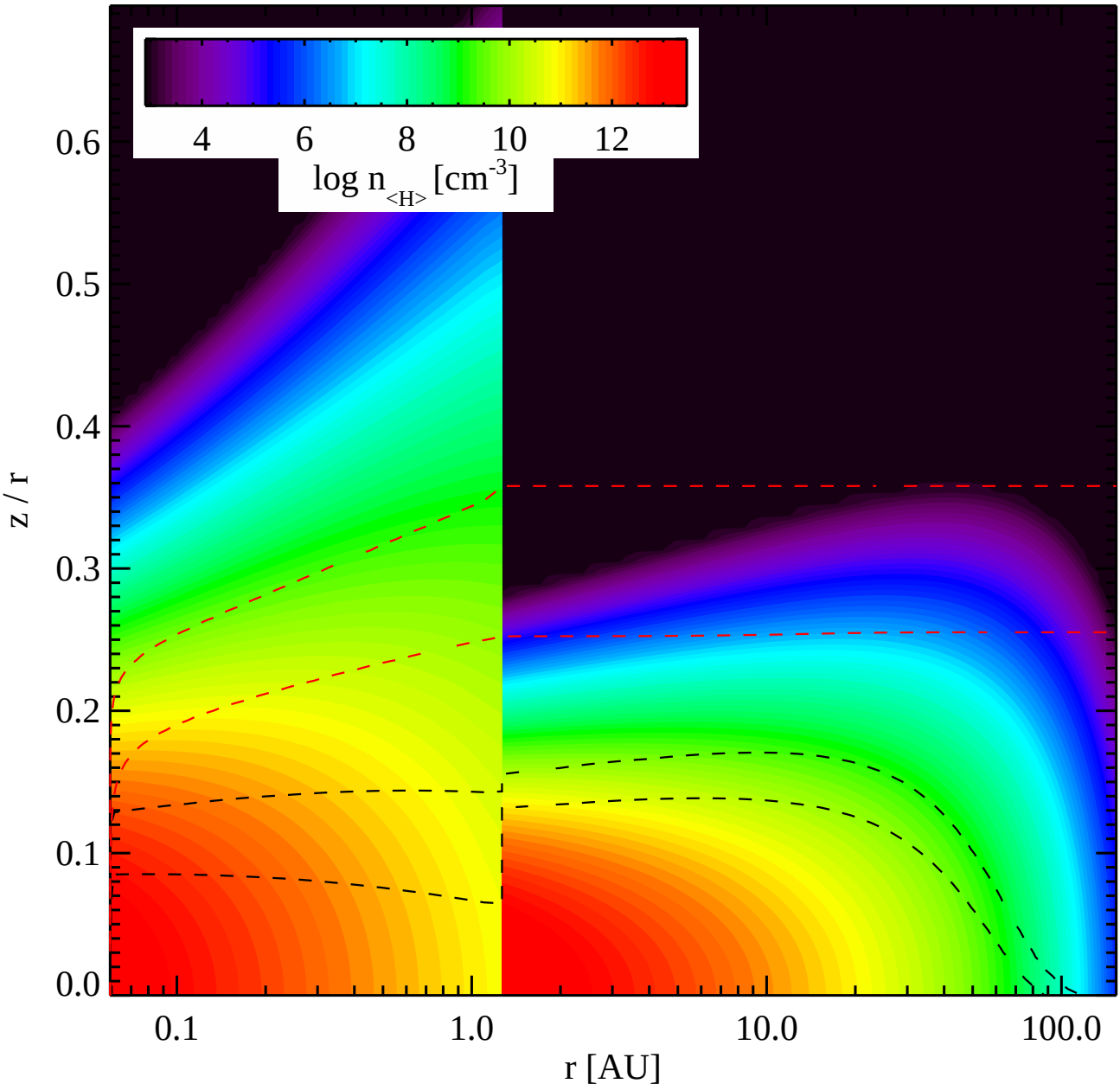
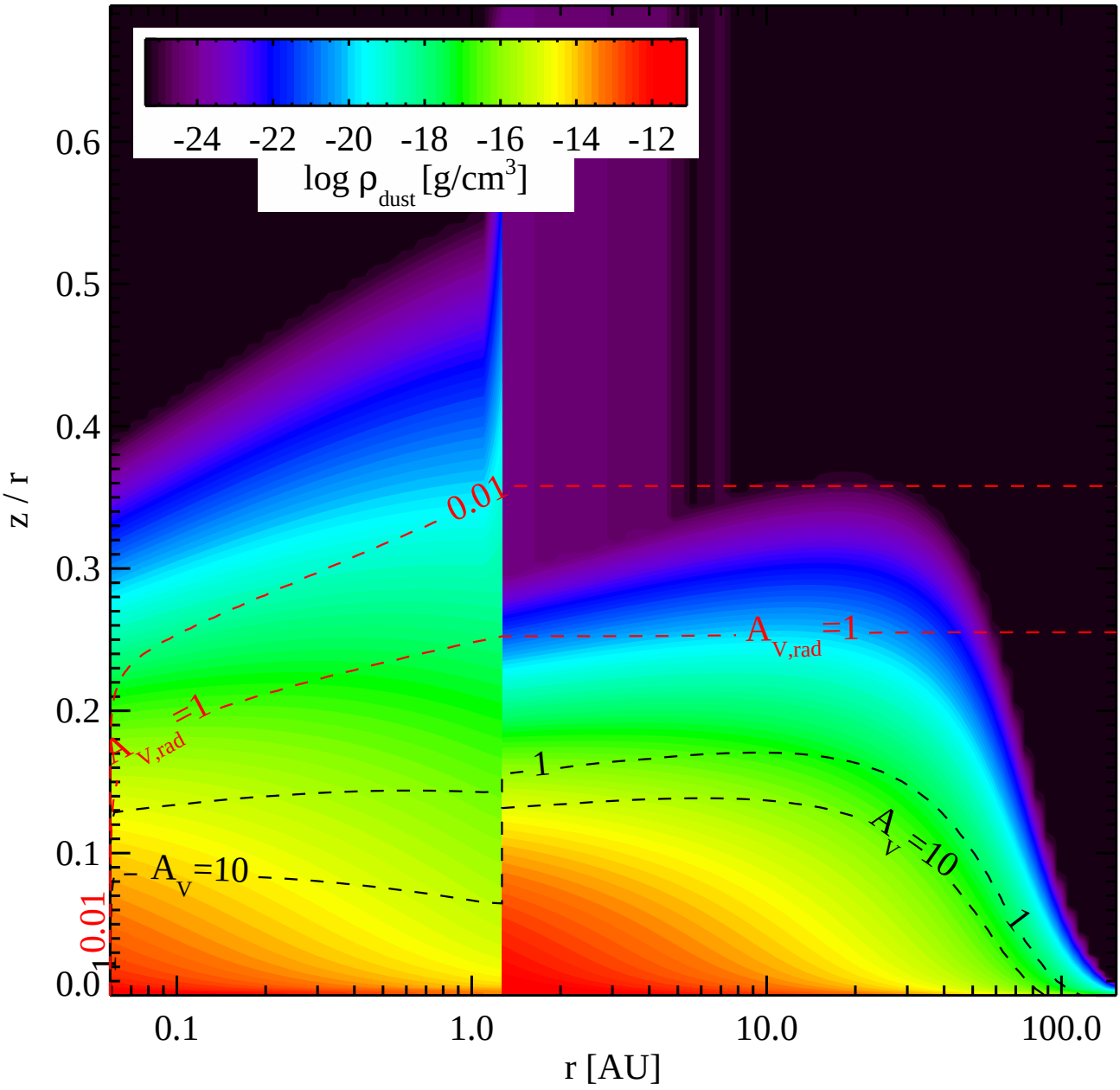
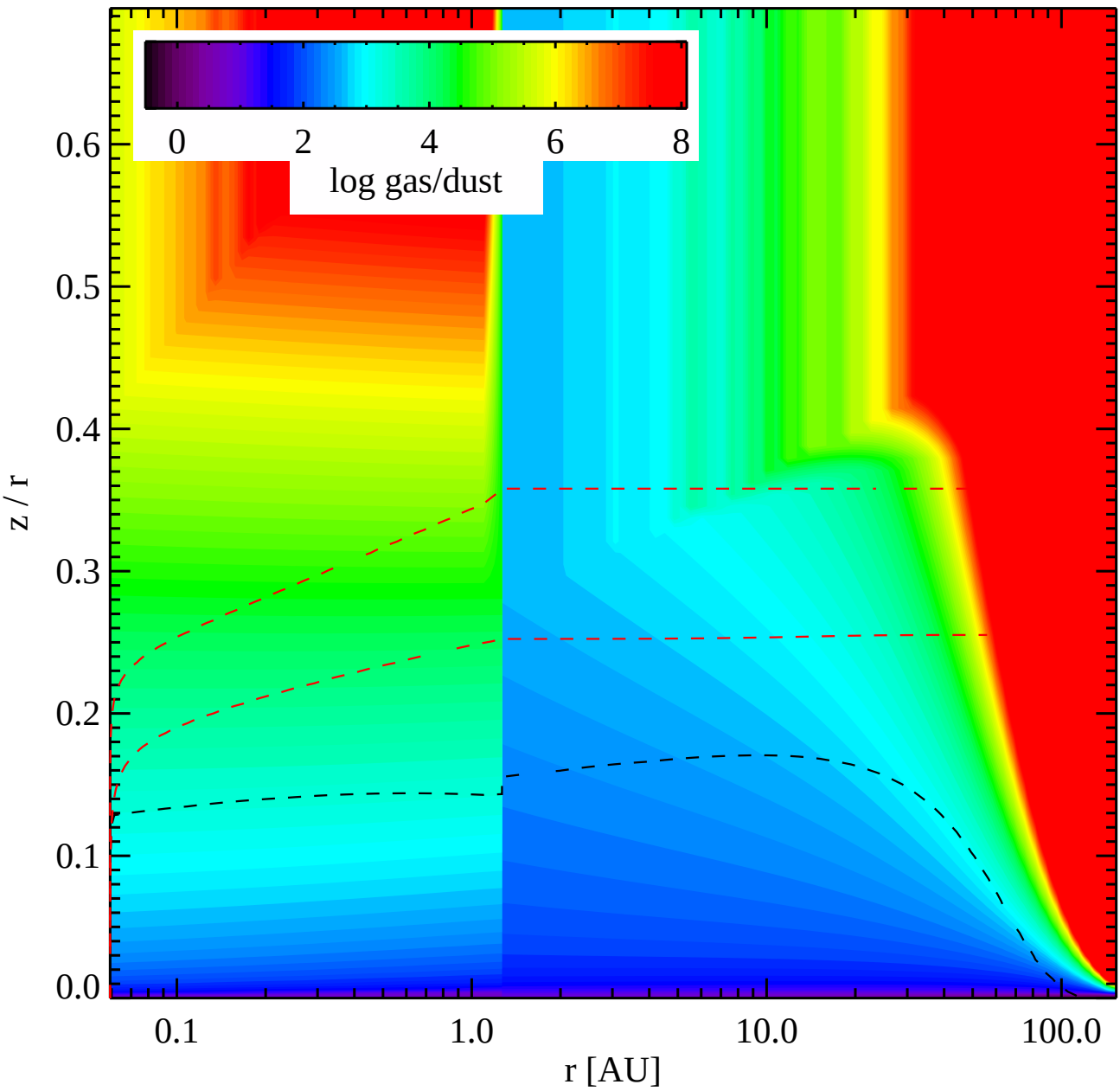
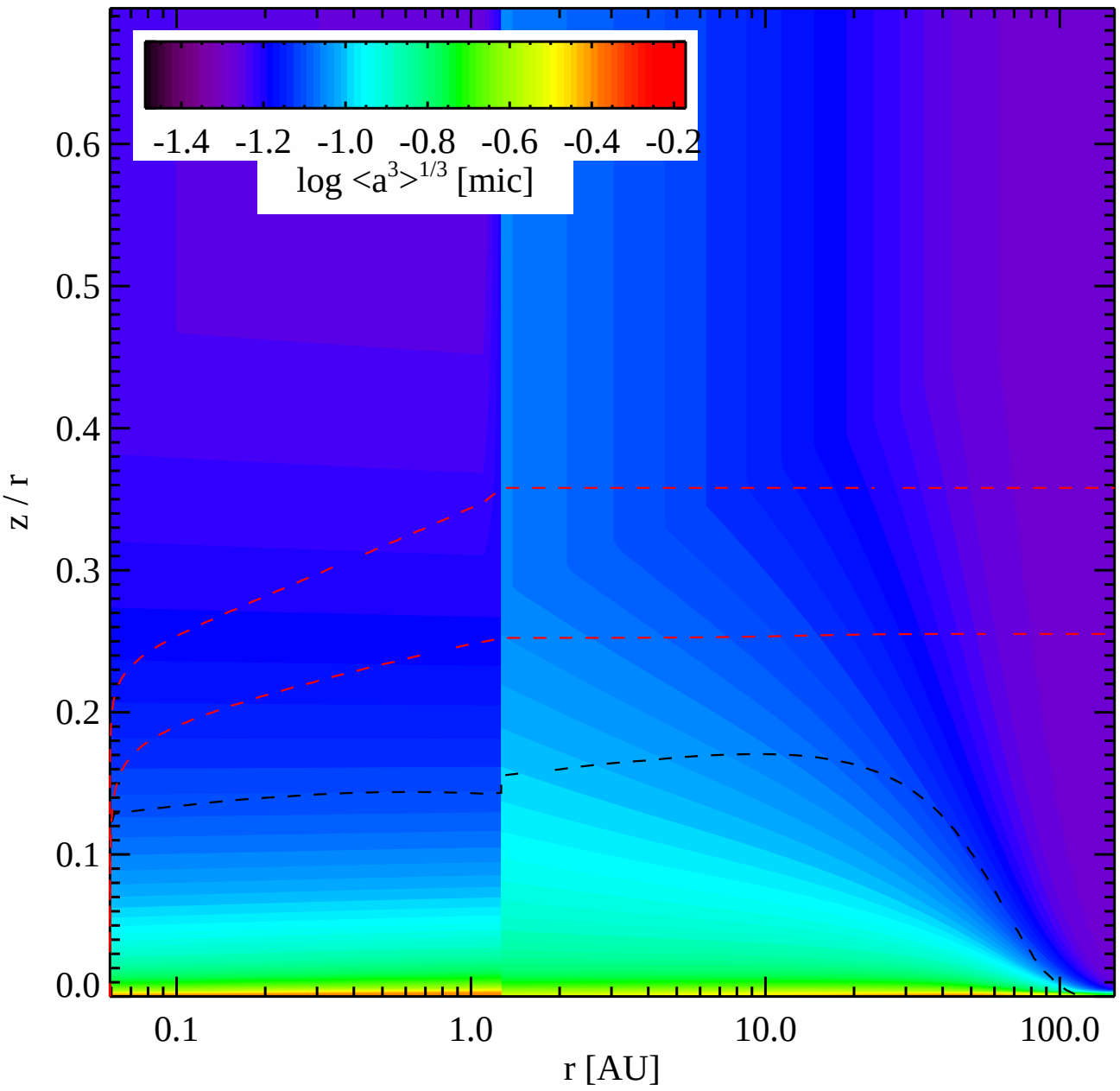
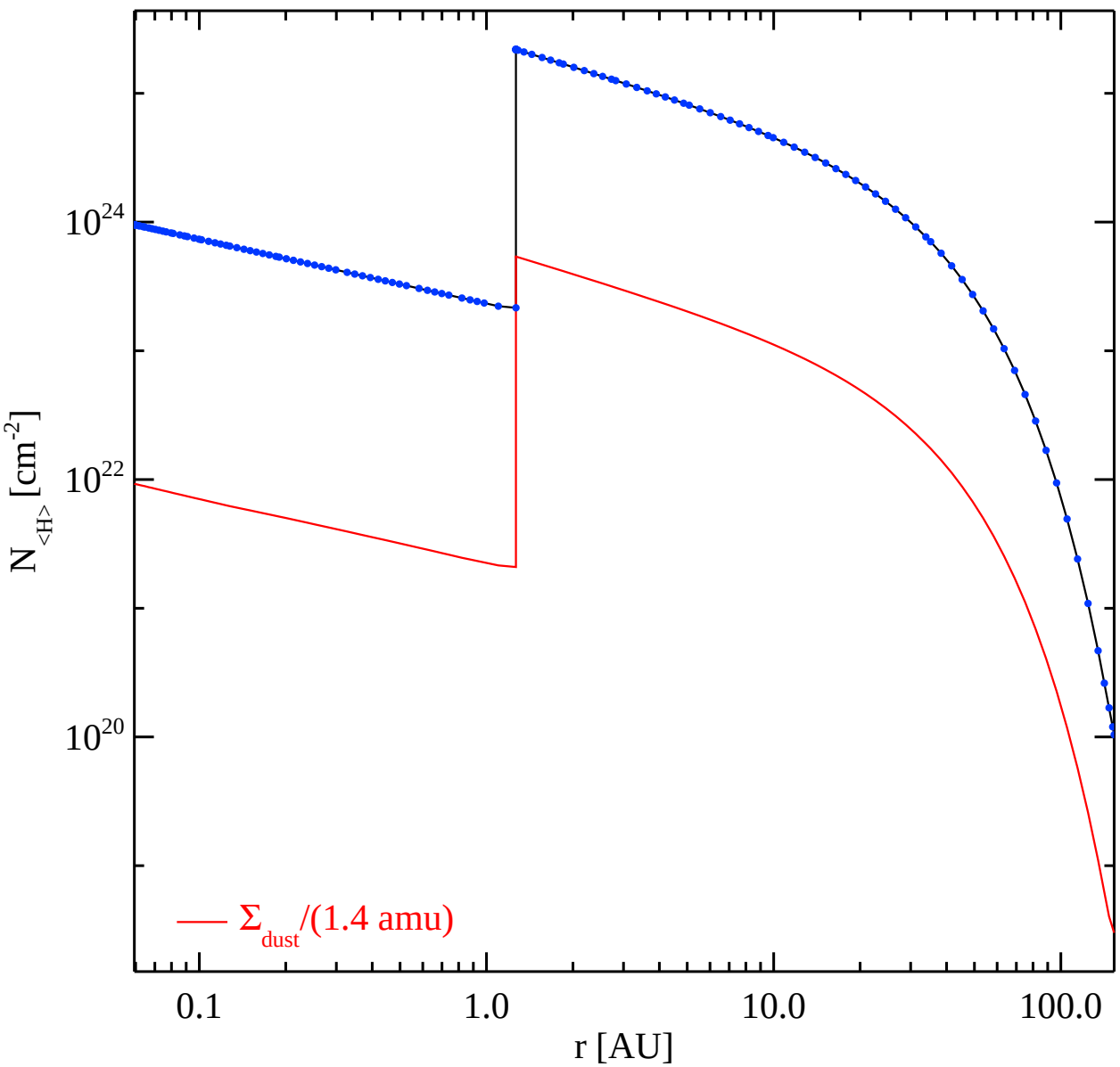
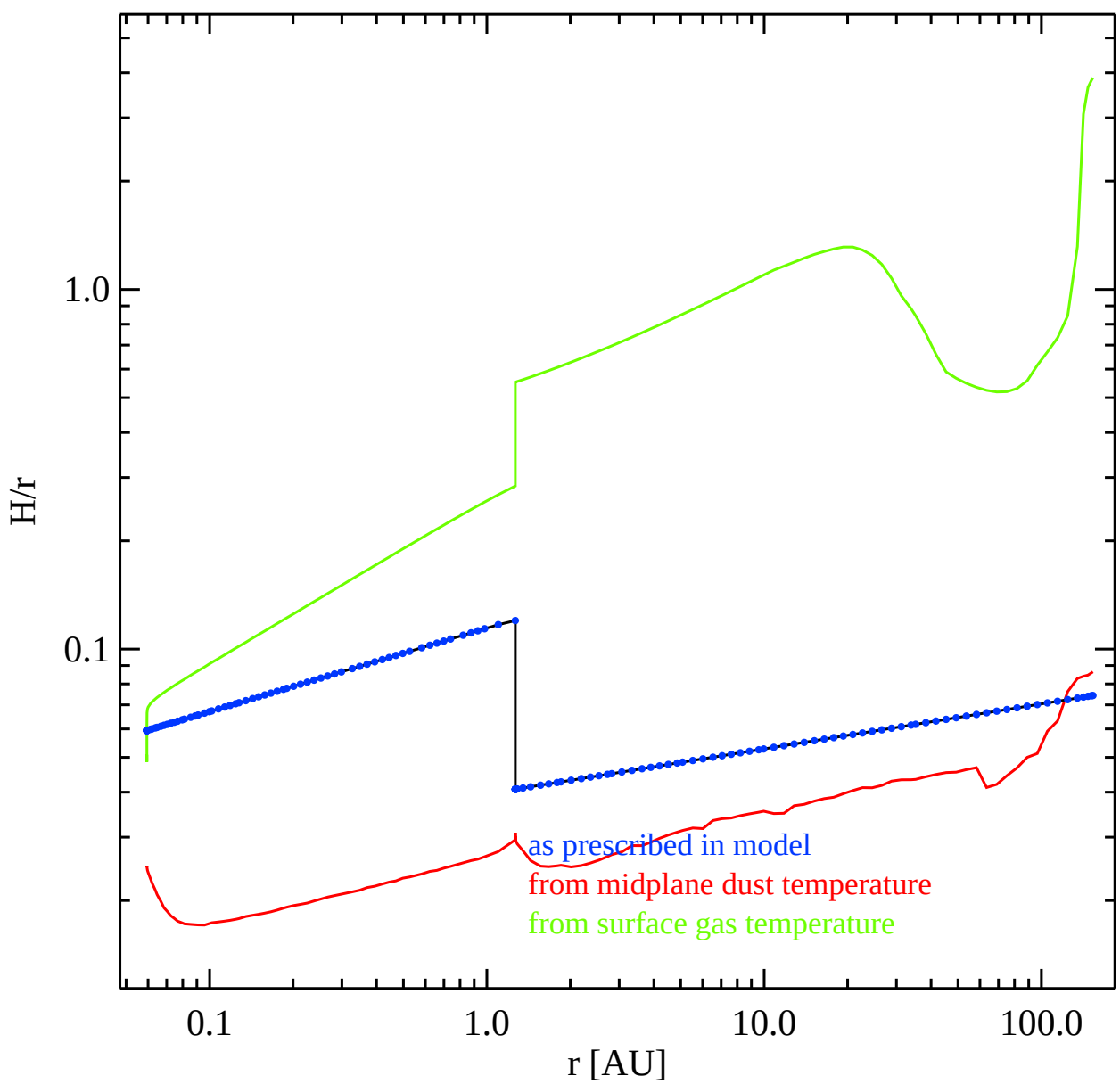

