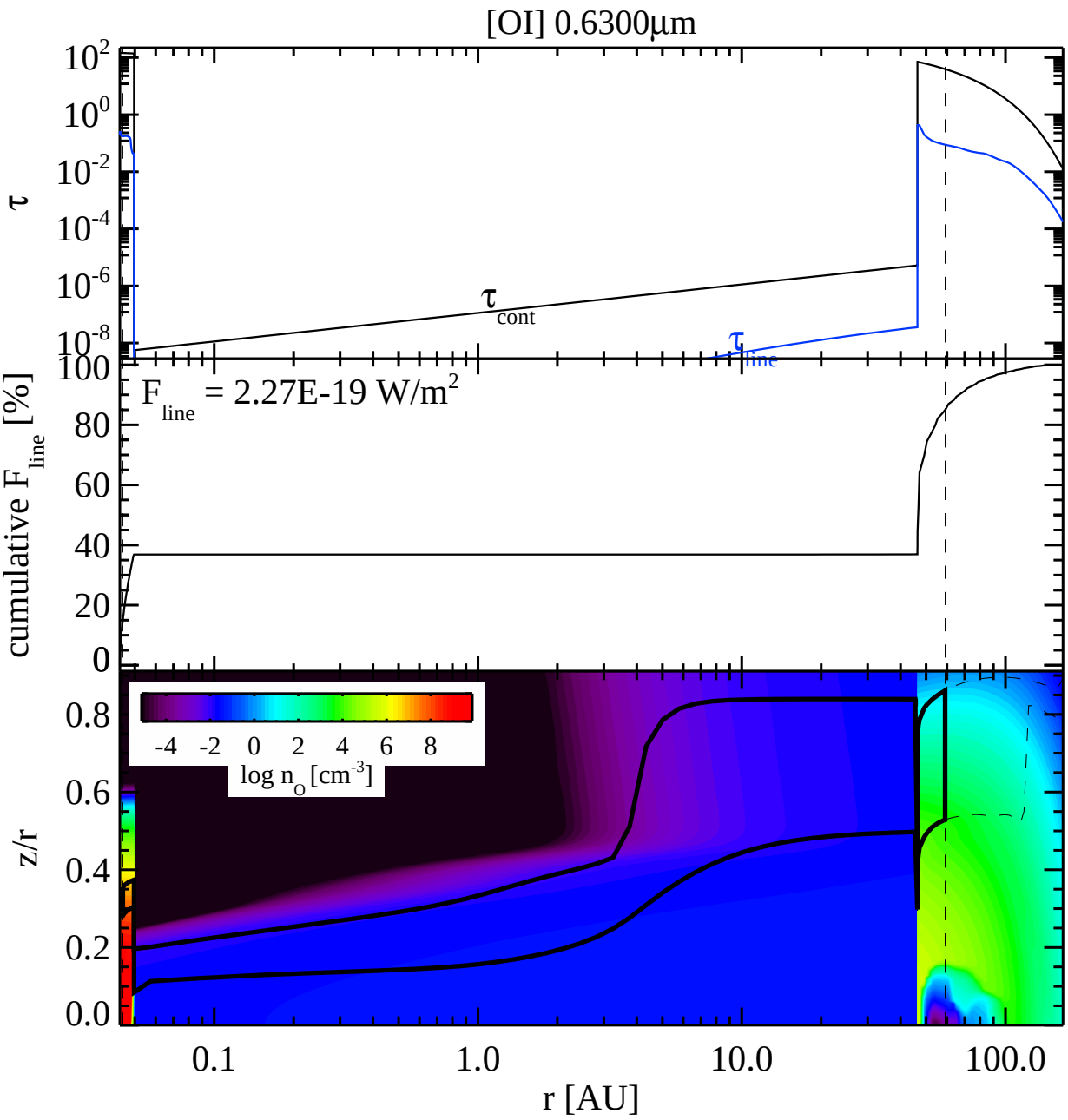

CO 2.350µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.92E-21 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

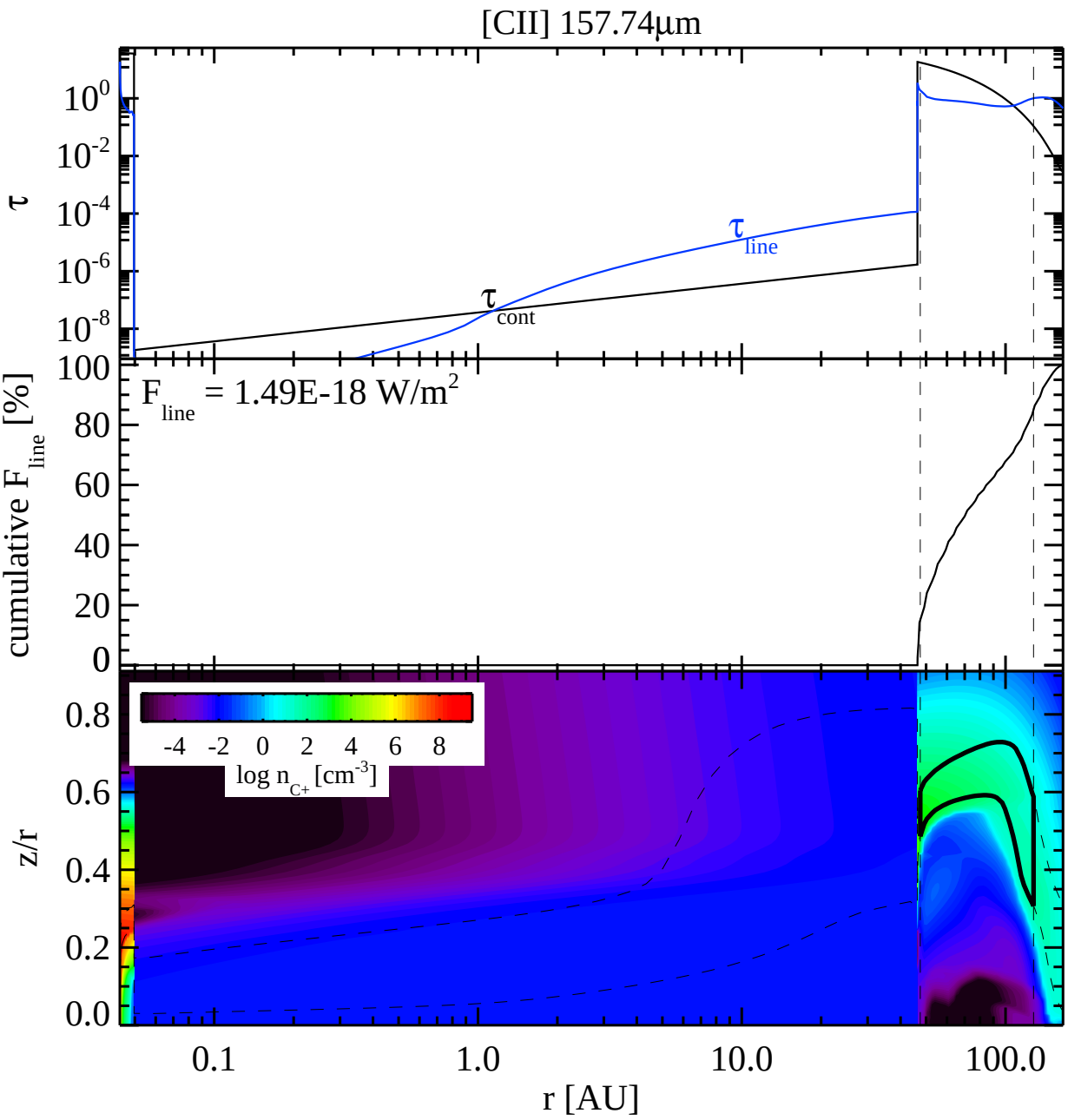

CO 2.361µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.08E-20 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

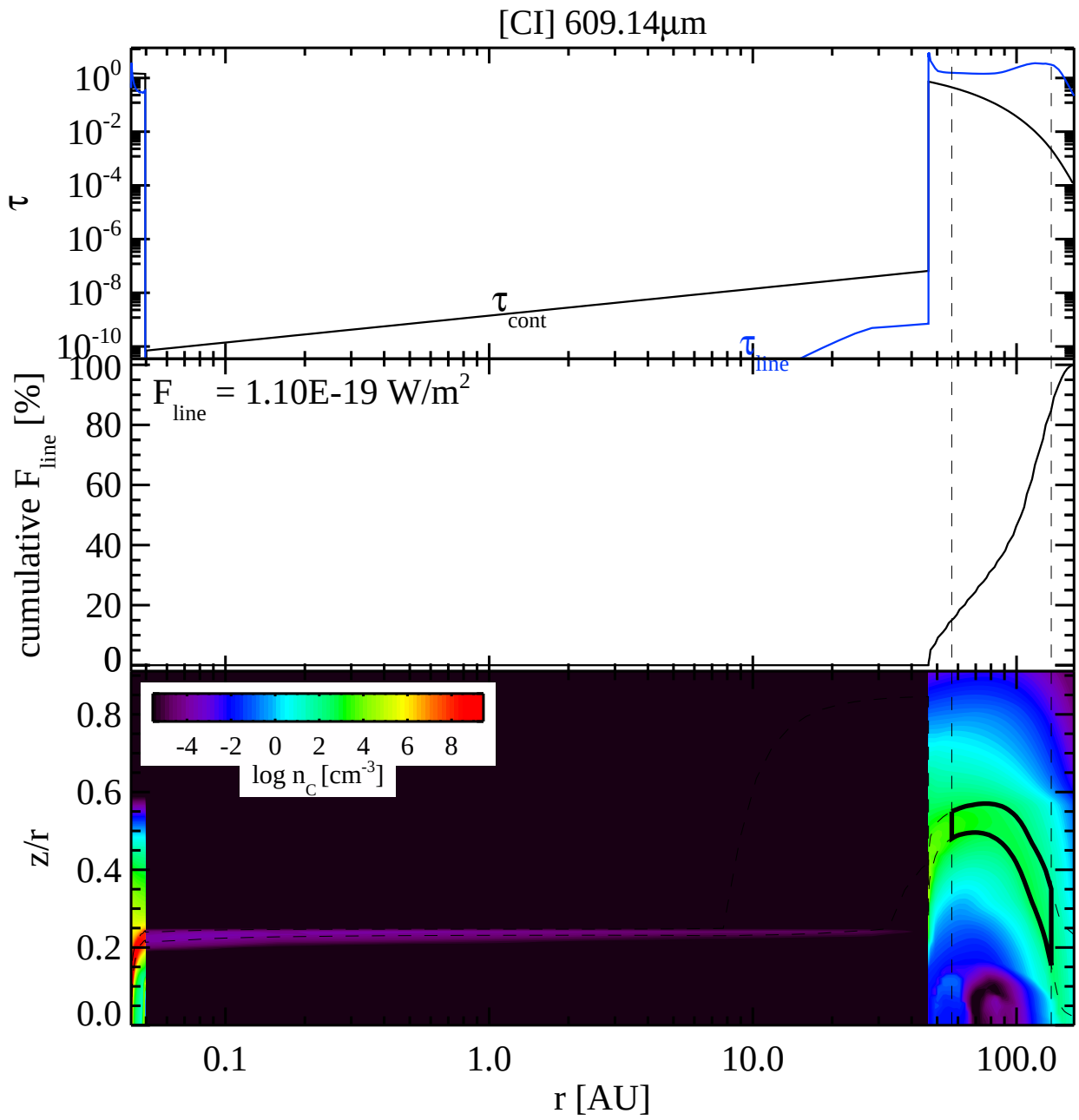

CO 2.376µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 3.01E-20 W/m^2
-4 -2 0 2 4 6 8
log n_{CO} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

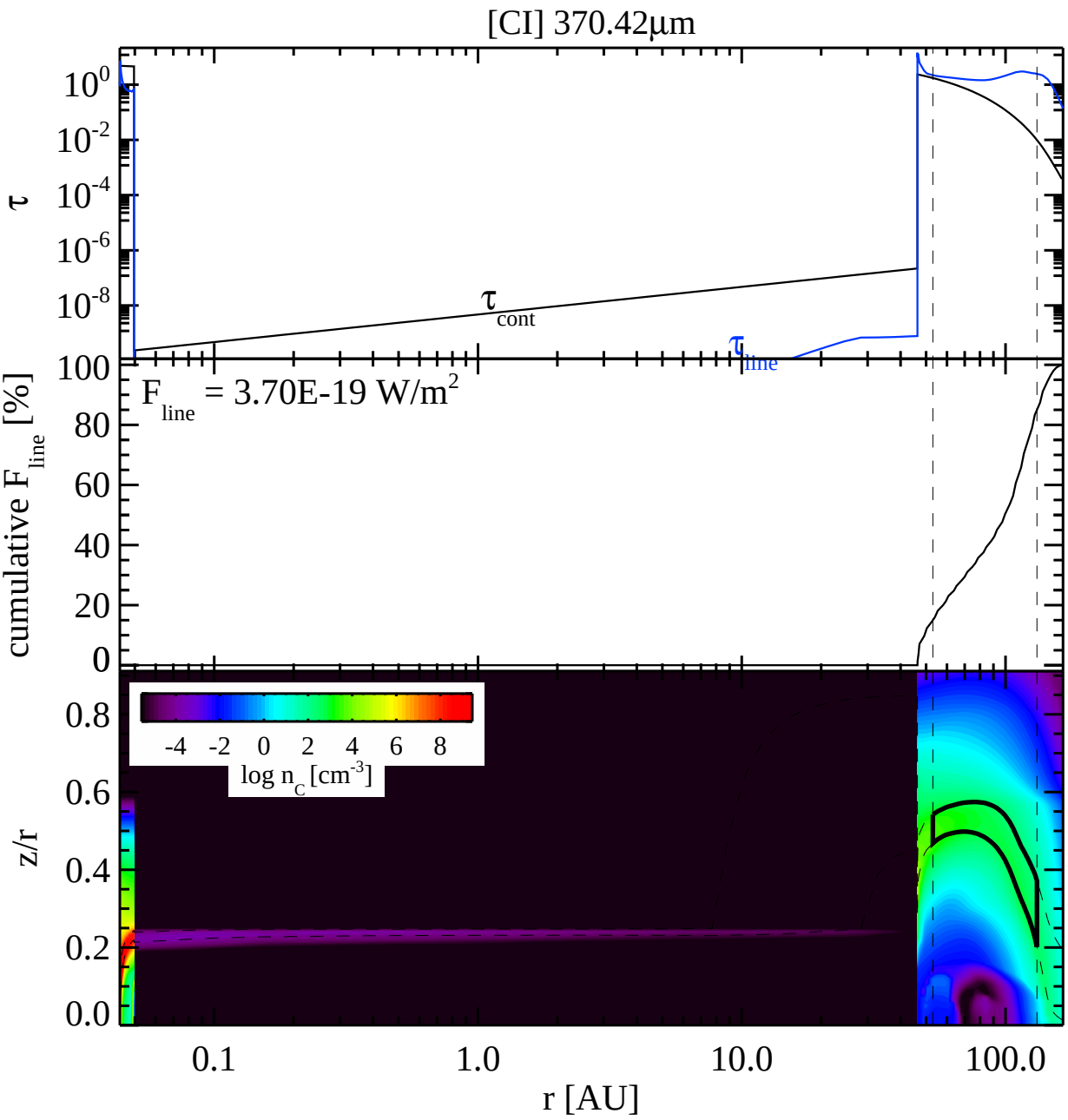

[OI] 63.18μm
τ
10^2
10^0
10^-2
10^-4
10^-6
10^-8
τ line
τ cont
cumulative F line [%]
F line = 2.60E-17 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n O [cm^-3]
1
0.1
1.0
10.0
100.0
r [AU]

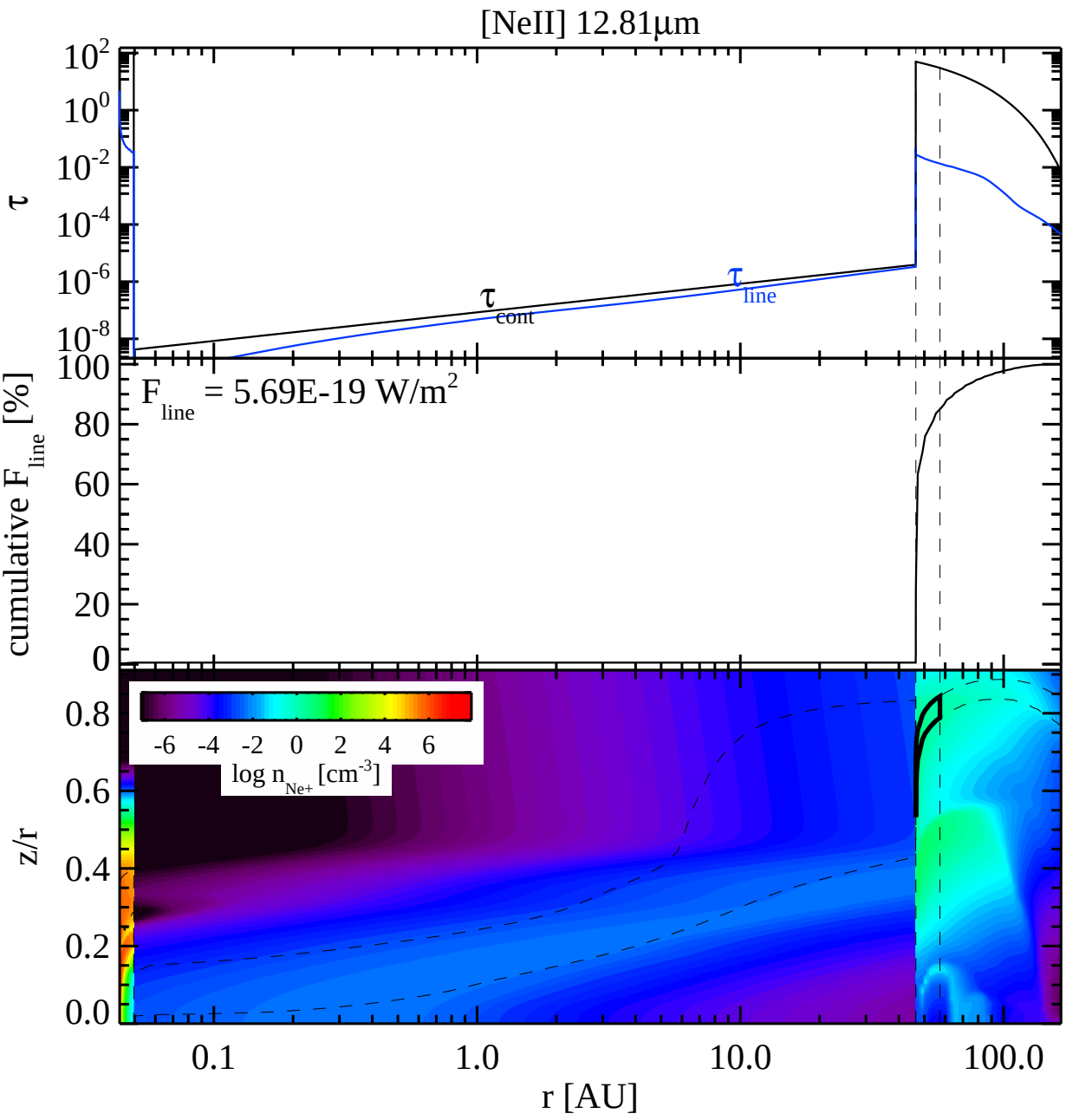

[OI] 145.53µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
F line = 1.22E-18 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n O [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

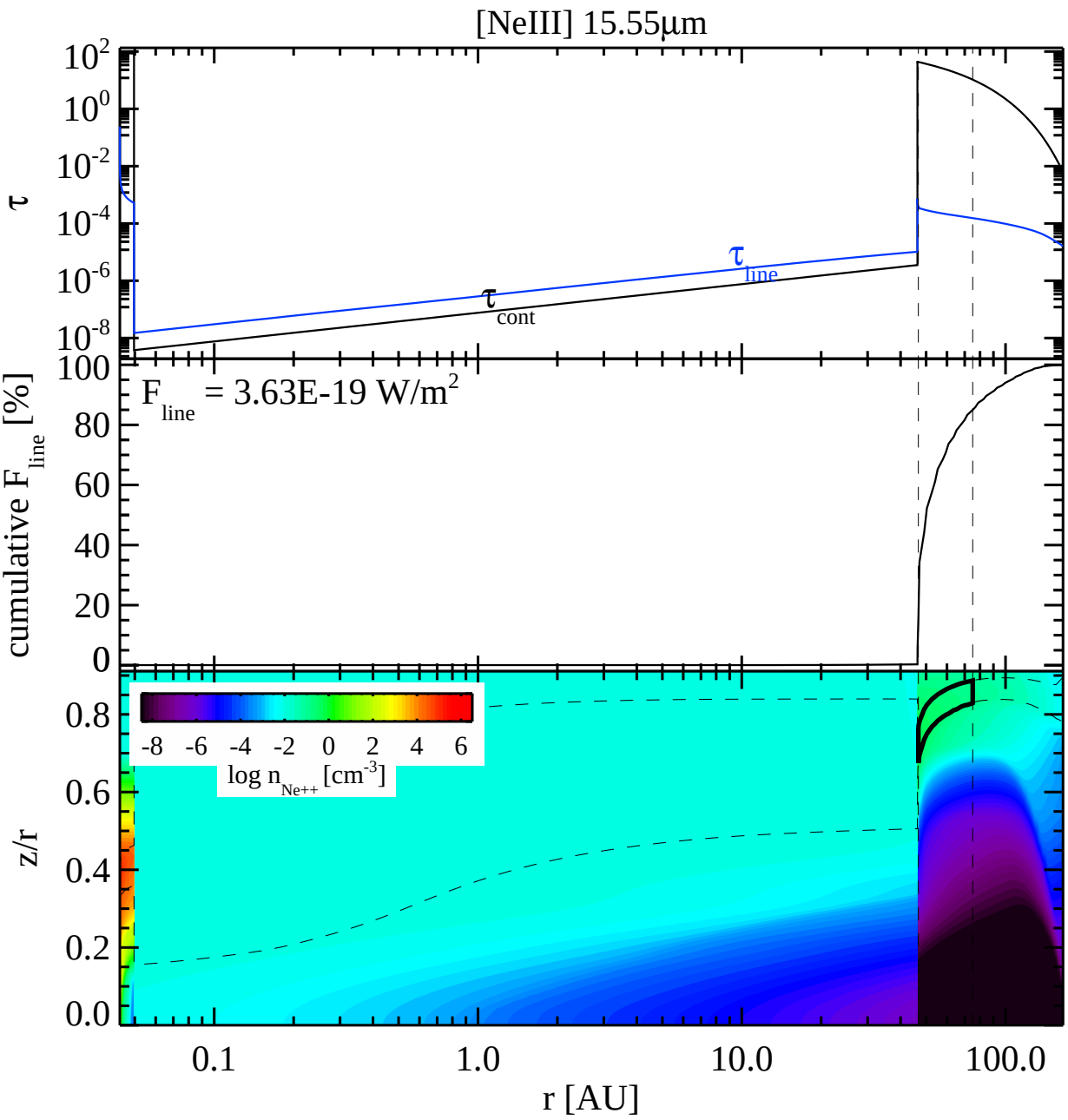

[OI] 0.6300µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.27E-19 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_O [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

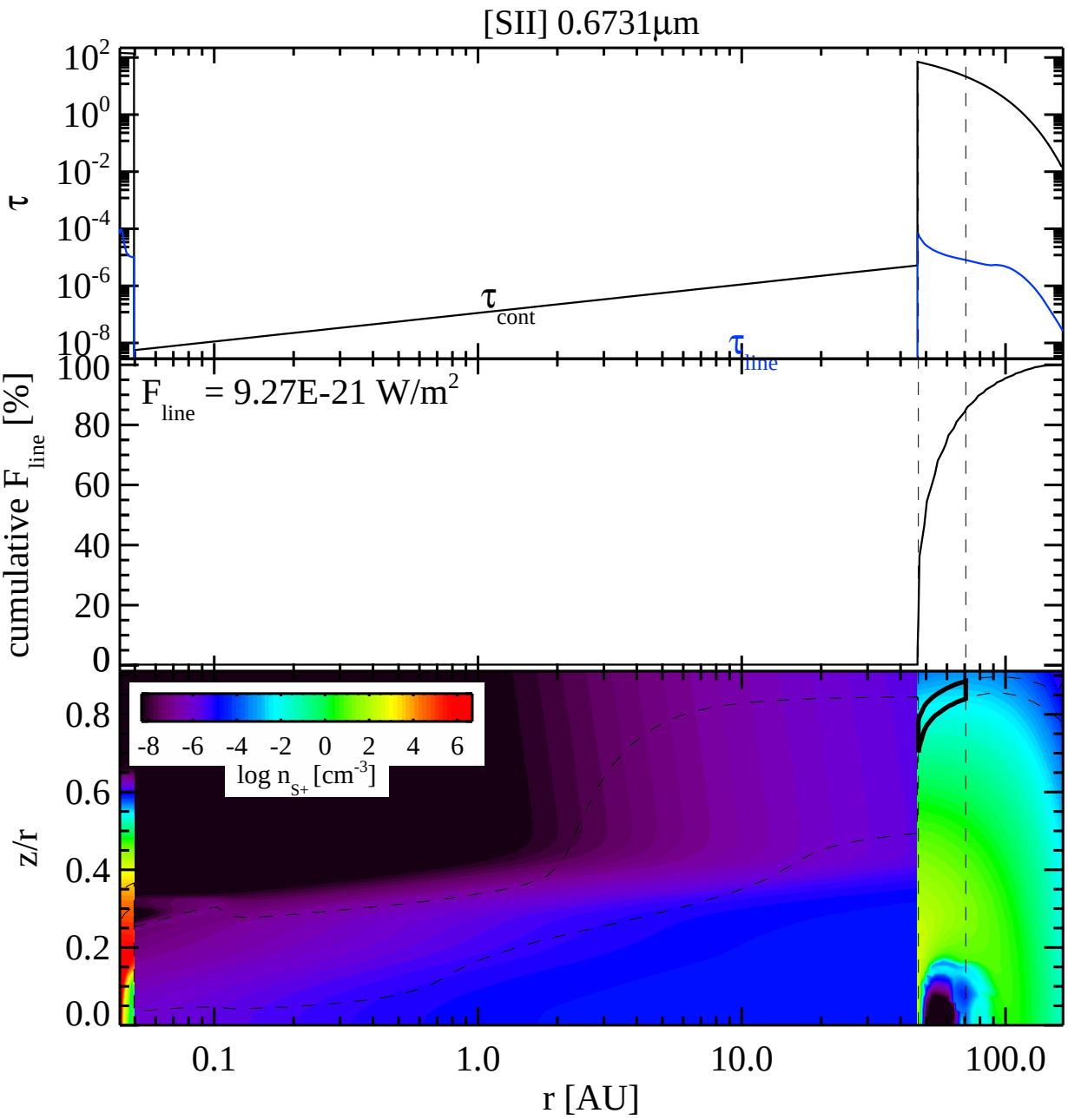

[CII] 157.74µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
F_{line} = 1.49E-18 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{C+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

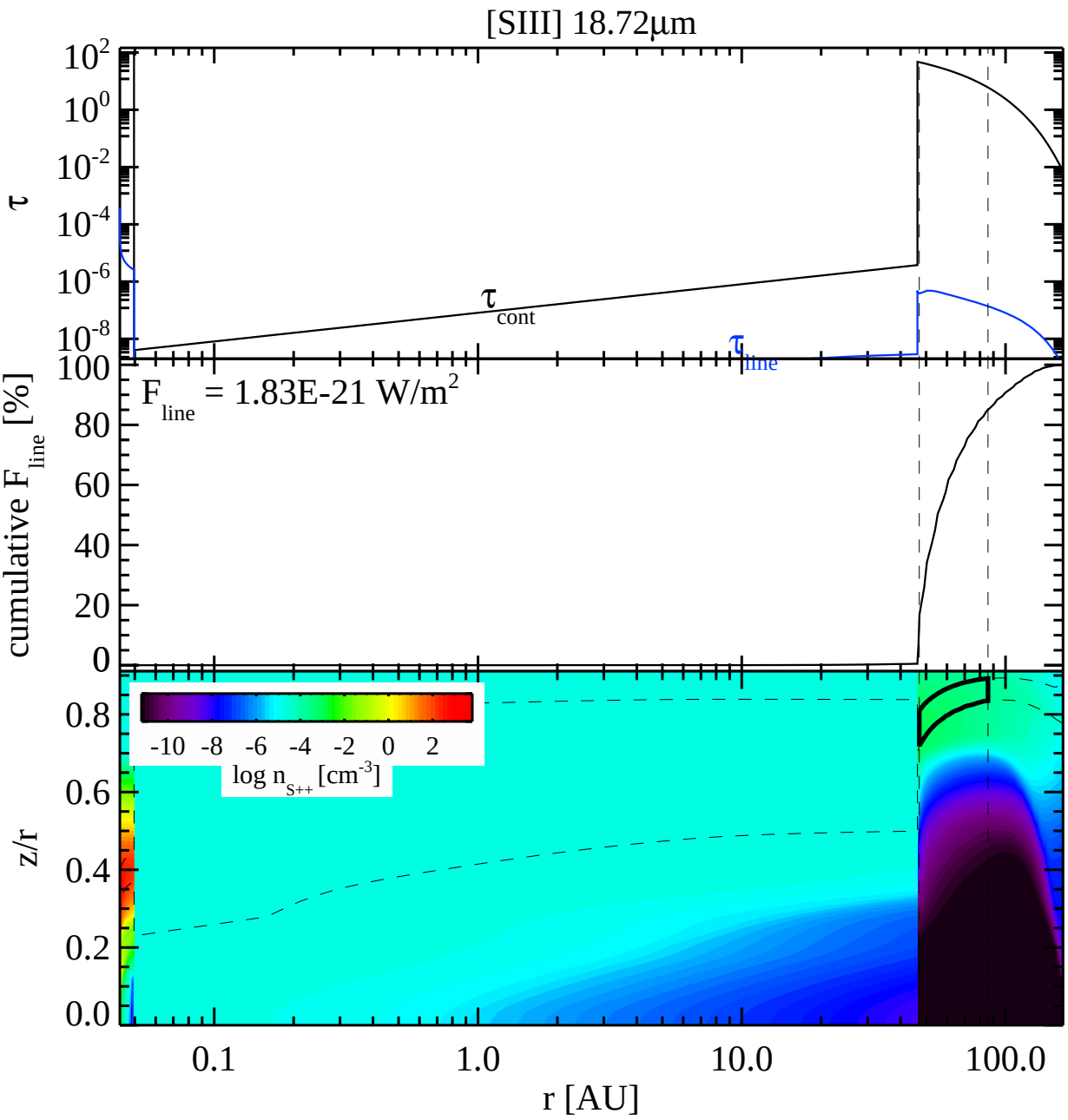

[CI] 609.14µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
τ cont
τ line
cumulative F line [%]
F line = 1.10E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n C [cm^-3]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