4
6
8
10
12
log n<H> [cm-3]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

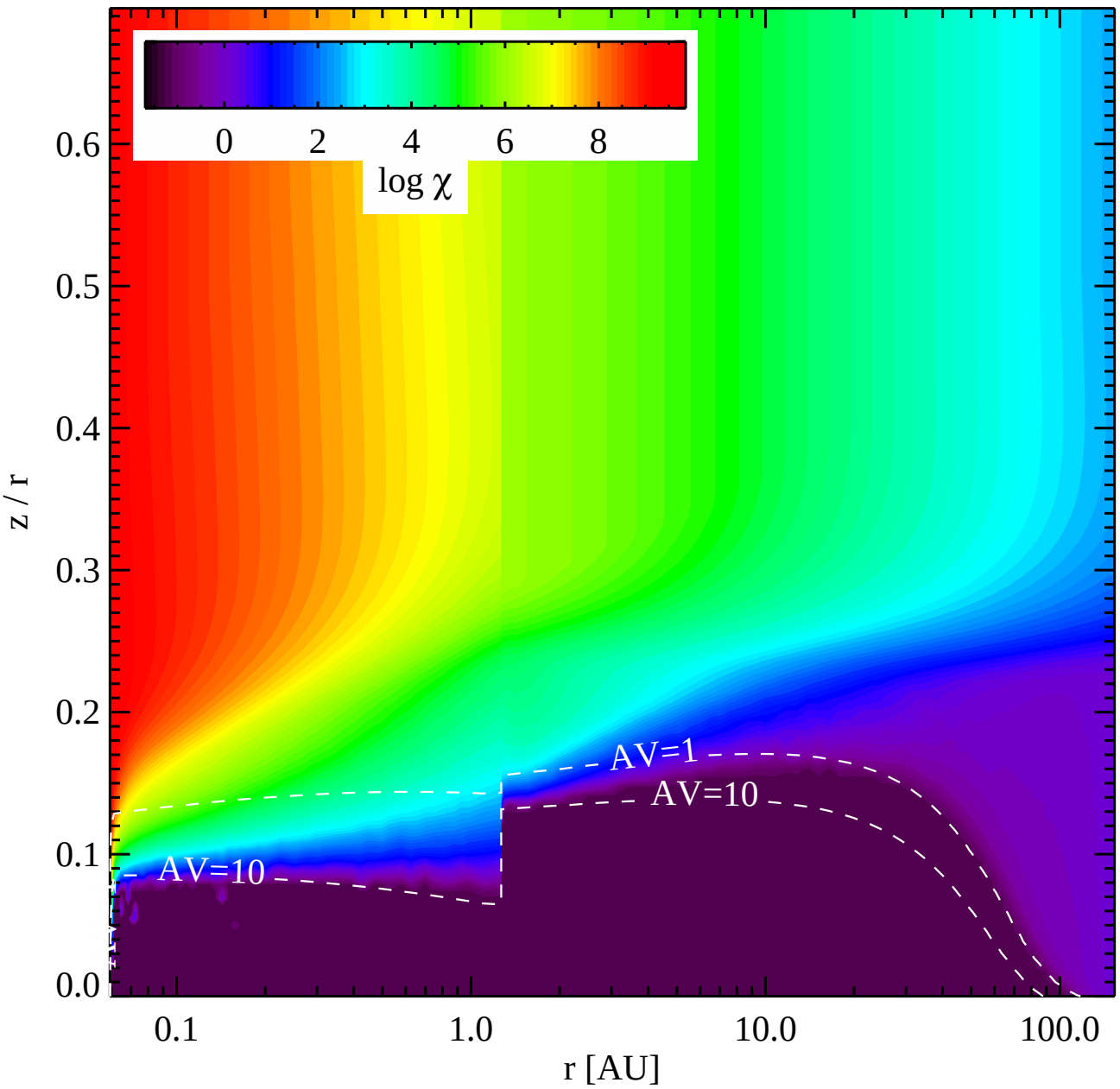

-24 -22 -20 -18 -16 -14 -12
log ρ dust [g/cm3]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.01
A V,rad =1
A V,rad =1
1
A V =10
A V =10
1
0.01
0.1
1.0
10.0
100.0
r [AU]

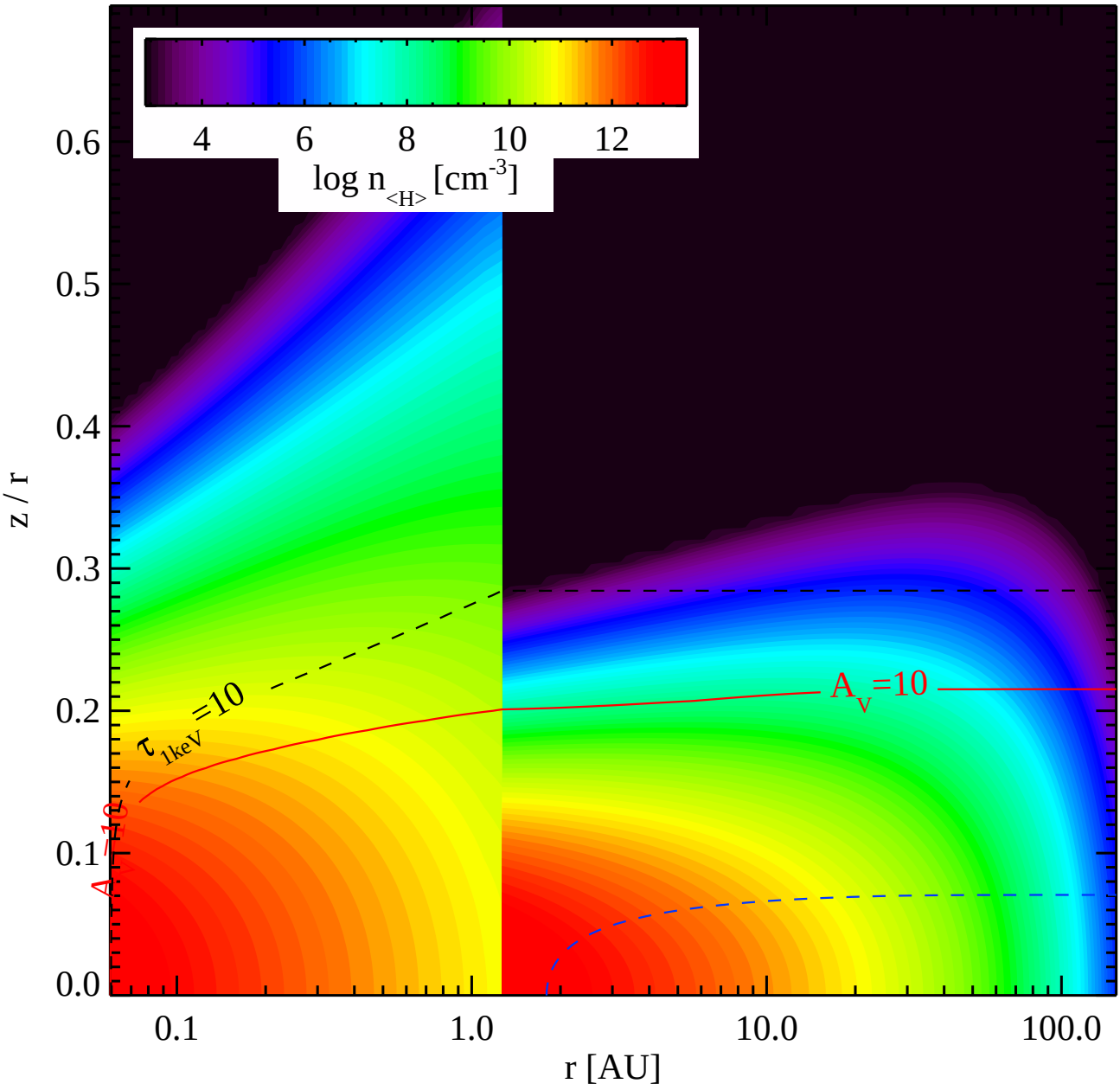

0
2
4
6
8
log gas/dust
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

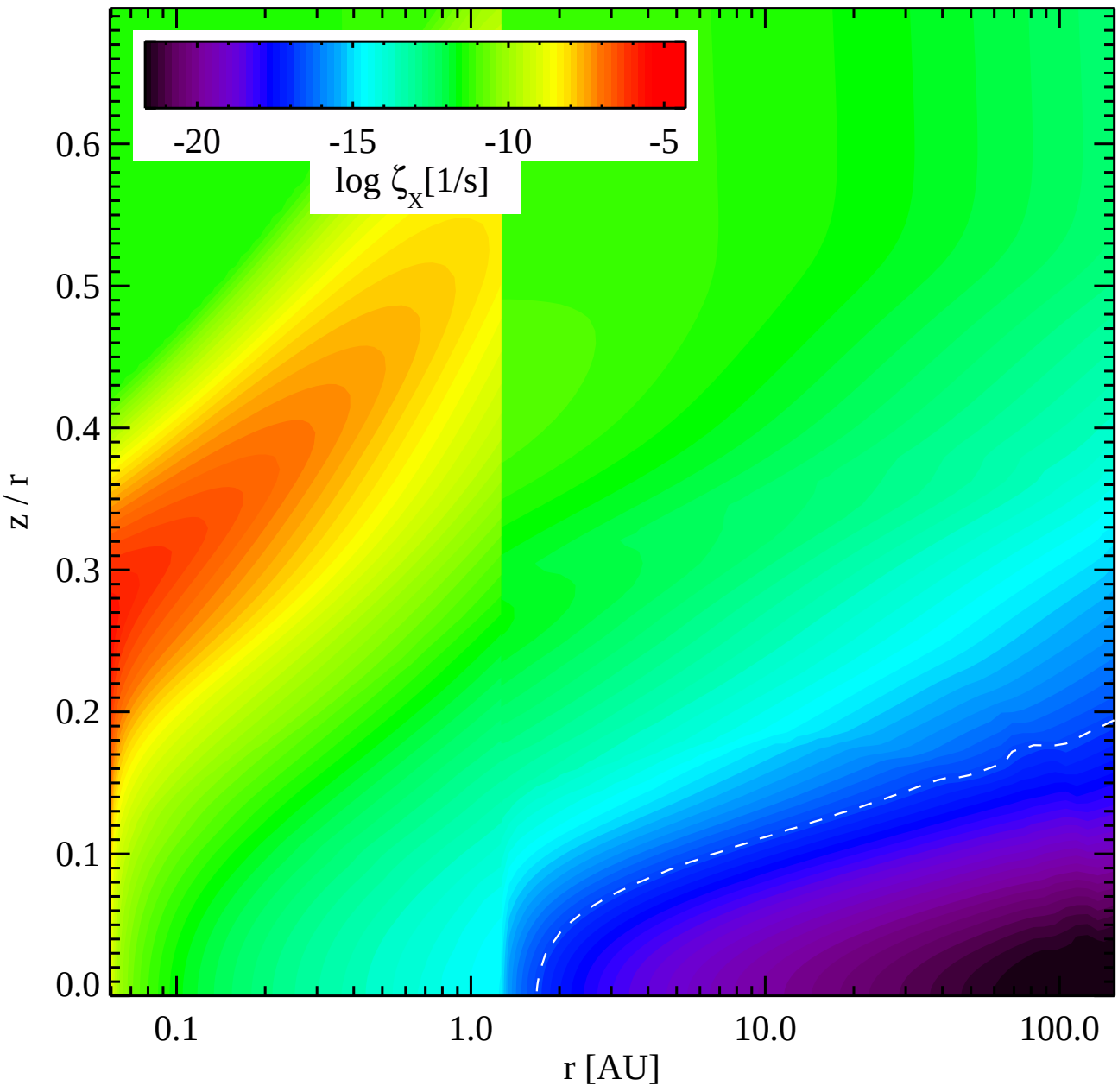

-1.4 -1.2 -1.0 -0.8 -0.6 -0.4 -0.2
log <a^3>^1/3 [mic]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

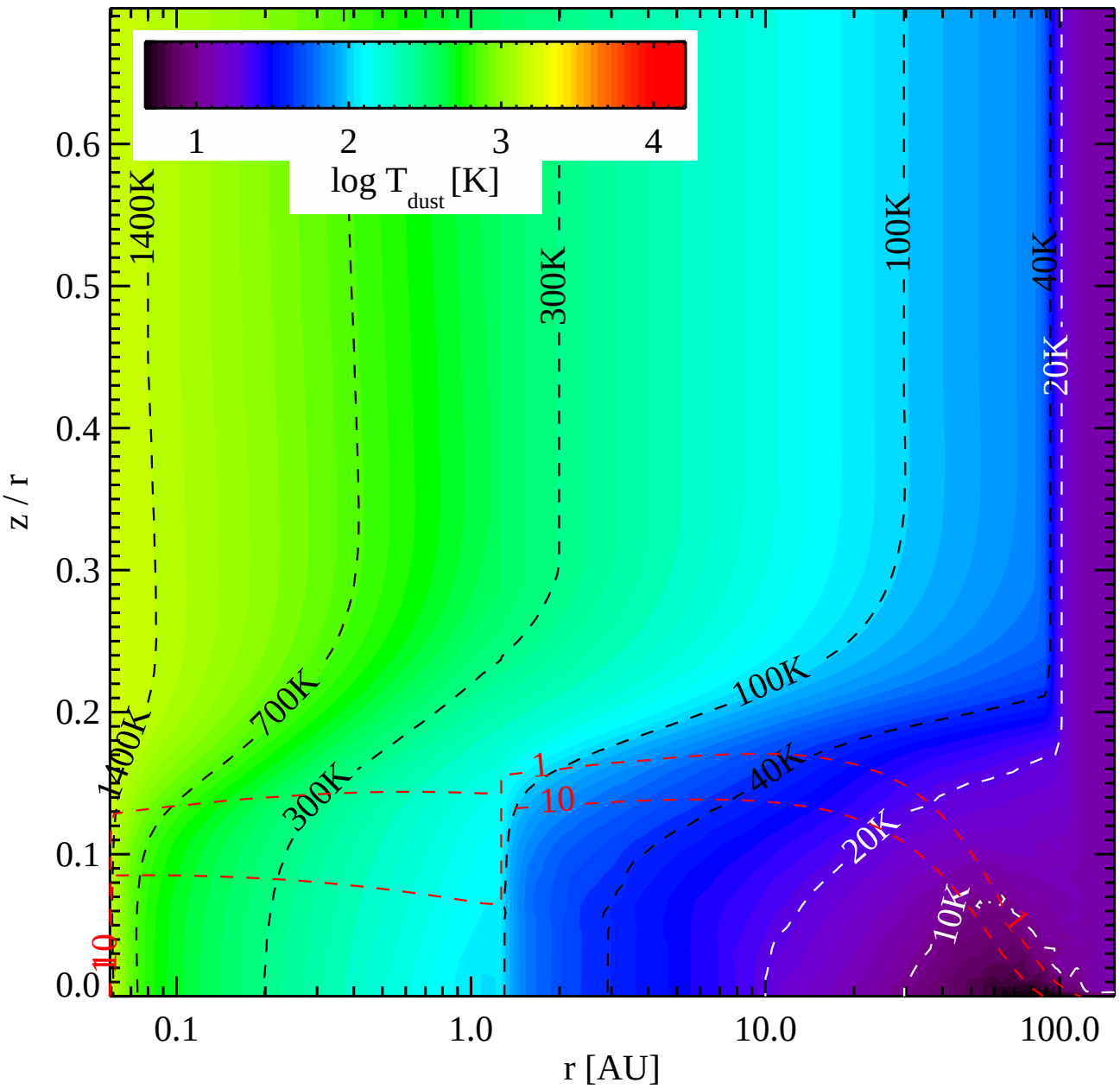

10^{24}
10^{22}
10^{20}
$N_{<H>}$ [cm^{-2}]
0.1
1.0
10.0
100.0
r [AU]
— Σ_{dust}/(1.4 amu)

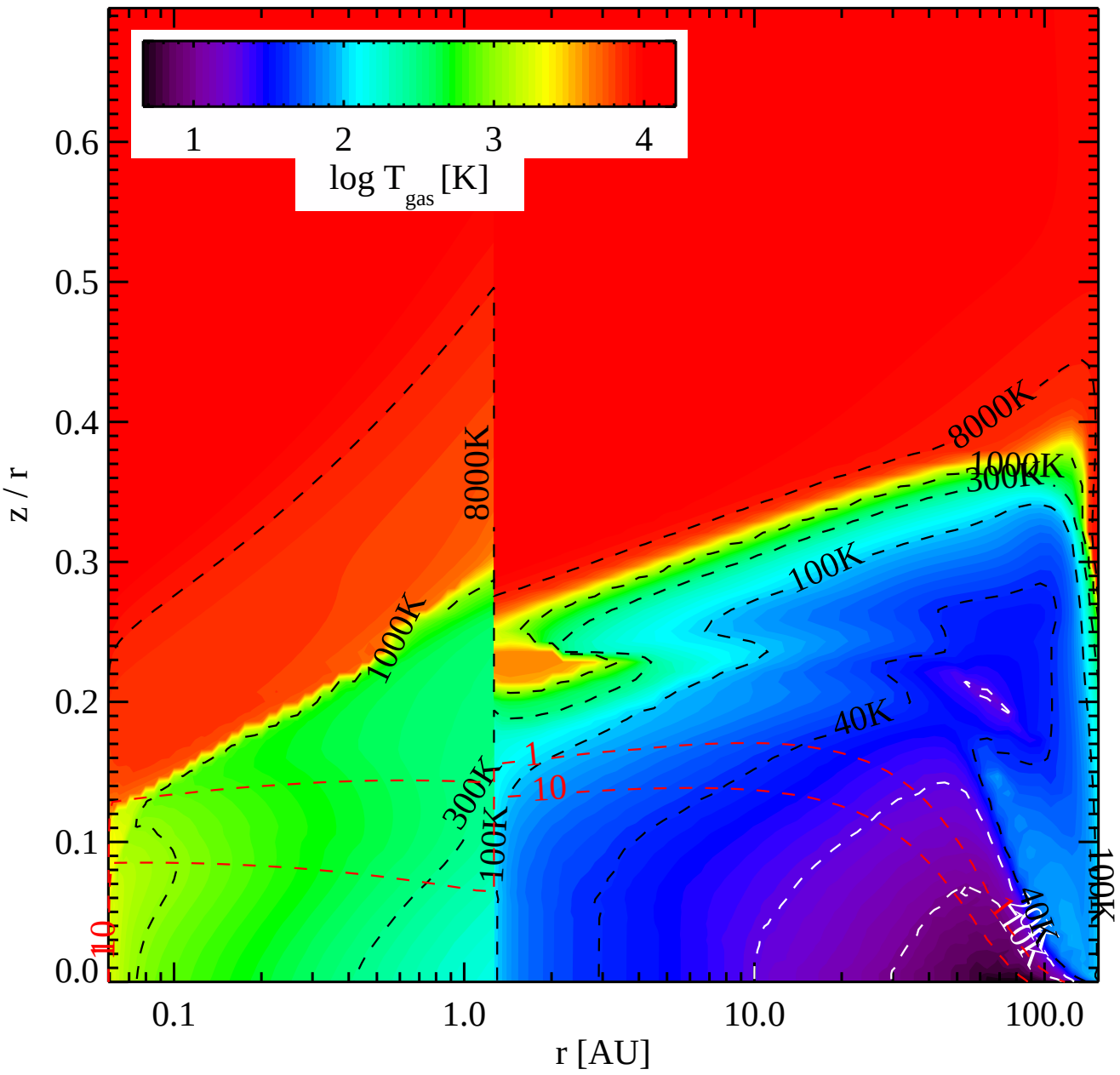

1.0
0.1
H/r
0.1
1.0
10.0
100.0
r [AU]
as prescribed in model
from midplane dust temperature
from surface gas temperature

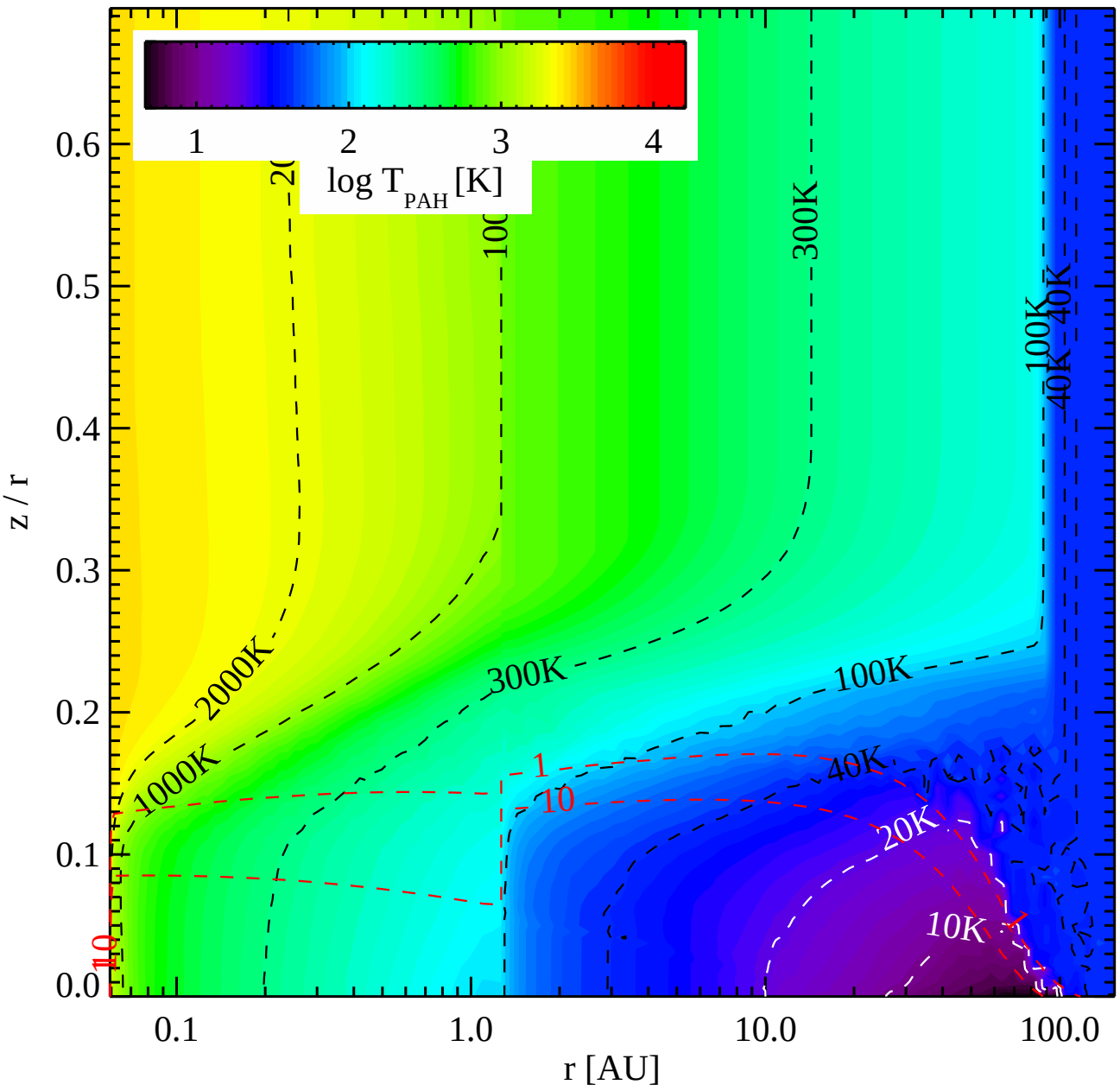

0
2
4
6
8
log χ
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
AV=1
AV=10
AV=10
0.1
1.0
10.0
100.0
r [AU]

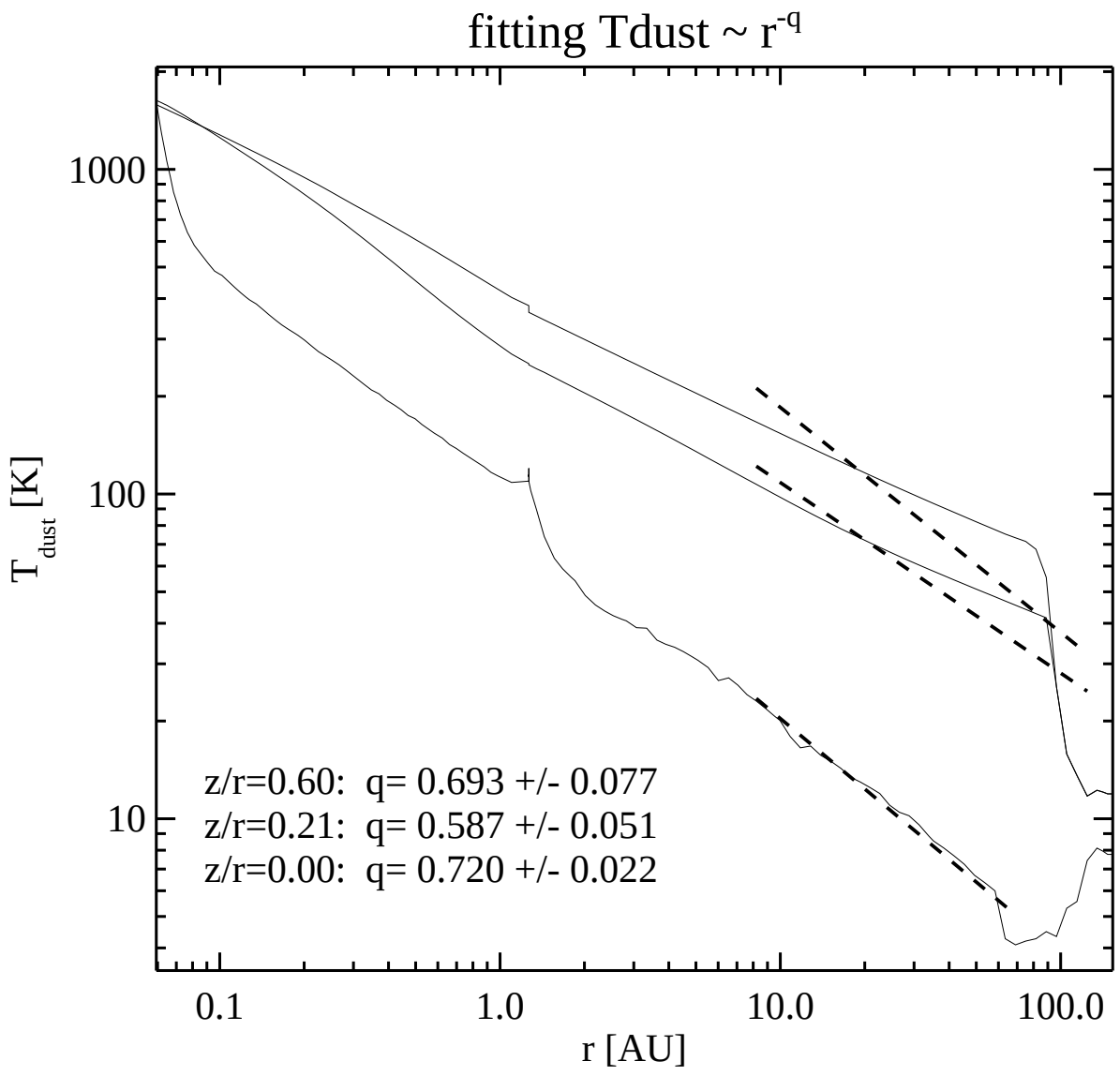

4
6
8
10
12
log n<H> [cm-3]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
τ1keV=10
AV=10

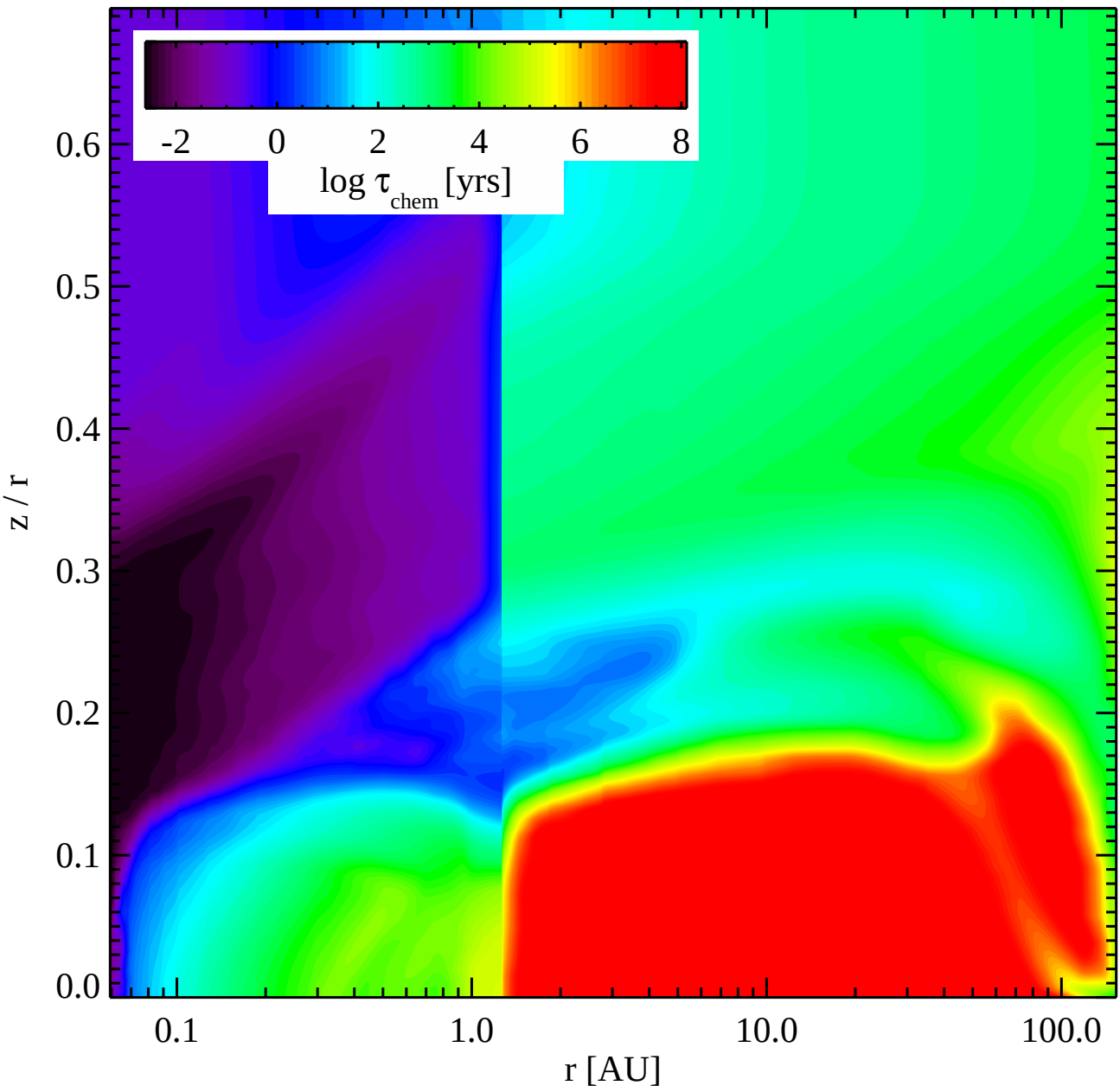

-20
-15
-10
-5
log ζ_X[1/s]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

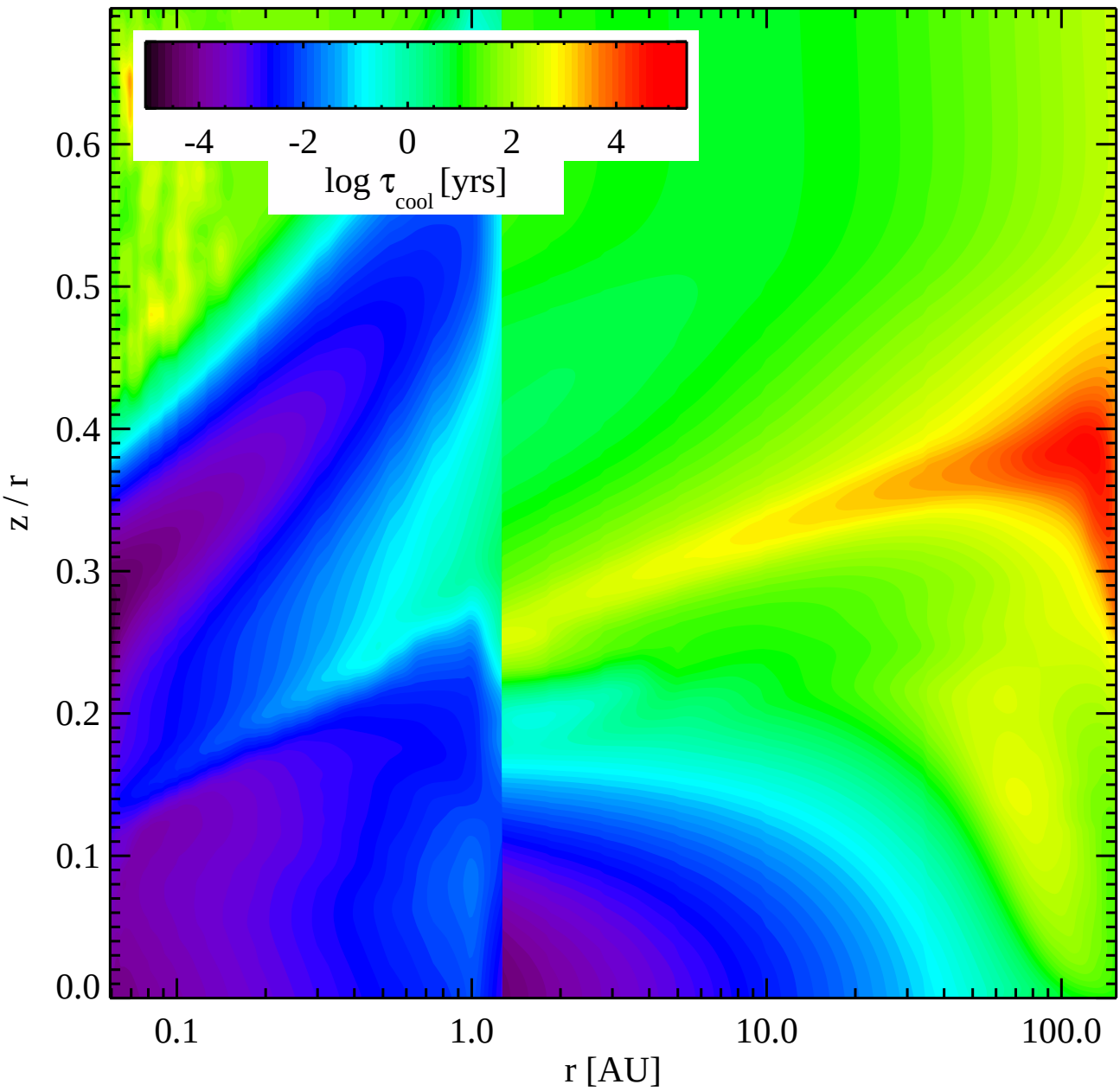

1
2
3
4
log T dust [K]
1400K
1400K
700K
300K
300K
100K
100K
40K
40K
20K
20K
10K
1
10
1
10
0.0
0.1
0.2
0.3
0.4
0.5
0.6
z / r
0.1
1.0
10.0
100.0
r [AU]

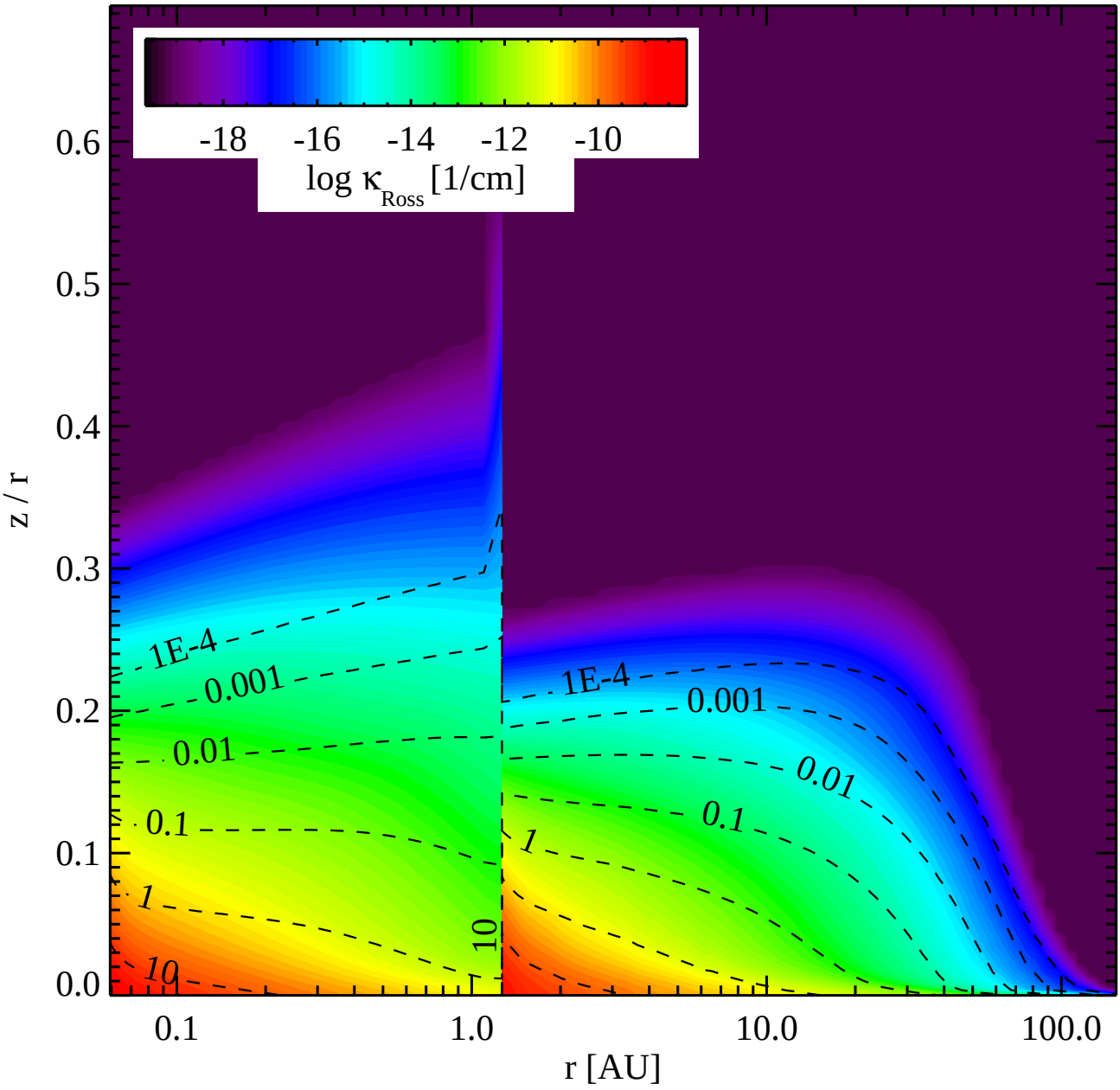

1
2
3
4
log T gas [K]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
8000K
1000K
300K
100K
40K
1
10
100K

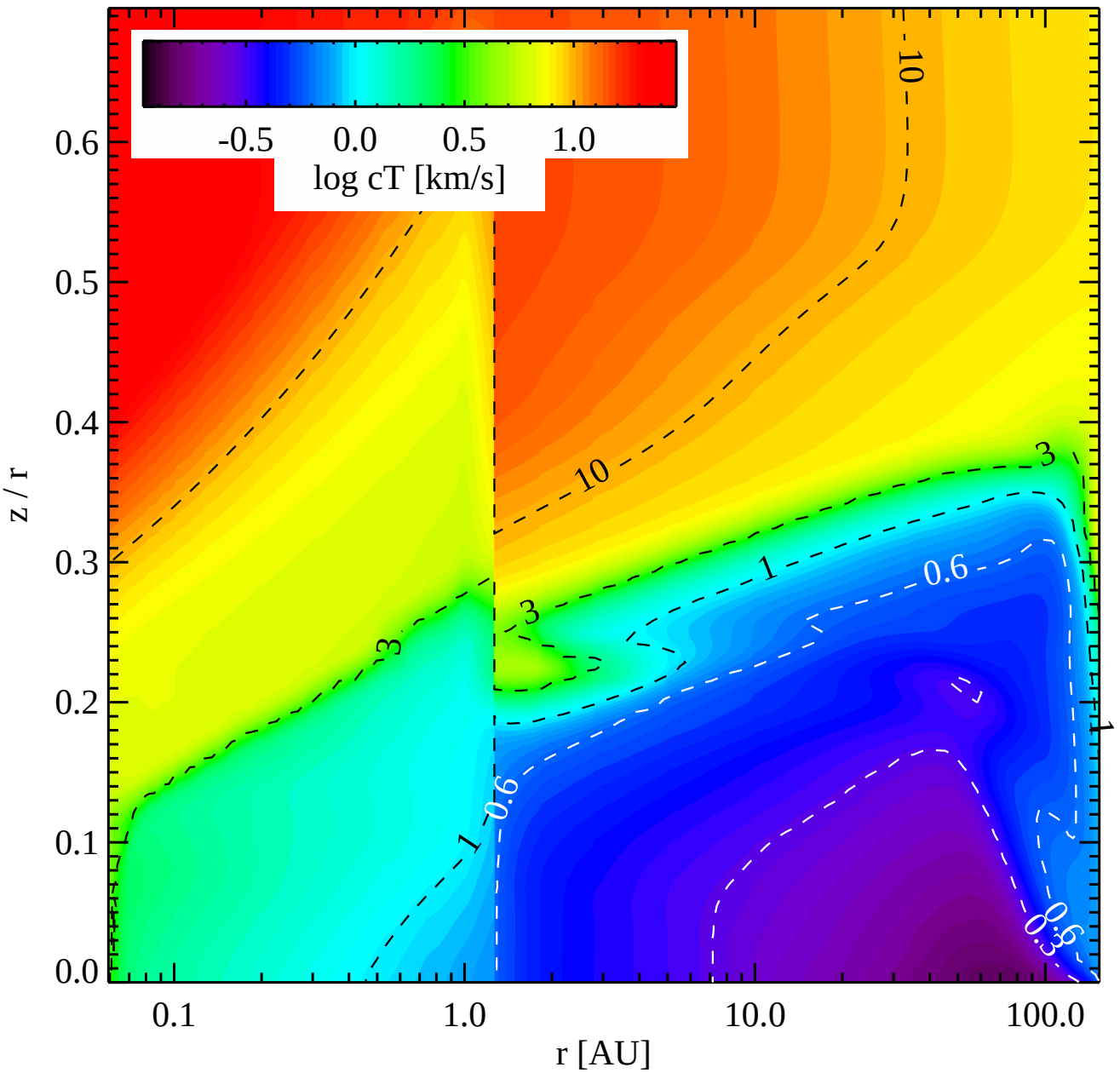

1
2
3
4
log T PAH [K]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
2000K
1000K
300K
100K
40K
20K
10K
1
10

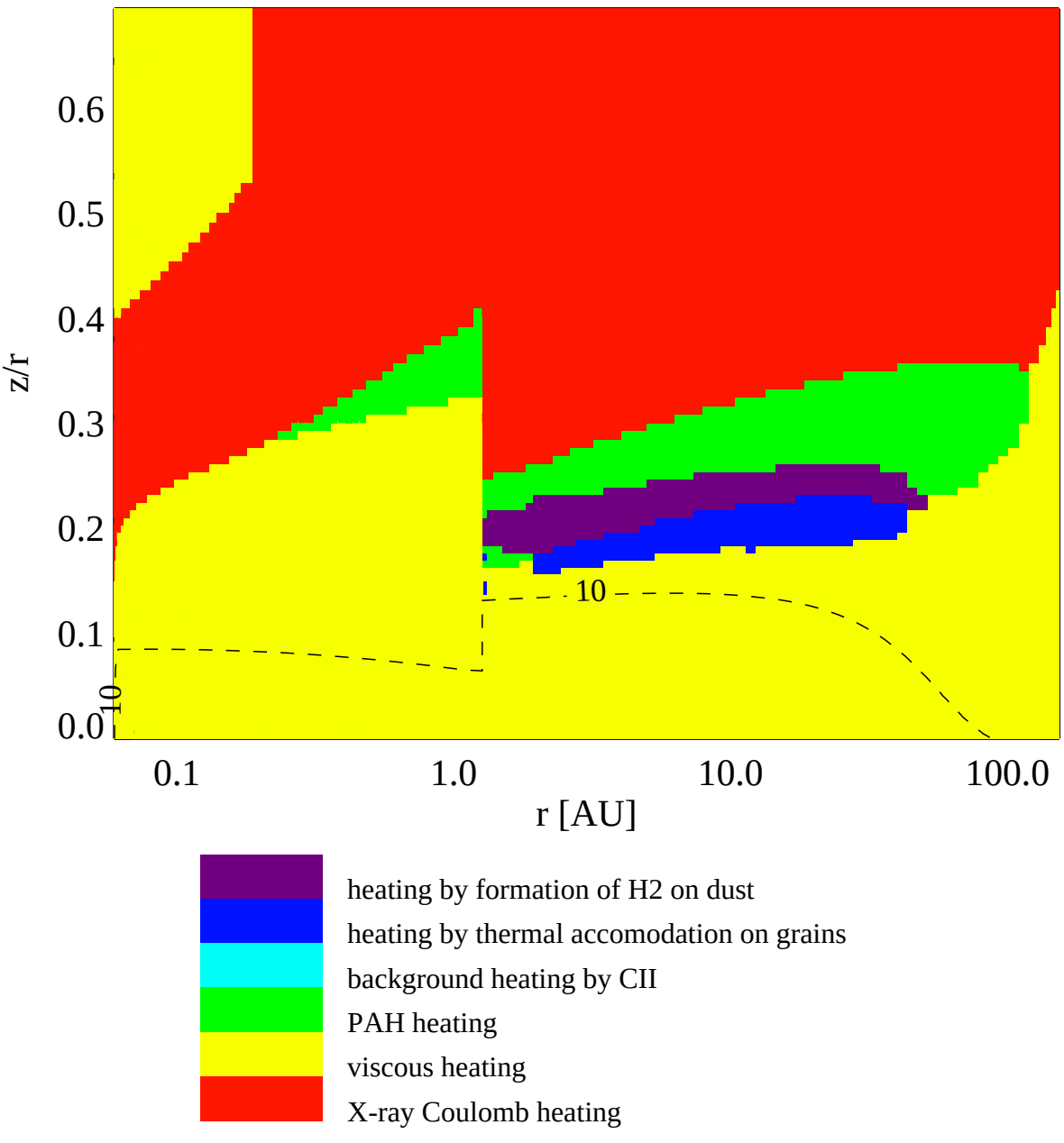

fitting Tdust ~ r^-q
1000
100
10
T dust [K]
0.1
1.0
10.0
100.0
r [AU]
z/r=0.60: q= 0.693 +/- 0.077
z/r=0.21: q= 0.587 +/- 0.051
z/r=0.00: q= 0.720 +/- 0.022