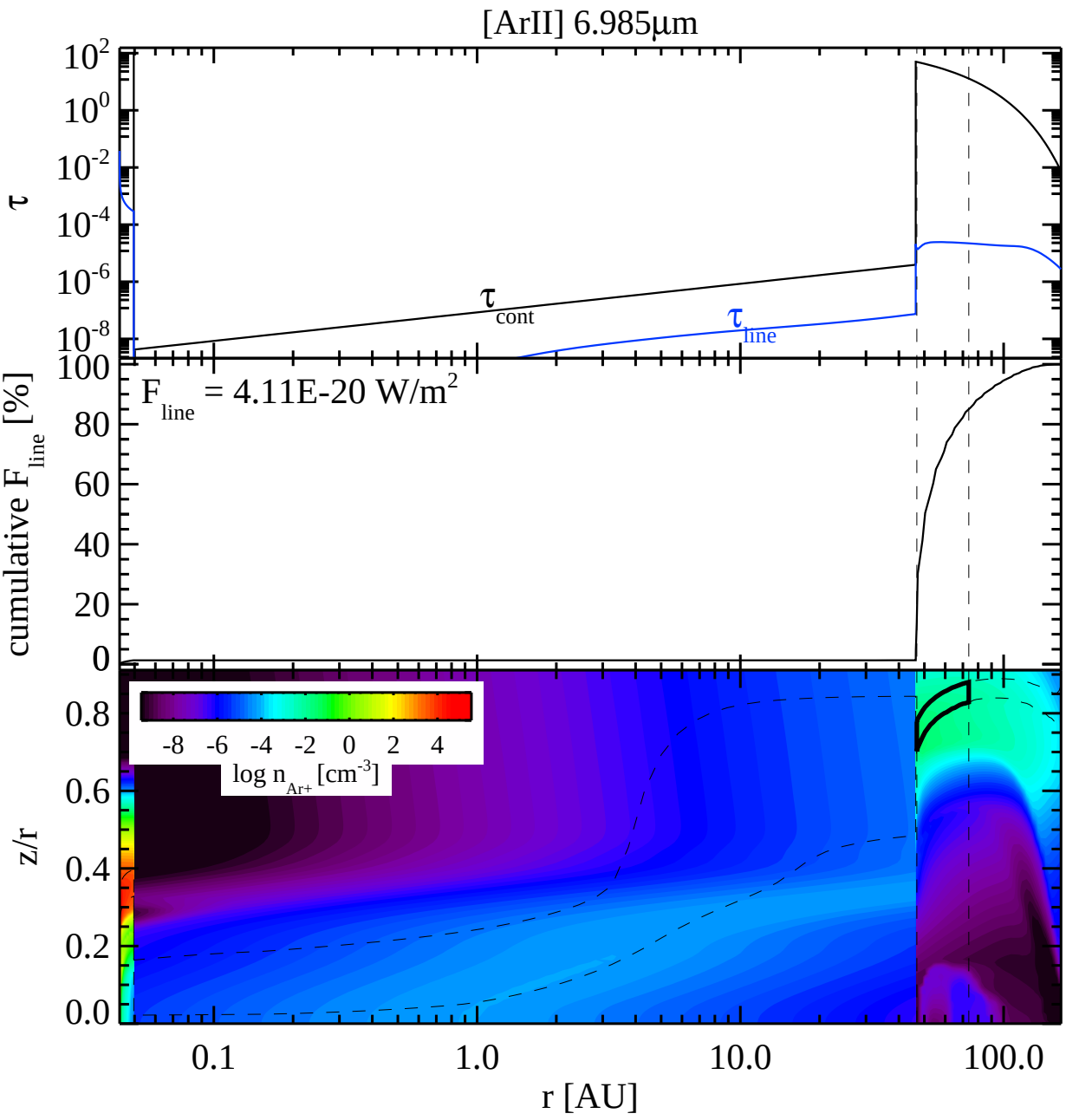

[CI] 370.42µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
F line = 3.70E-19 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n C [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

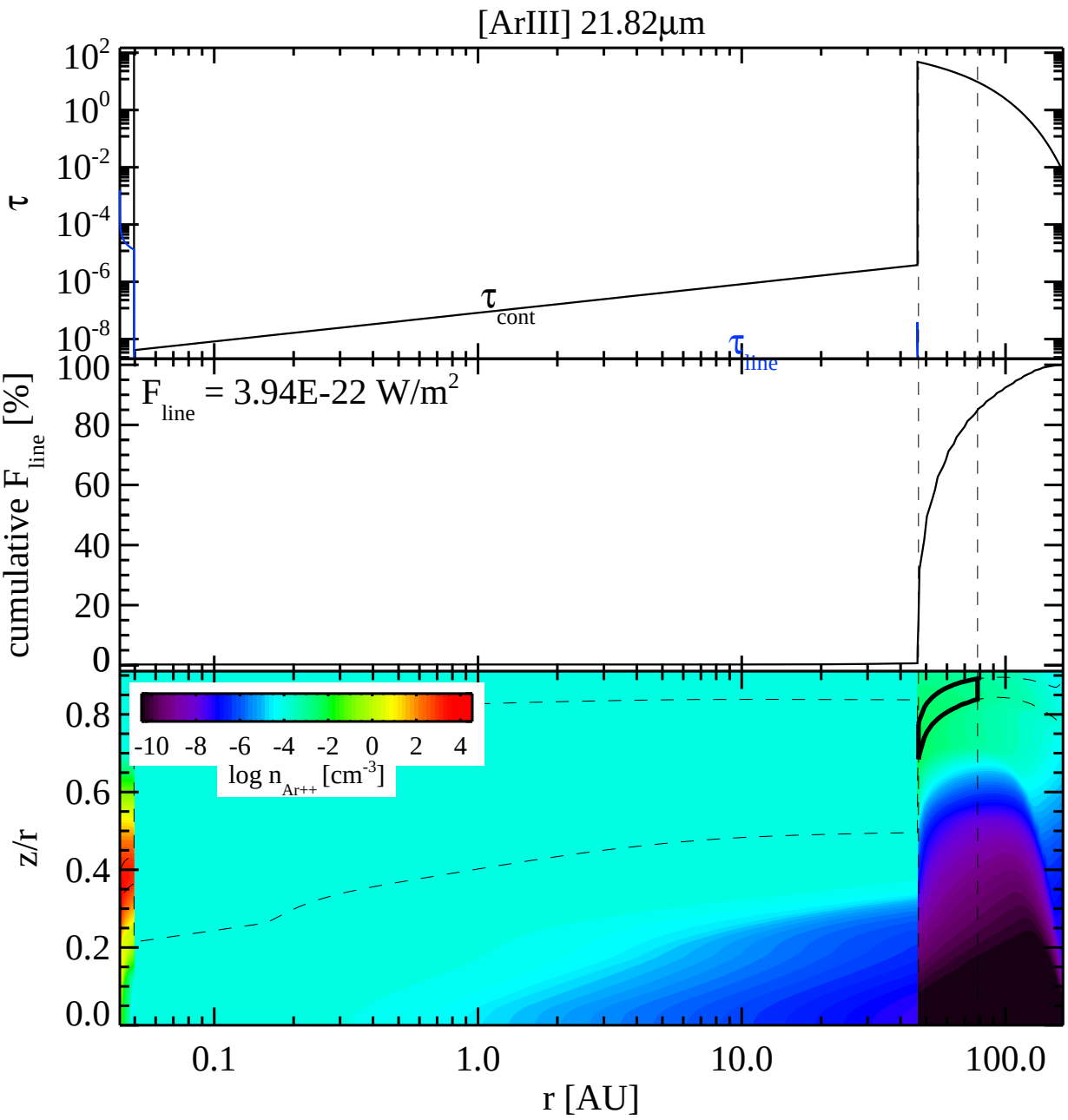

[NeII] 12.81µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.69E-19 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6
log n_{Ne+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

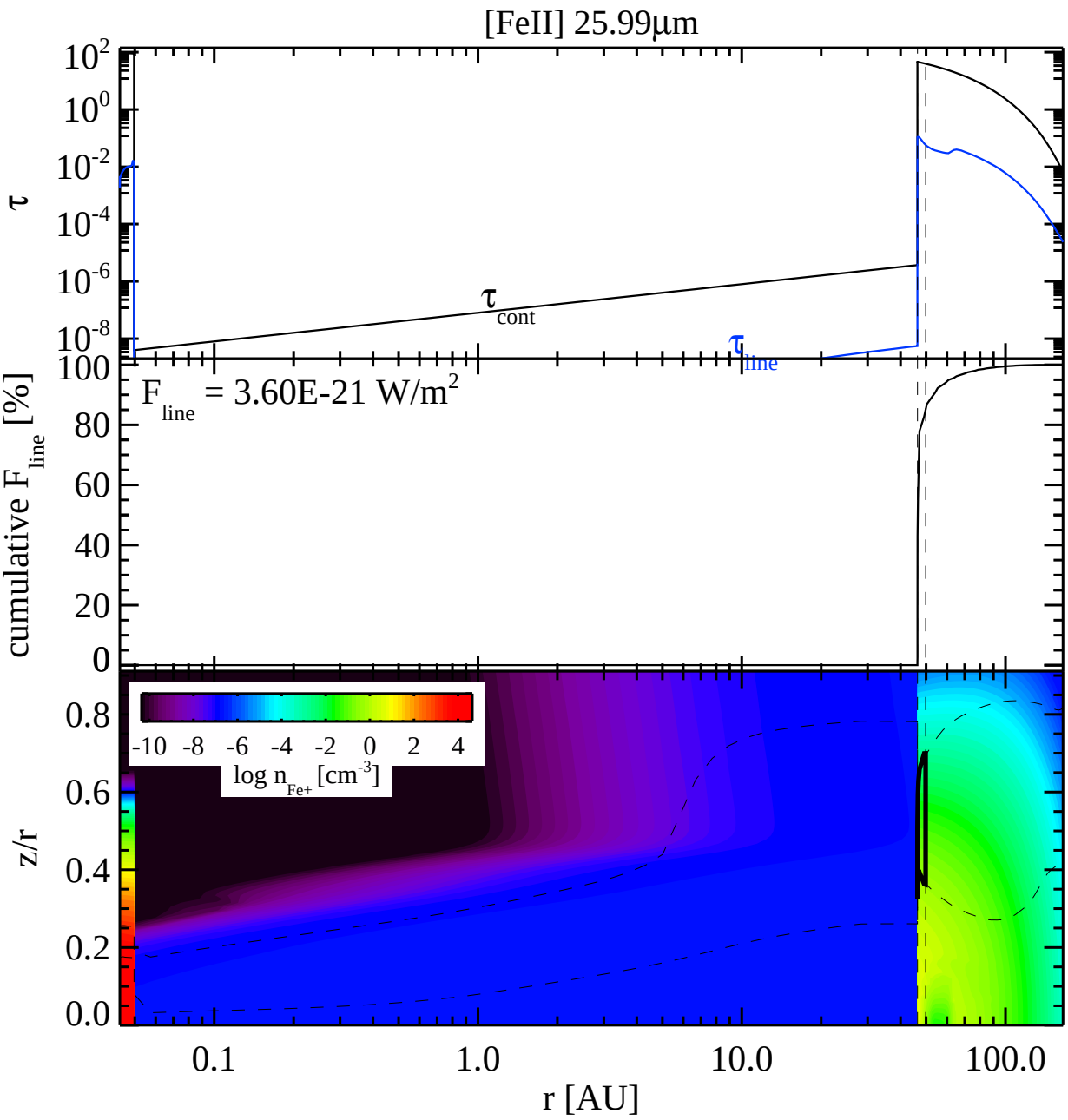

[NeIII] 15.55µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 3.63E-19 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-8 -6 -4 -2 0 2 4 6
log n_{Ne++} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

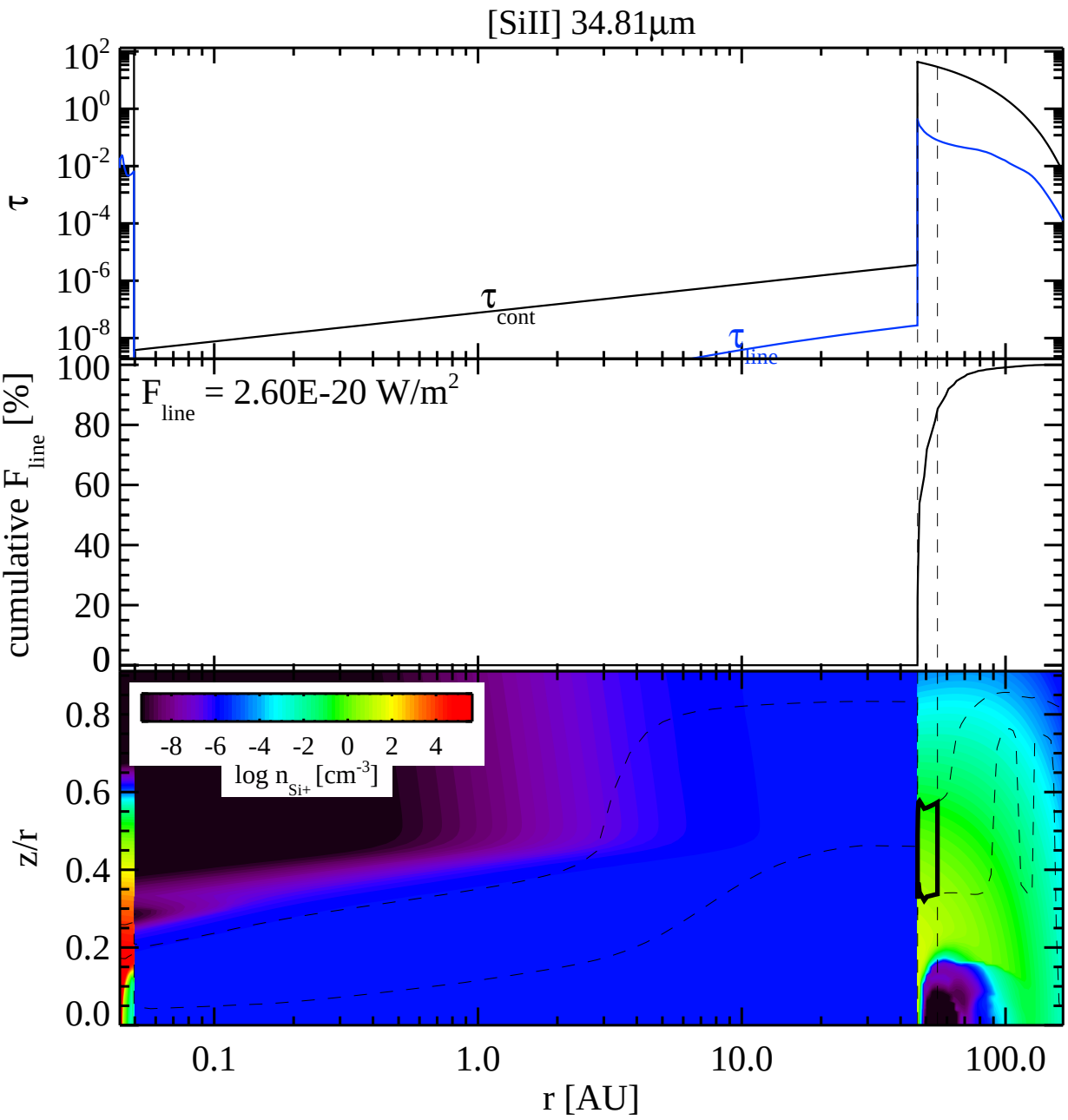

[SII] 0.6731µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 9.27E-21 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n_{S+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

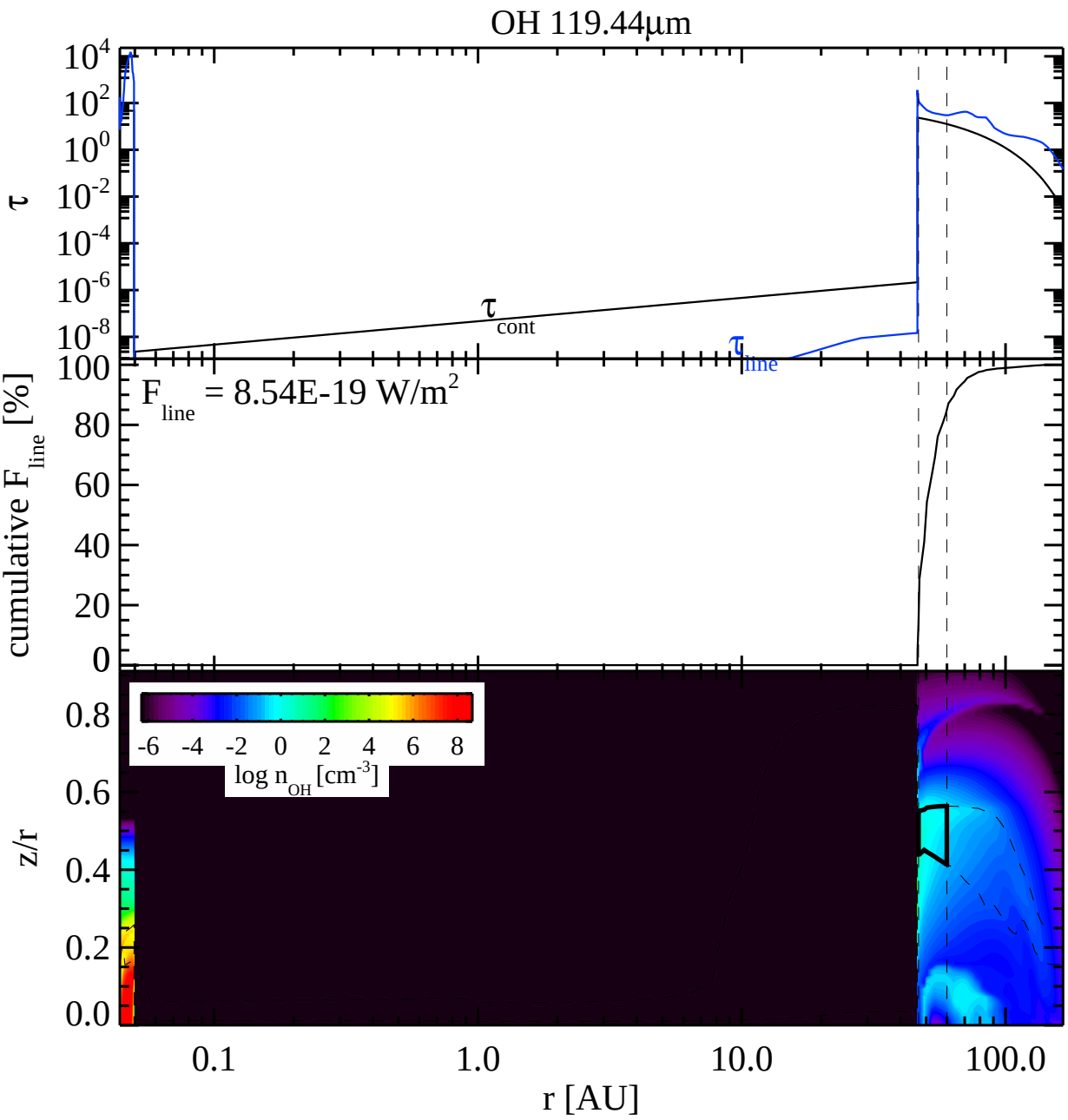

[SIII] 18.72µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.83E-21 W/m^2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2
log n_{S++} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

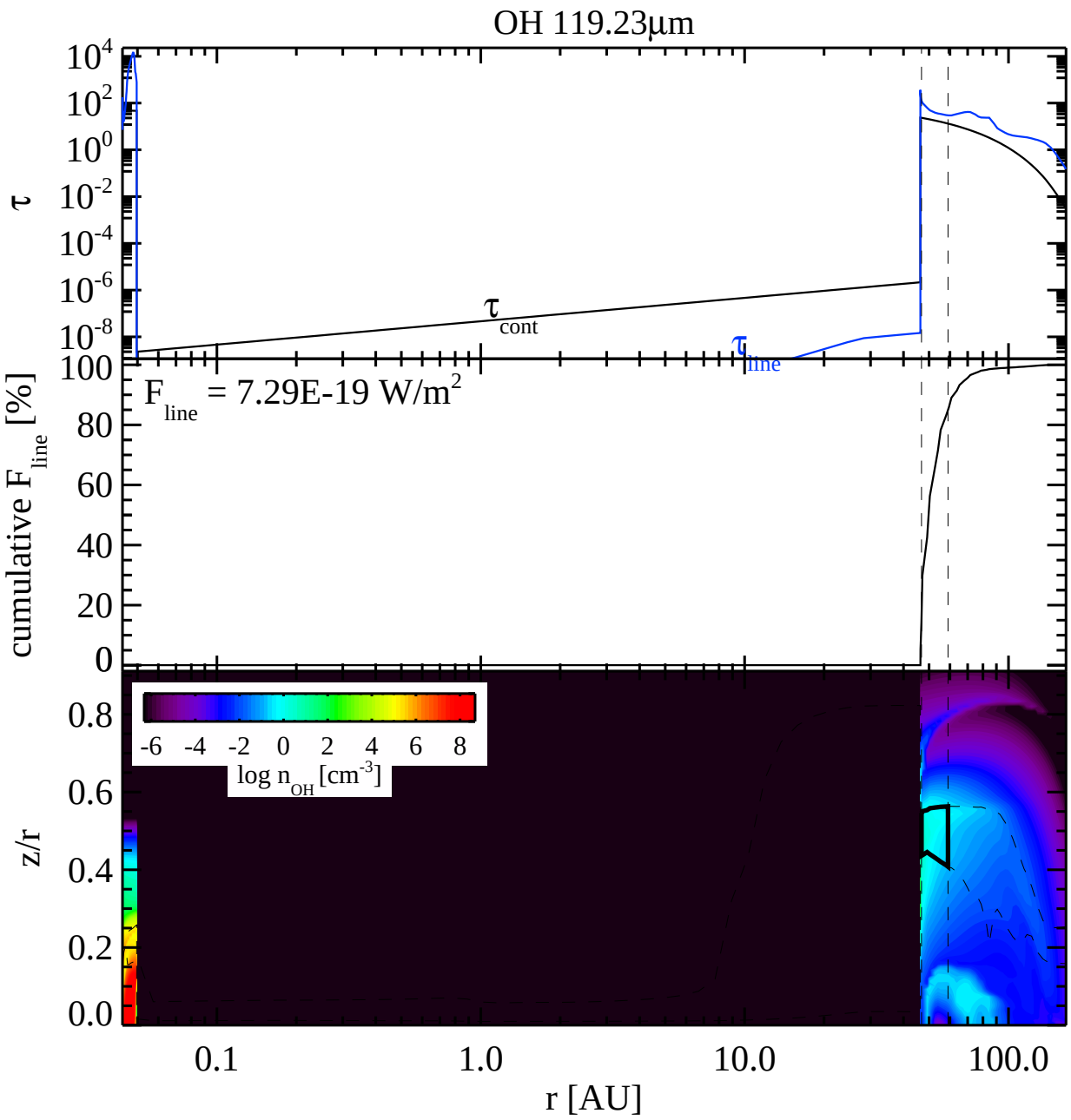

[ArII] 6.985µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.11E-20 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-8 -6 -4 -2 0 2 4
log n_{Ar+} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

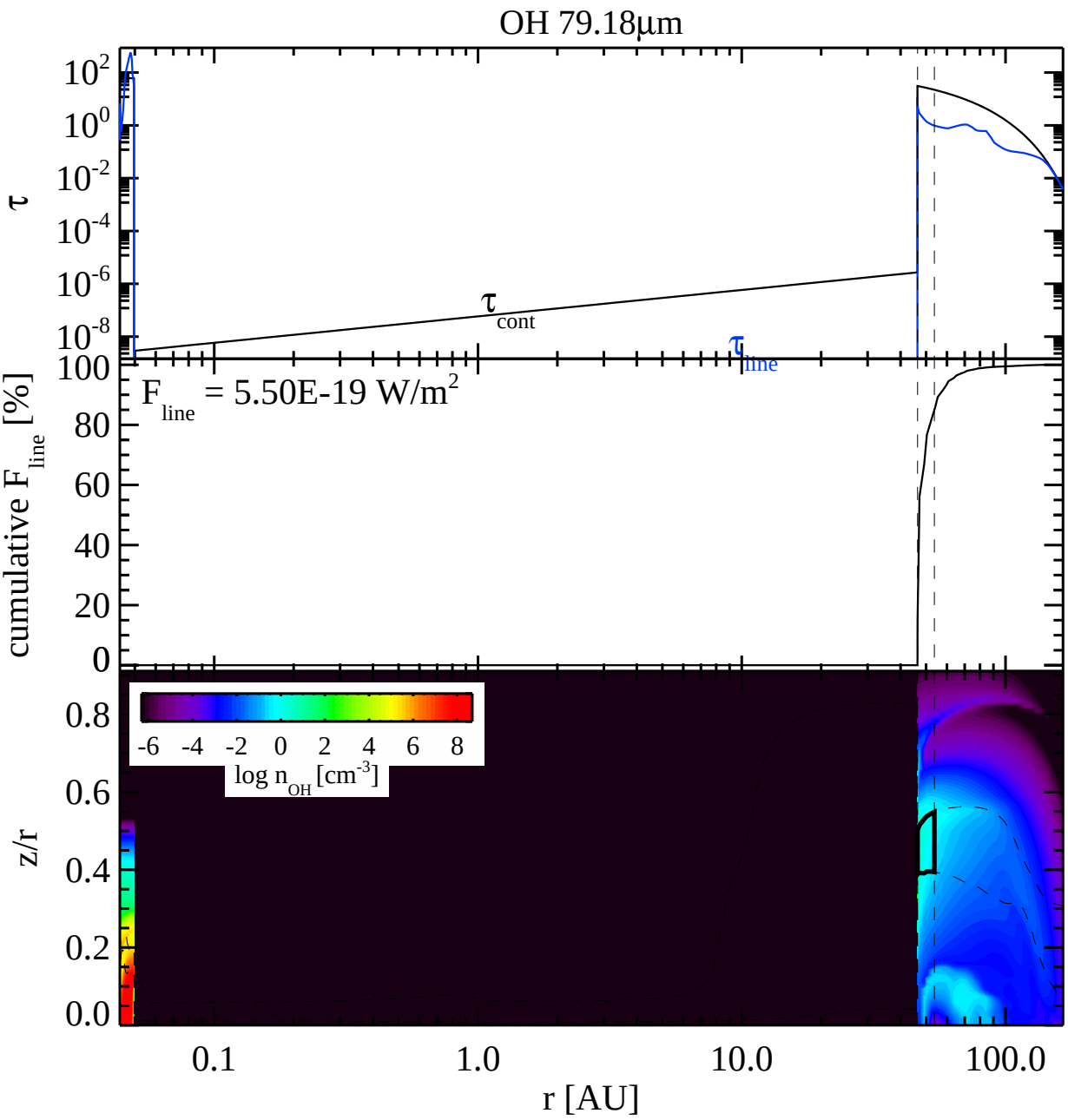

[ArIII] 21.82µm
τ
cumulative F line [%]
z/r
r [AU]
τ cont
τ line
F line = 3.94E-22 W/m2
log n Ar++ [cm-3]
-10 -8 -6 -4 -2 0 2 4
0.1
1.0
10.0
100.0

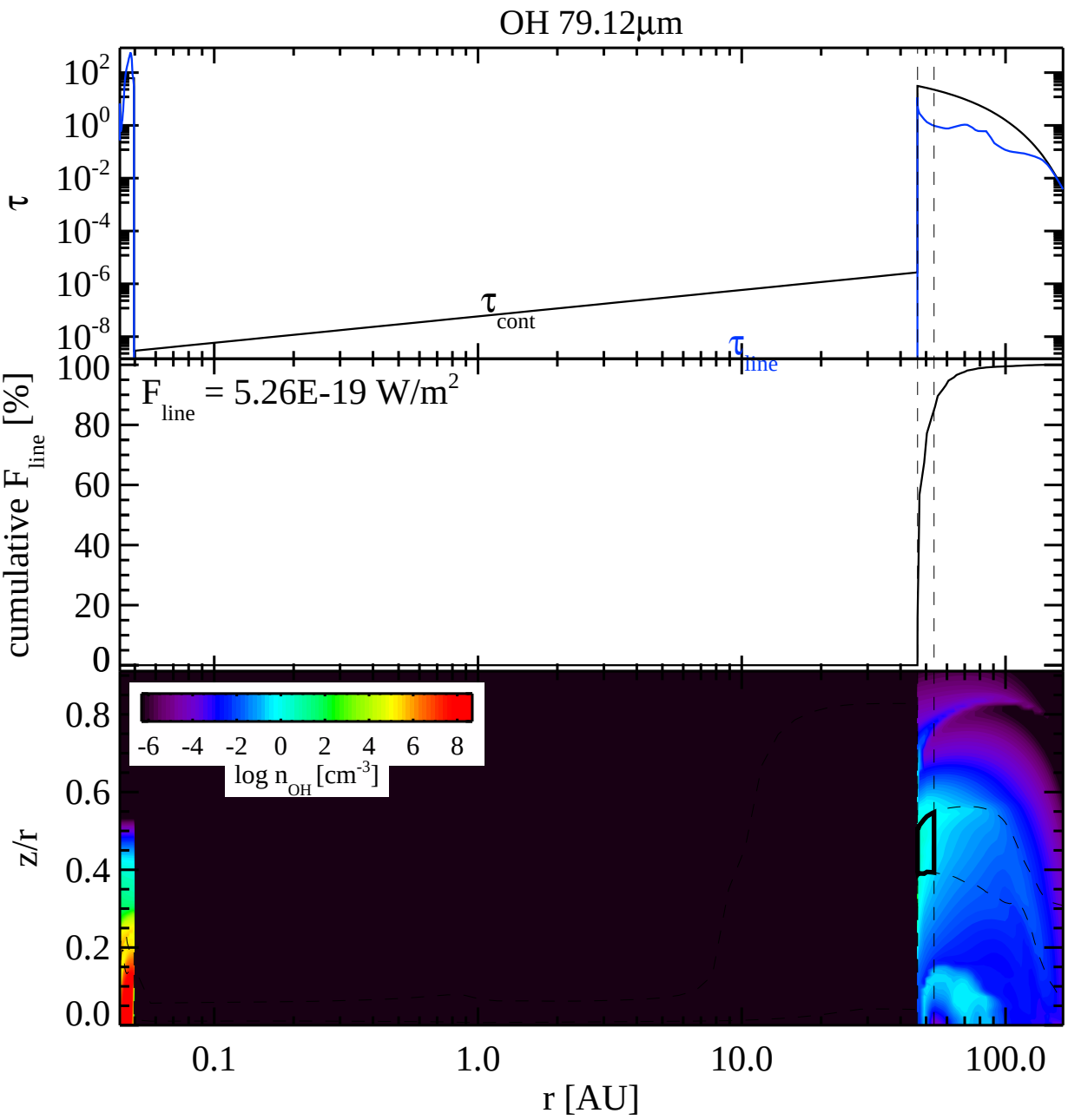

[FeII] 25.99μm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.60E-21 W/m^2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2 4
log n_{Fe+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

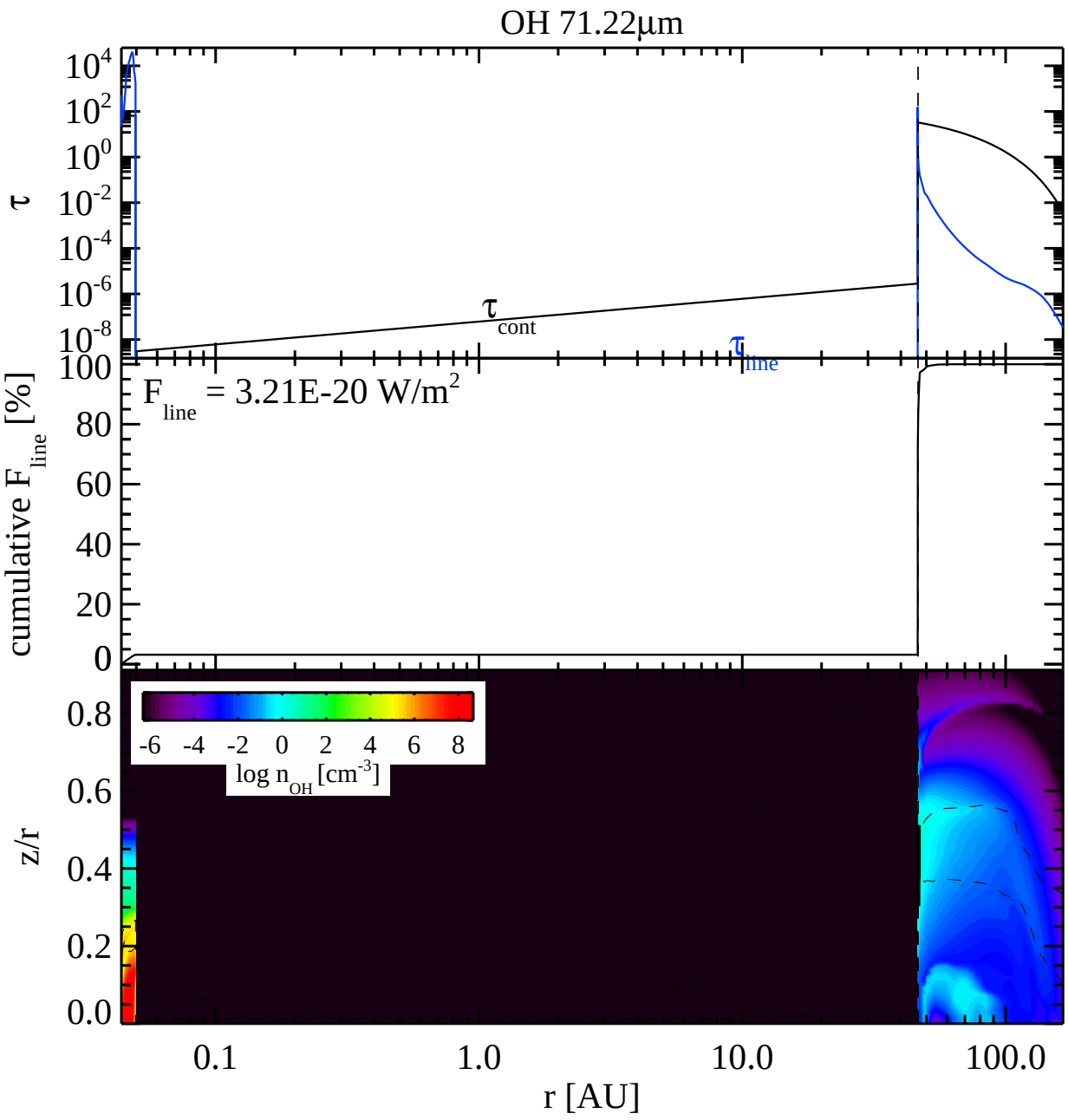

[SiII] 34.81µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.60E-20 W/m^2
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4
log n_{Si+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

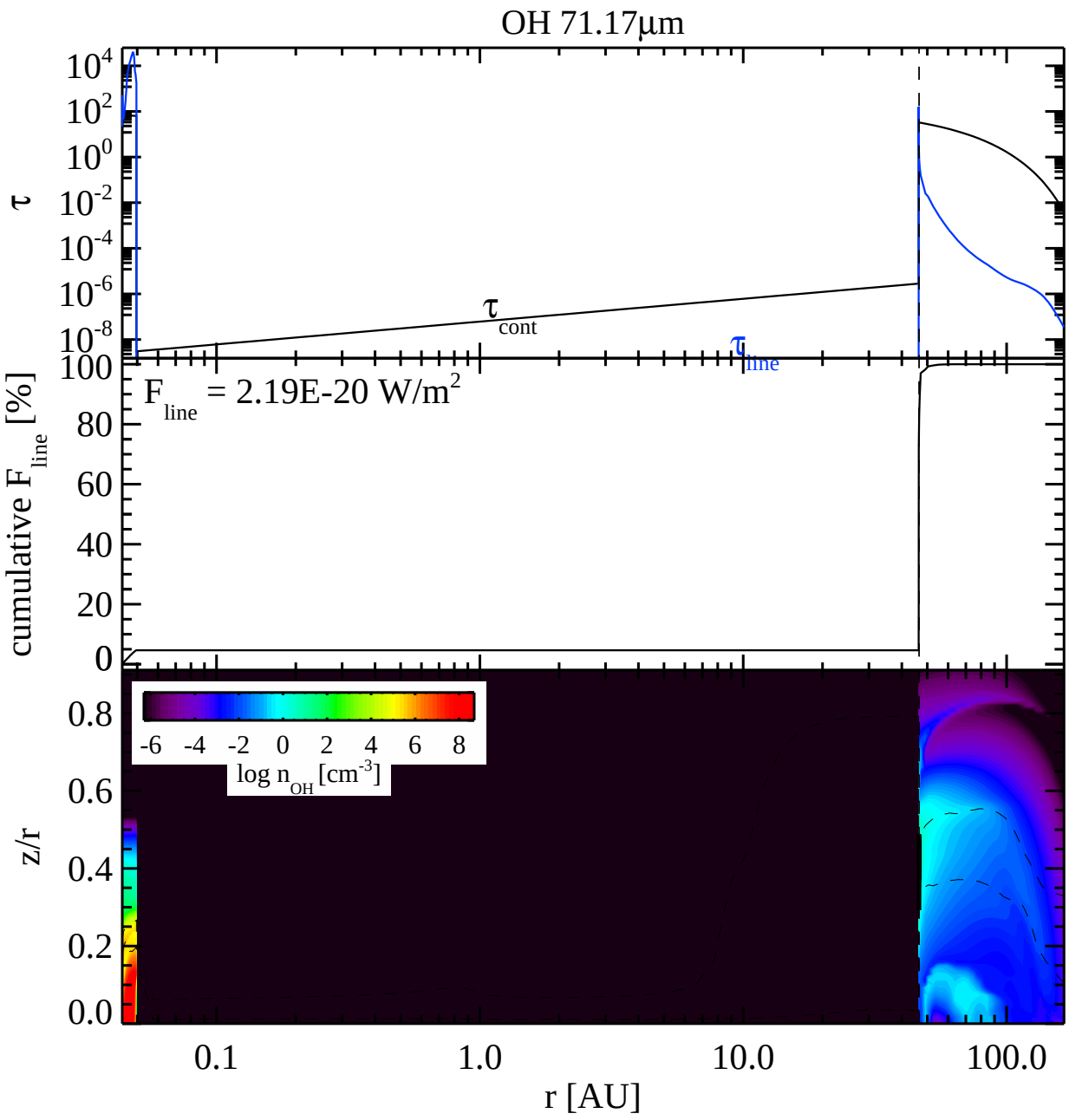

OH 119.44μm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.54E-19 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

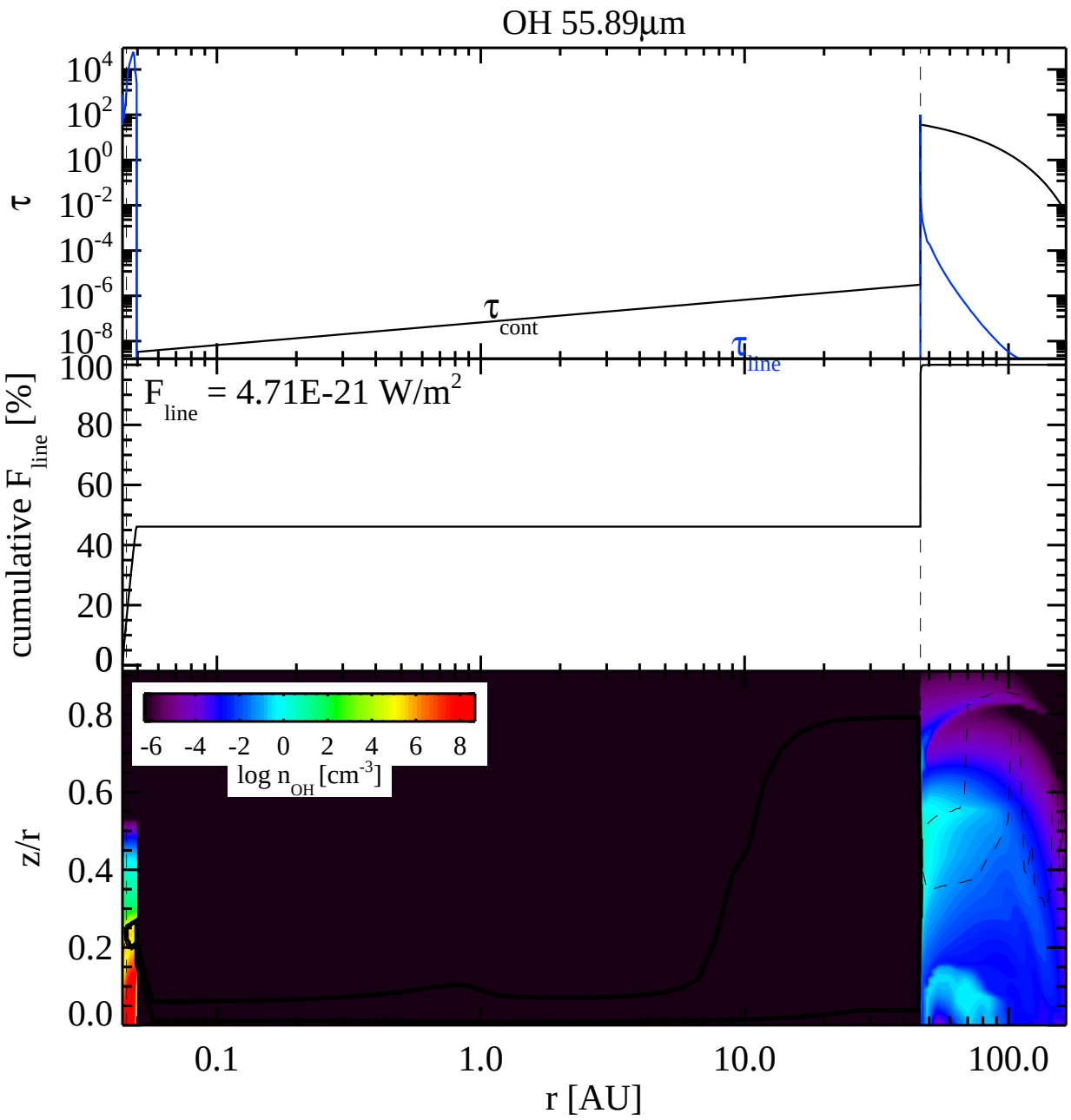

OH 119.23µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 7.29E-19 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

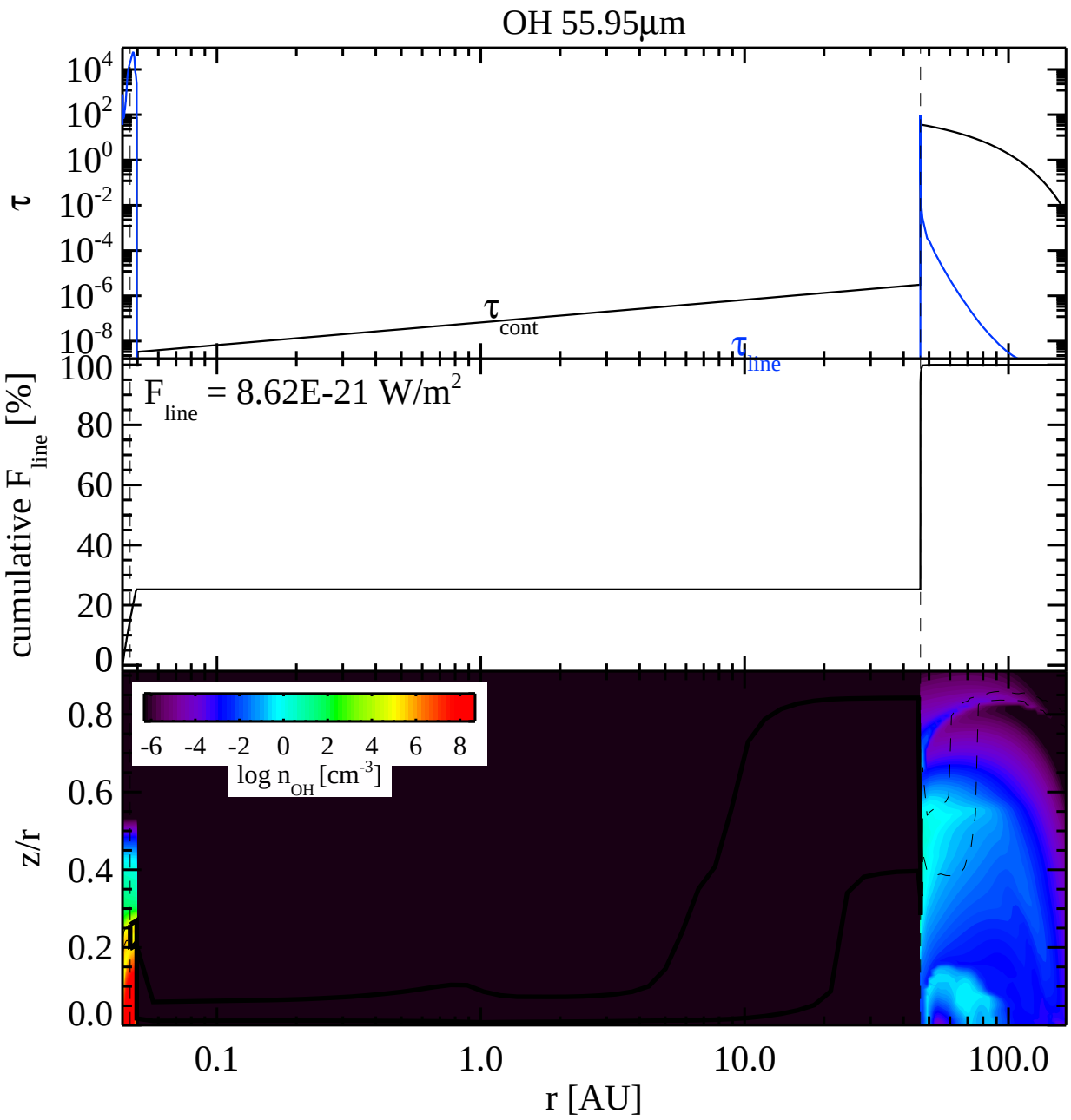

OH 79.18µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.50E-19 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

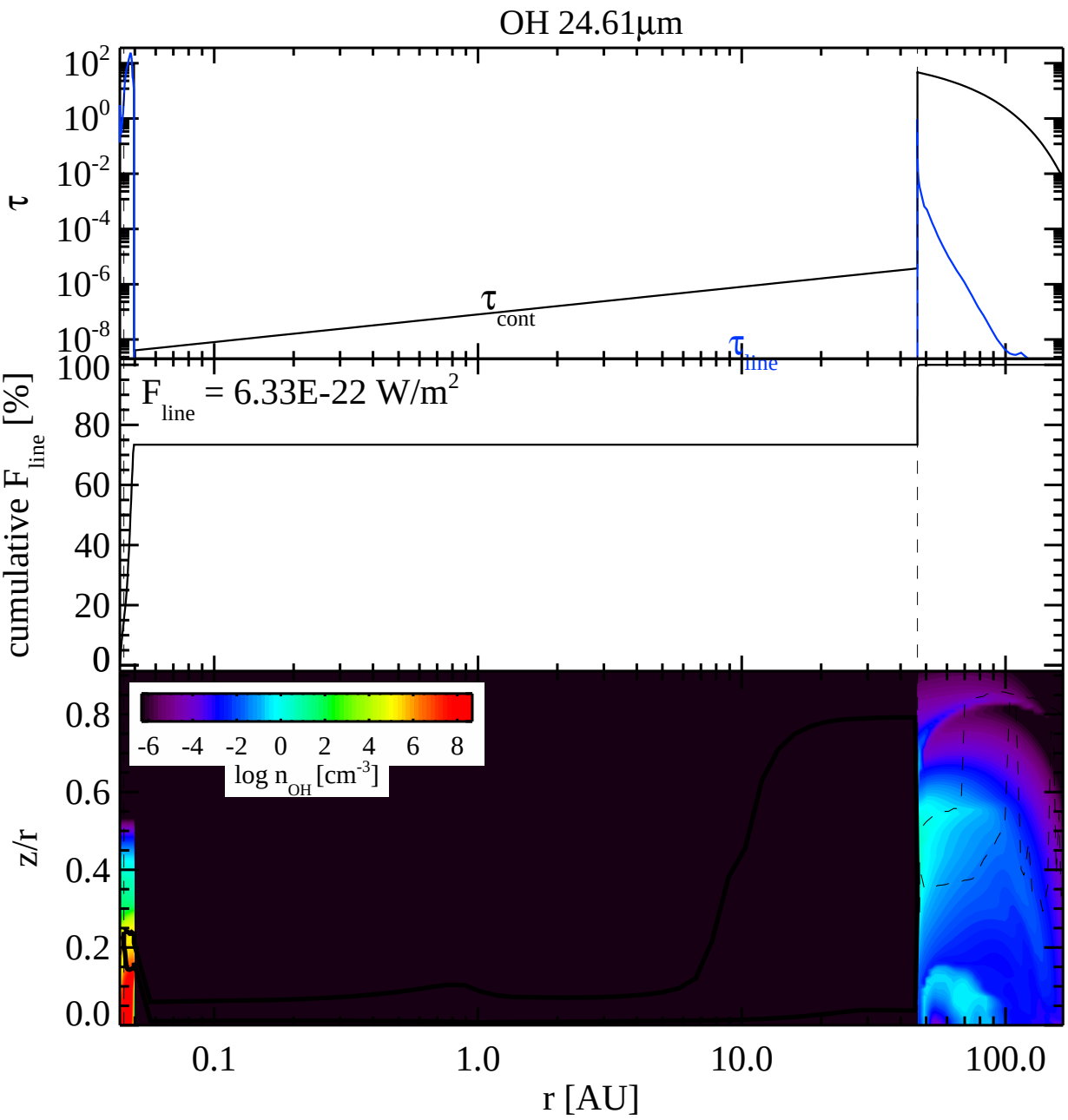

OH 79.12µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.26E-19 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

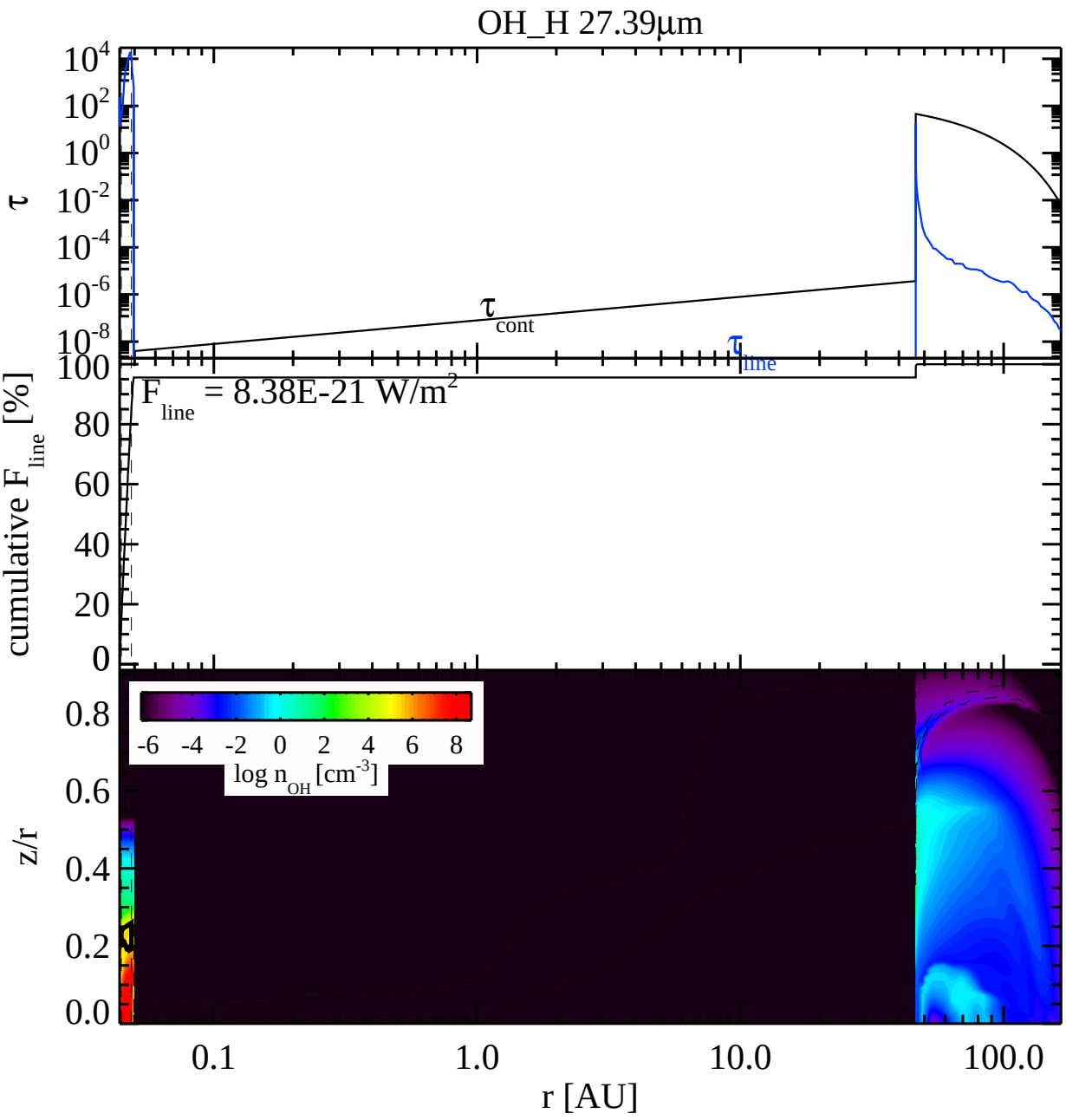

OH 71.22µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.21E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

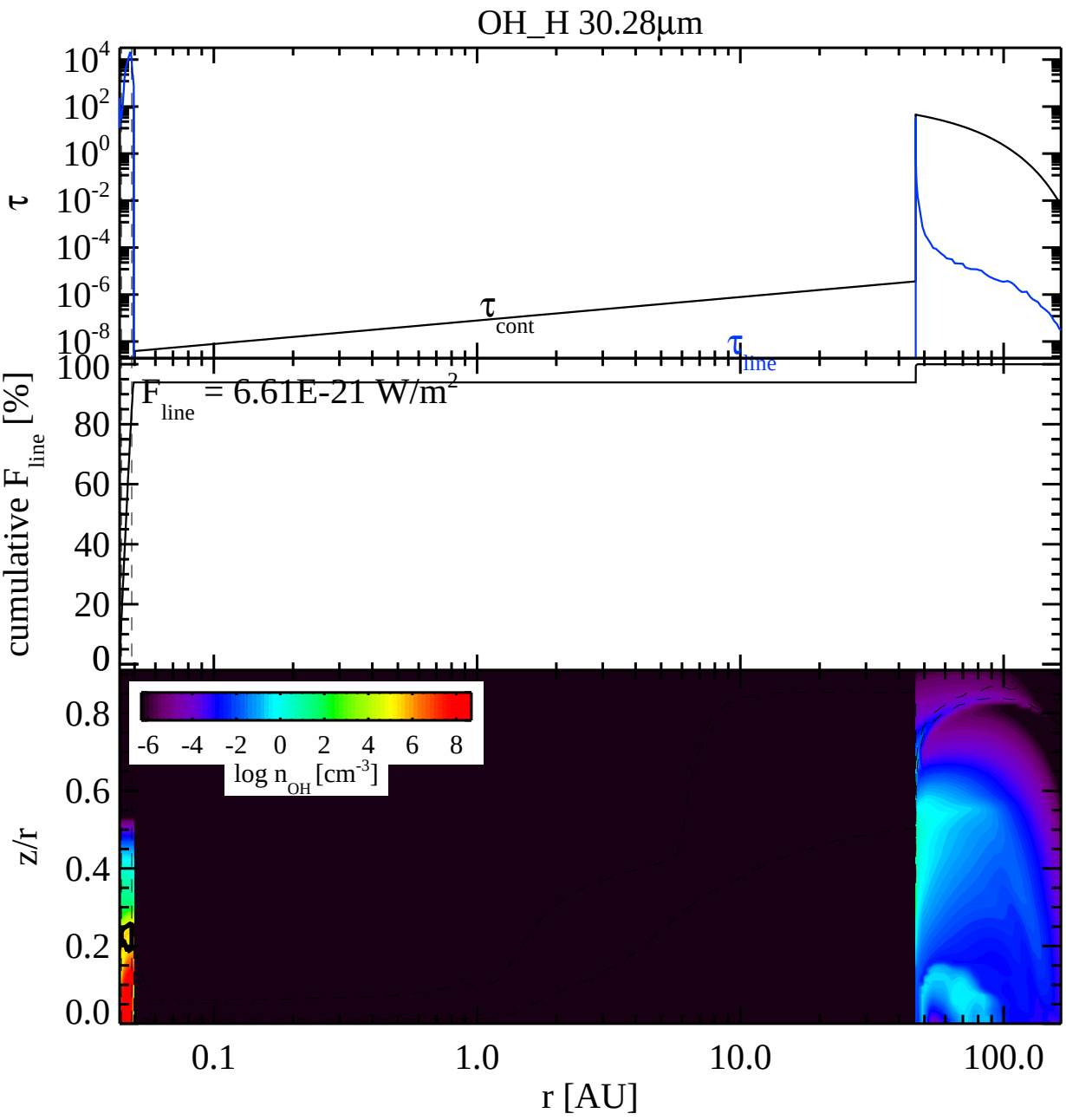

OH 71.17µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.19E-20 W/m^2
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

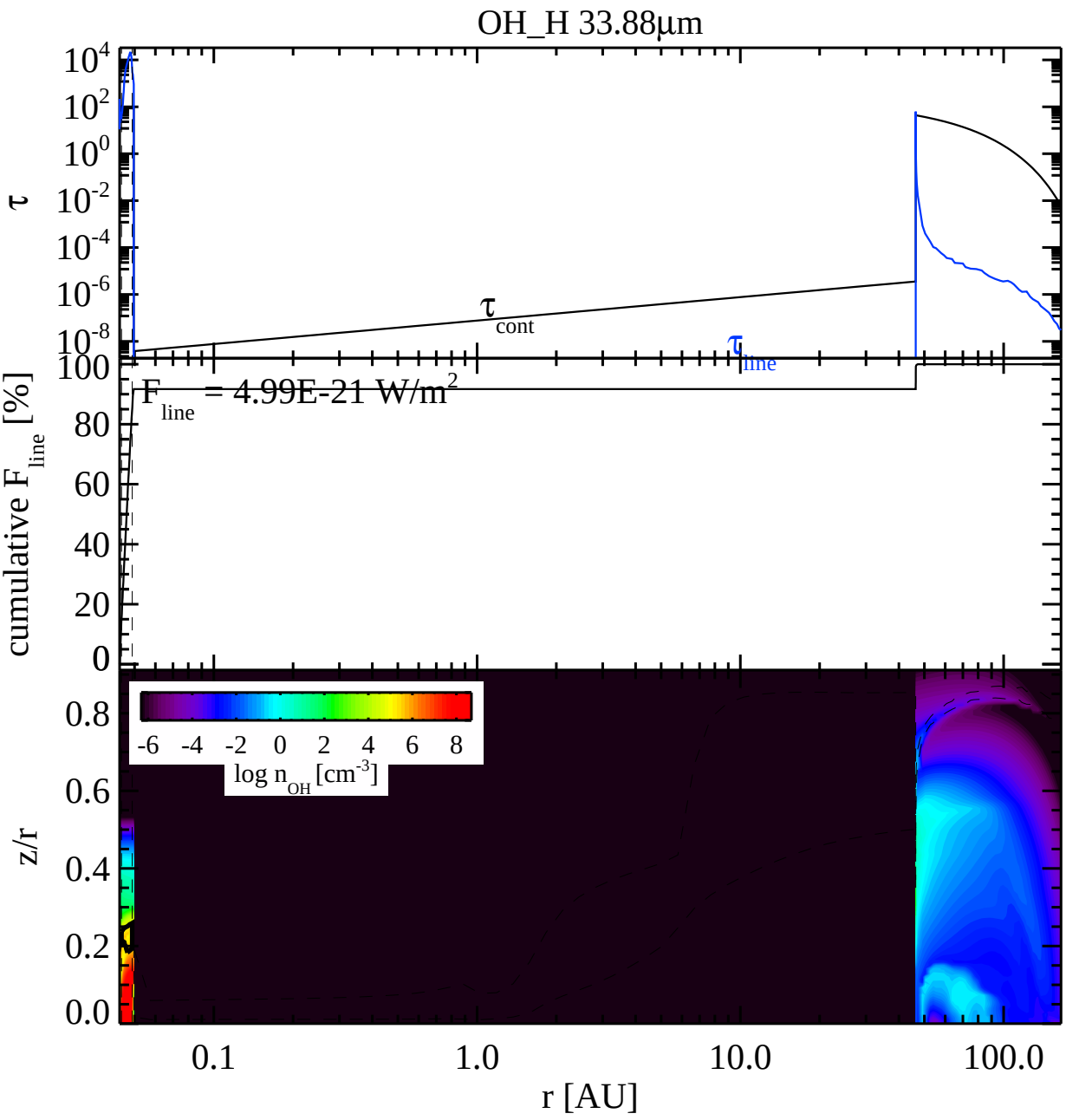

OH 55.89µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 4.71E-21 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