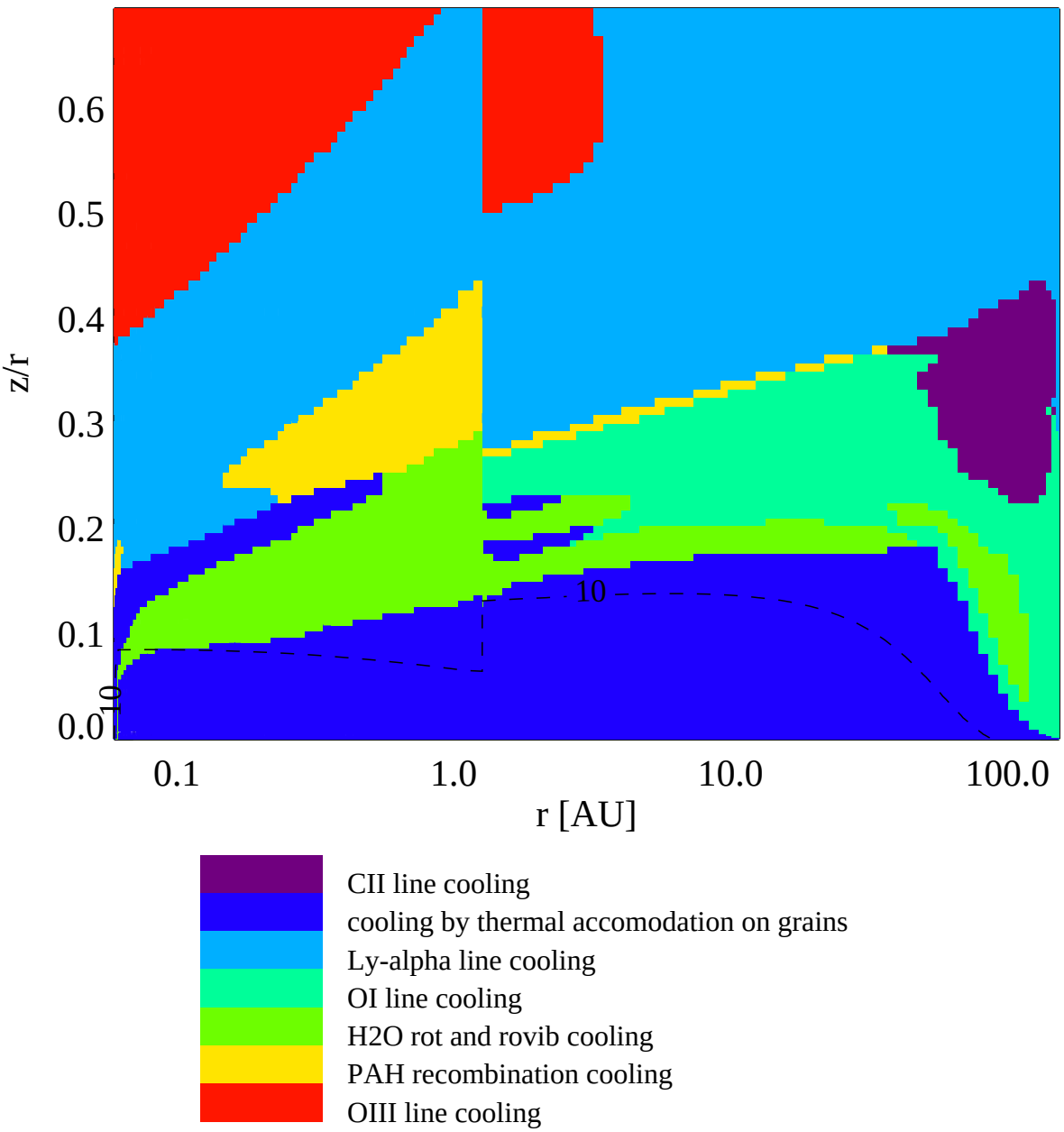

-2
0
2
4
6
8
log τ chem [yrs]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

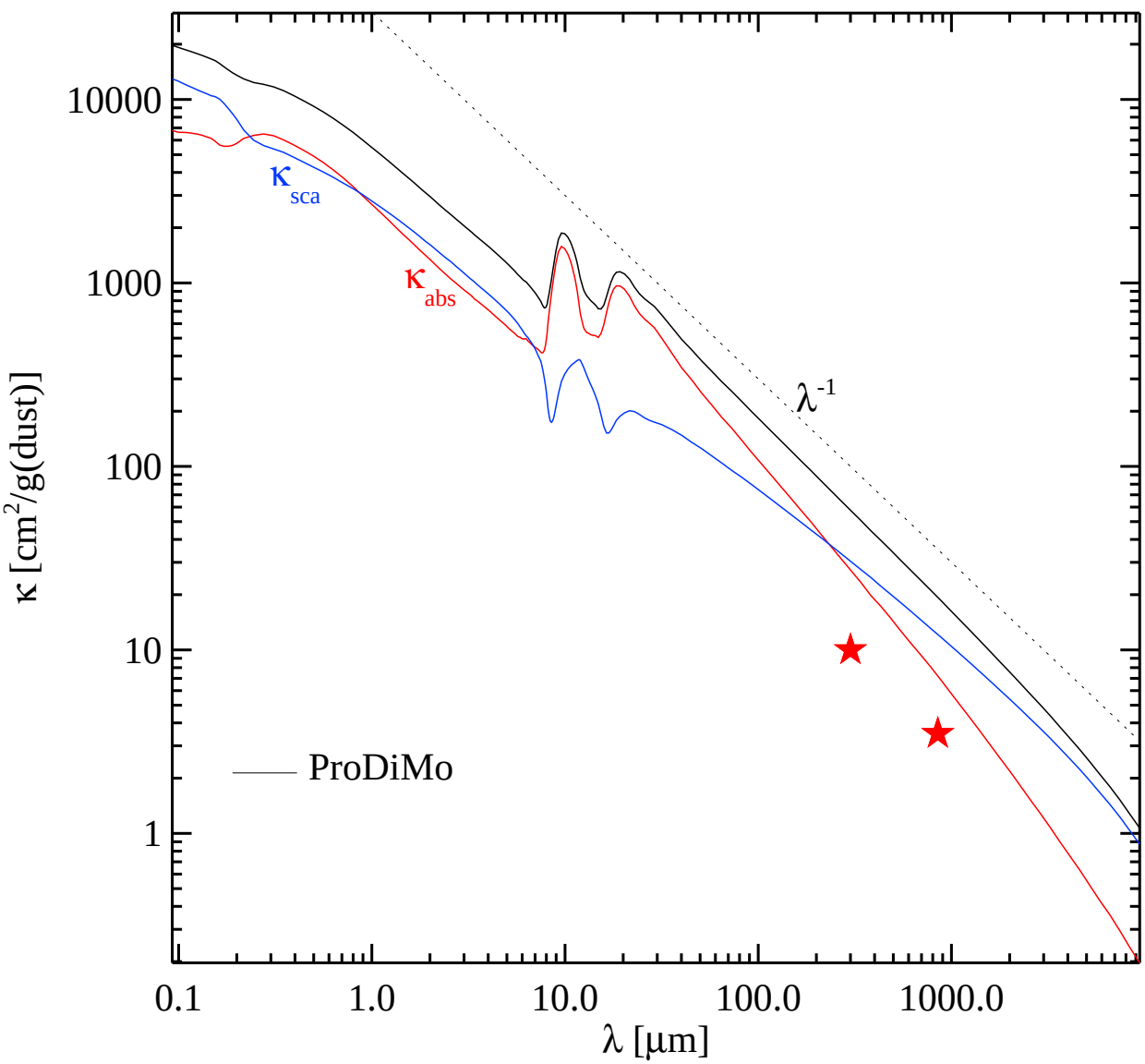

-4
-2
0
2
4
log τ cool [yrs]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

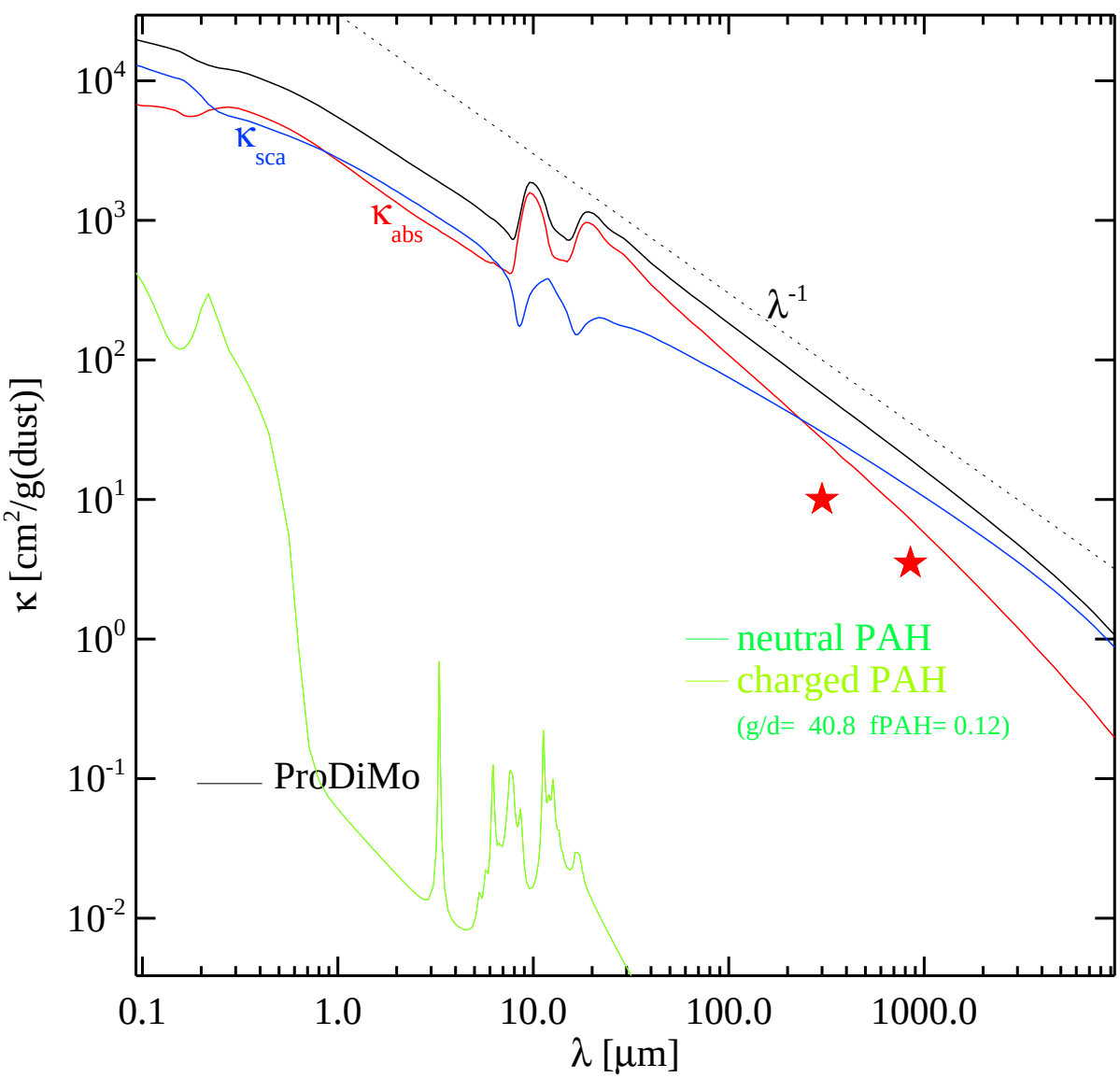

-18
-16
-14
-12
-10
log κ Ross [1/cm]
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
1E-4
0.001
0.01
0.1
1
10
1E-4
0.001
0.01
0.1
1
10
0.1
1.0
10.0
100.0
r [AU]

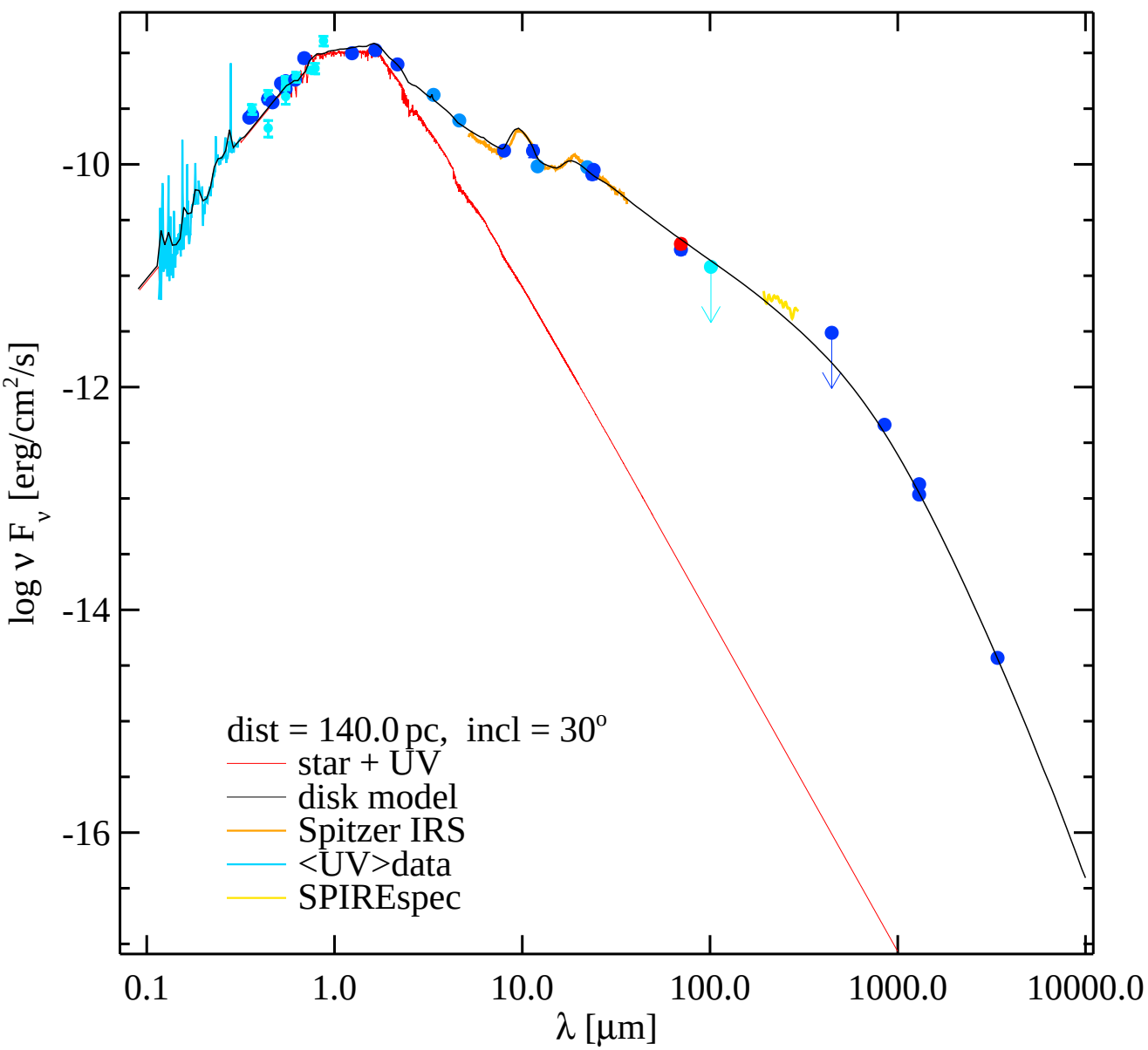

-0.5
0.0
0.5
1.0
log cT [km/s]
z / r
r [AU]
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.1
1.0
10.0
100.0
10
10
3
3
3
1
1
0.6
0.6
0.3

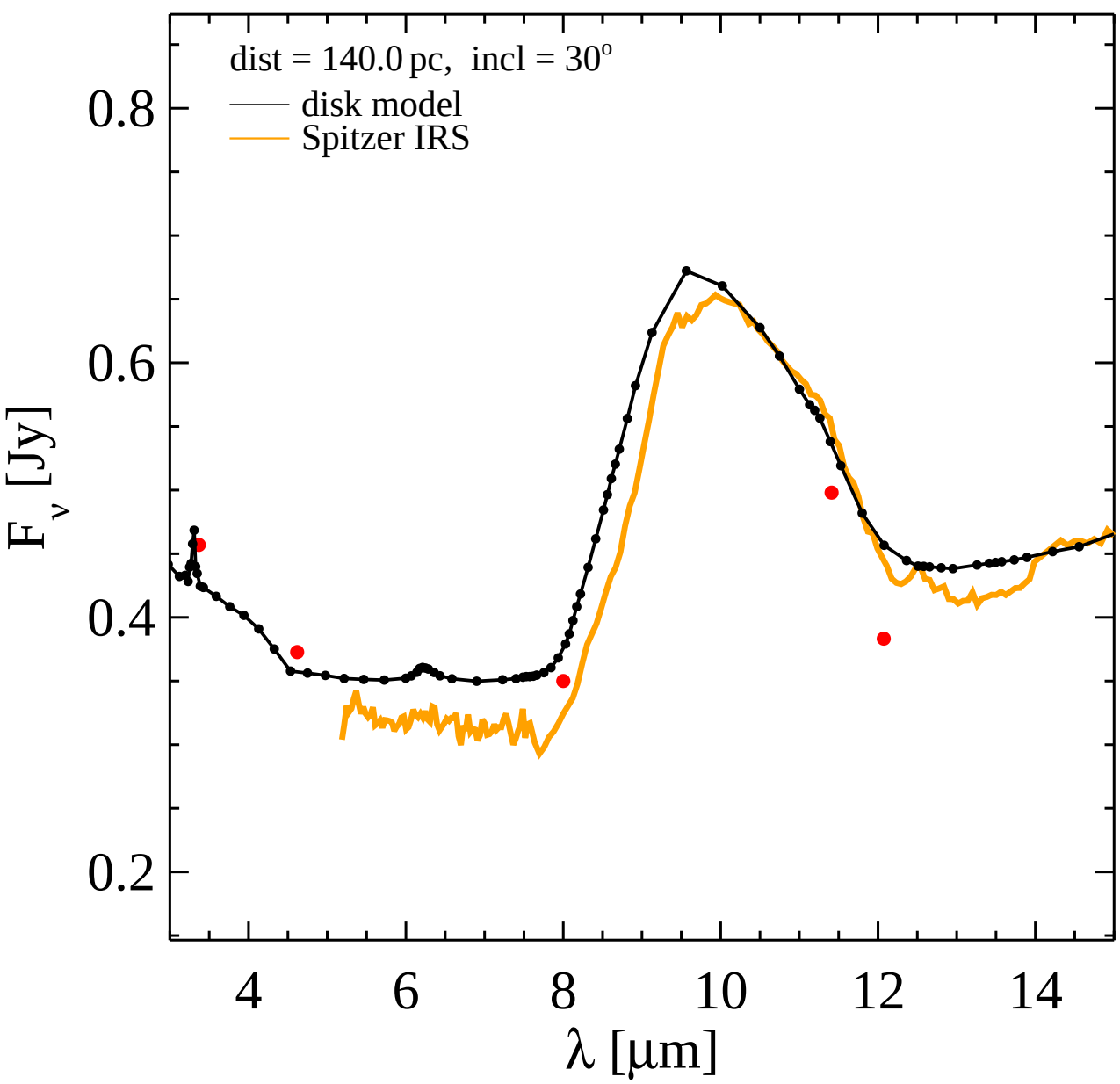

0.6
0.5
0.4
0.3
0.2
0.1
0.0
z/r
10
10
0.1
1.0
10.0
100.0
r [AU]
heating by formation of H2 on dust
heating by thermal accomodation on grains
background heating by CII
PAH heating
viscous heating
X-ray Coulomb heating