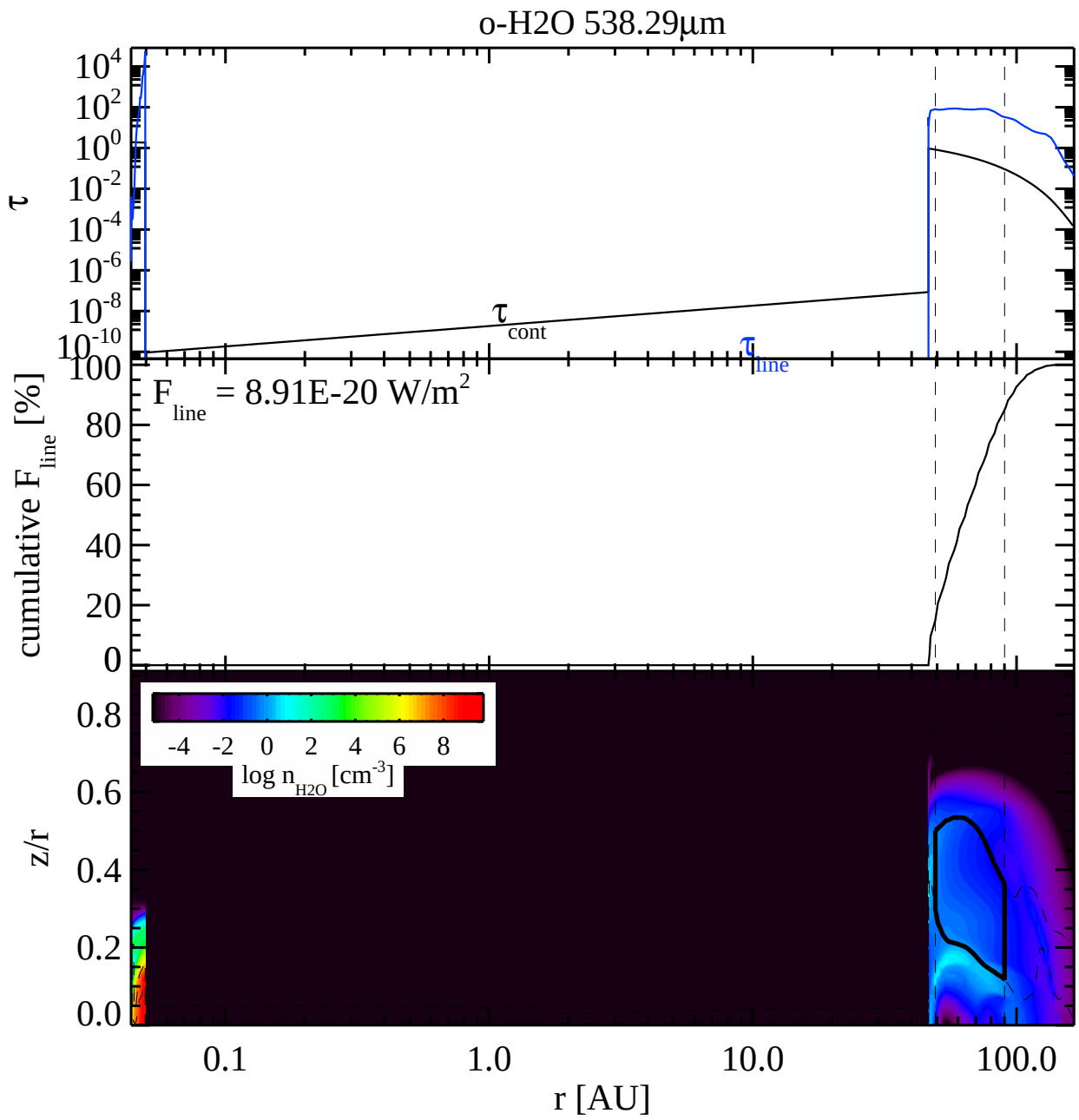

OH 55.95µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.62E-21 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

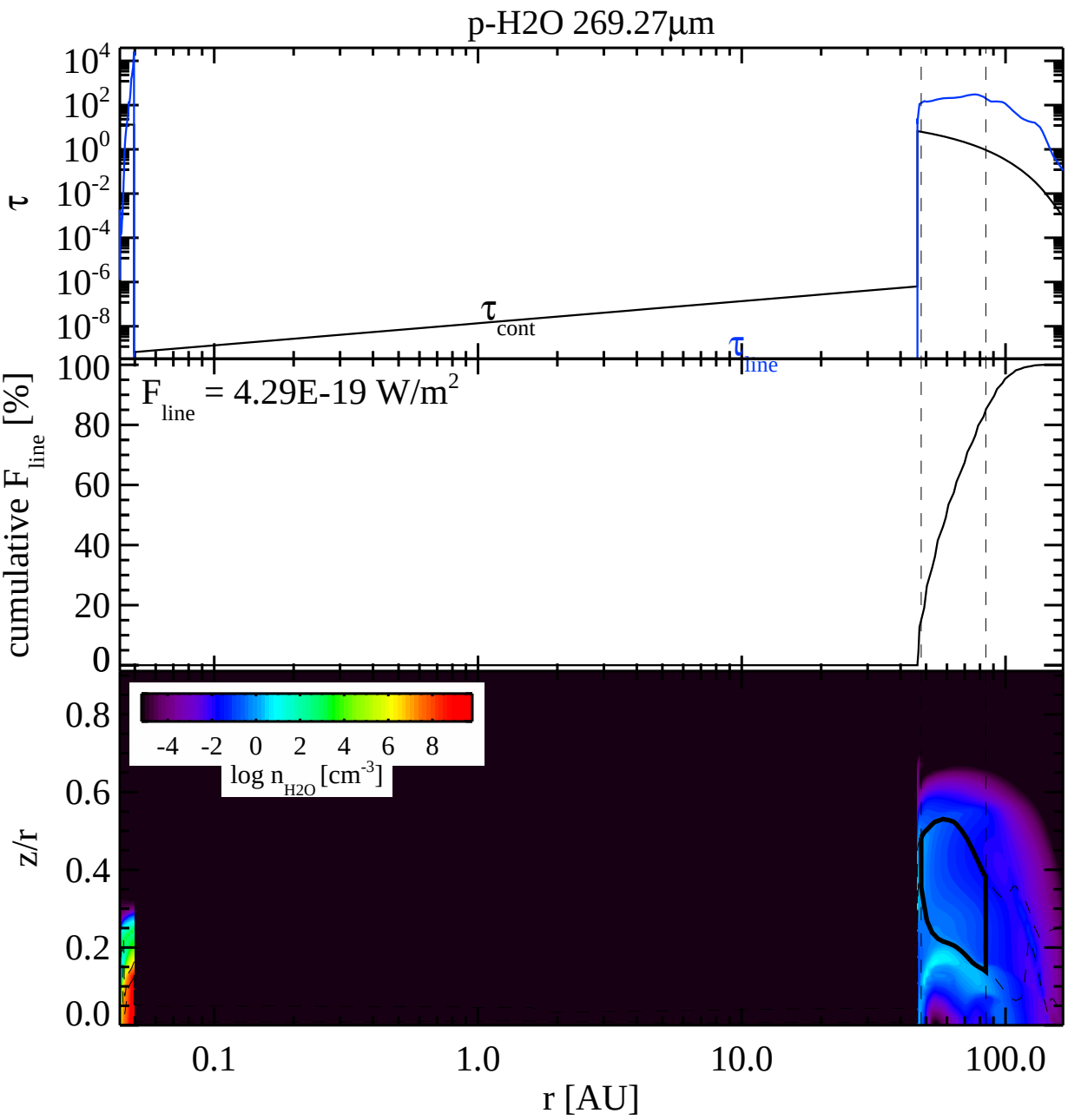

OH 24.61µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 6.33E-22 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

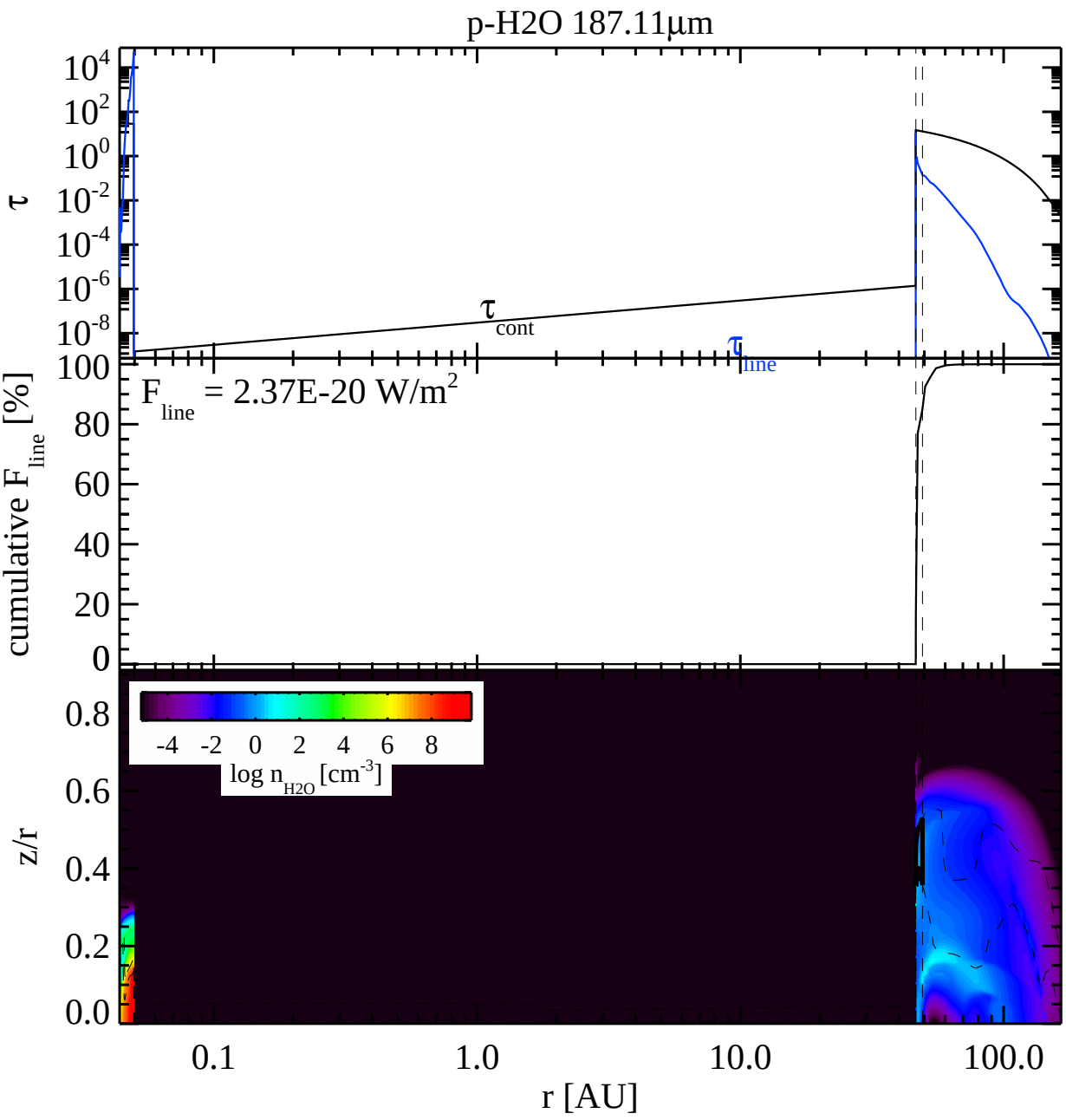

OH_H 27.39µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 8.38E-21 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

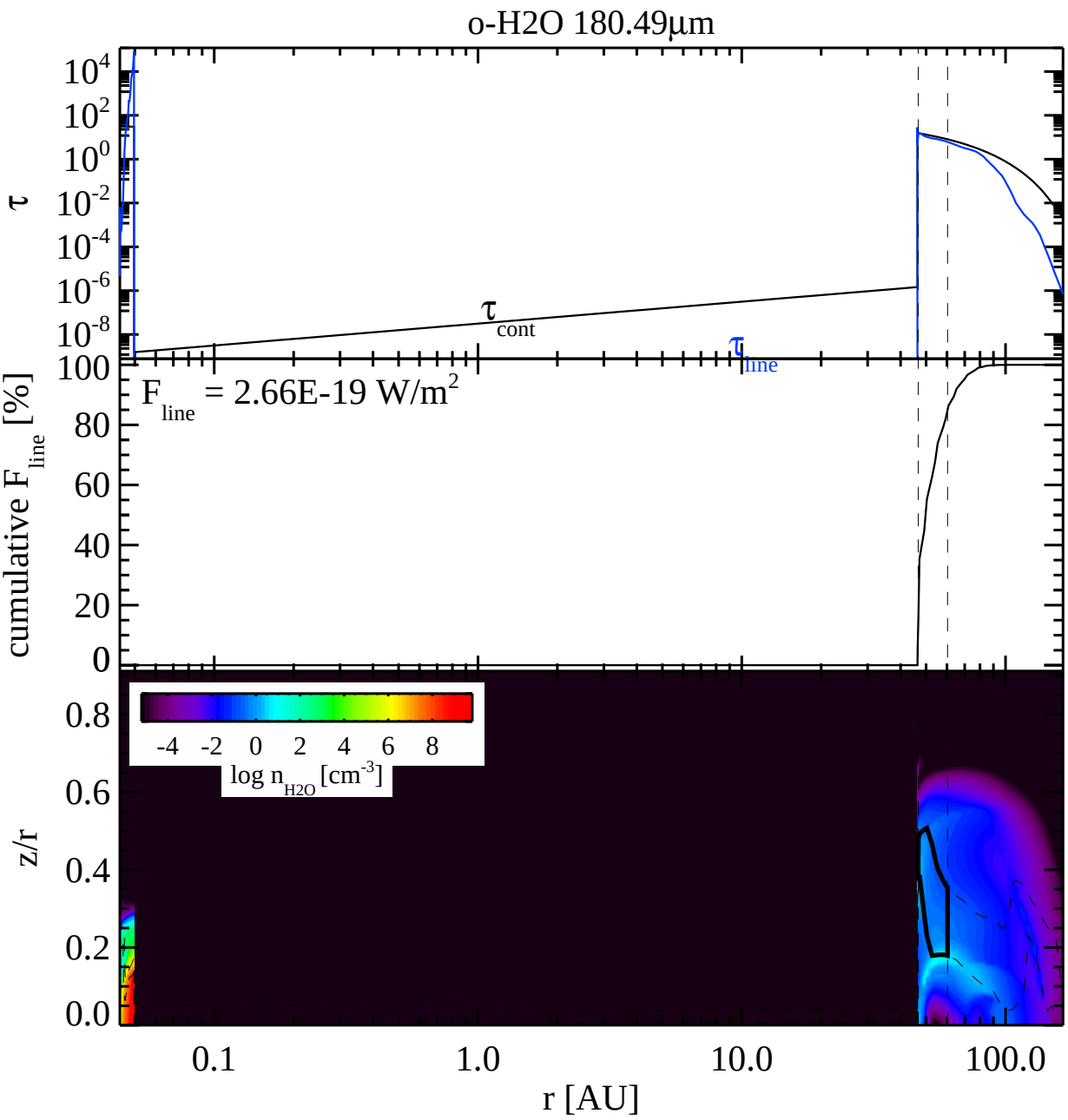

OH_H 30.28µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 6.61E-21 W/m^2
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

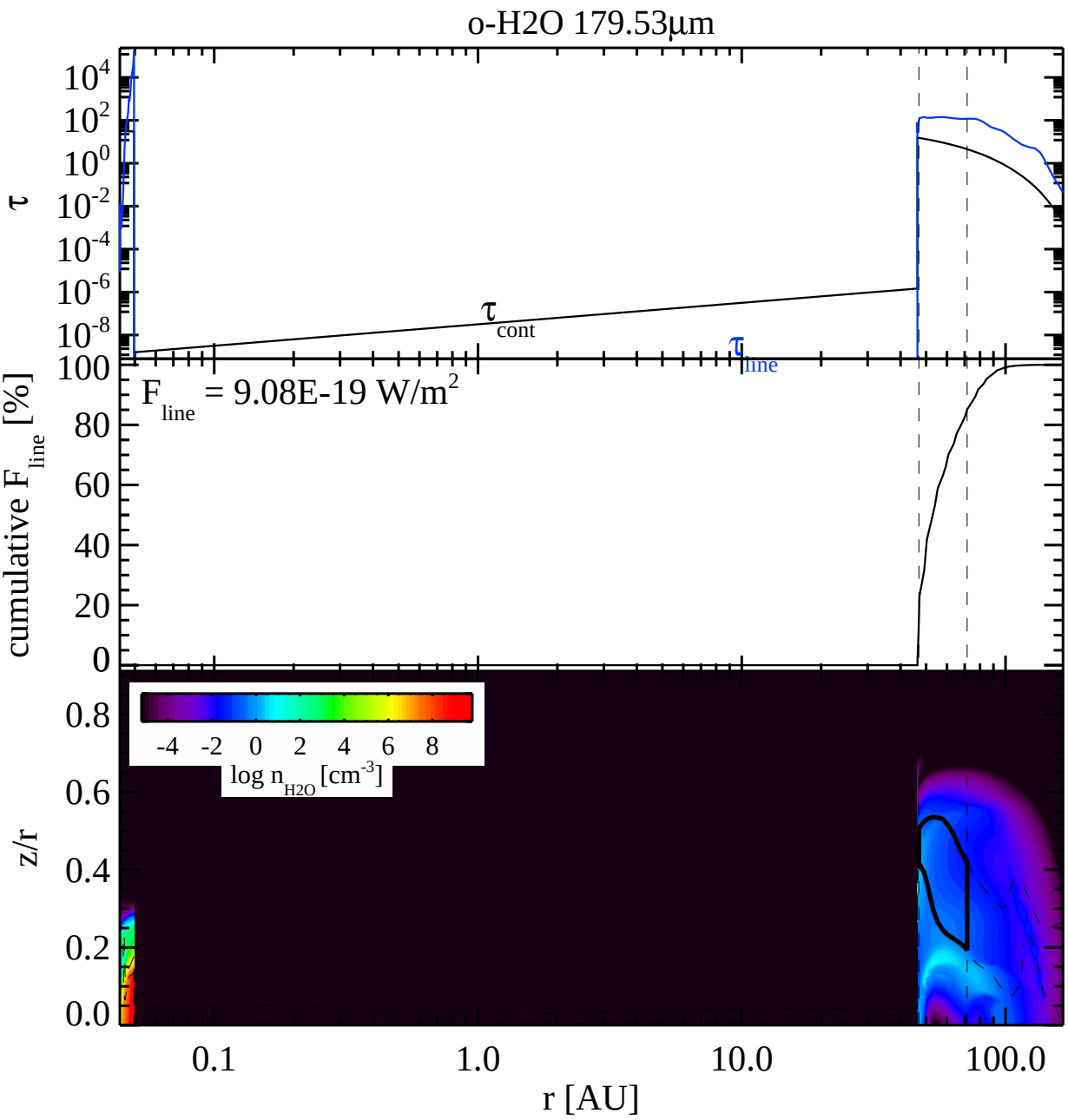

OH_H 33.88µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.99E-21 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

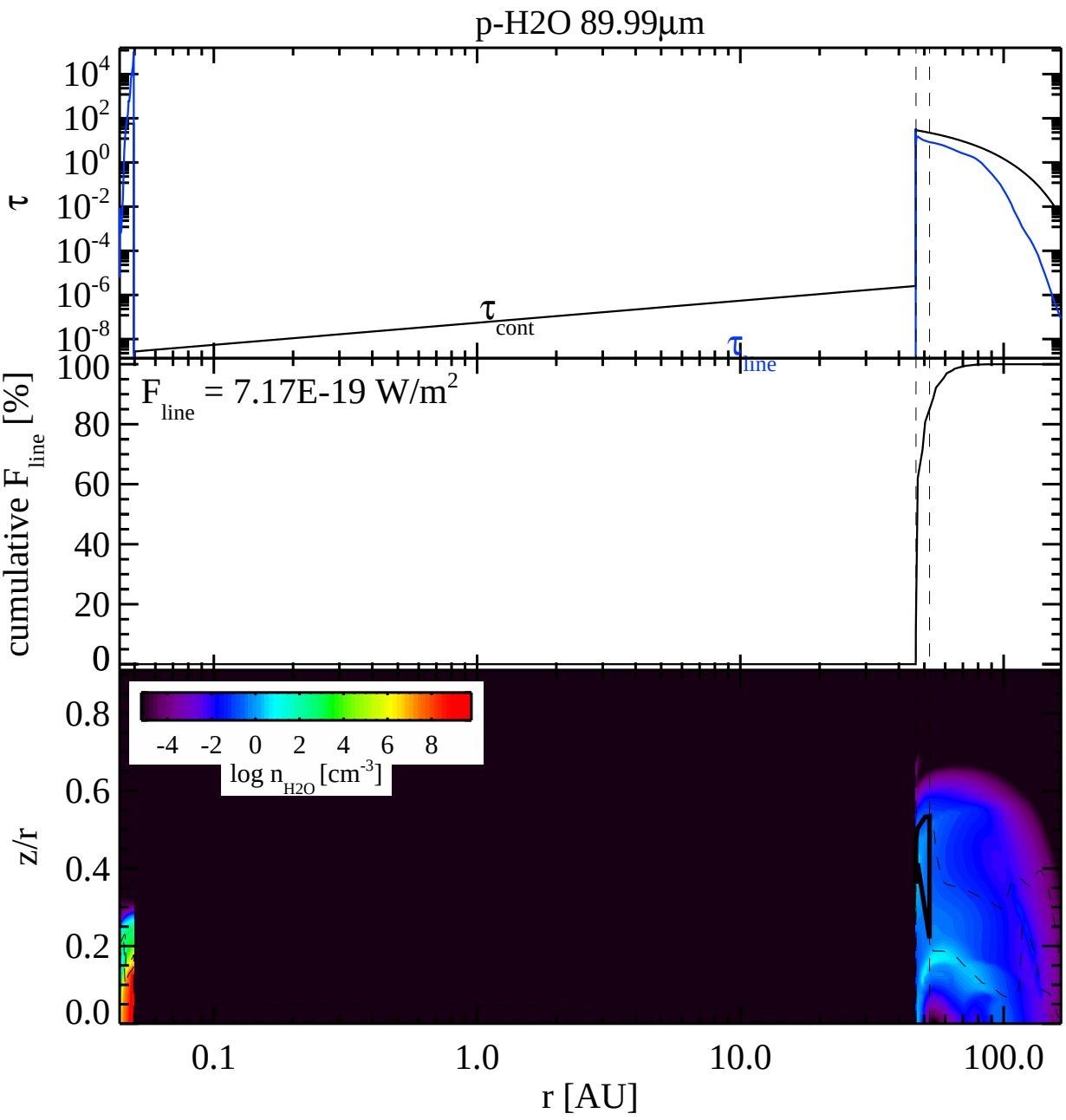

o-H2O 538.29µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
F_{line} = 8.91E-20 W/m^2
cumulative F_{line} [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

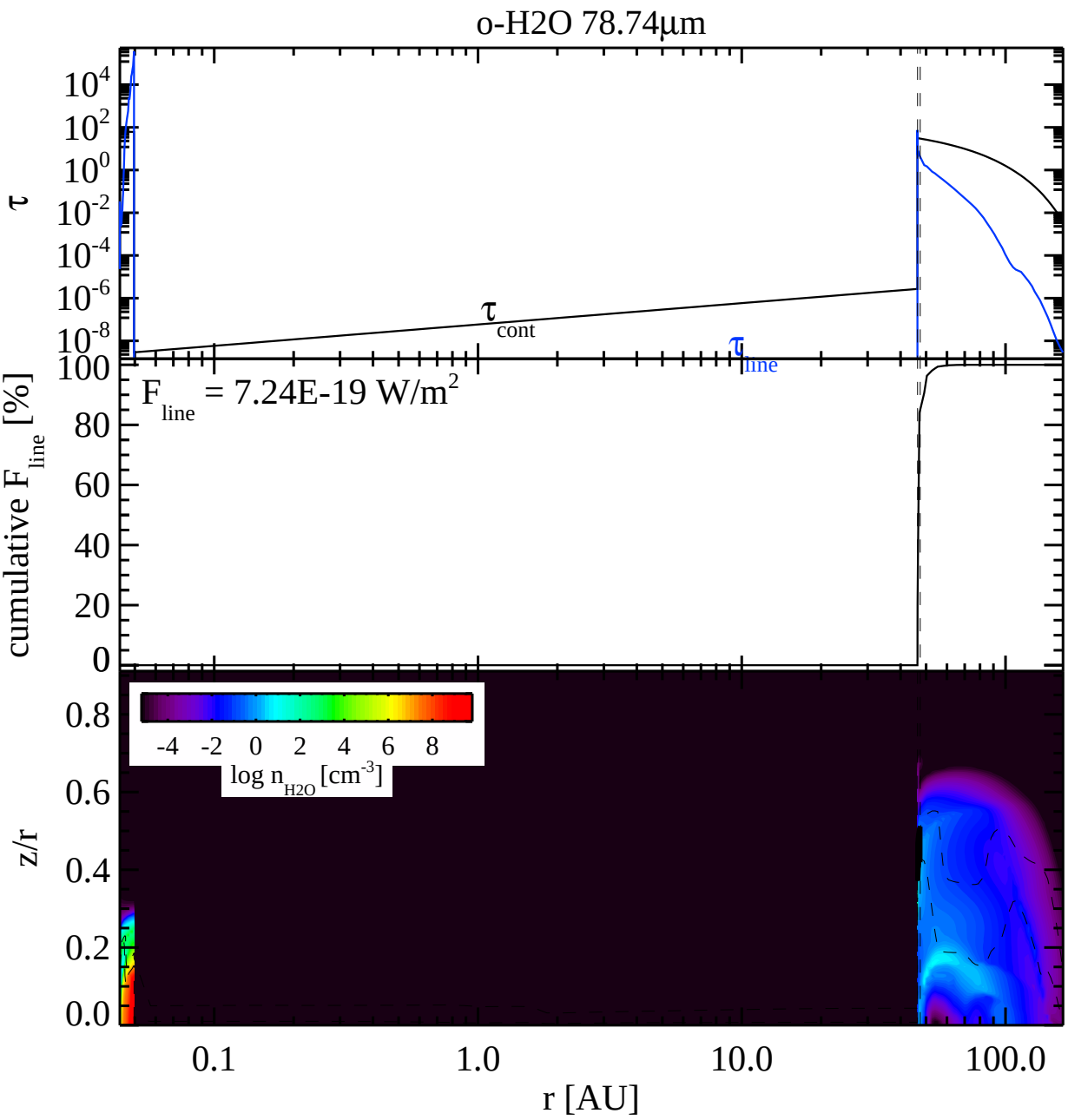

p-H2O 269.27µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.29E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

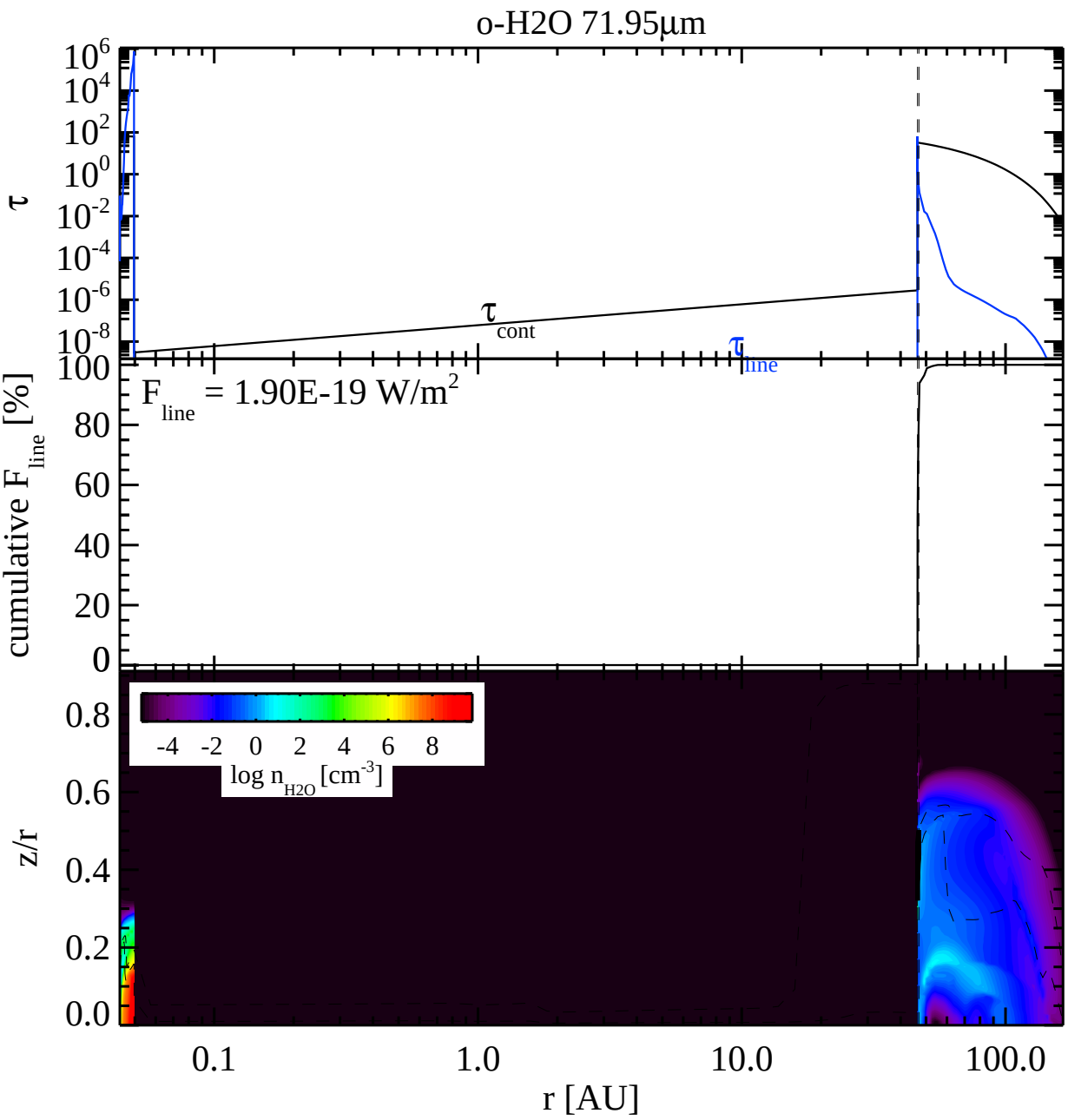

p-H2O 187.11µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.37E-20 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