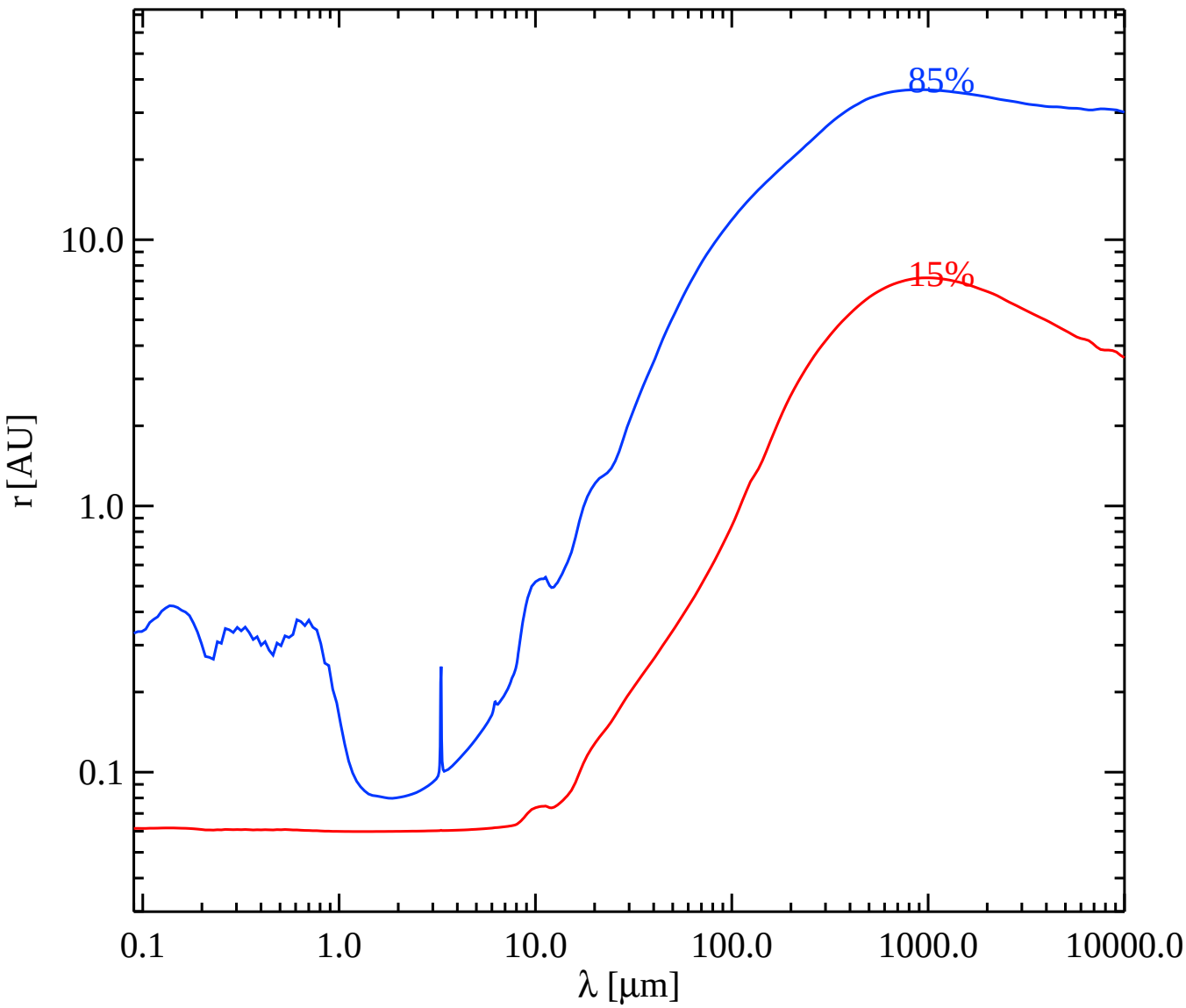

z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
10
10
0.1
1.0
10.0
100.0
r [AU]
CII line cooling
cooling by thermal accomodation on grains
Ly-alpha line cooling
OI line cooling
H2O rot and rovib cooling
PAH recombination cooling
OIII line cooling

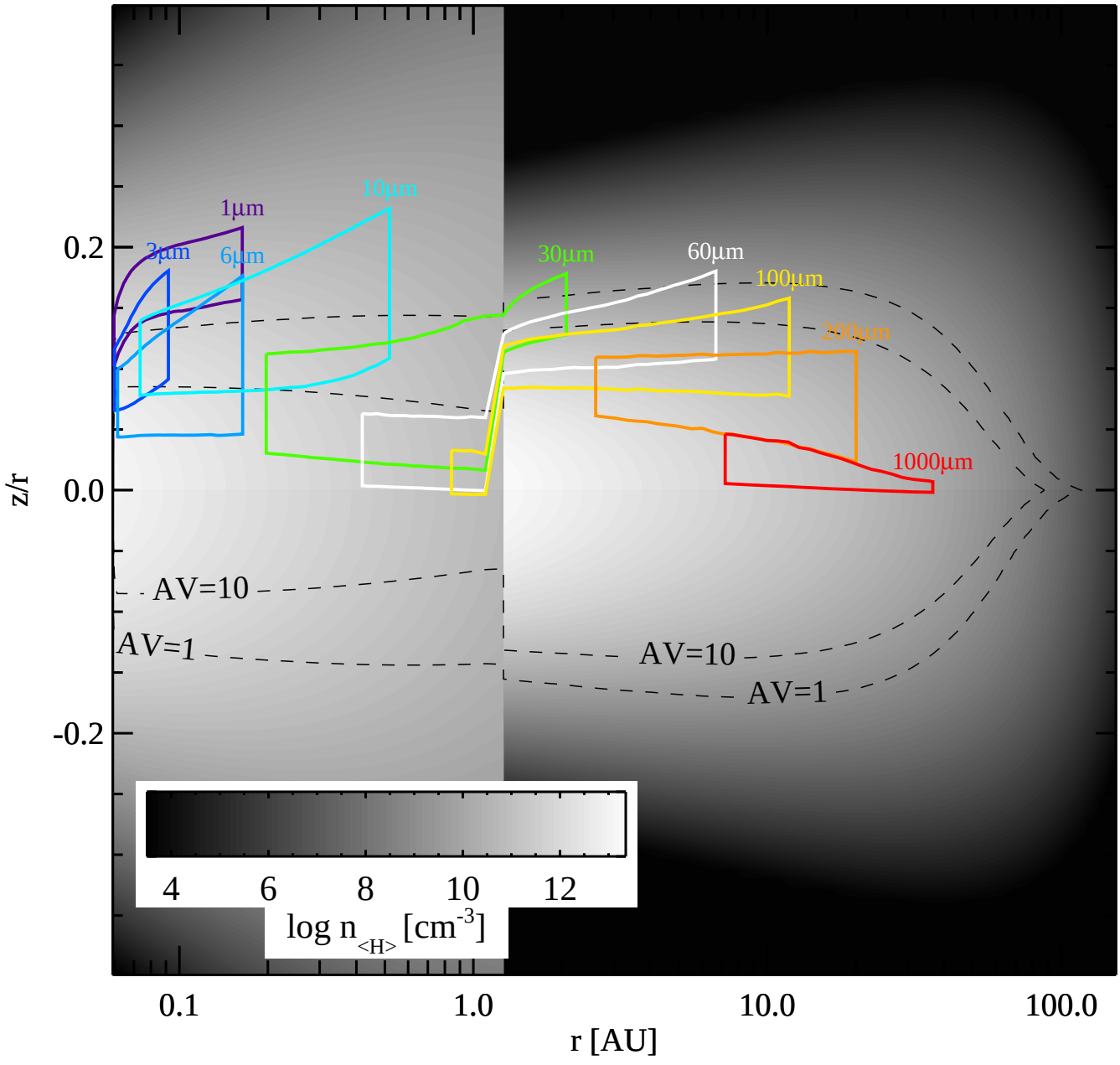

10000
1000
100
10
1
κ [cm²/g(dust)]
κsca
κabs
λ-1
ProDiMo
0.1
1.0
10.0
100.0
1000.0
λ [μm]

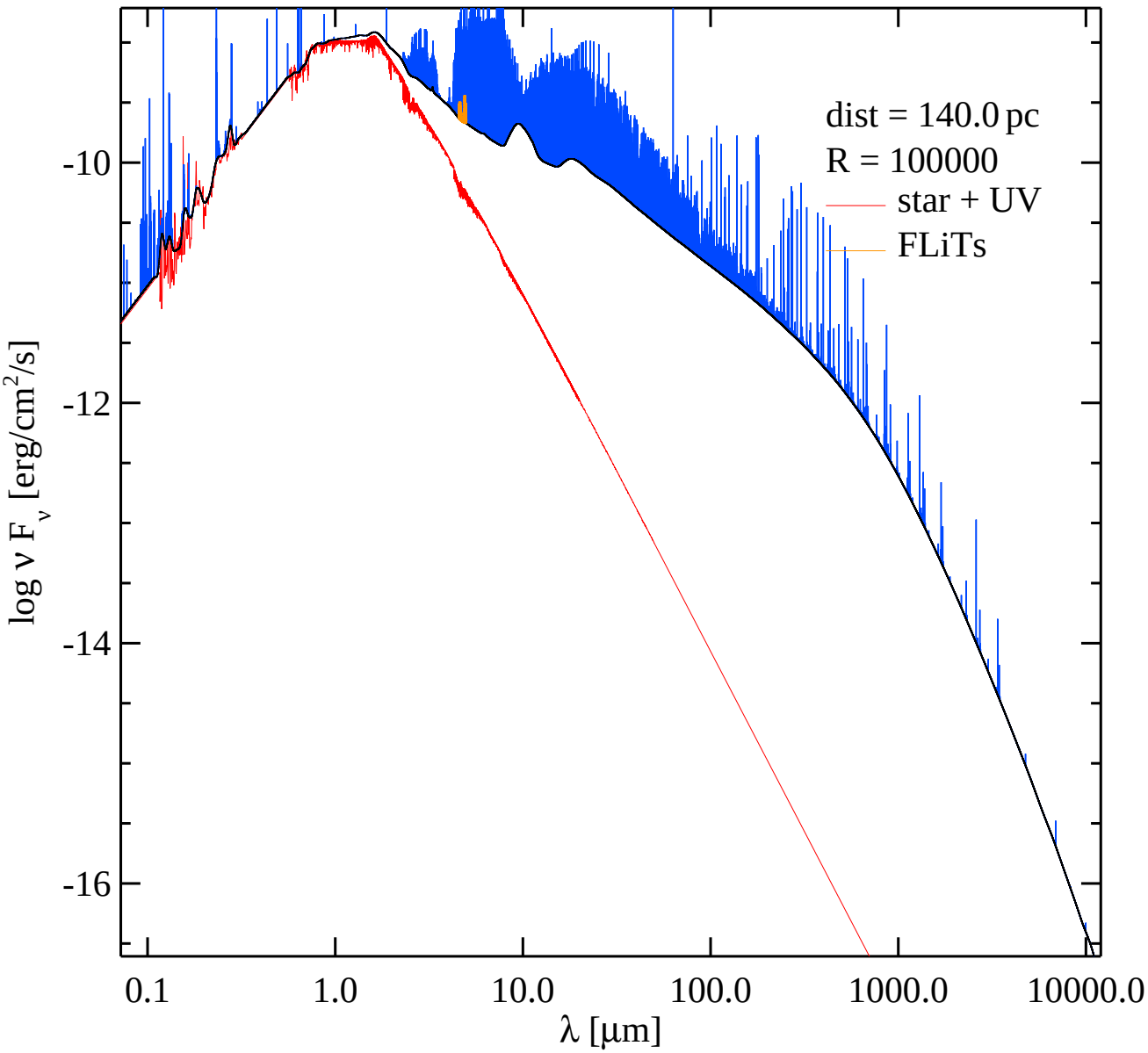

κ [cm²/g(dust)]
λ [μm]
κsca
κabs
λ-1
neutral PAH
charged PAH
(g/d= 40.8 fPAH= 0.12)
ProDiMo
10⁴
10³
10²
10¹
10⁰
10⁻¹
10⁻²
0.1
1.0
10.0
100.0
1000.0

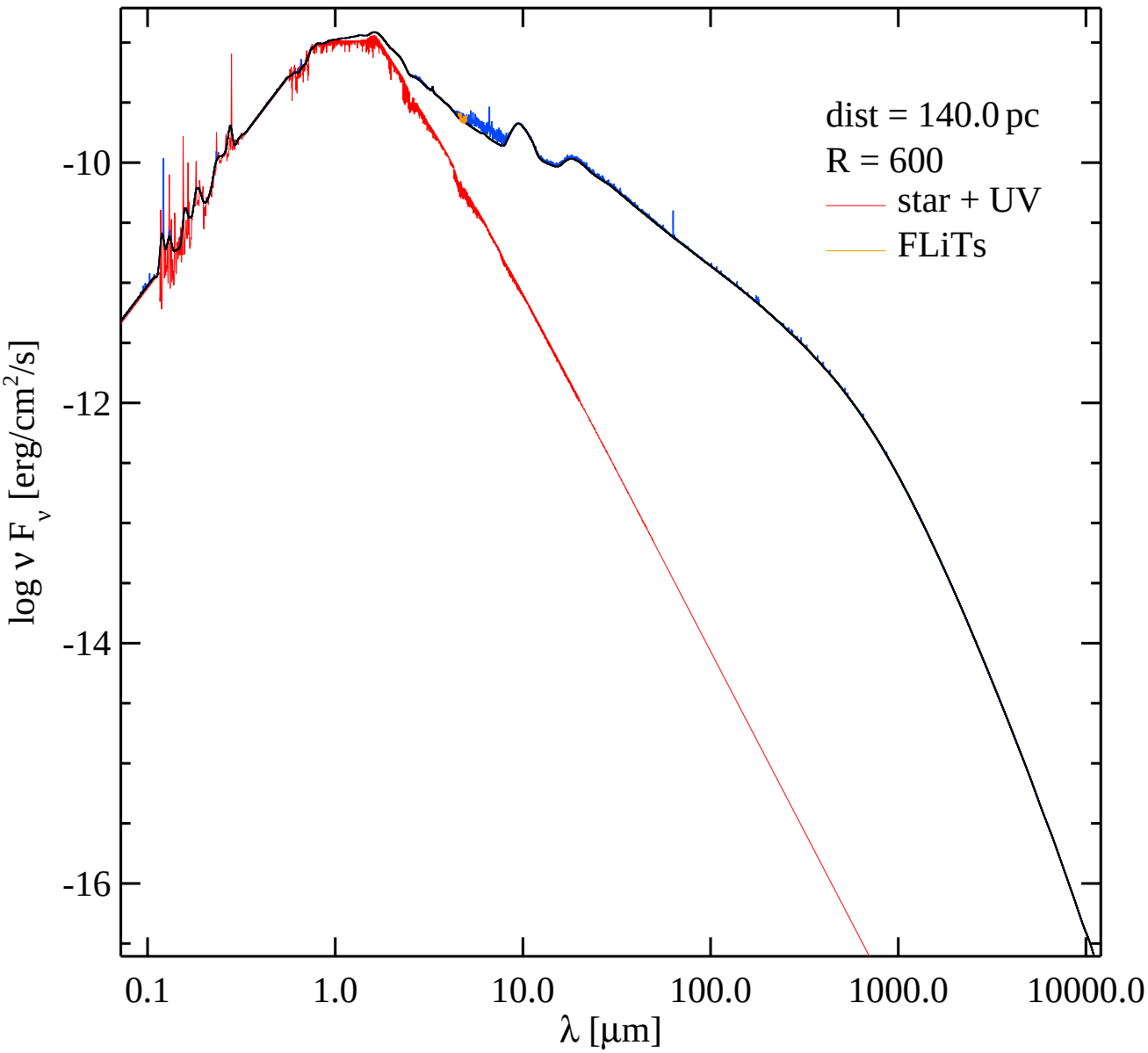

-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]
dist = 140.0 pc, incl = 30°
star + UV
disk model
Spitzer IRS
<UV>data
SPIREspec

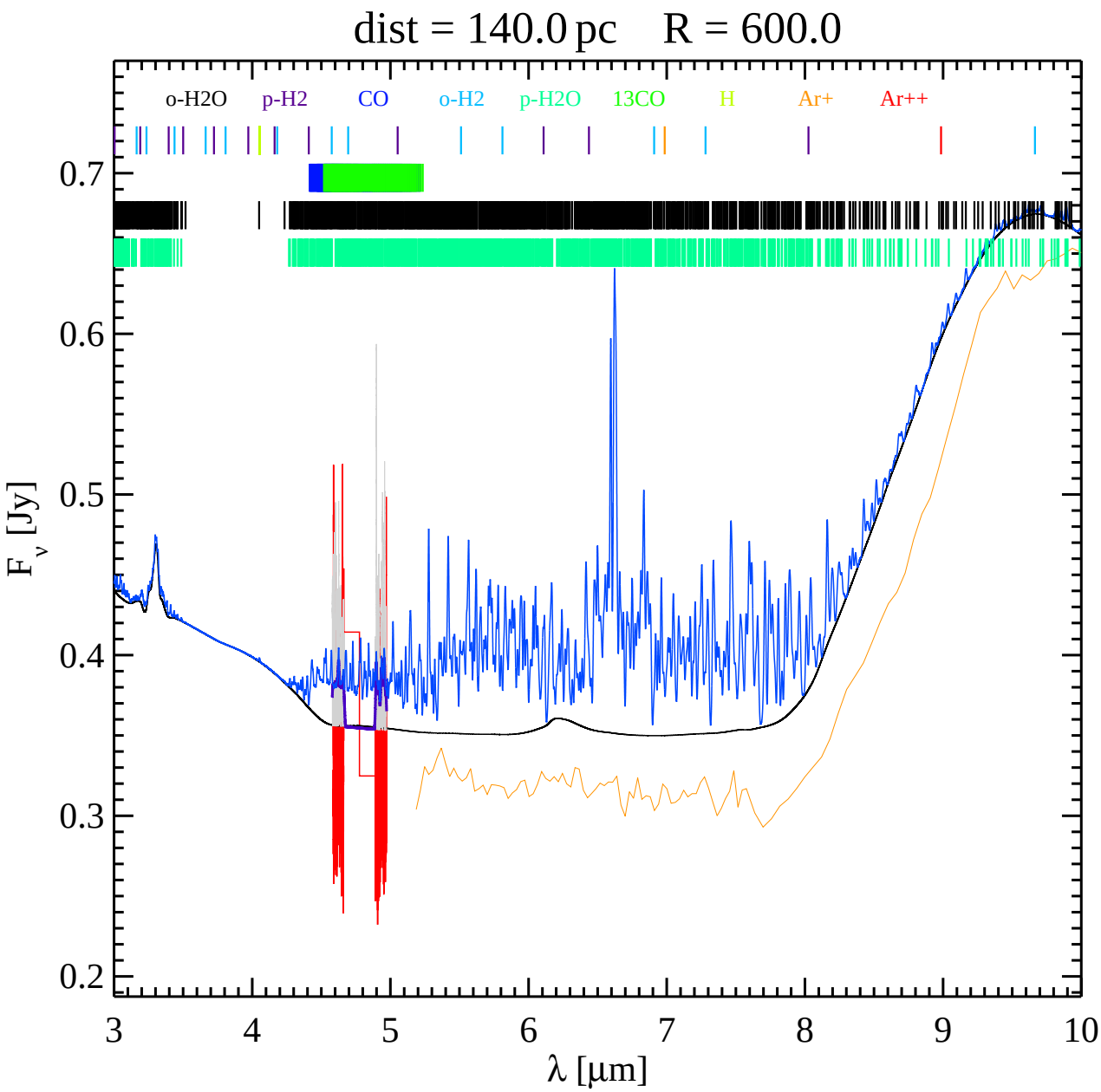

dist = 140.0 pc, incl = 30°
disk model
Spitzer IRS
0.8
0.6
0.4
0.2
F_ν [Jy]
4
6
8
10
12
14
λ [μm]