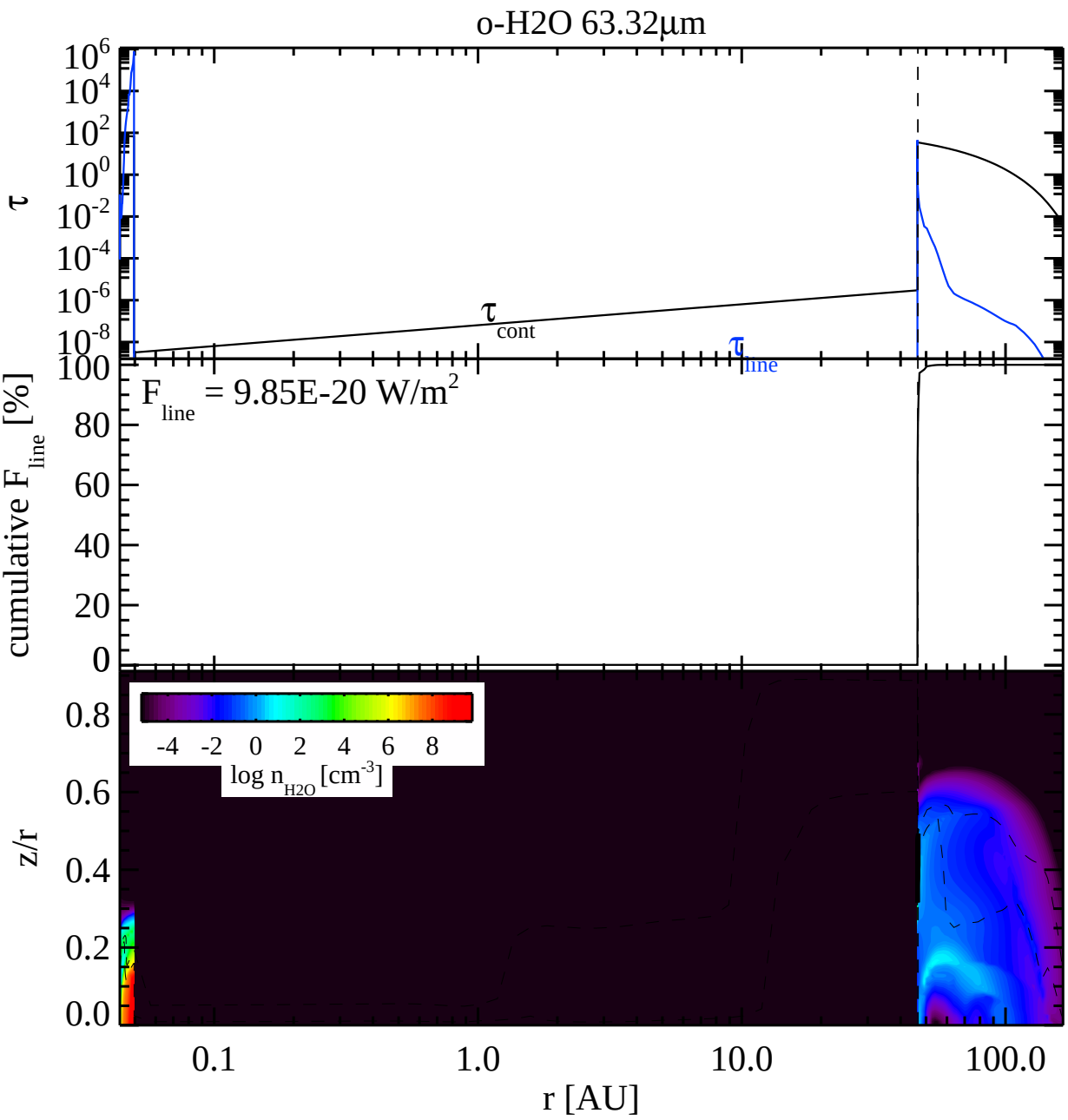

o-H2O 180.49µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.66E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

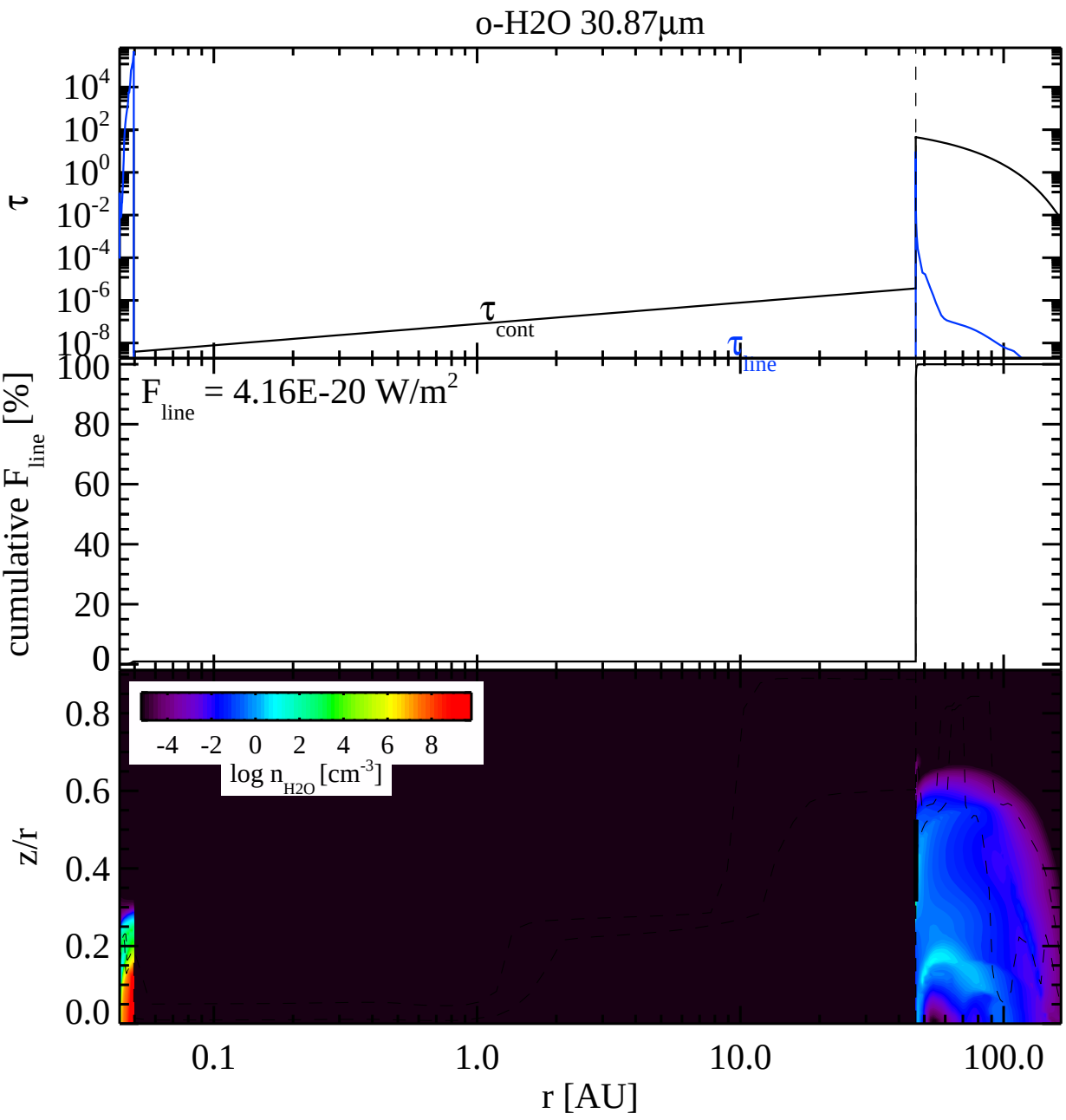

o-H2O 179.53µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 9.08E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

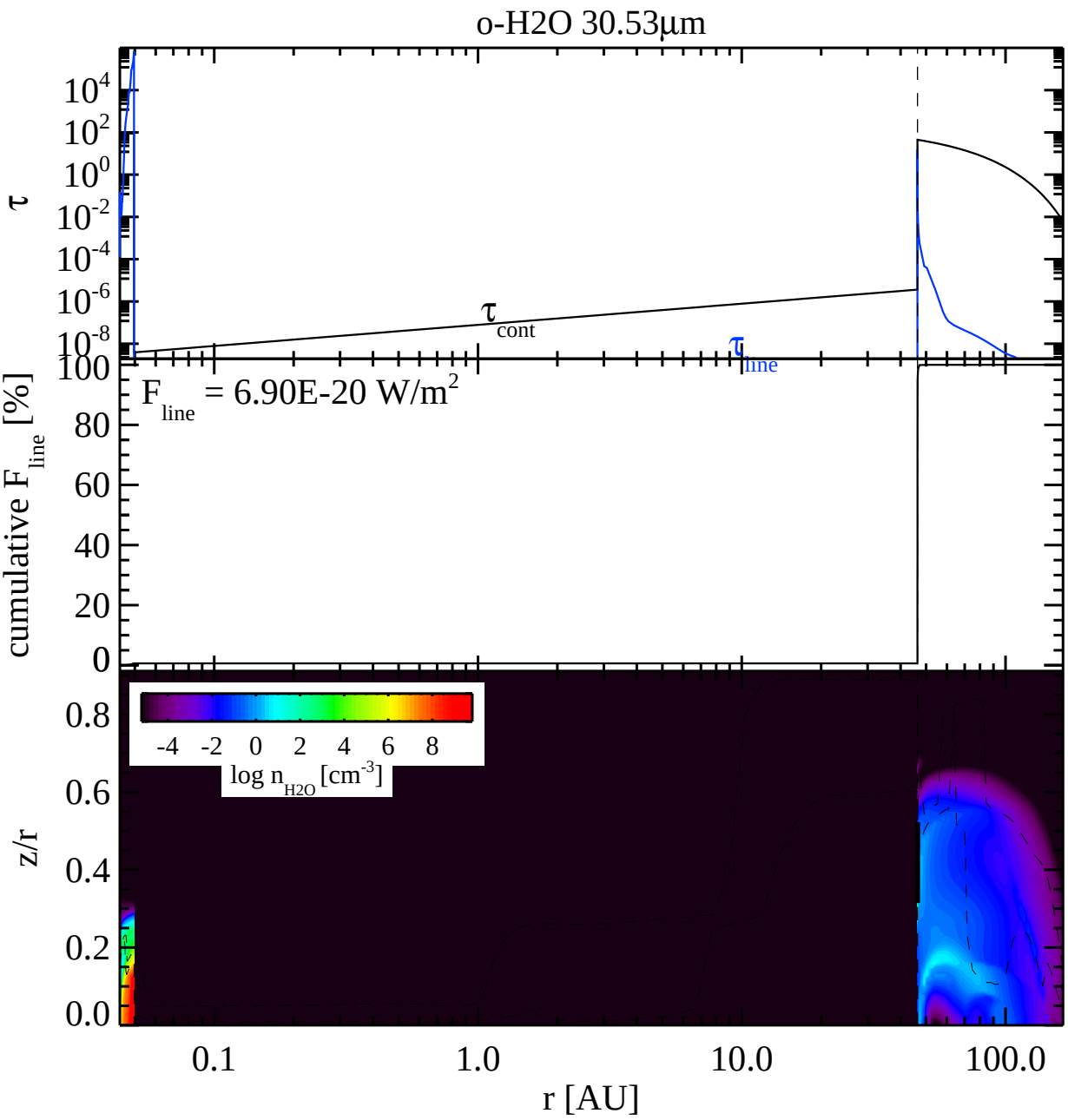

p-H2O 89.99µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 7.17E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

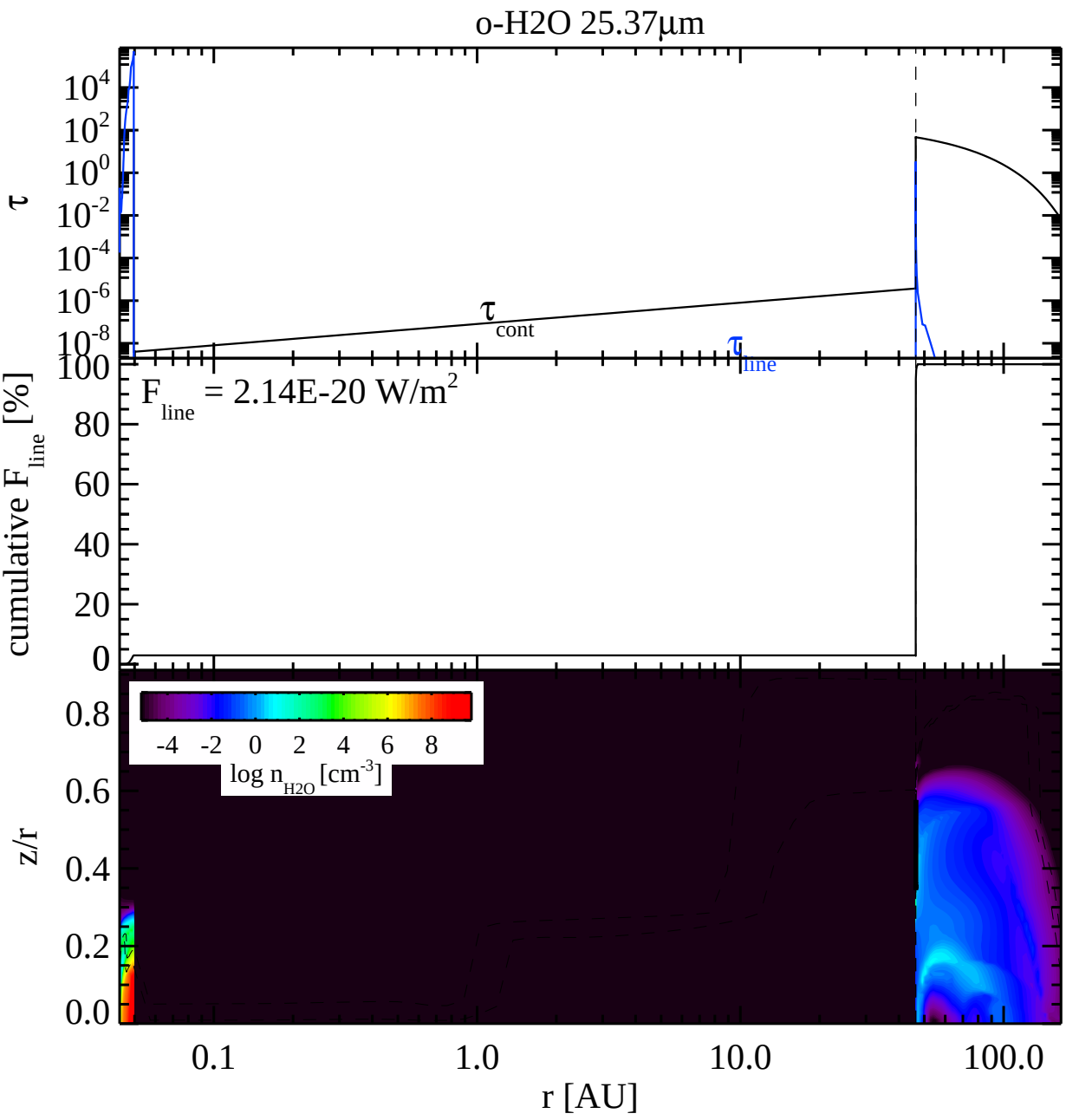

o-H2O 78.74µm
τ
10^4
10^2
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
F line = 7.24E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n H2O [cm^-3]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

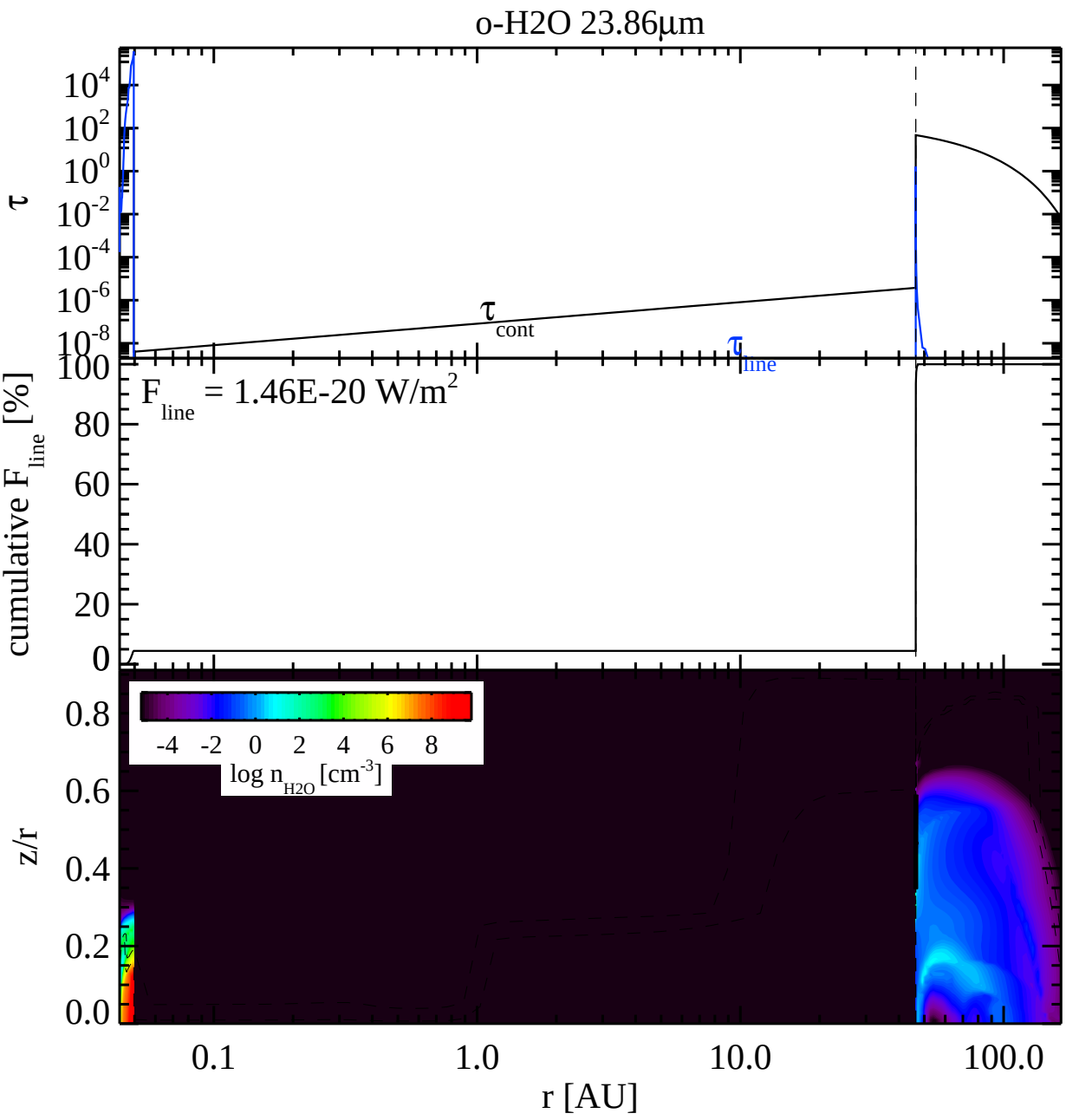

o-H2O 71.95µm
τ
10^{6}
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.90E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

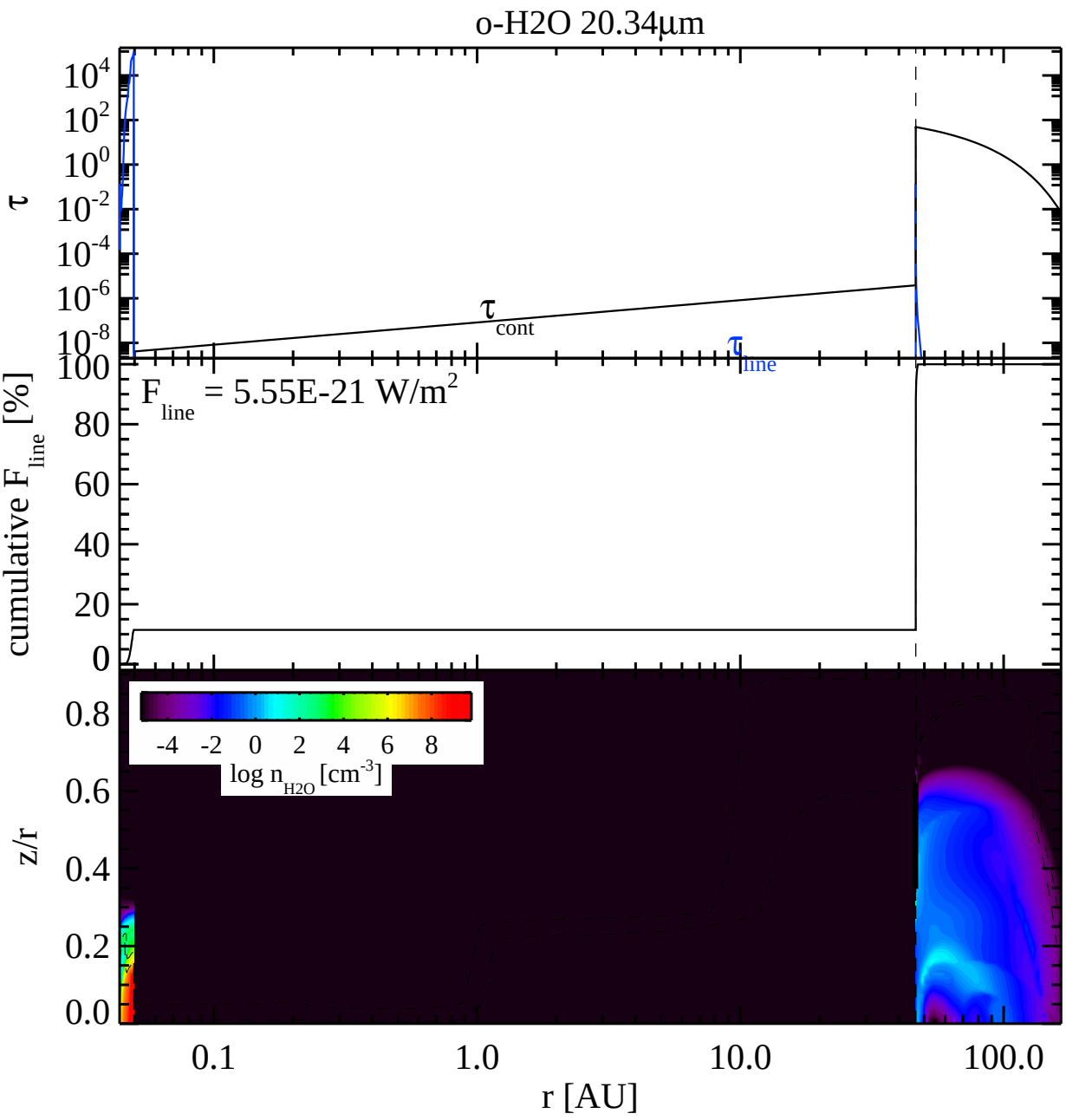

o-H2O 63.32µm
τ
10^{6}
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 9.85E-20 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

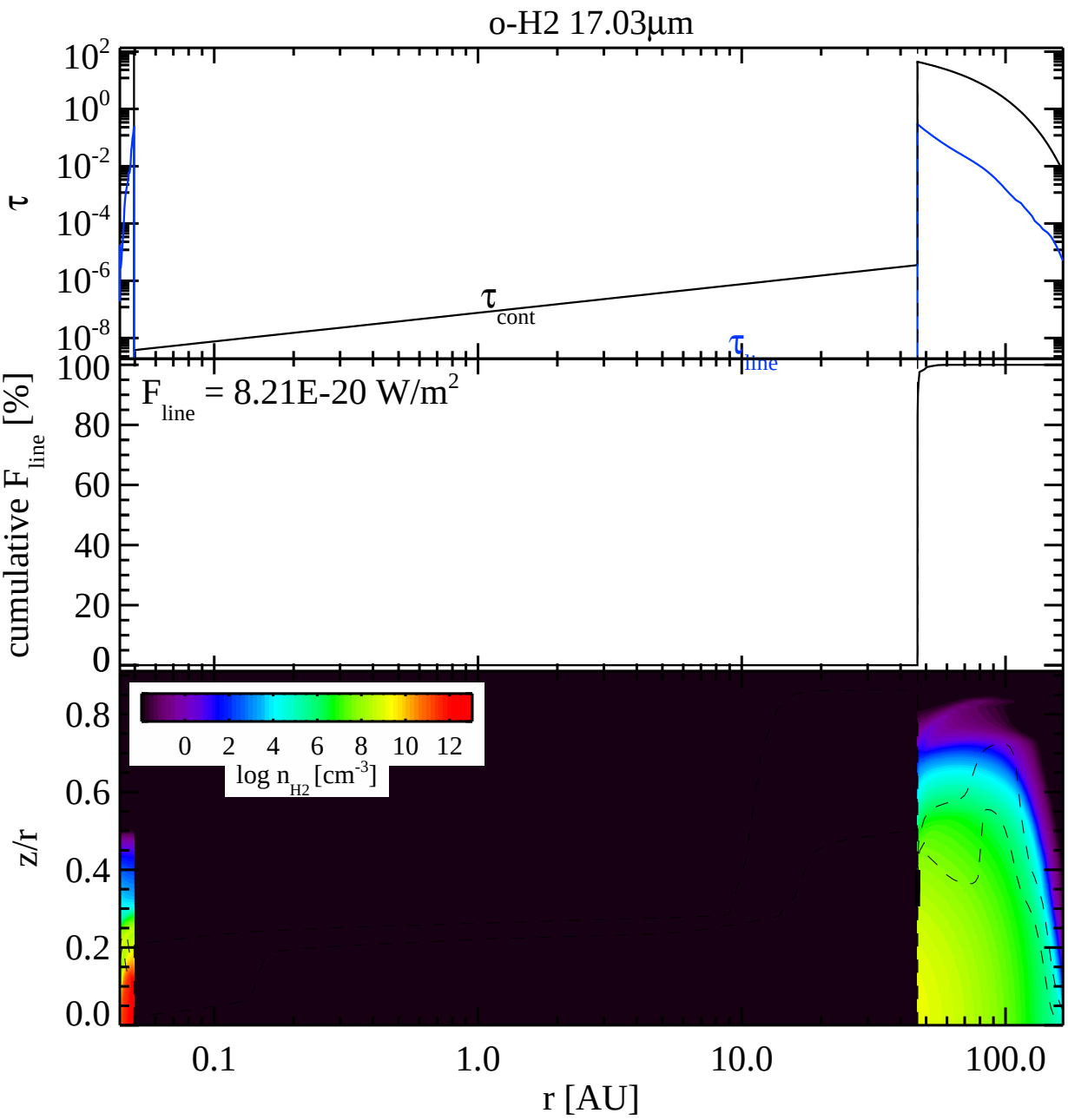

o-H2O 30.87µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 4.16E-20 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

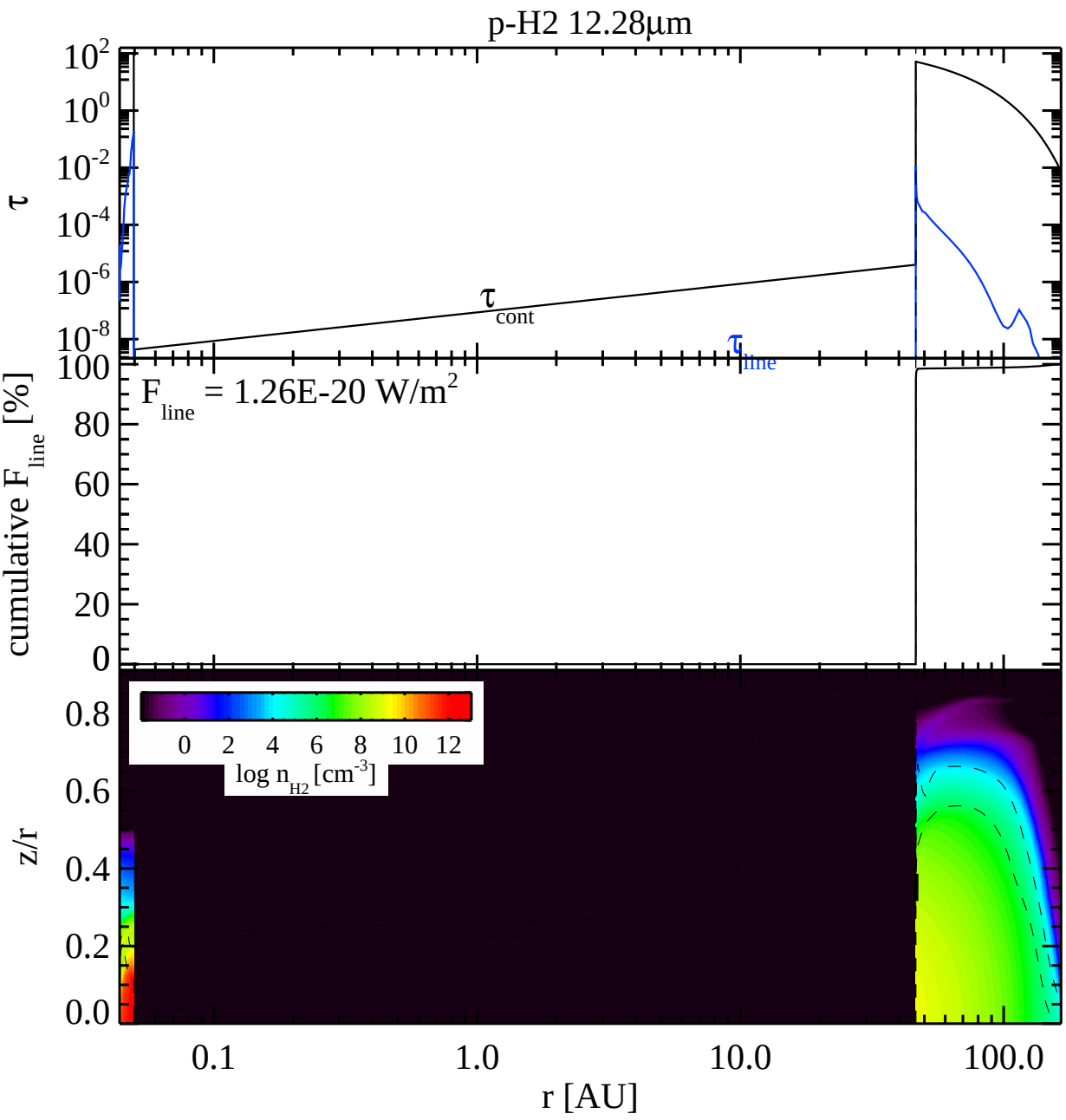

o-H2O 30.53µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 6.90E-20 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