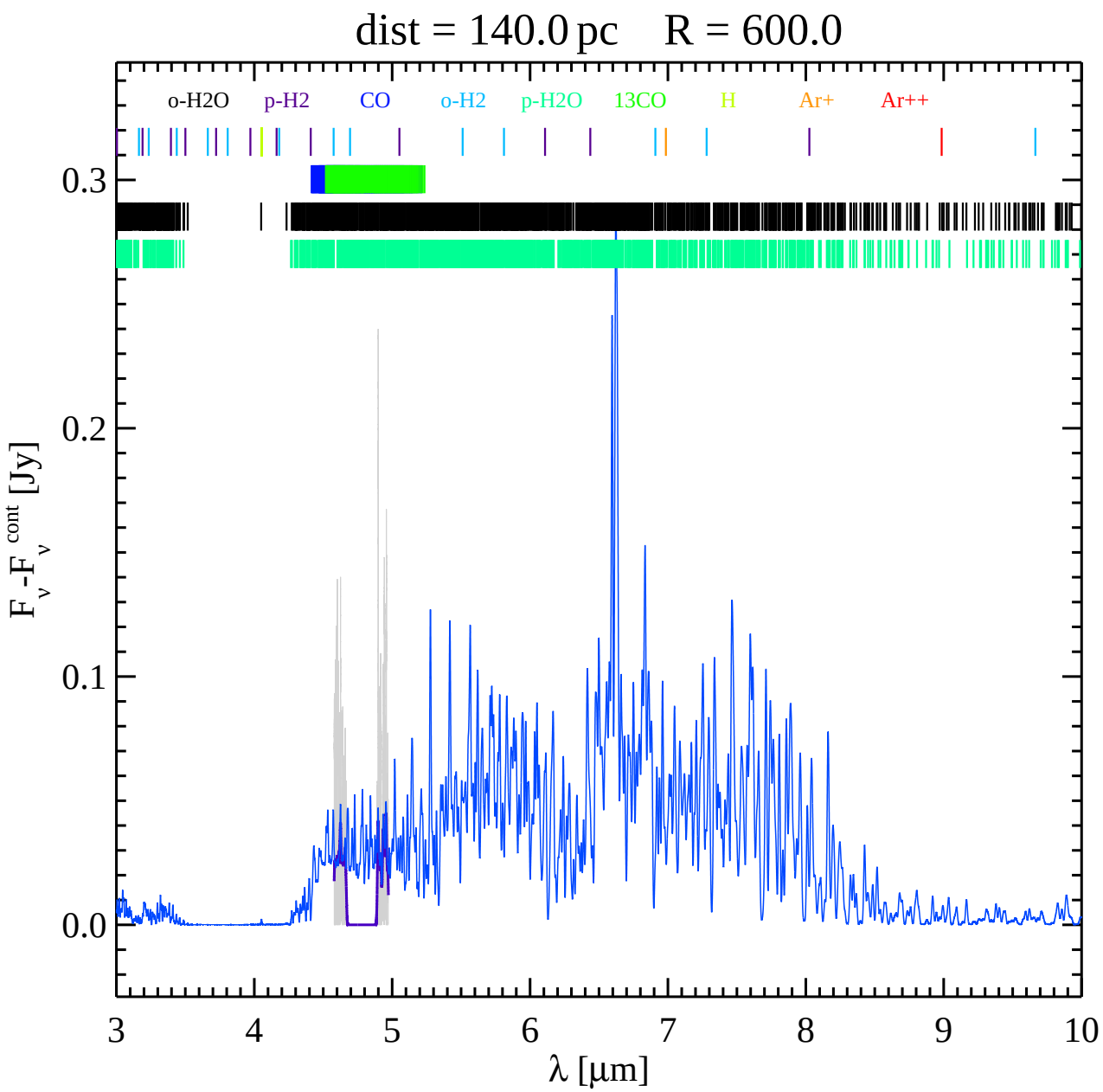

85%
15%
10.0
1.0
0.1
r [AU]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

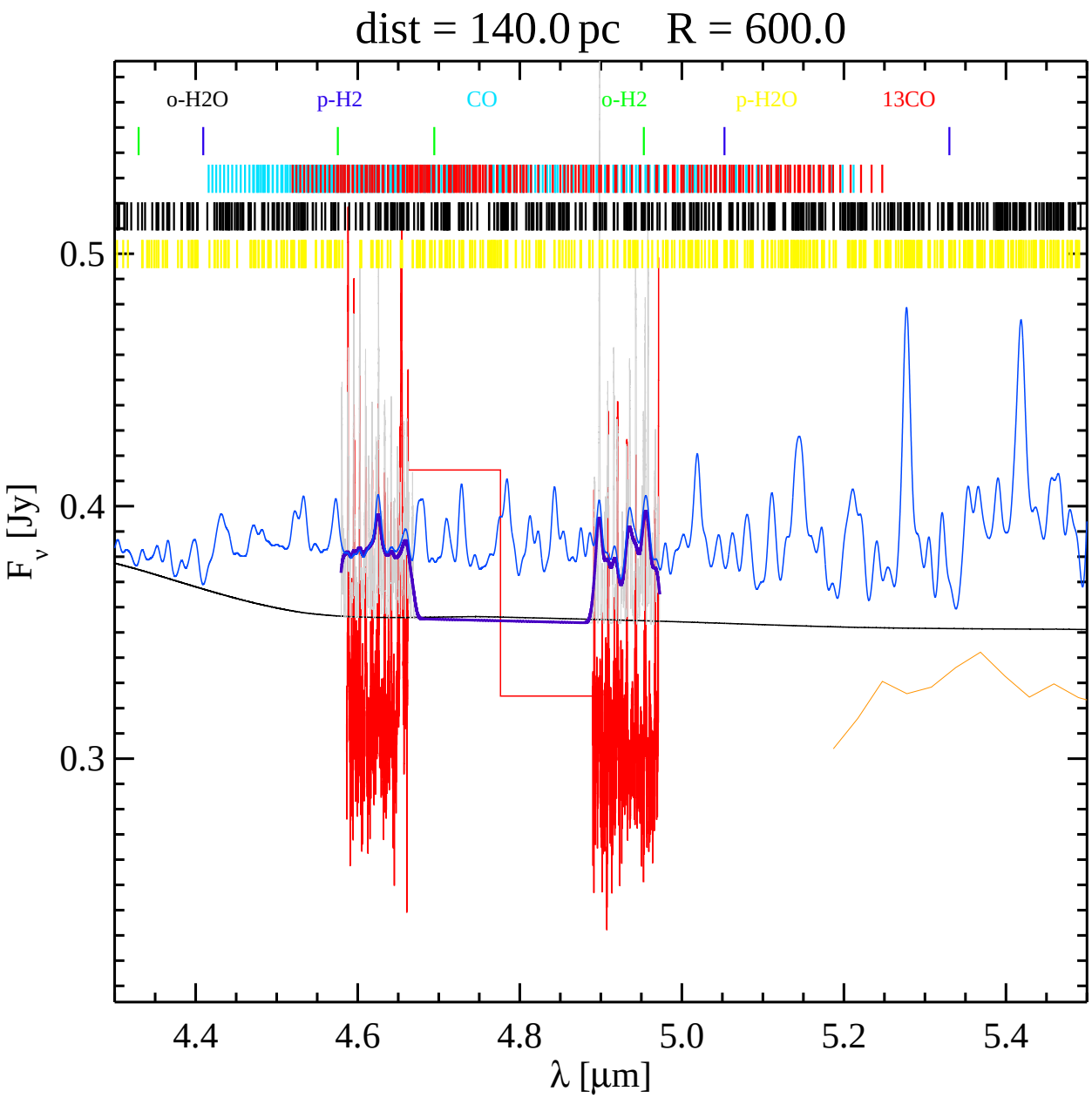

1µm
3µm
6µm
10µm
30µm
60µm
100µm
300µm
1000µm
AV=10
AV=1
AV=10
AV=1
0.2
0.0
-0.2
z/r
0.1
1.0
10.0
100.0
r [AU]
4
6
8
10
12
log n<H> [cm-3]

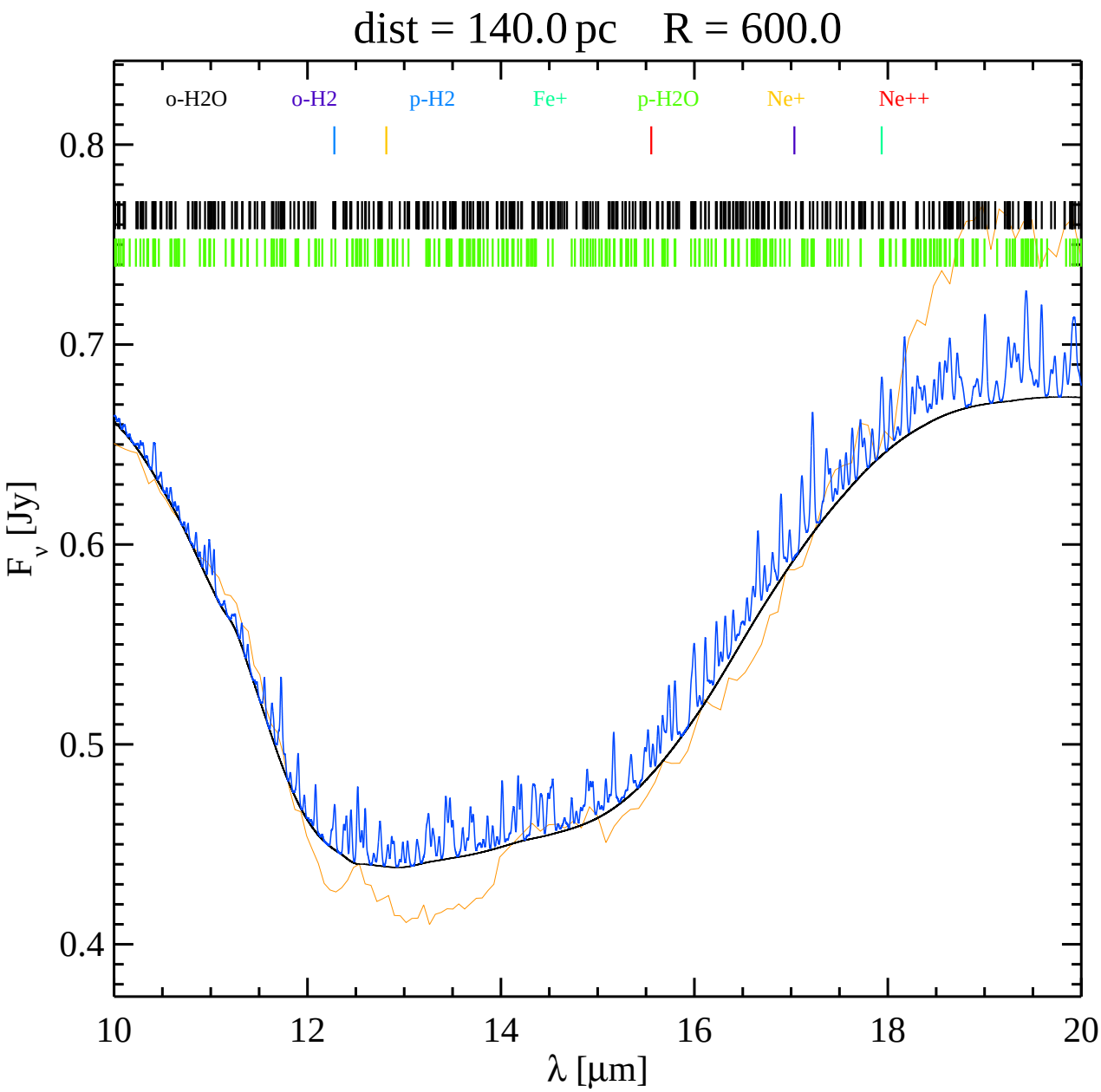

dist = 140.0 pc
R = 100000
star + UV
FLiTs
-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

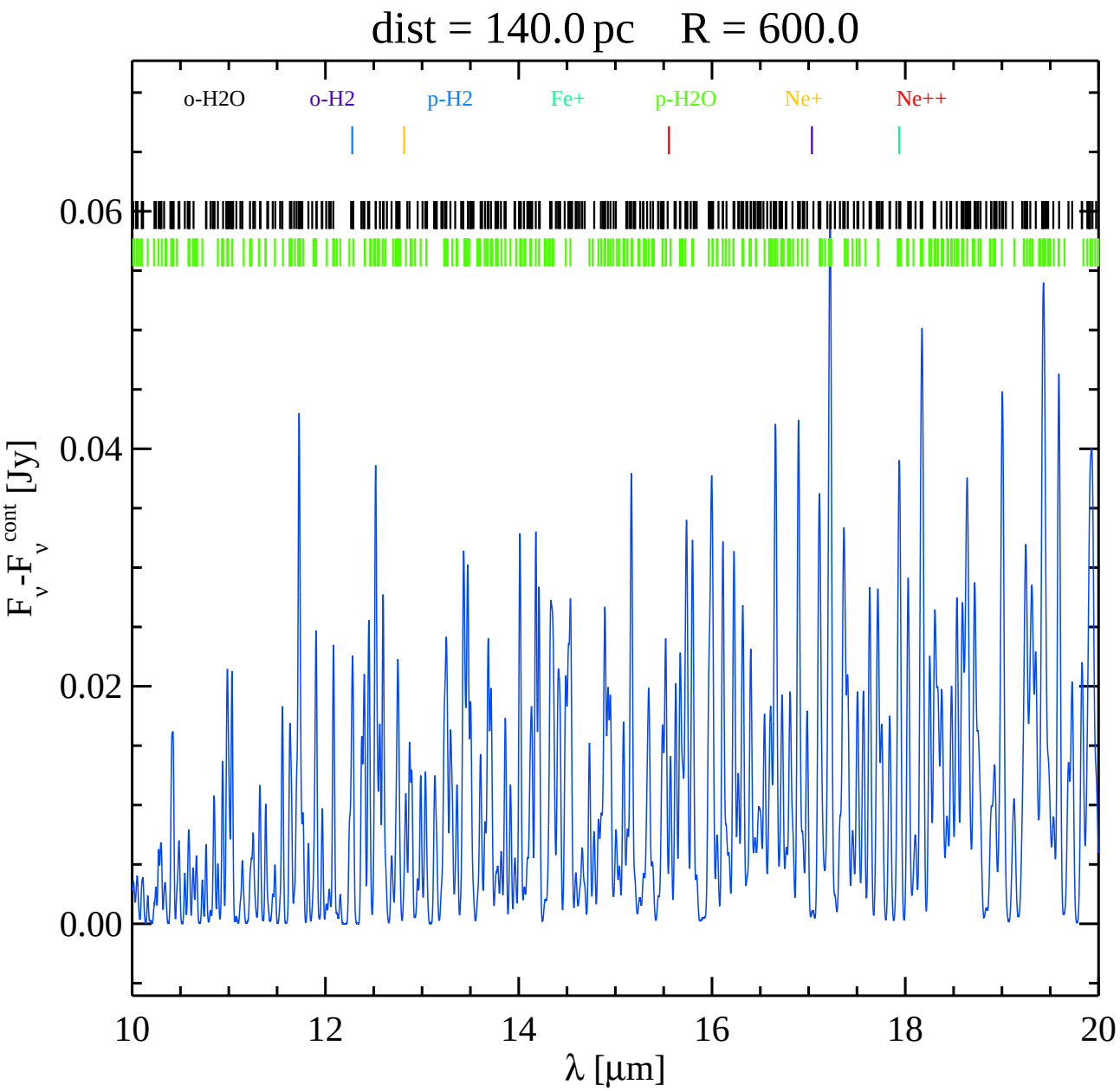

dist = 140.0 pc
R = 600
star + UV
FLiTs
-10
-12
-14
-16
log ν F_ν [erg/cm²/s]
0.1
1.0
10.0
100.0
1000.0
10000.0
λ [μm]

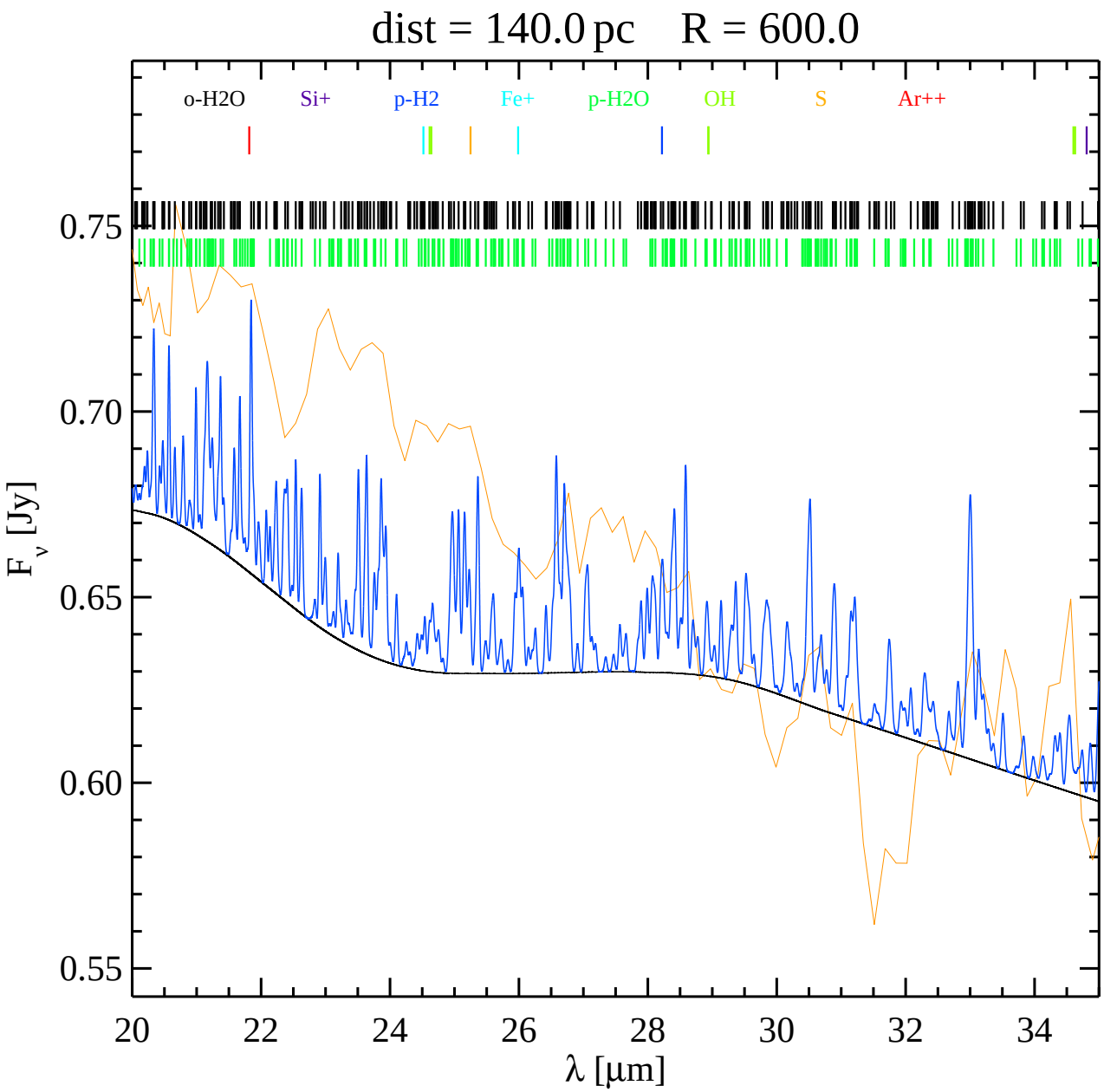

dist = 140.0 pc R = 600.0
o-H2O
p-H2
CO
o-H2
p-H2O
13CO
H
Ar+
Ar++
0.7
0.6
0.5
0.4
0.3
0.2
F_ν [Jy]
3
4
5
6
7
8
9
10
λ [μm]

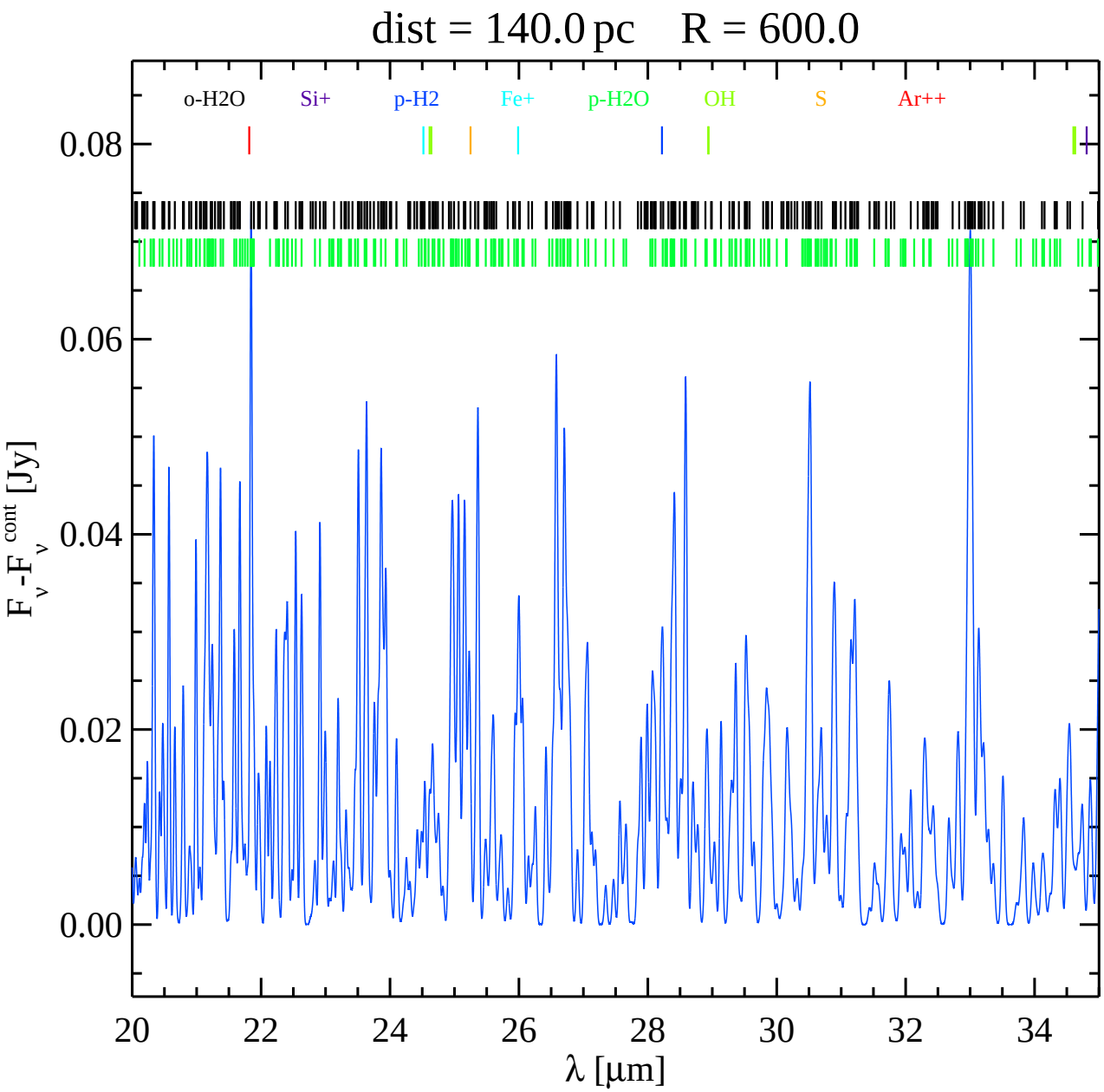

dist = 140.0 pc R = 600.0
o-H2O
p-H2
CO
o-H2
p-H2O
13CO
H
Ar+
Ar++
0.3
0.2
0.1
0.0
F_ν -F_ν^cont [Jy]
3
4
5
6
7
8
9
10
λ [μm]

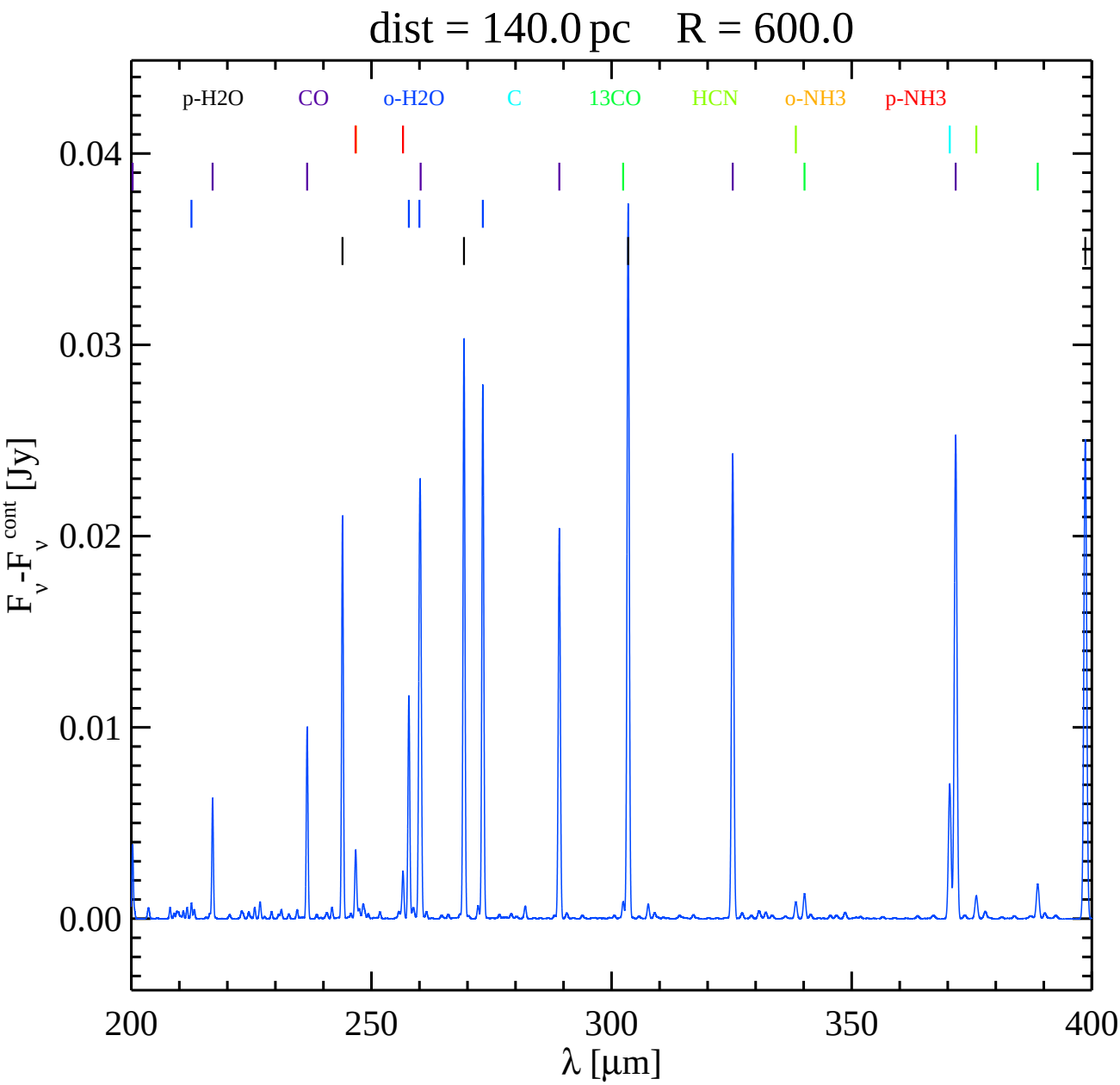

dist = 140.0 pc R = 600.0
o-H2O
p-H2
CO
o-H2
p-H2O
13CO
0.5
0.4
0.3
F_ν [Jy]
4.4
4.6
4.8
5.0
5.2
5.4
λ [μm]