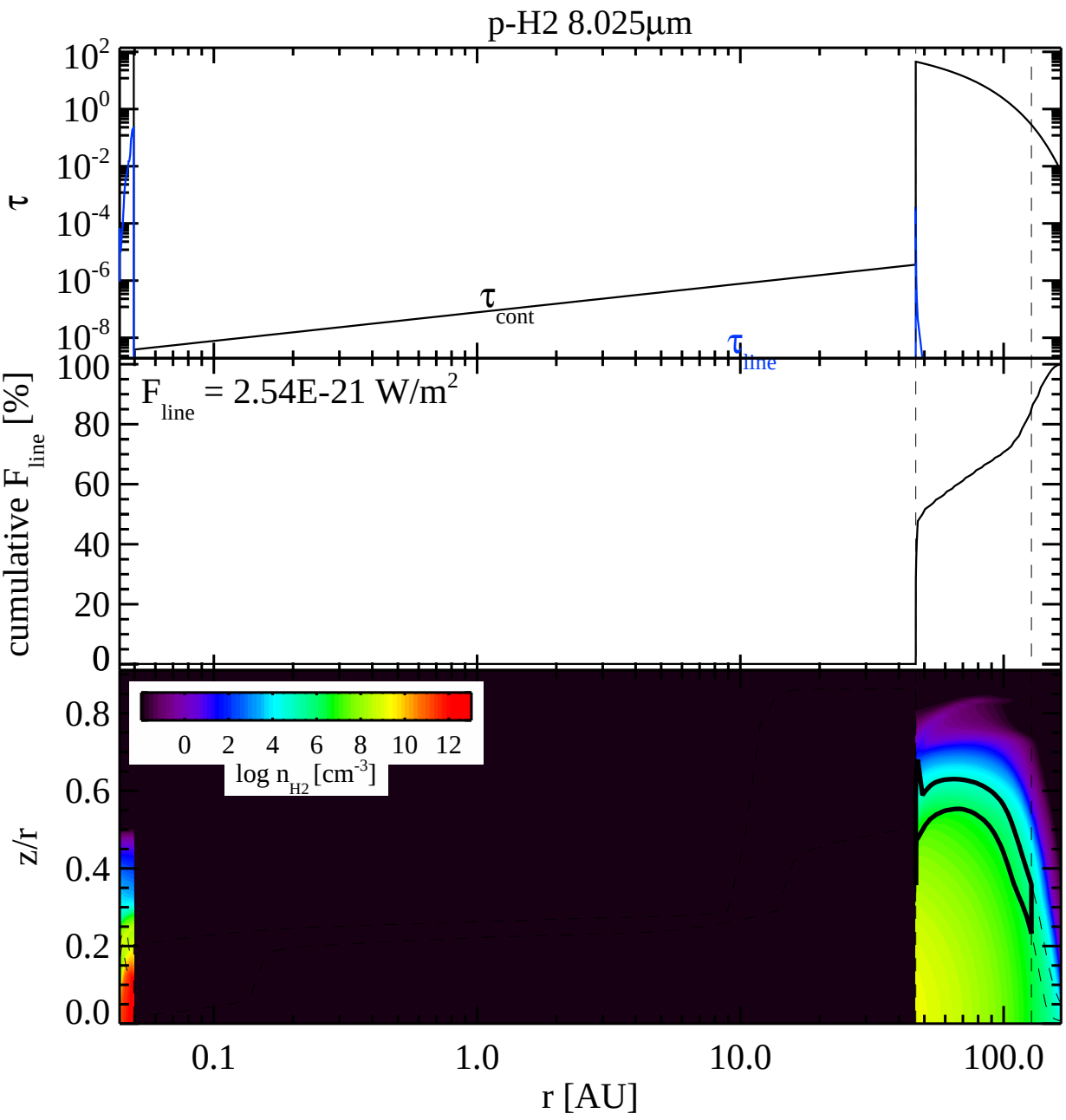

o-H2O 25.37µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.14E-20 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

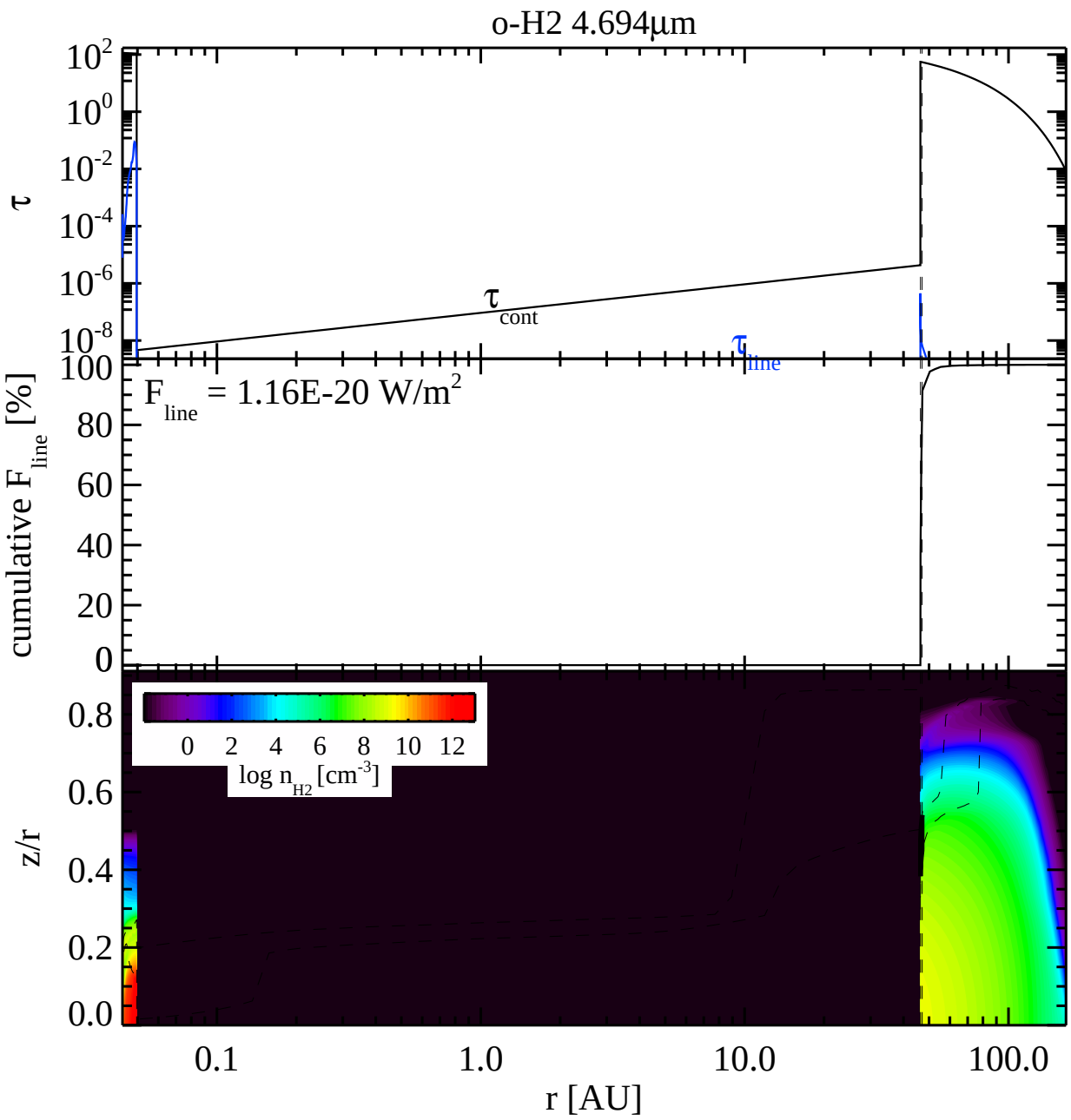

o-H2O 23.86µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.46E-20 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

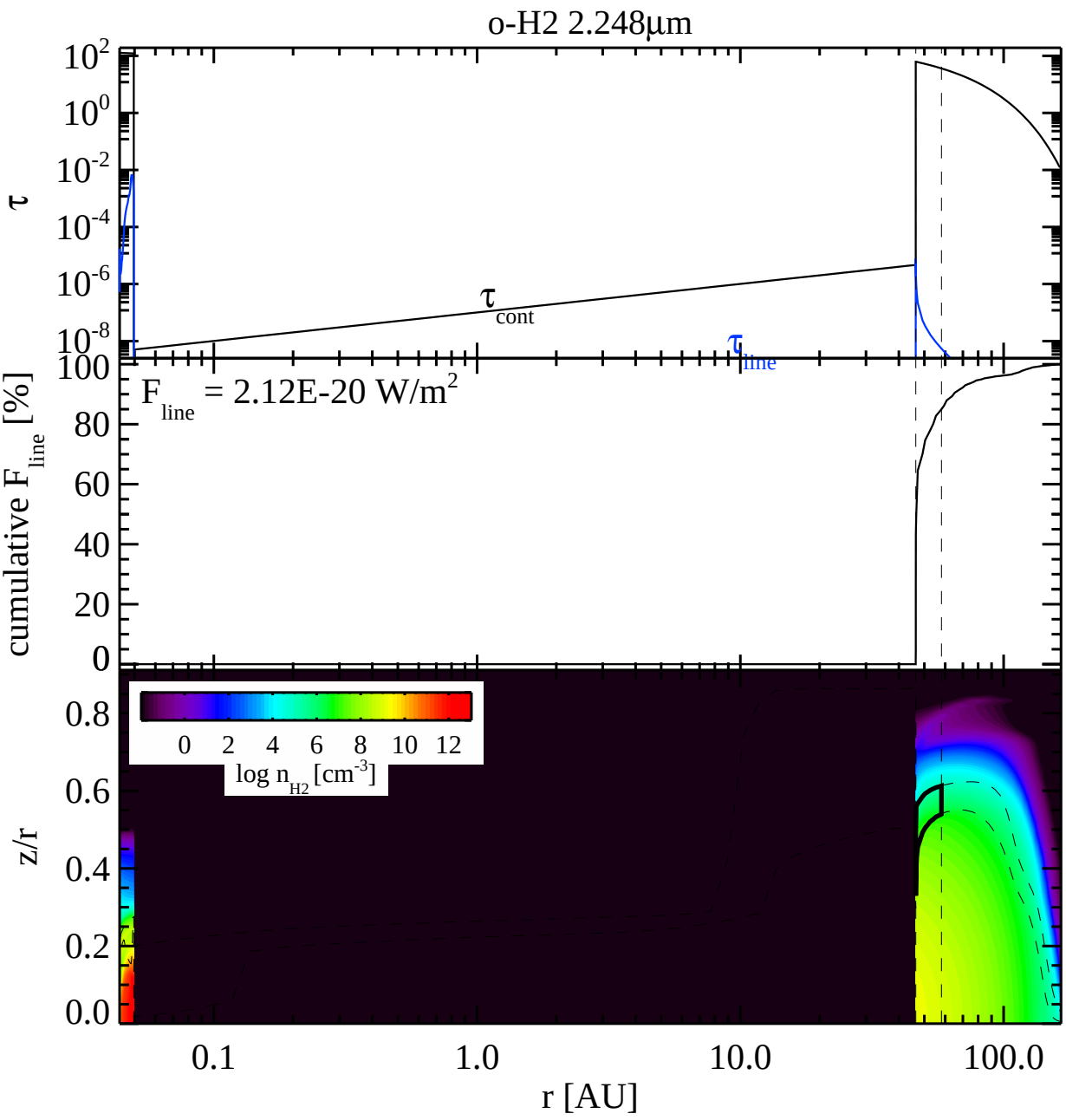

o-H2O 20.34µm
τ
10^{4}
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.55E-21 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

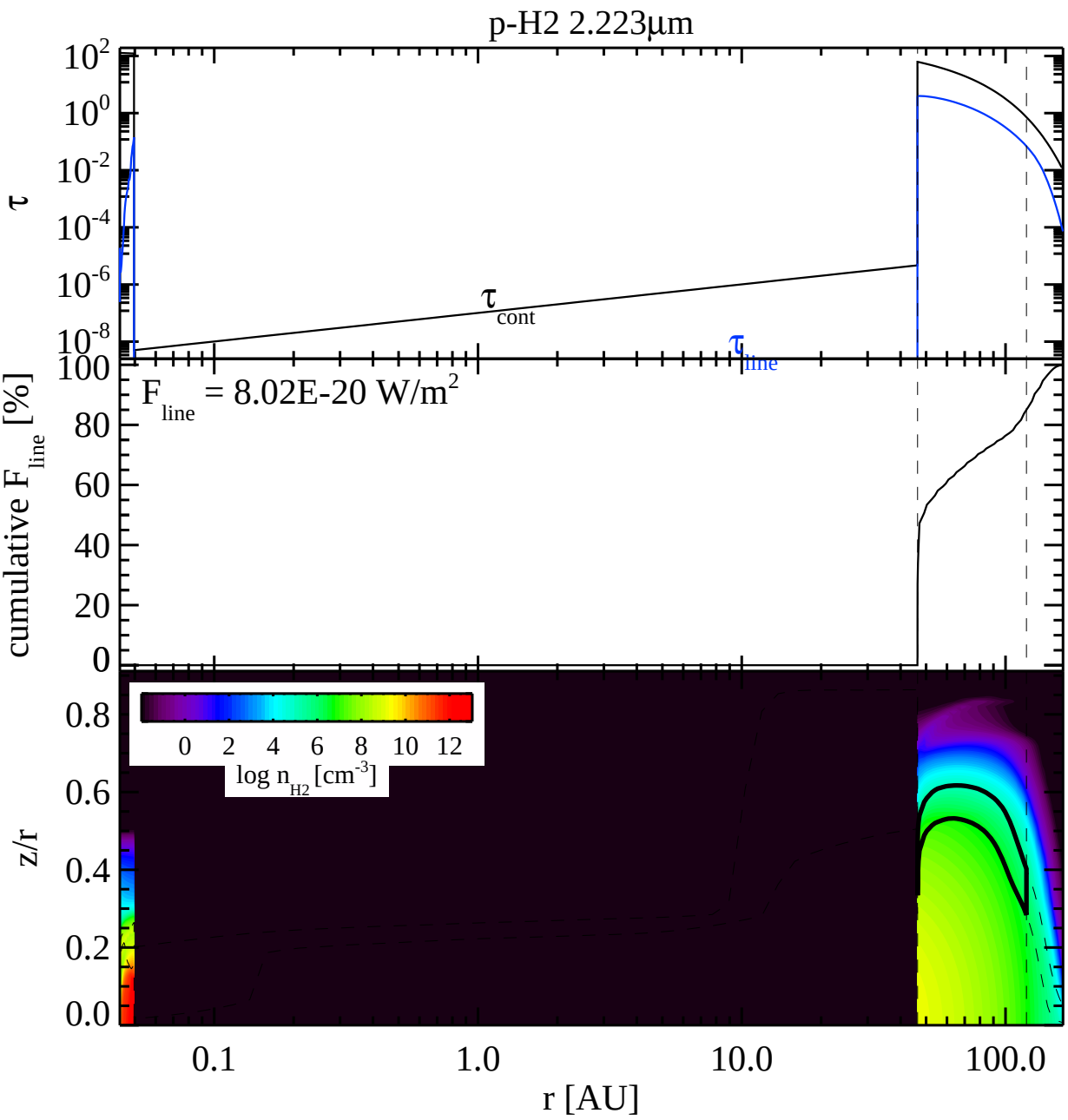

o-H2 17.03µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.21E-20 W/m^2
100
80
60
40
20
0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

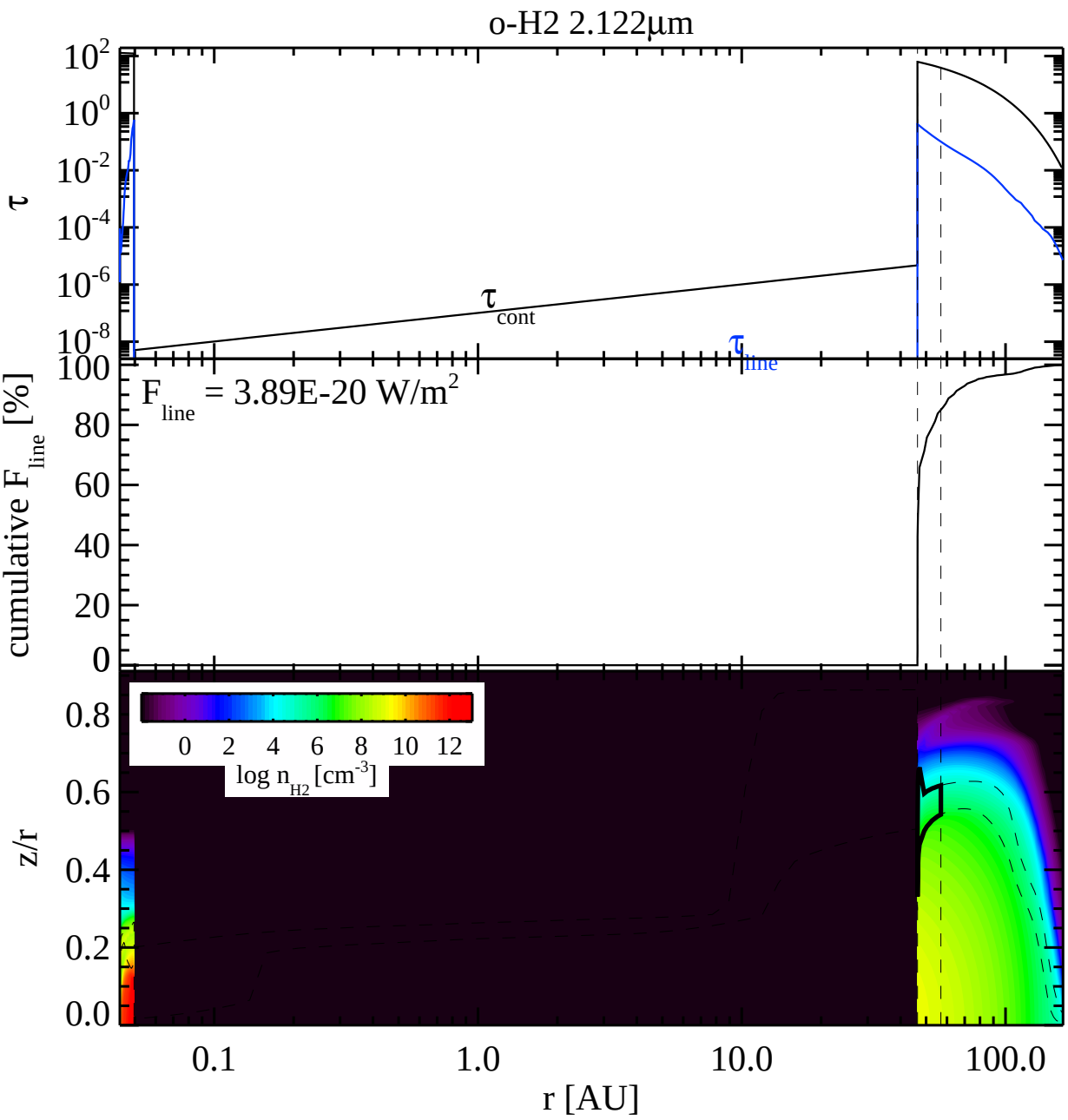

p-H2 12.28µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.26E-20 W/m^2
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

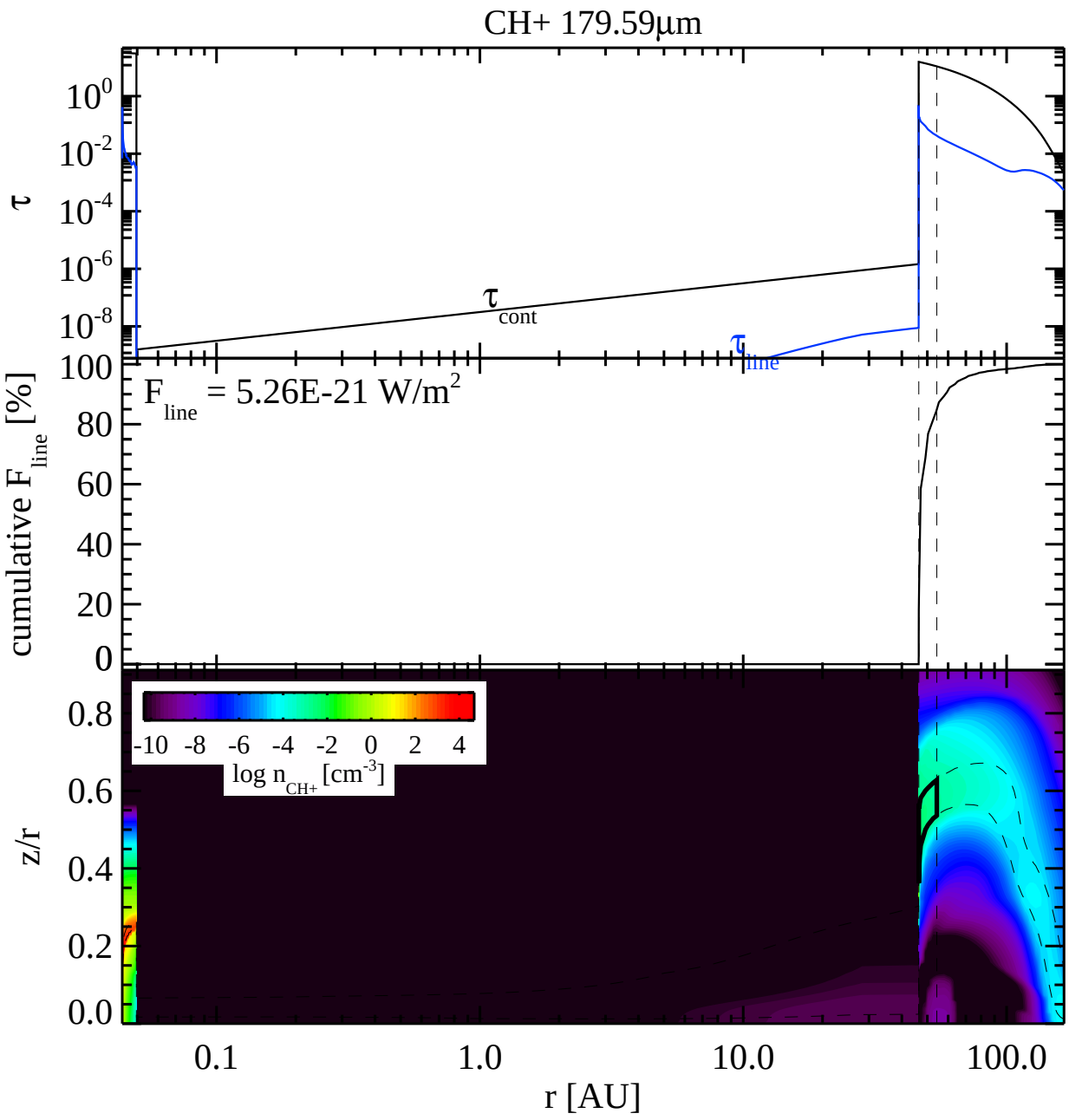

p-H2 8.025µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.54E-21 W/m^2
100
80
60
40
20
0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

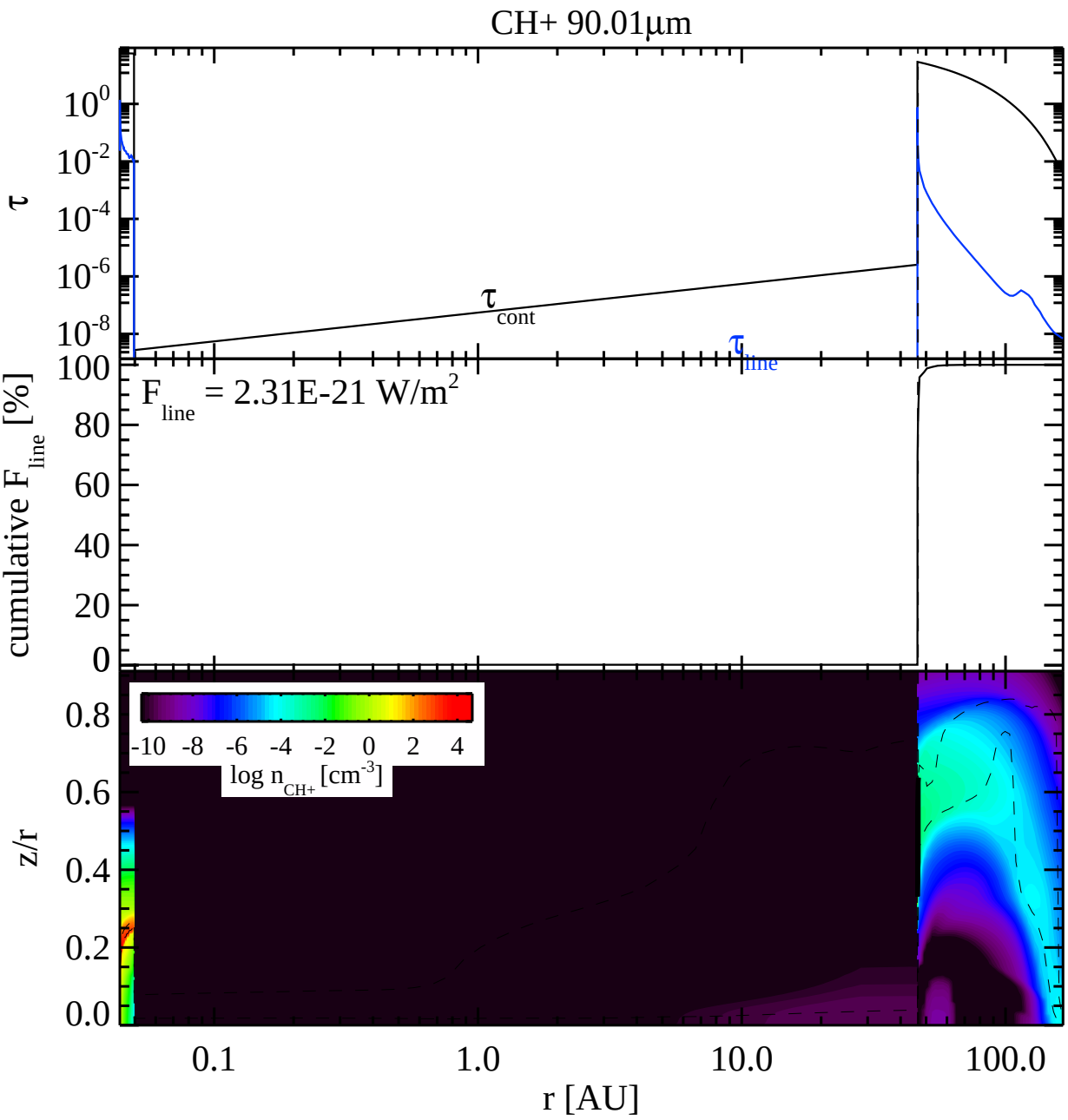

o-H2 4.694µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.16E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

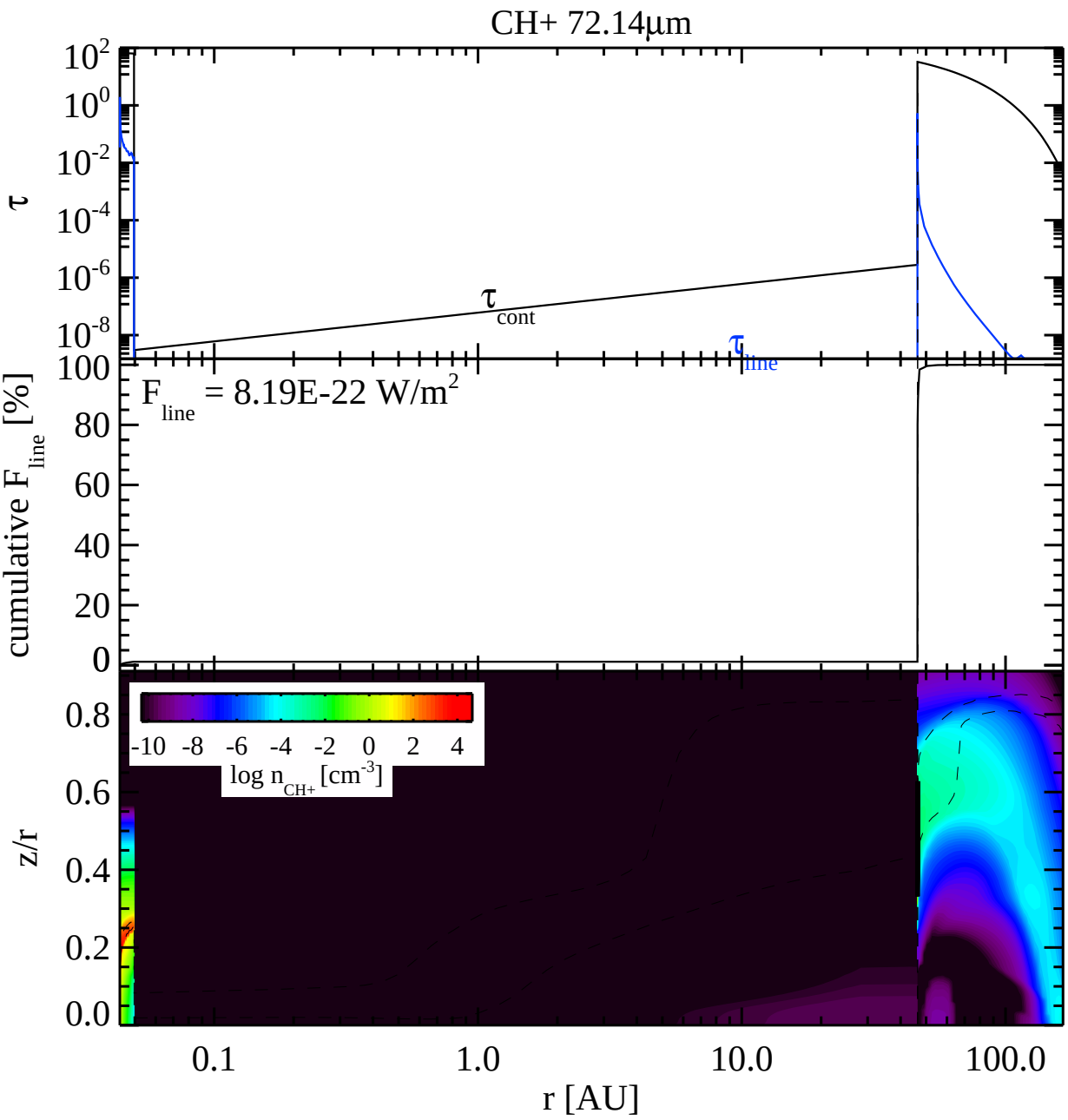

o-H2 2.248µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 2.12E-20 W/m^2
100
80
60
40
20
0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

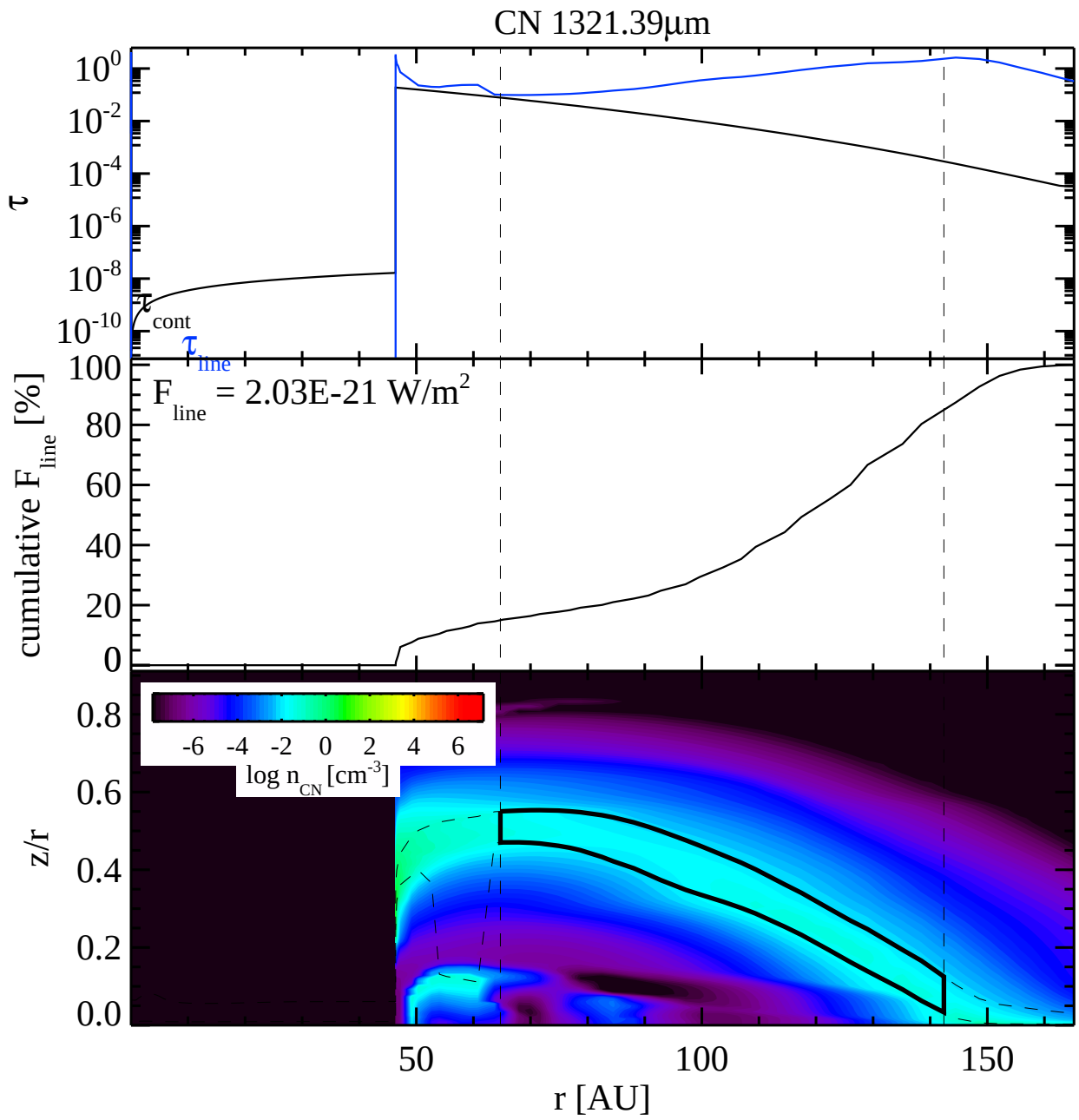

p-H2 2.223µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.02E-20 W/m^2
100
80
60
40
20
0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

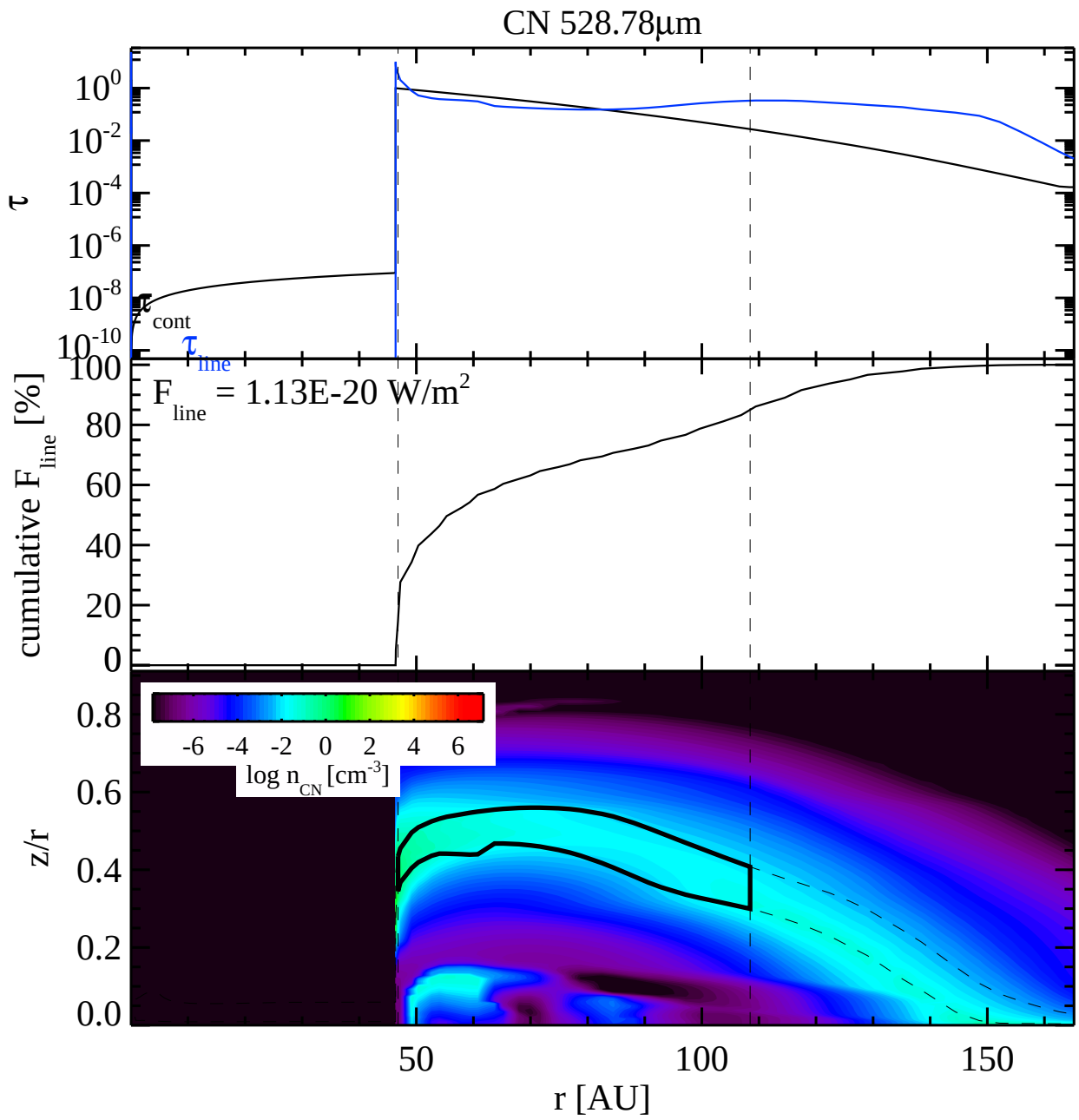

o-H2 2.122µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.89E-20 W/m^2
100
80
60
40
20
0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

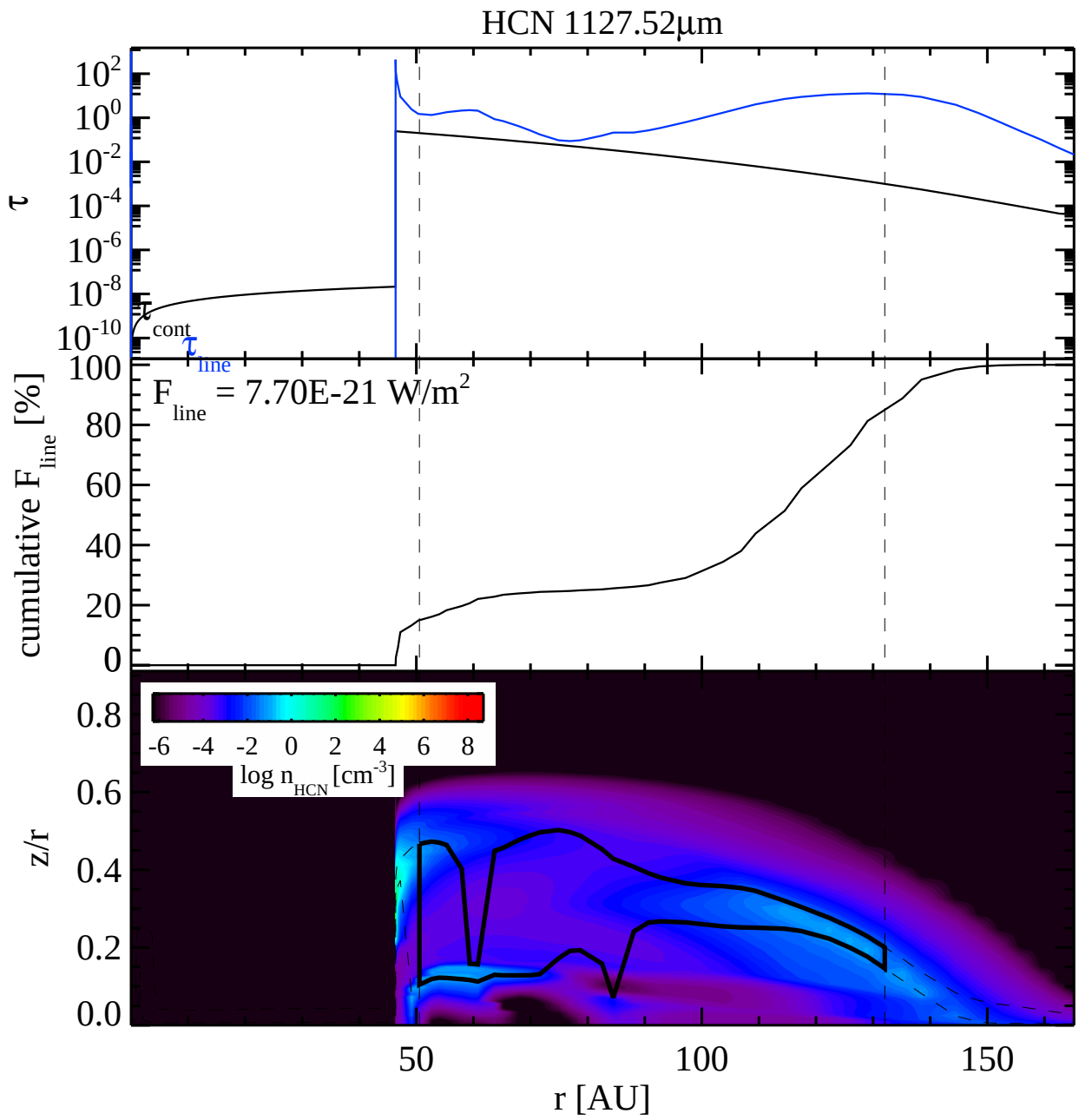

CH+ 179.59µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 5.26E-21 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-10 -8 -6 -4 -2 0 2 4
log n_{CH+} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

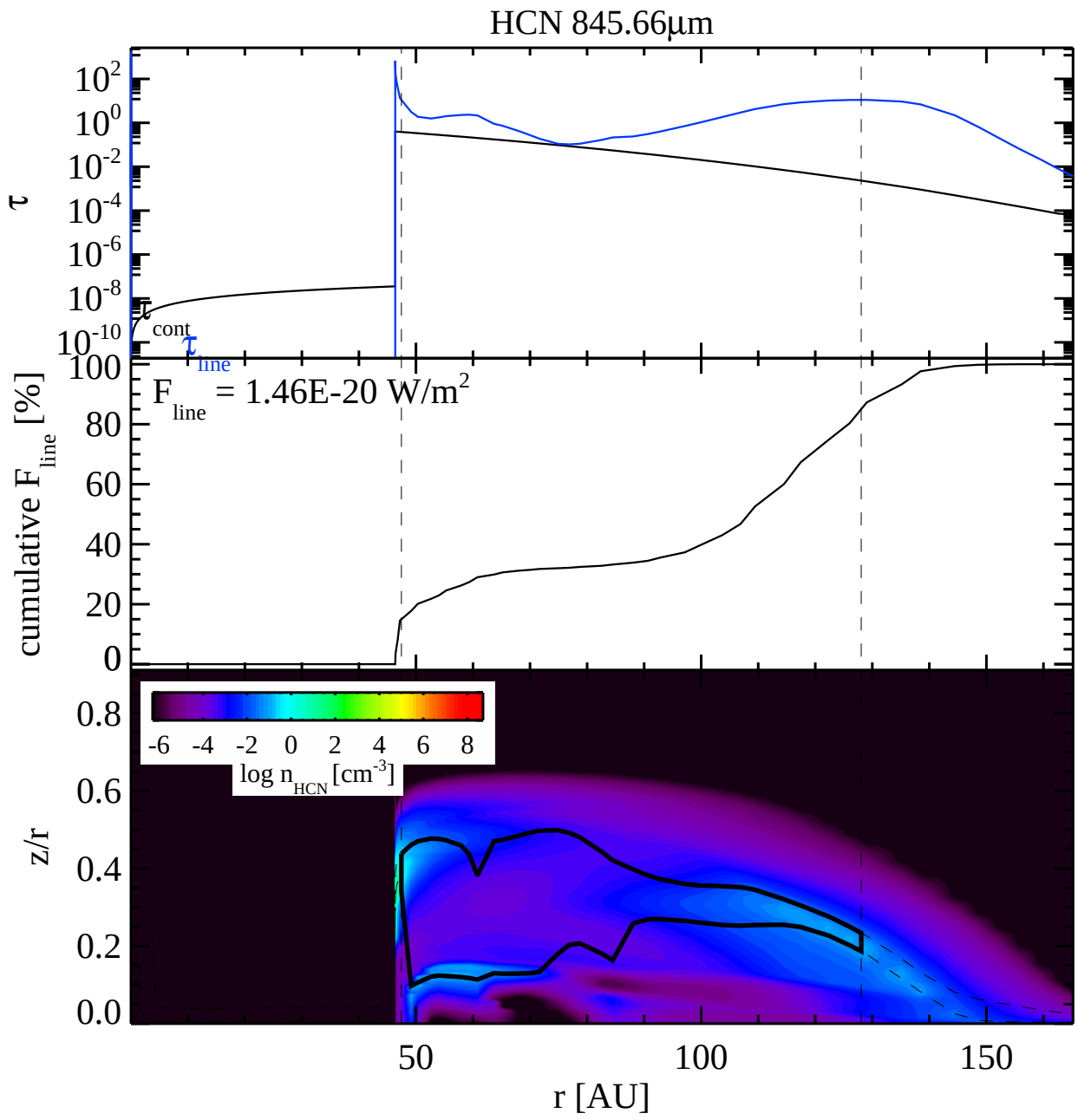

CH+ 90.01µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
τ cont
τ line
cumulative F line [%]
F line = 2.31E-21 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-10 -8 -6 -4 -2 0 2 4
log n CH+ [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

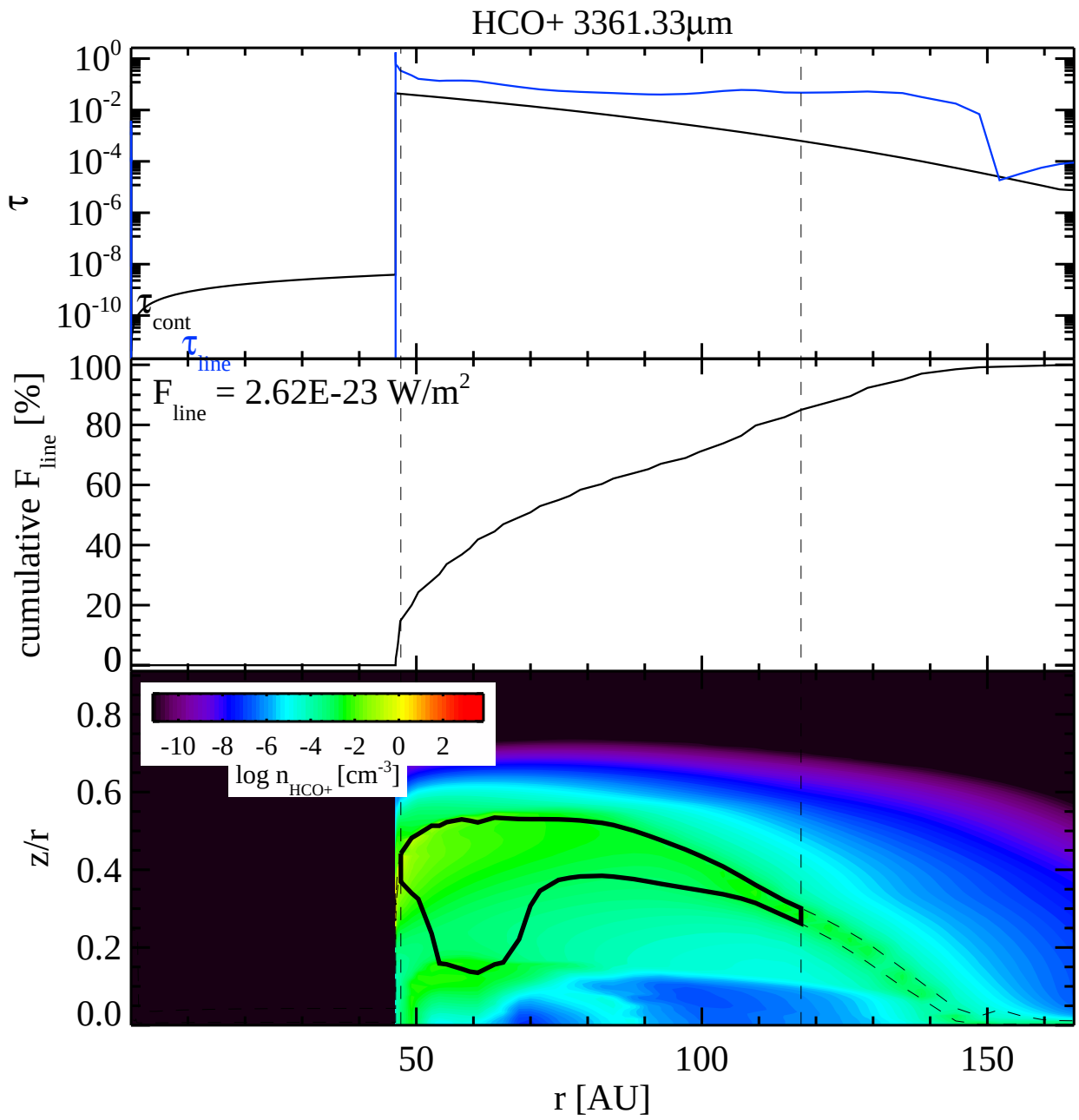

CH+ 72.14µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 8.19E-22 W/m^2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2 4
log n_{CH+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
0.1
1.0
10.0
100.0
r [AU]

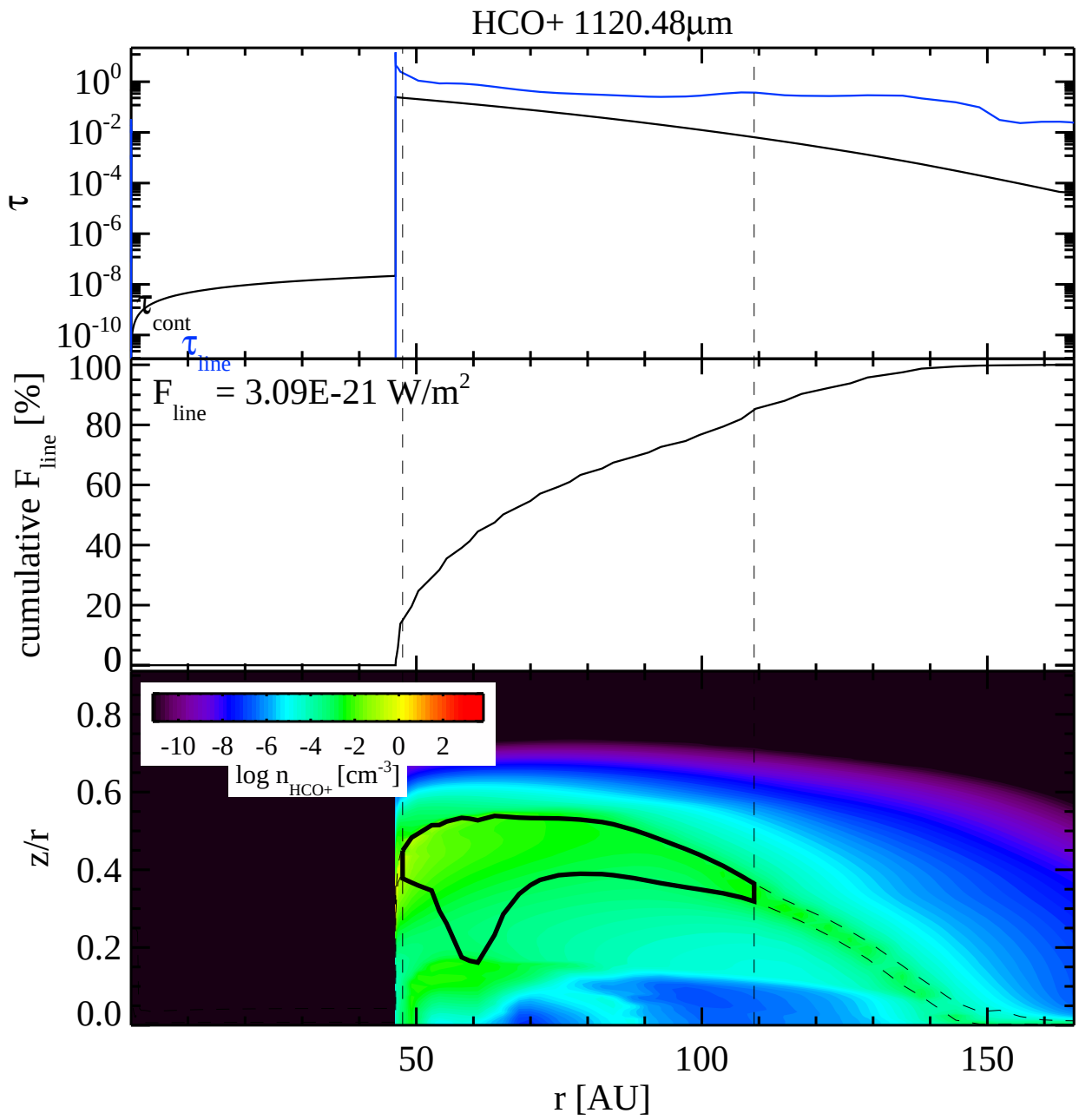

CN 1321.39µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.03E-21 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6
log n_{CN} [cm^{-3}]
50
100
150
r [AU]

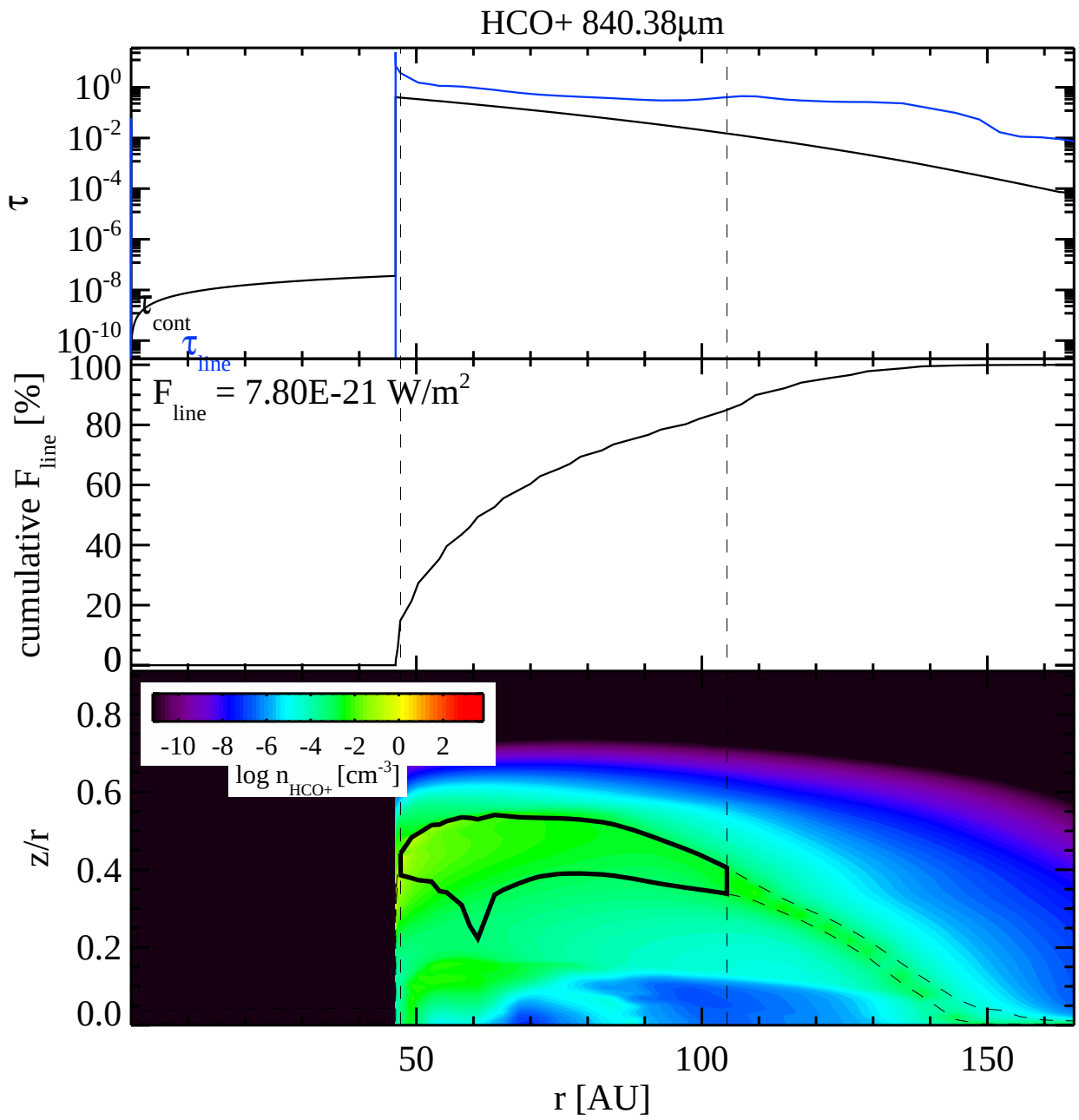

CN 528.78µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
τ cont
τ line
cumulative F line [%]
F line = 1.13E-20 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-6 -4 -2 0 2 4 6
log n CN [cm^-3]
50
100
150
r [AU]

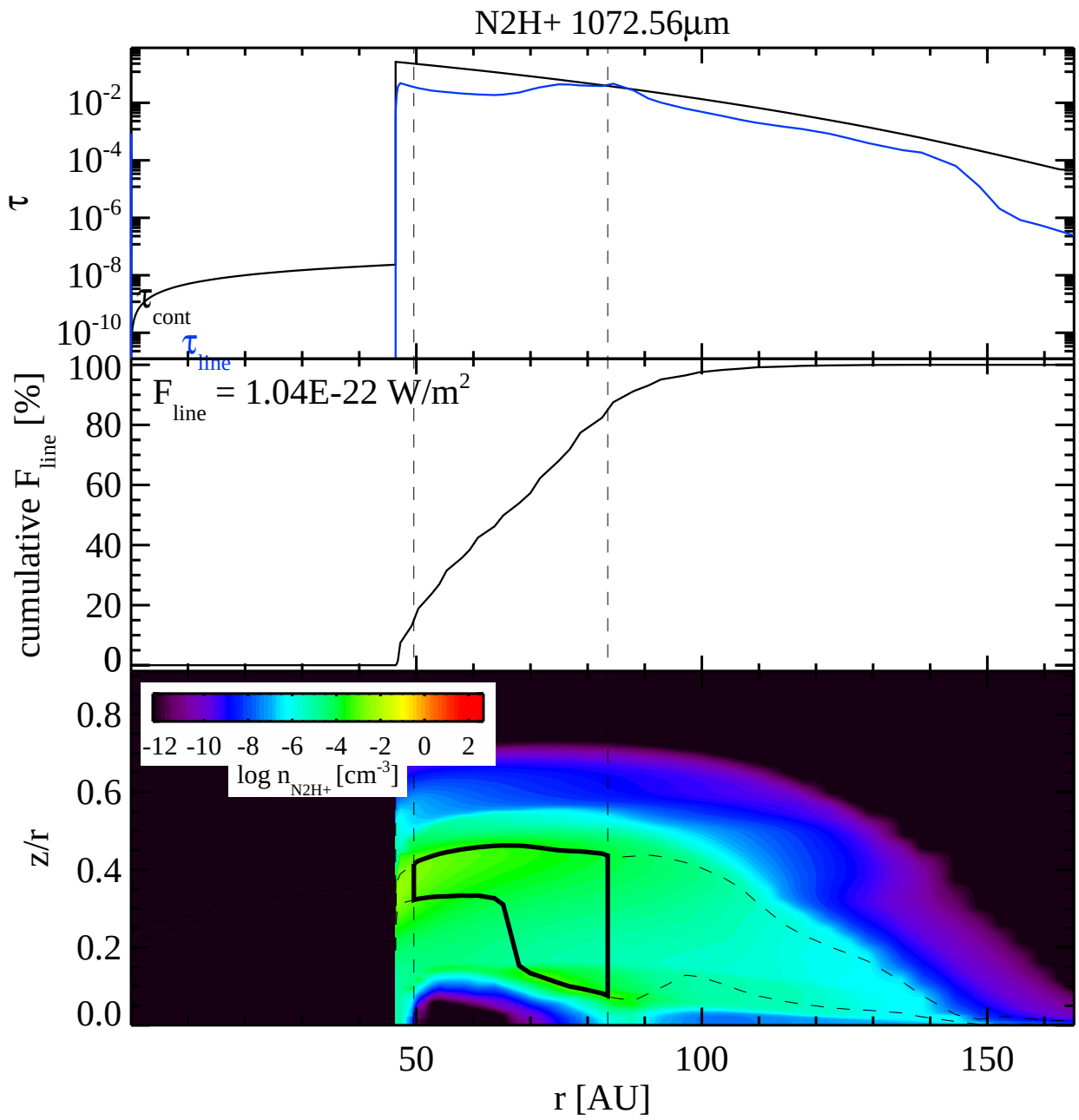

HCN 1127.52µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 7.70E-21 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{HCN} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