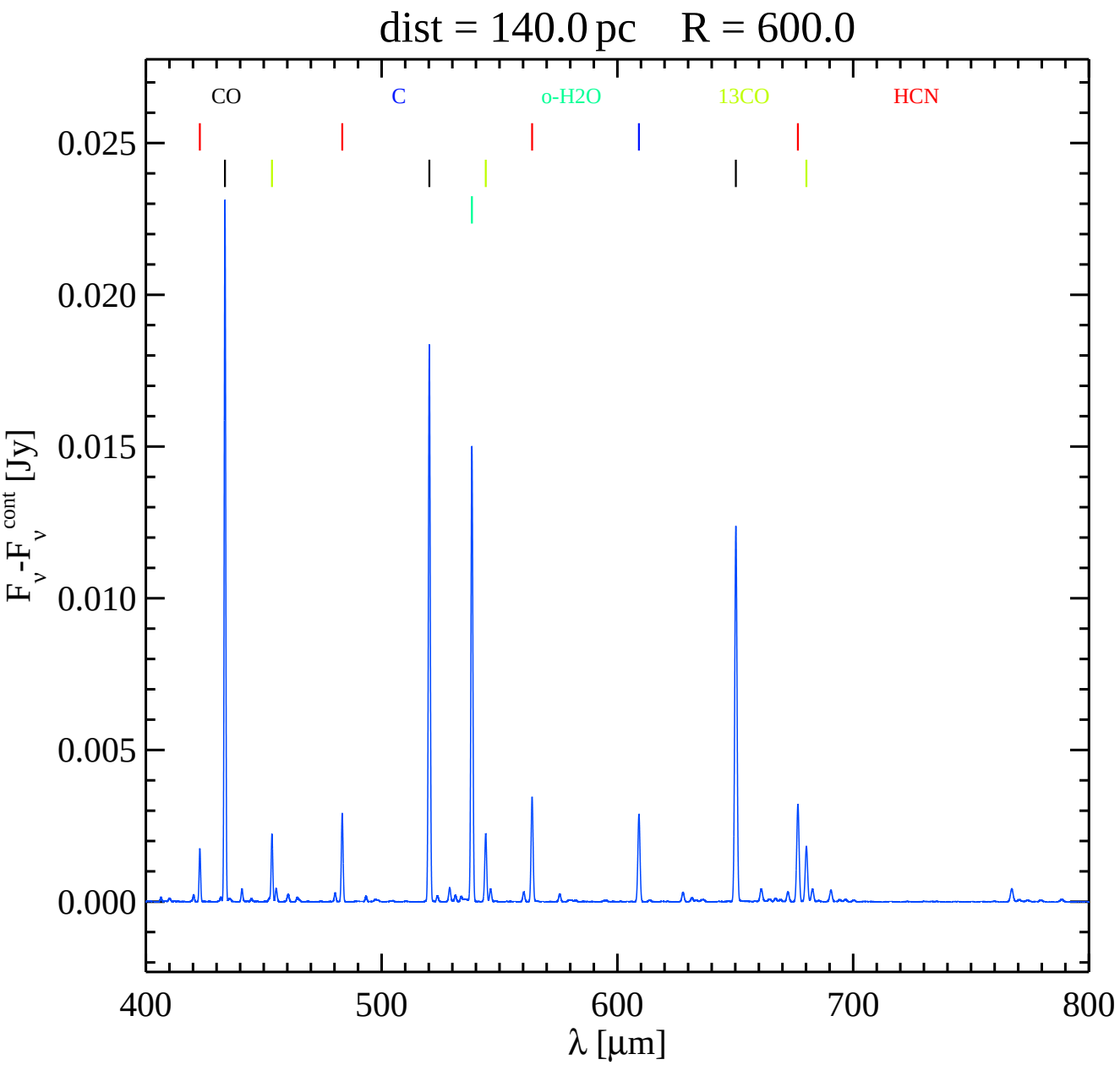

dist = 140.0 pc R = 600.0
o-H2O
o-H2
p-H2
Fe+
p-H2O
Ne+
Ne++
0.8
0.7
0.6
0.5
0.4
F_ν [Jy]
10
12
14
16
18
20
λ [μm]

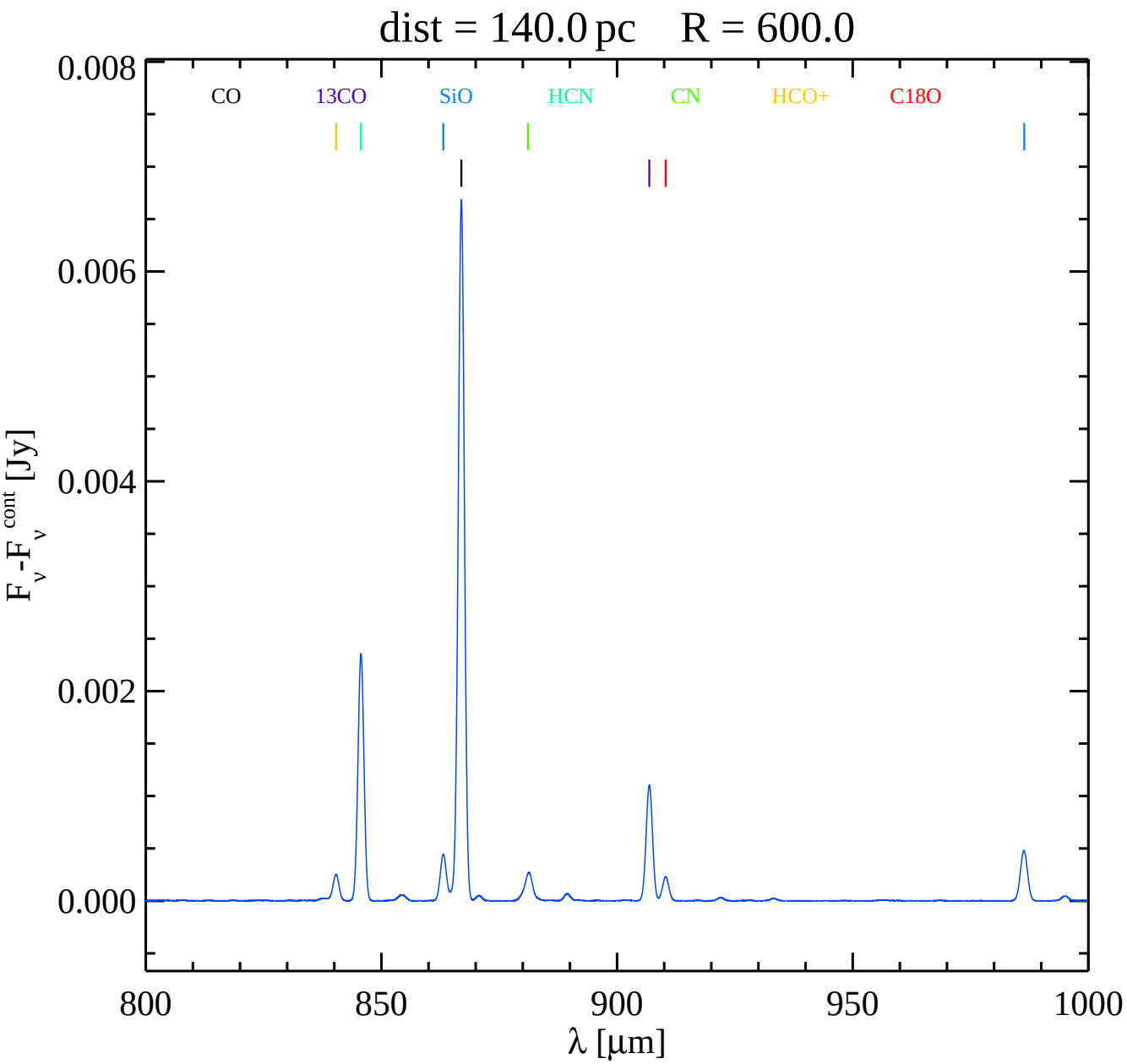

dist = 140.0 pc R = 600.0
o-H2O
o-H2
p-H2
Fe+
p-H2O
Ne+
Ne++
0.06
0.04
0.02
0.00
F_ν -F_ν^cont [Jy]
10
12
14
16
18
20
λ [μm]

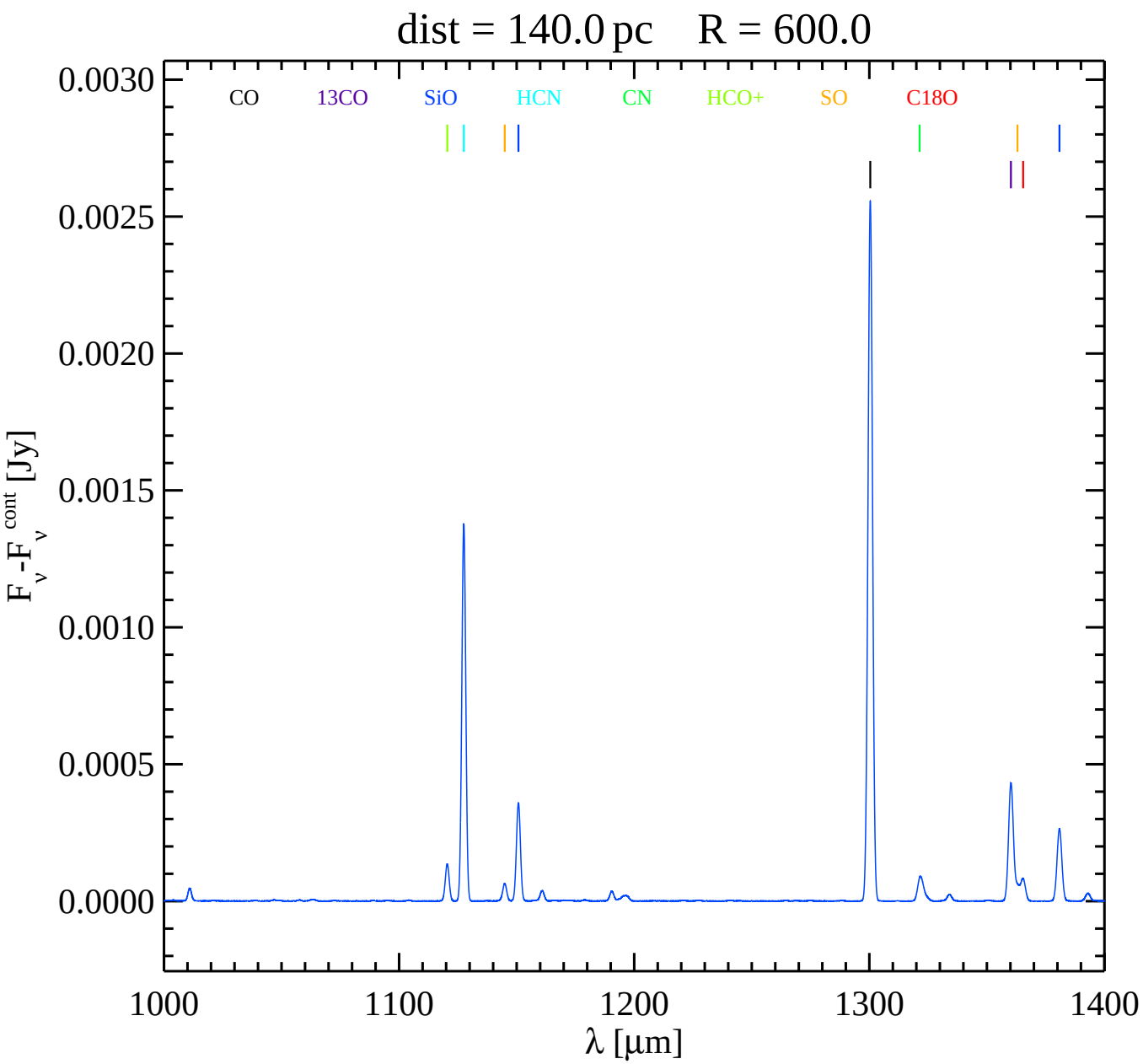

dist = 140.0 pc R = 600.0
o-H2O
Si+
p-H2
Fe+
p-H2O
OH
S
Ar++
0.75
0.70
0.65
0.60
0.55
F_ν [Jy]
20
22
24
26
28
30
32
34
λ [μm]

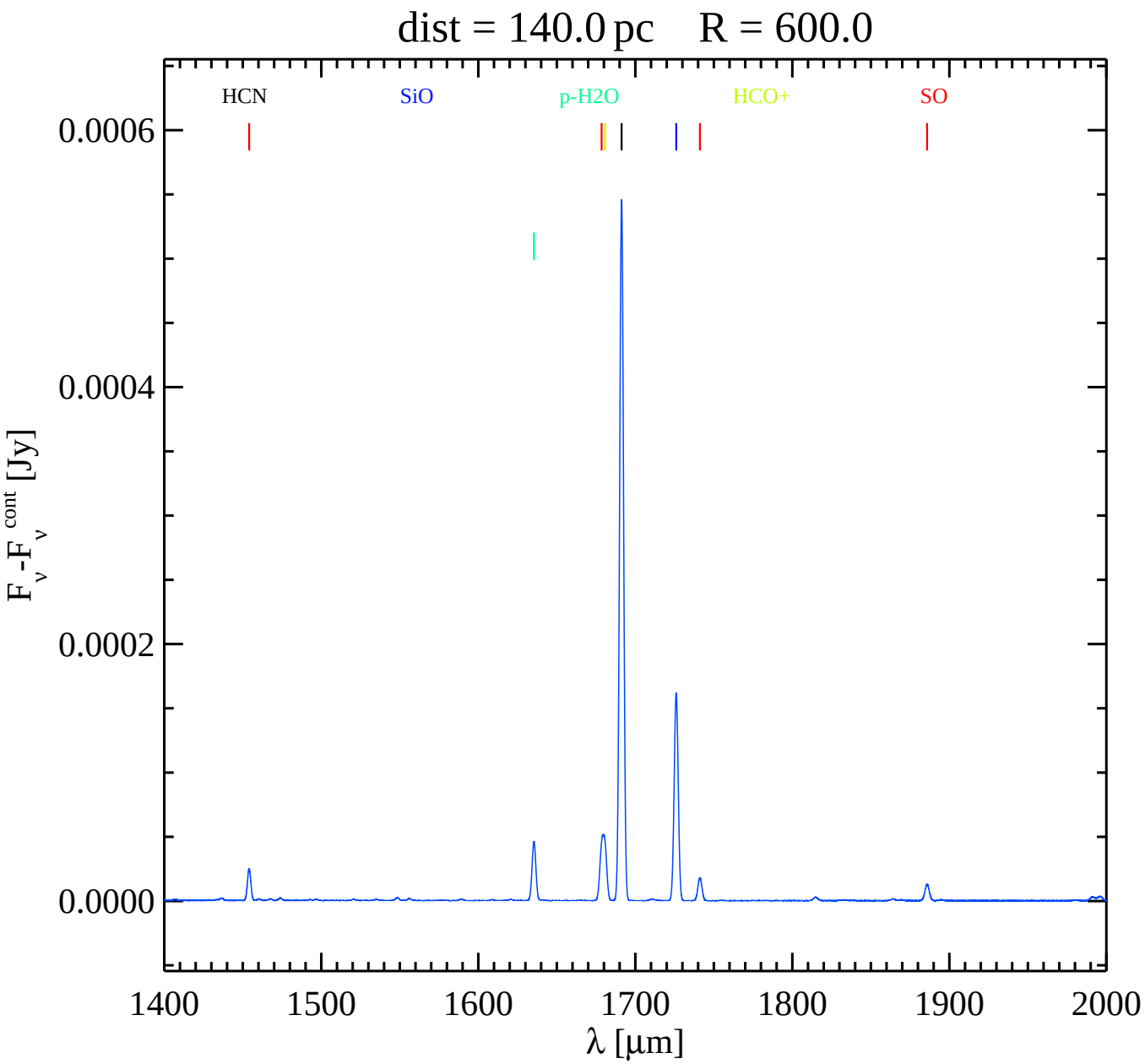

dist = 140.0 pc R = 600.0
o-H2O
Si+
p-H2
Fe+
p-H2O
OH
S
Ar++
0.08
0.06
0.04
0.02
0.00
F_ν -F_ν^cont [Jy]
20
22
24
26
28
30
32
34
λ [μm]

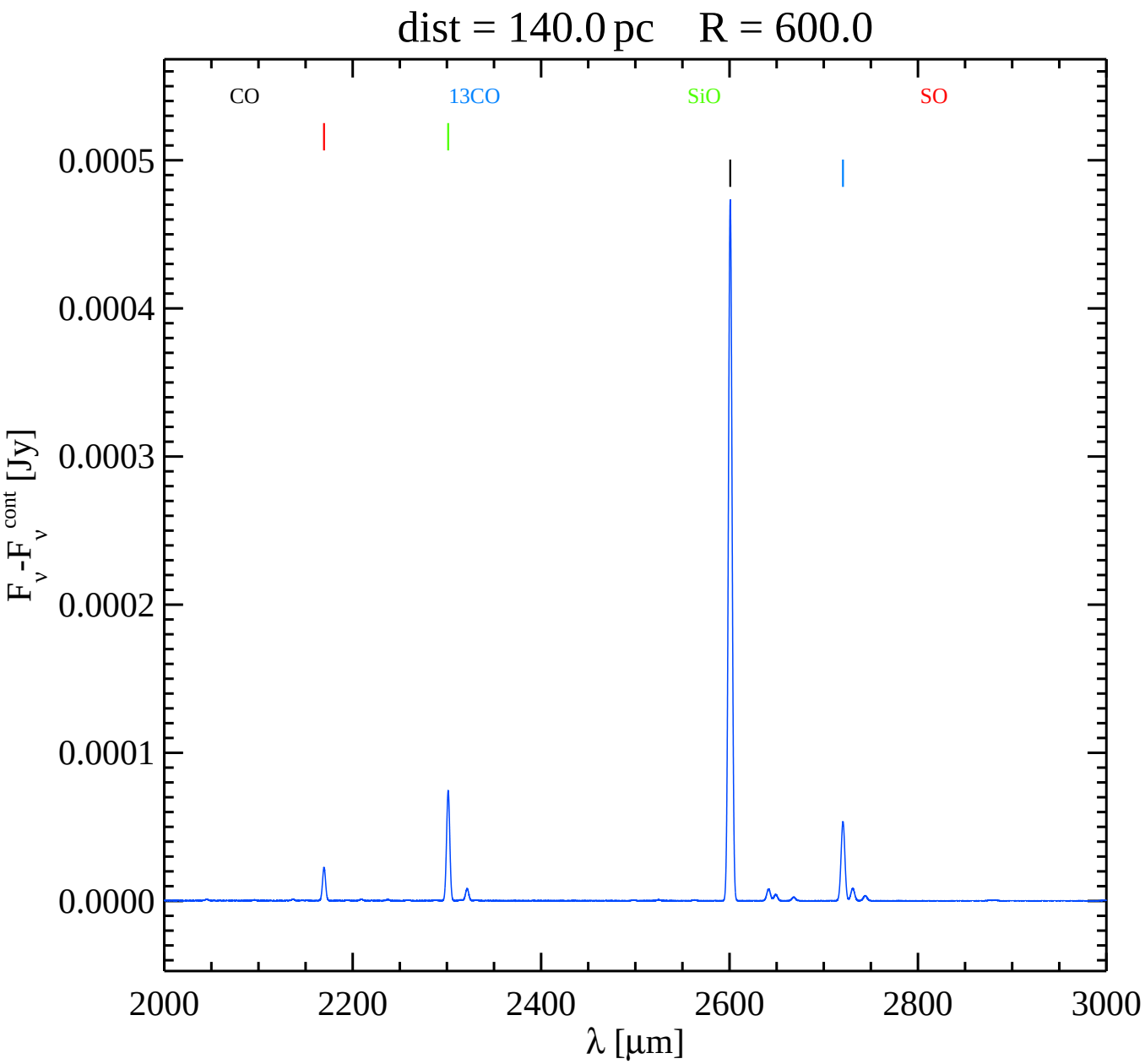

dist = 140.0 pc R = 600.0
p-H2O
CO
o-H2O
C
13CO
HCN
o-NH3
p-NH3
0.04
0.03
0.02
0.01
0.00
F_ν -F_ν^cont [Jy]
200
250
300
350
400
λ [μm]