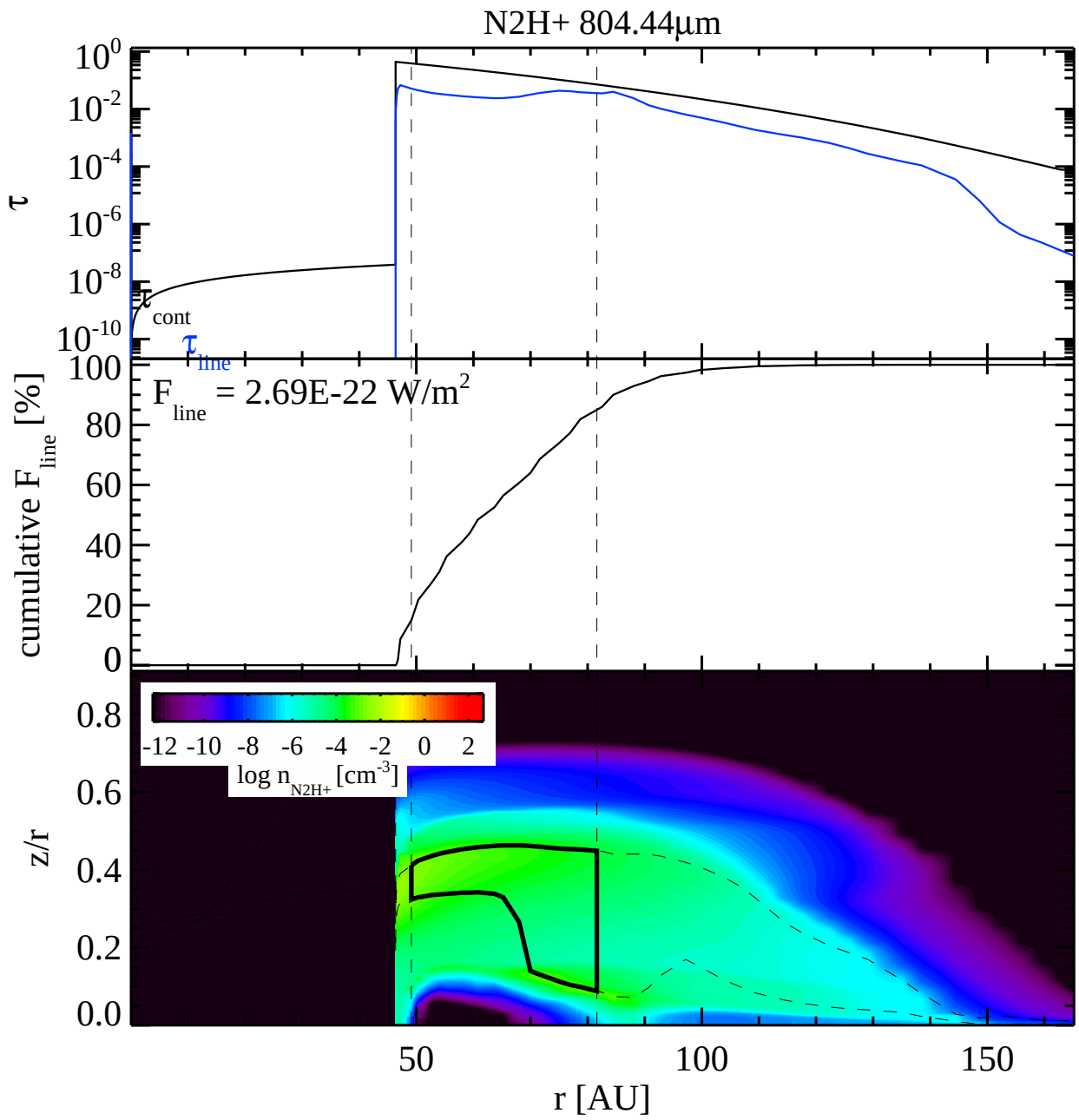

HCN 845.66µm
τ
10^{2}
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.46E-20 W/m^2
100
80
60
40
20
0
-6 -4 -2 0 2 4 6 8
log n_{HCN} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

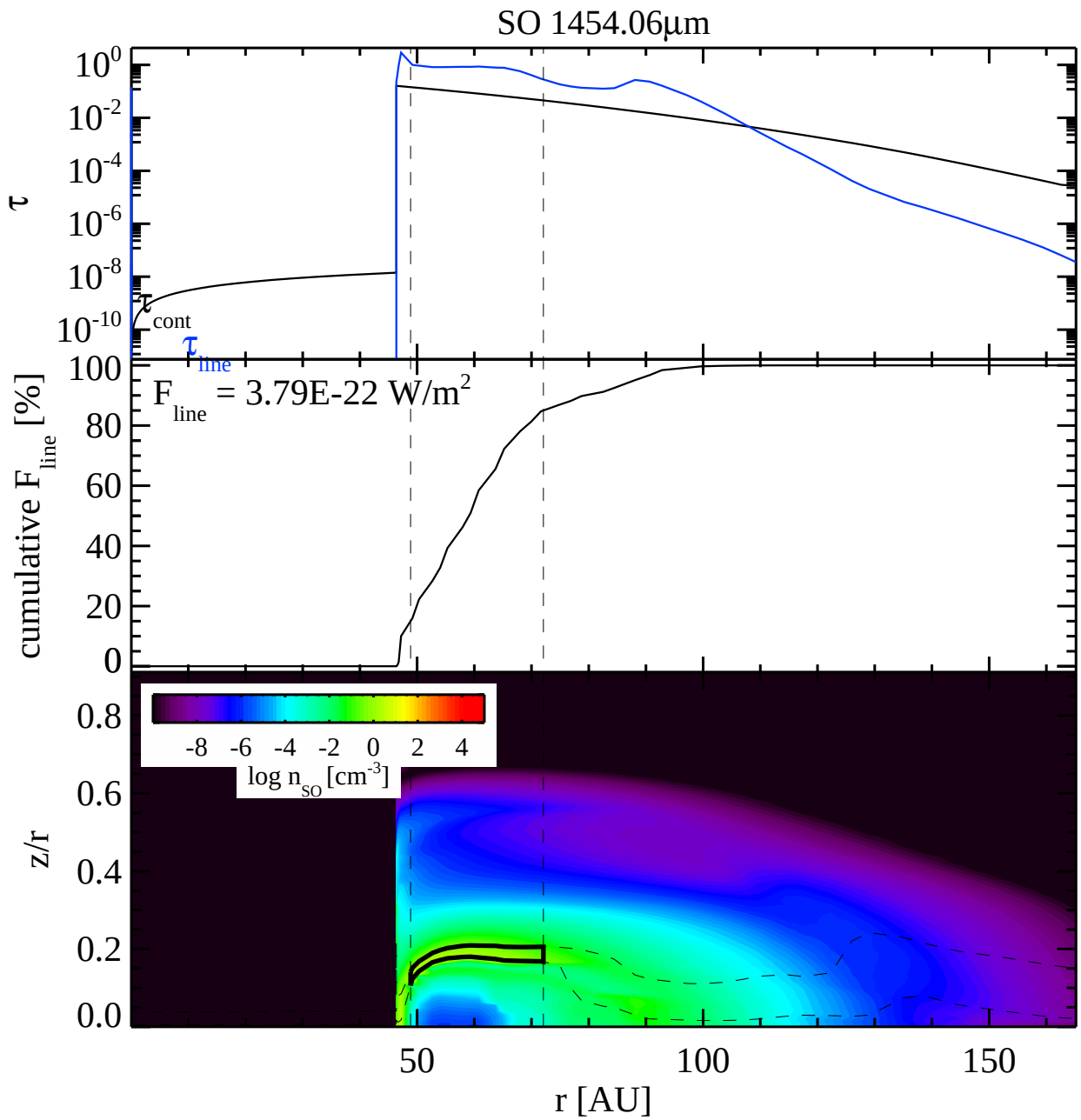

HCO+ 3361.33µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.62E-23 W/m^2
z/r
0.8
0.6
0.4
0.2
0.0
-10 -8 -6 -4 -2 0 2
log n_{HCO+} [cm^{-3}]
50
100
150
r [AU]

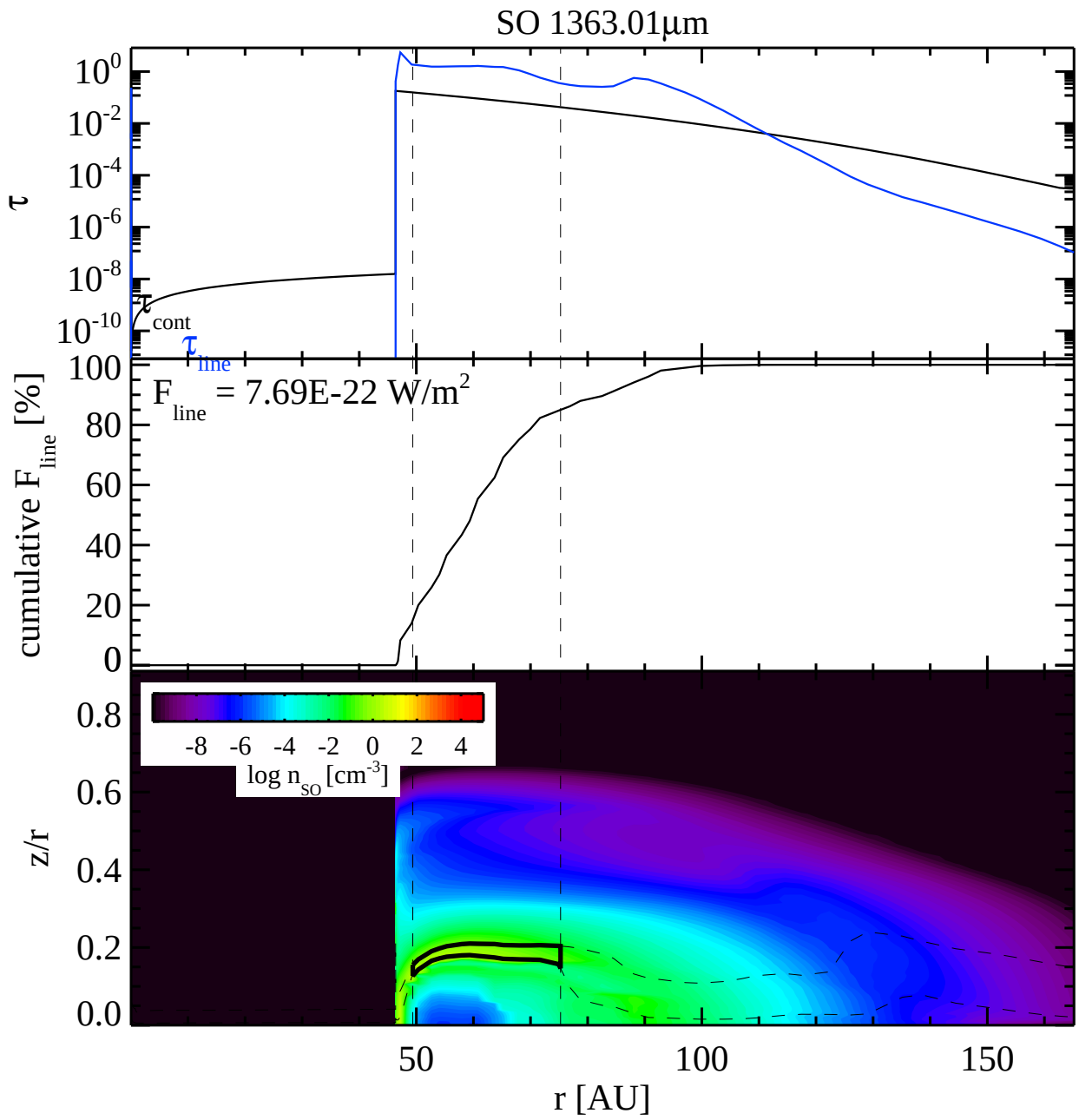

HCO+ 1120.48µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.09E-21 W/m^2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2
log n_{HCO+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

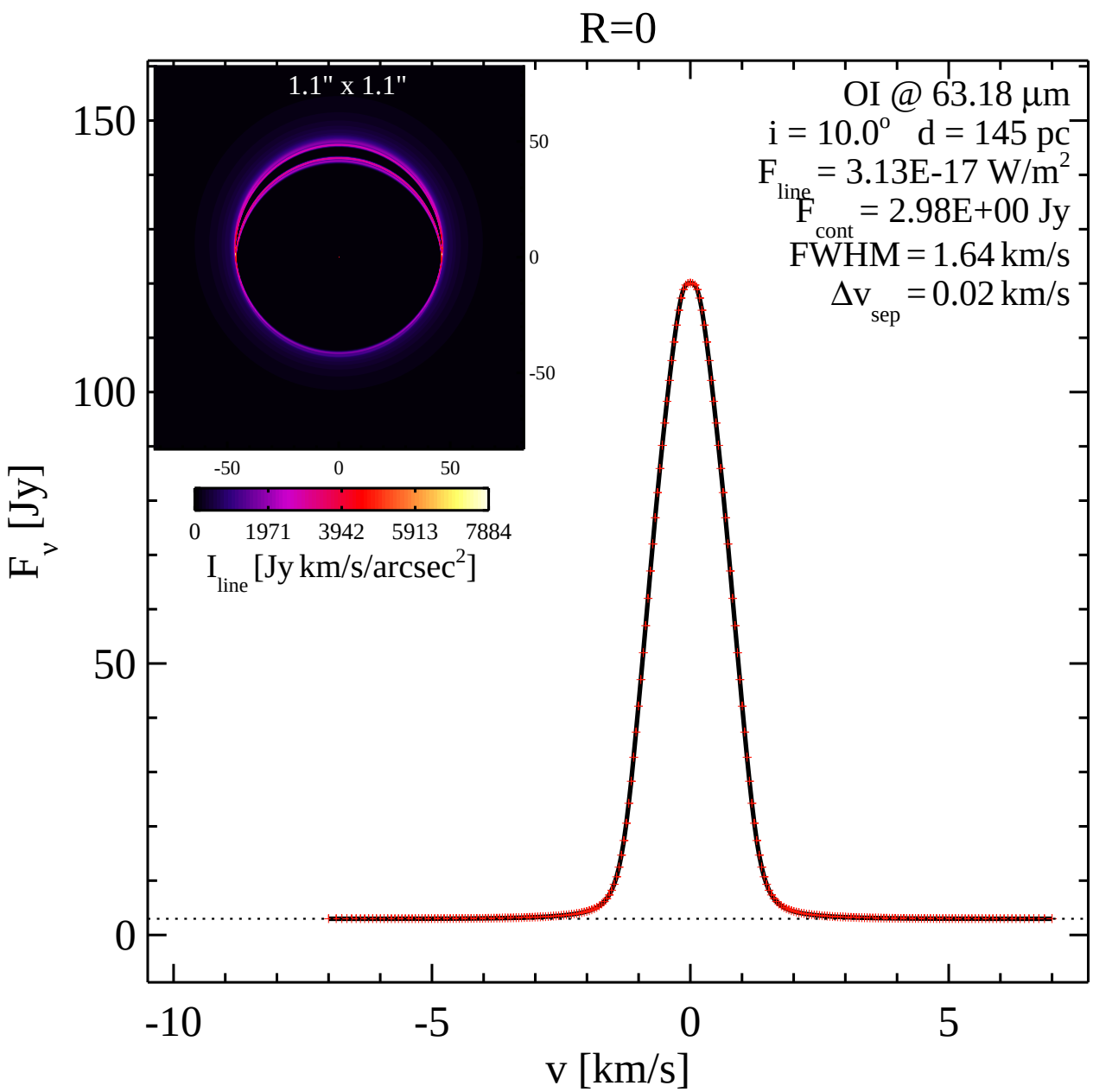

HCO+ 840.38µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 7.80E-21 W/m^2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2
log n_{HCO+} [cm^{-3}]
z/r
0.8
0.6
0.4
0.2
0.0
50
100
150
r [AU]

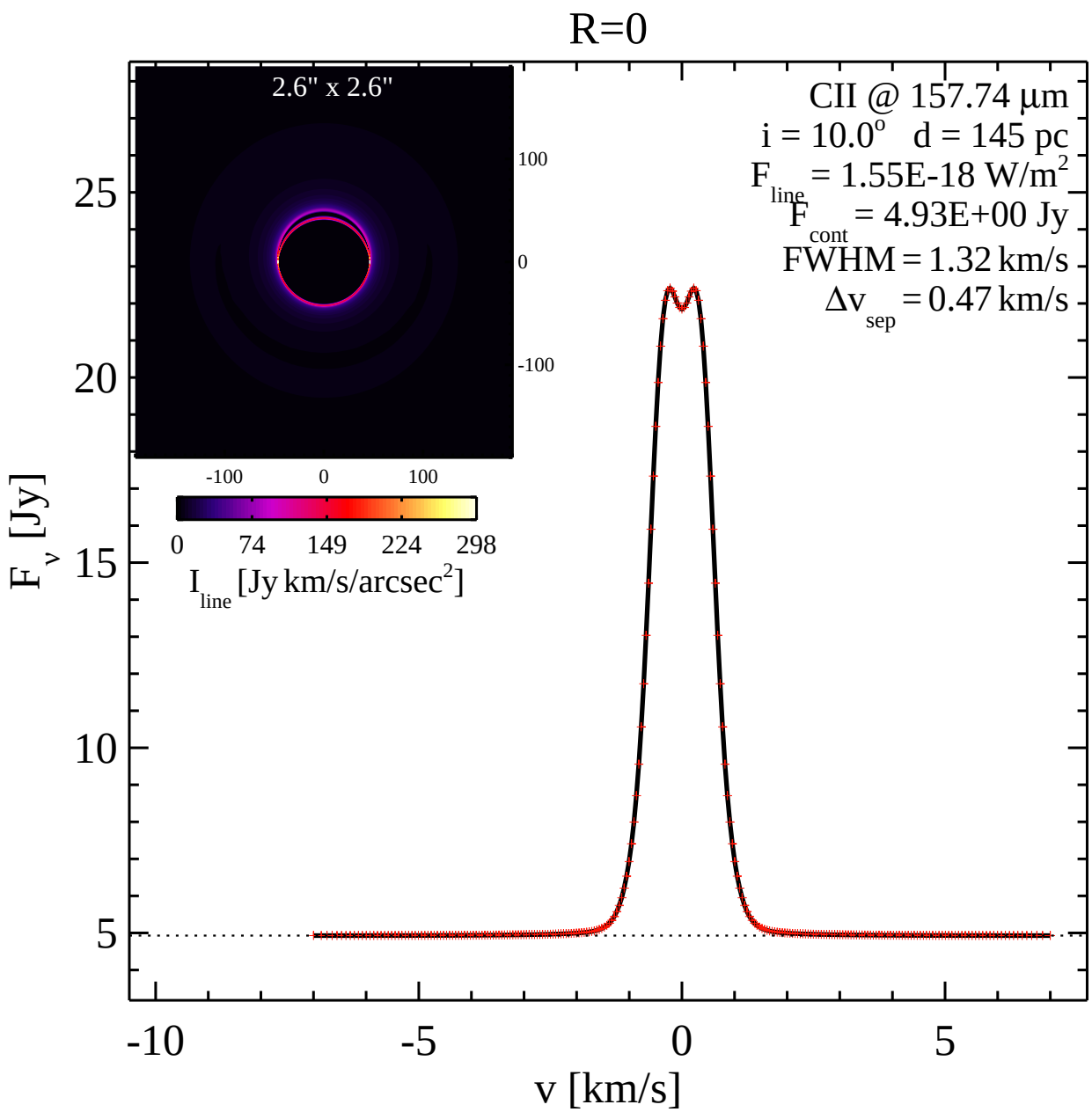

N2H+ 1072.56µm
τ
10^-2
10^-4
10^-6
10^-8
10^-10
τ cont
τ line
cumulative F line [%]
F line = 1.04E-22 W/m^2
100
80
60
40
20
0
0.8
0.6
0.4
0.2
0.0
z/r
-12 -10 -8 -6 -4 -2 0 2
log n N2H+ [cm^-3]
50
100
150
r [AU]

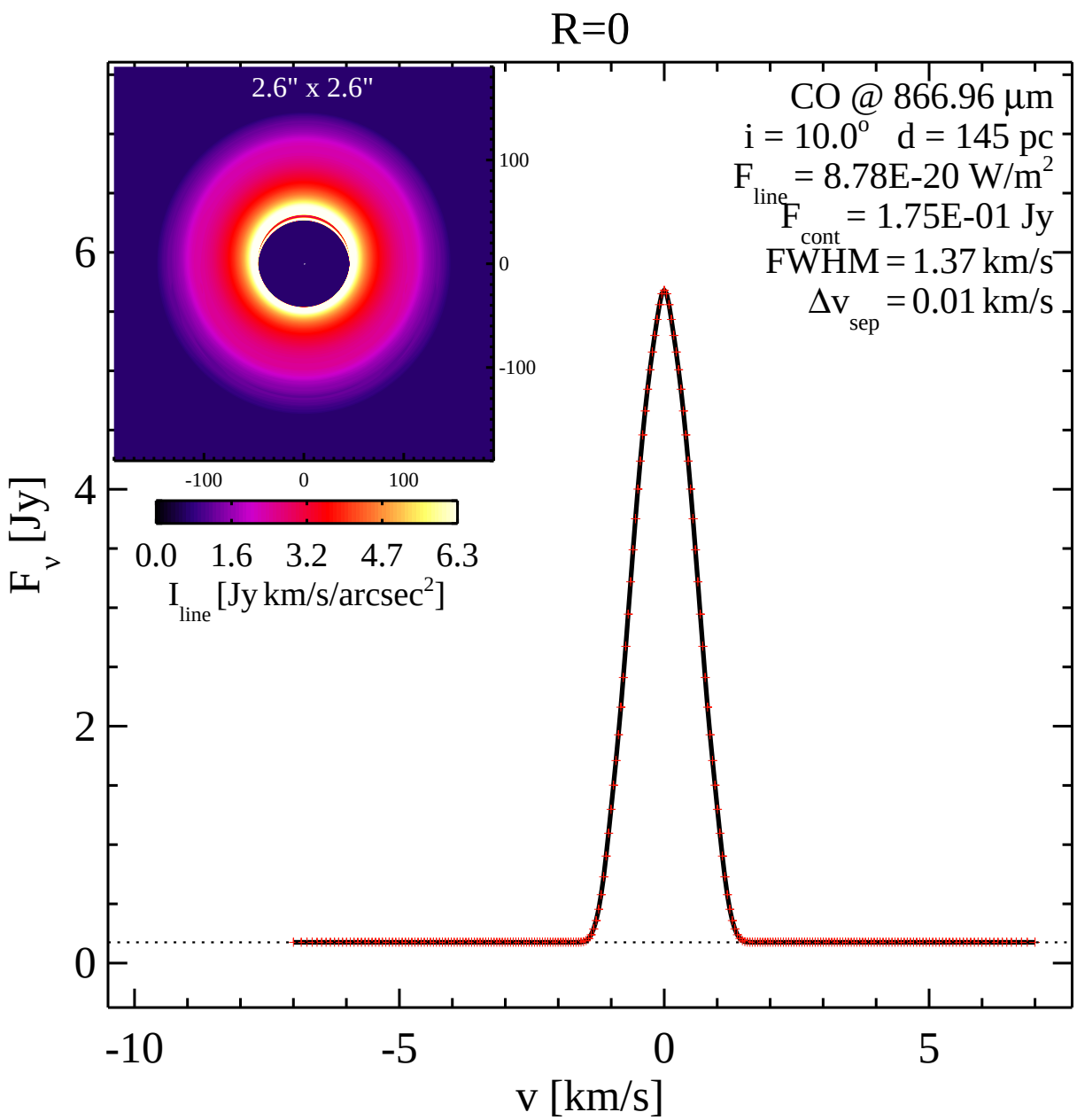

N2H+ 804.44µm
τ
cont
line
cumulative F line [%]
F line = 2.69E-22 W/m2
-12 -10 -8 -6 -4 -2 0 2
log n N2H+ [cm-3]
z/r
r [AU]

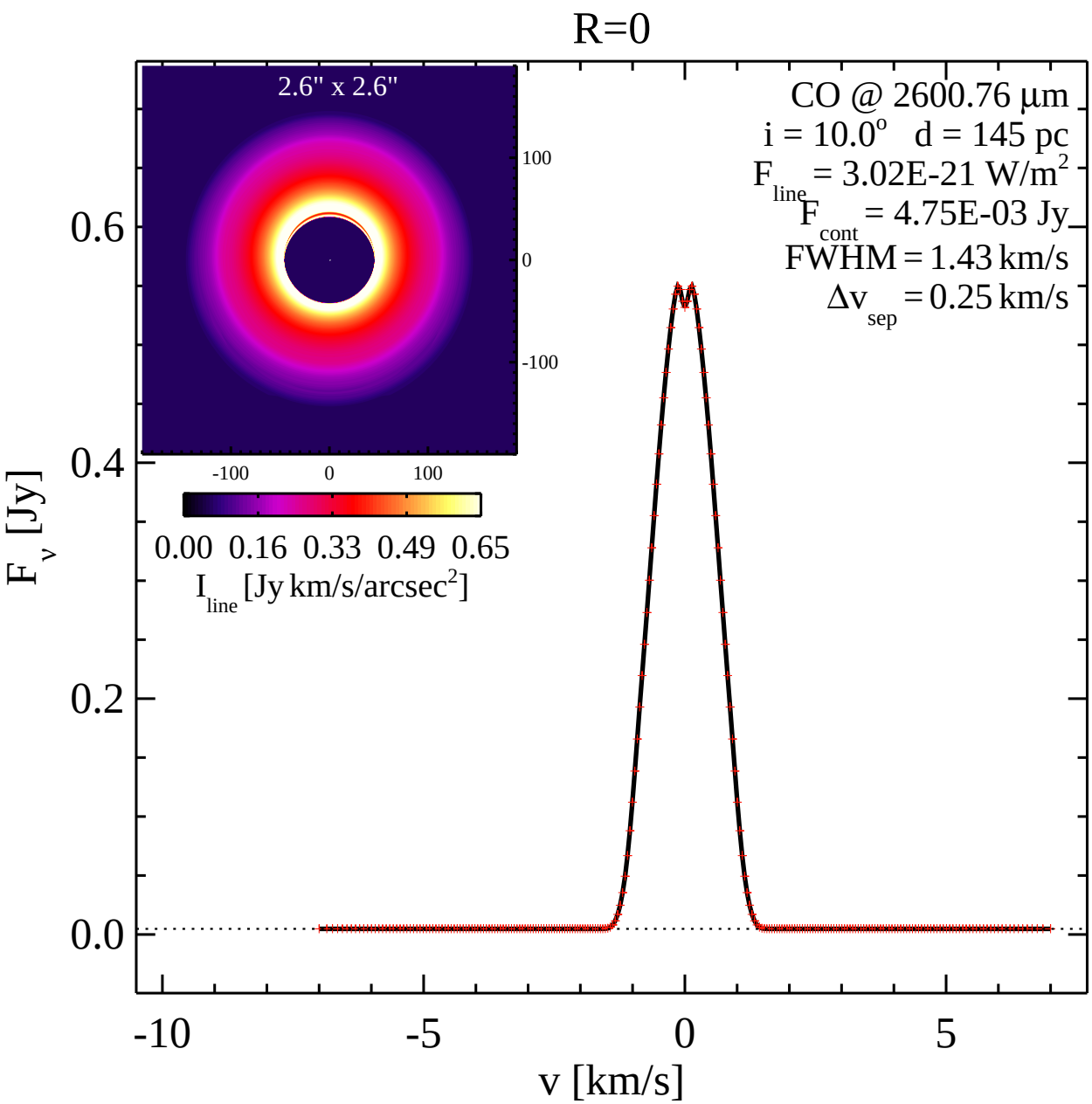

SO 1454.06µm
τ
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 3.79E-22 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-8 -6 -4 -2 0 2 4
log n_{SO} [cm^{-3}]
50
100
150
r [AU]


SO 1363.01µm
τ
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
τ cont
τ line
cumulative F line [%]
F line = 7.69E-22 W/m^2
100
80
60
40
20
0
z/r
0.8
0.6
0.4
0.2
0.0
-8 -6 -4 -2 0 2 4
log n SO [cm^-3]
50
100
150
r [AU]


R=0
1.1" x 1.1"
50
0
-50
-50
0
50
0
1971
3942
5913
7884
I line [Jy km/s/arcsec2]
OI @ 63.18 µm
i = 10.0o d = 145 pc
F line = 3.13E-17 W/m2
F cont = 2.98E+00 Jy
FWHM = 1.64 km/s
Δv sep = 0.02 km/s
F v [Jy]
150
100
50
0
-10
-5
0
5
v [km/s]


R=0
2.6" x 2.6"
100
0
-100
-100
0
100
0
74
149
224
298
I line [Jy km/s/arcsec2]
CII @ 157.74 µm
i = 10.0o d = 145 pc
F line = 1.55E-18 W/m2
F cont = 4.93E+00 Jy
FWHM = 1.32 km/s
Δv sep = 0.47 km/s
F v [Jy]
25
20
15
10
5
-10
-5
0
5
v [km/s]


R=0
2.6" x 2.6"
100
0
-100
-100
0
100
0.0
1.6
3.2
4.7
6.3
I line [Jy km/s/arcsec2]
CO @ 866.96 µm
i = 10.0o d = 145 pc
F line = 8.78E-20 W/m2
F cont = 1.75E-01 Jy
FWHM = 1.37 km/s
Δv sep = 0.01 km/s
F v [Jy]
0
2
4
6
-10
-5
0
5
v [km/s]


R=0
2.6" x 2.6"
100
0
-100
-100
0
100
0.00 0.16 0.33 0.49 0.65
I line [Jy km/s/arcsec2]
CO @ 2600.76 µm
i = 10.0o d = 145 pc
F line = 3.02E-21 W/m2
F cont = 4.75E-03 Jy
FWHM = 1.43 km/s
Δv sep = 0.25 km/s
F v [Jy]
0.0
0.2
0.4
0.6
-10
-5
0
5
v [km/s]