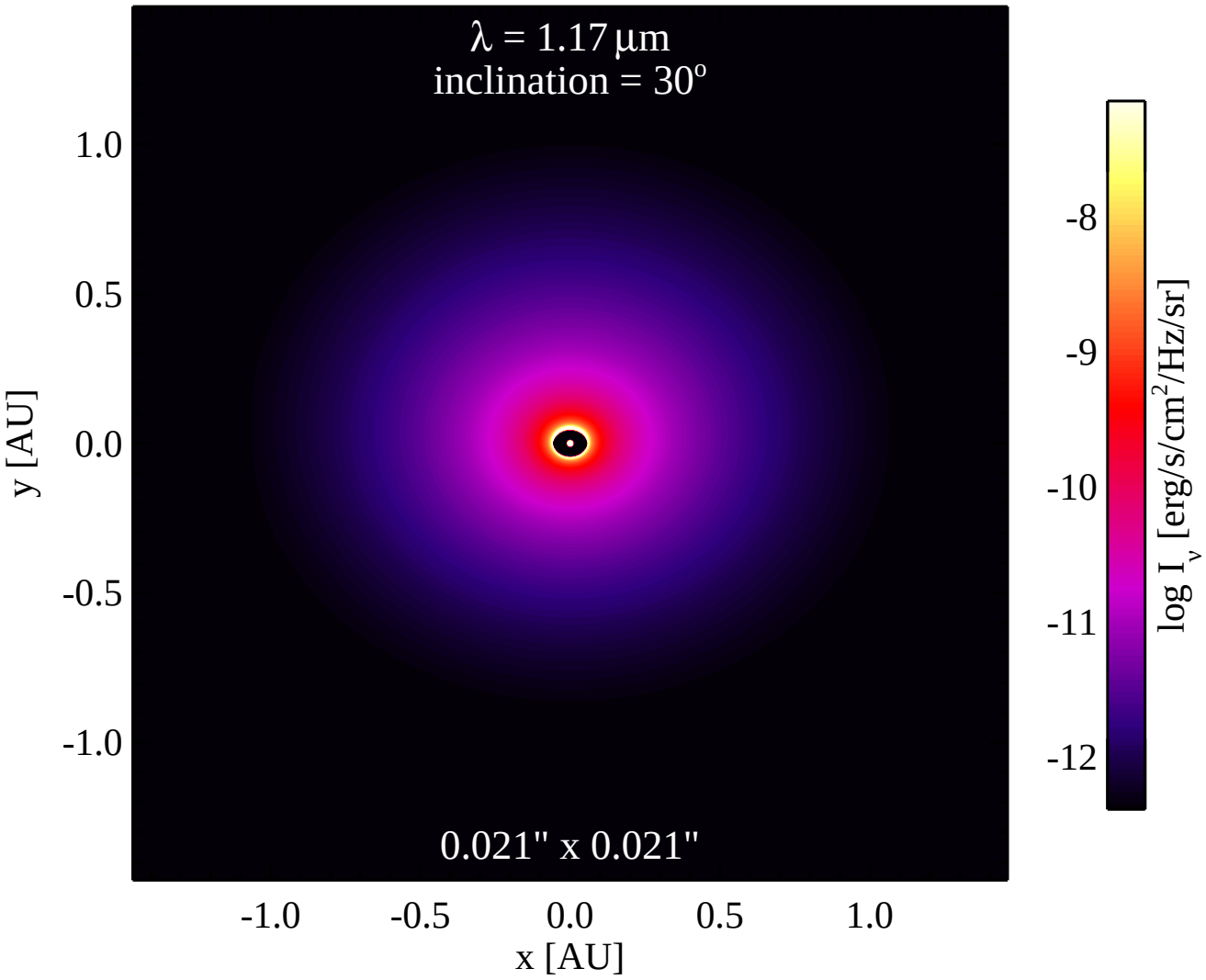

dist = 140.0 pc R = 600.0
CO
C
o-H2O
13CO
HCN
0.025
0.020
0.015
0.010
0.005
0.000
F_ν - F_ν^cont [Jy]
400
500
600
700
800
λ [μm]

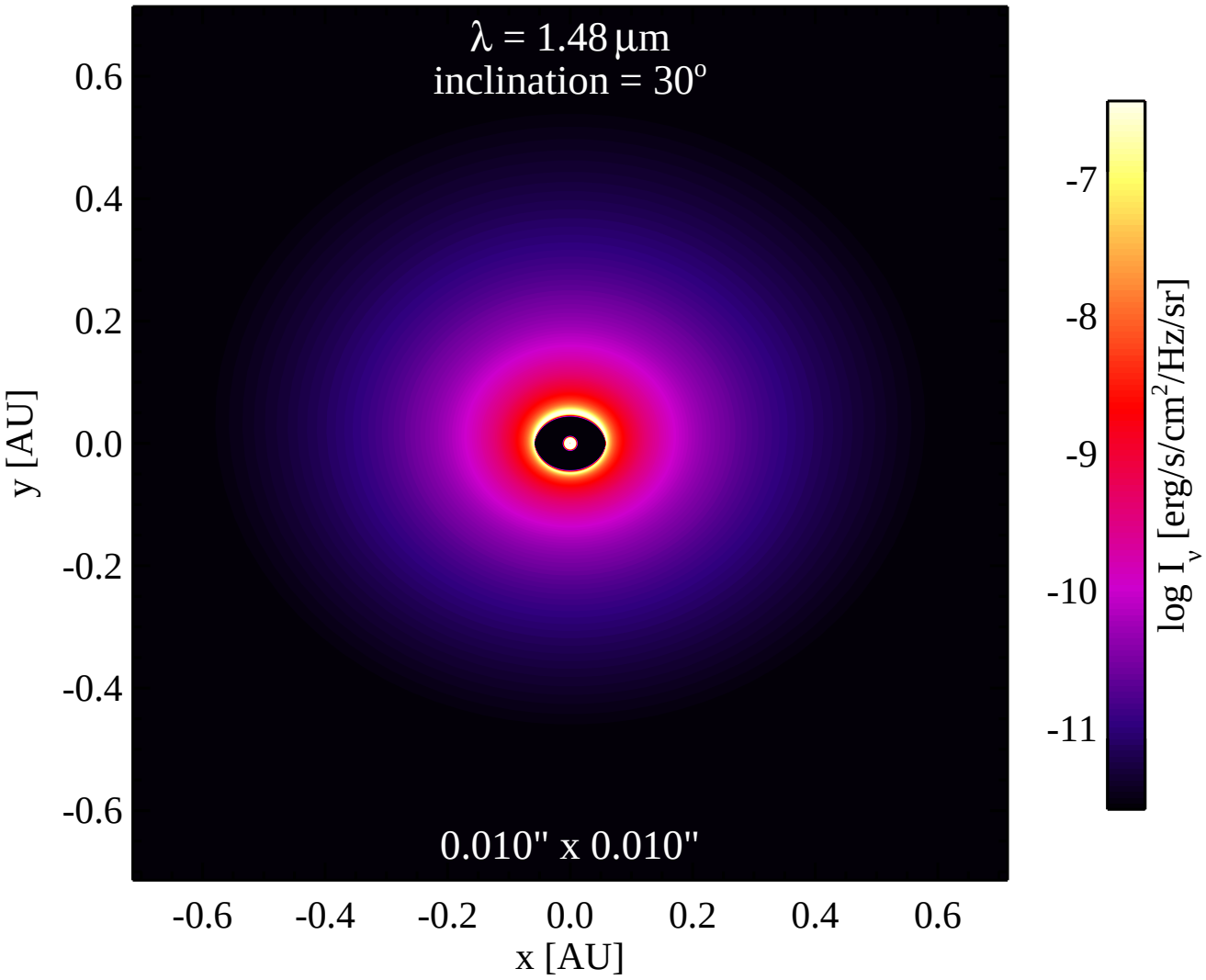

dist = 140.0 pc R = 600.0
CO
13CO
SiO
HCN
CN
HCO+
C18O
0.008
0.006
0.004
0.002
0.000
F_ν - F_ν^cont [Jy]
800
850
900
950
1000
λ [μm]

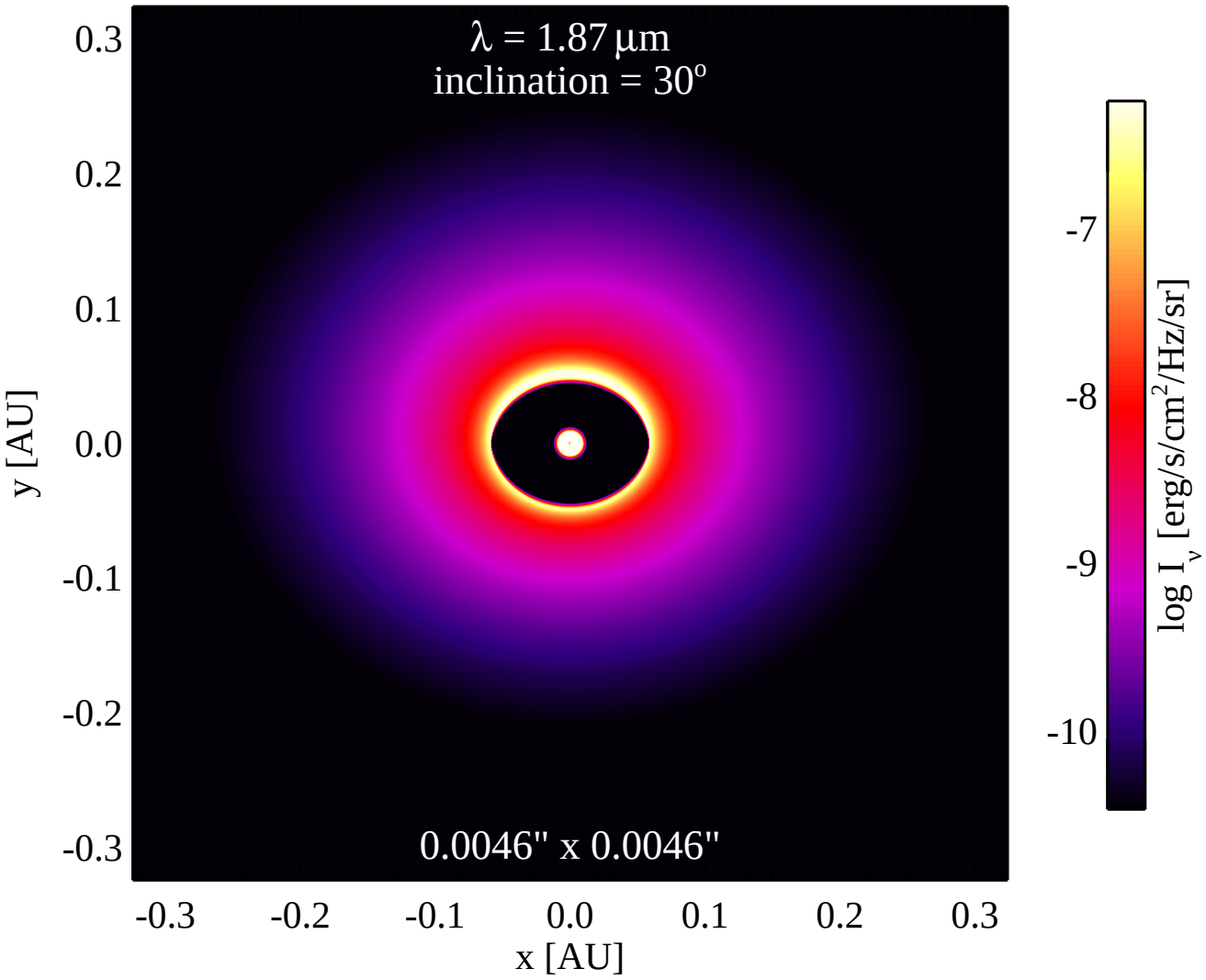

dist = 140.0 pc R = 600.0
CO
13CO
SiO
HCN
CN
HCO+
SO
C18O
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
F_ν -F_ν^cont [Jy]
1000
1100
1200
1300
1400
λ [μm]

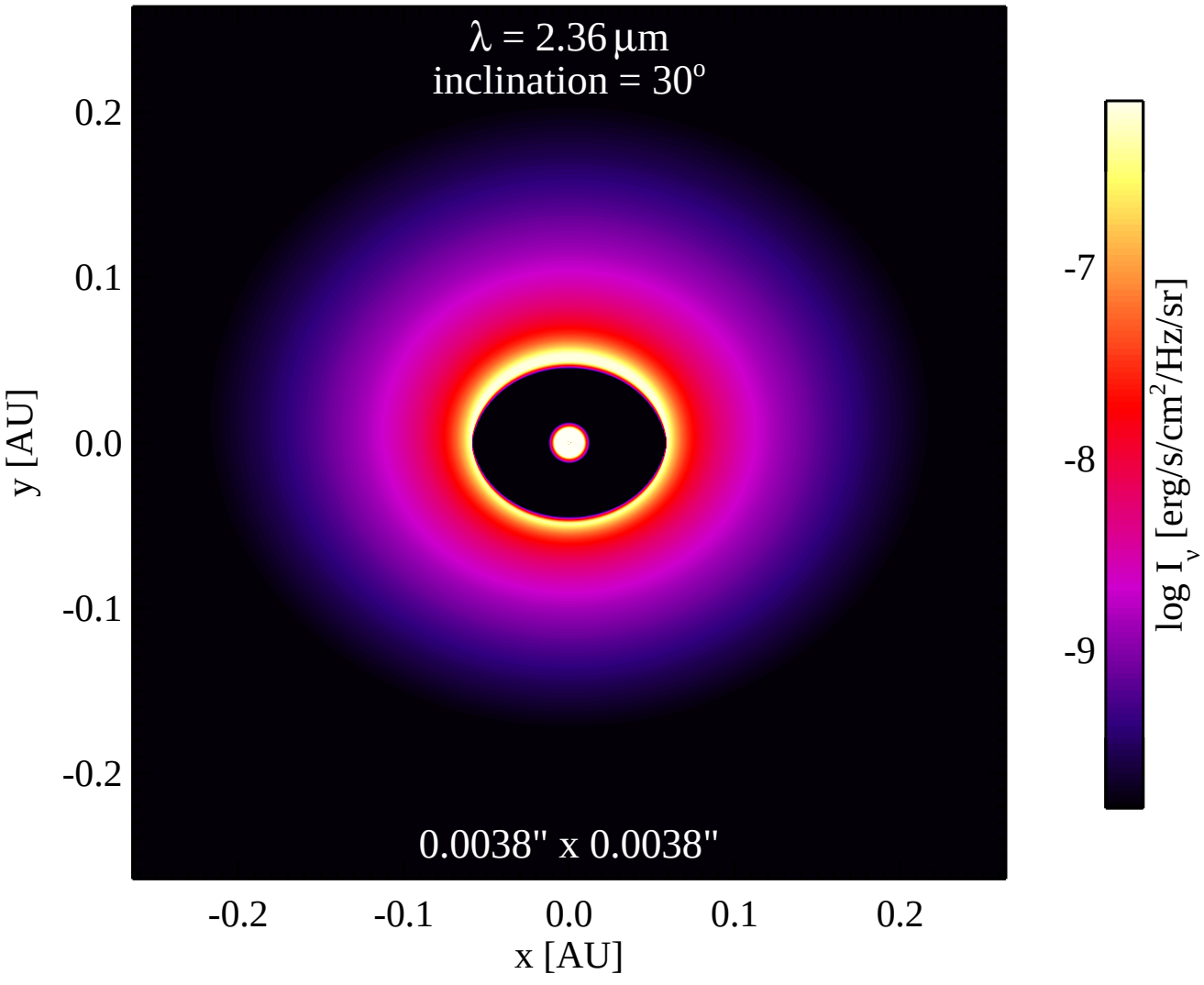

dist = 140.0 pc R = 600.0
HCN
SiO
p-H2O
HCO+
SO
0.0006
0.0004
0.0002
0.0000
F_ν -F_ν^cont [Jy]
1400
1500
1600
1700
1800
1900
2000
λ [μm]

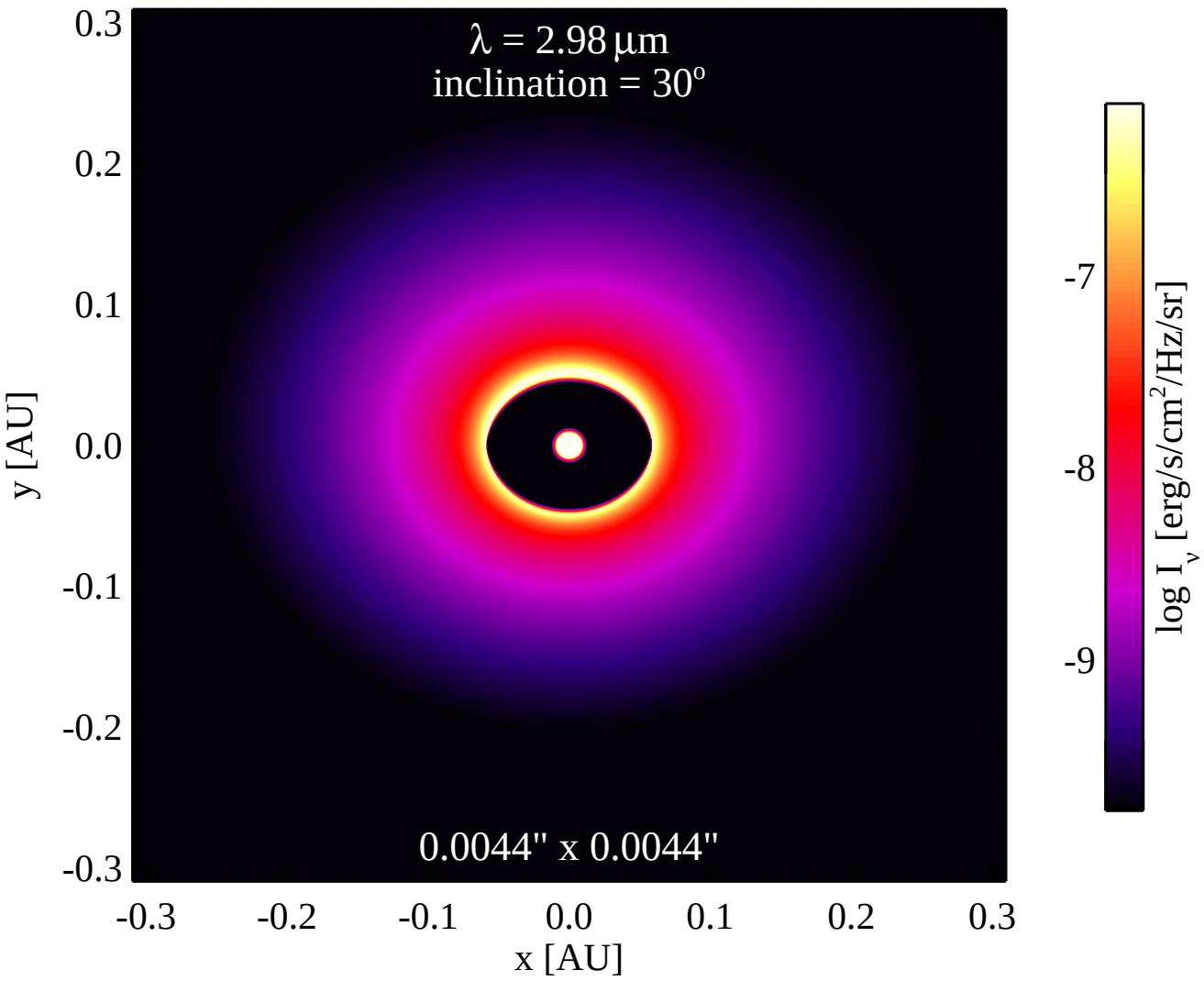

dist = 140.0 pc R = 600.0
CO
13CO
SiO
SO
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
F_ν -F_ν^cont [Jy]
2000
2200
2400
2600
2800
3000
λ [μm]

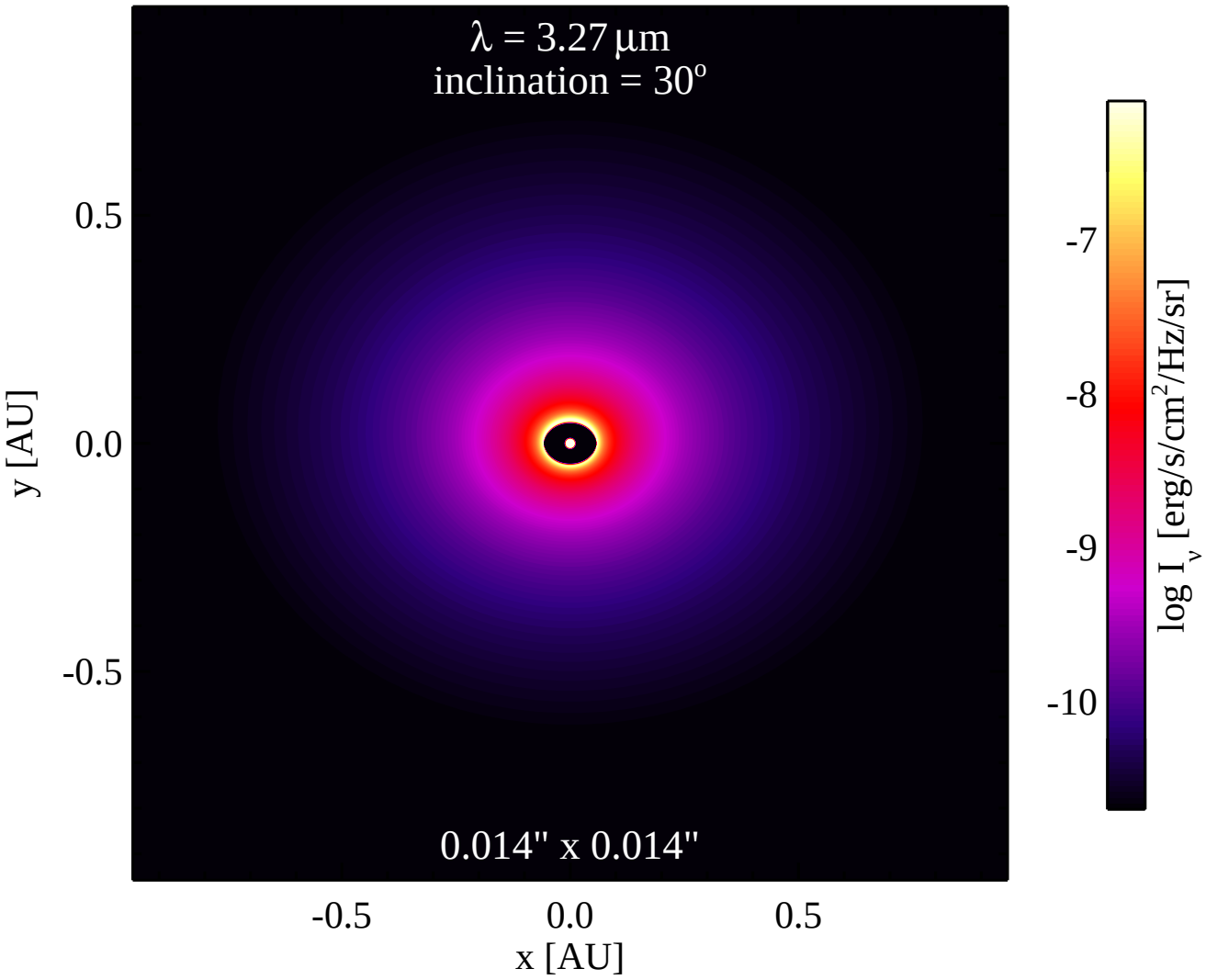

λ = 1.17 μm
inclination = 30°
0.021" x 0.021"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-8
-9
-10
-11
-12
log I_ν [erg/s/cm²/Hz/sr]

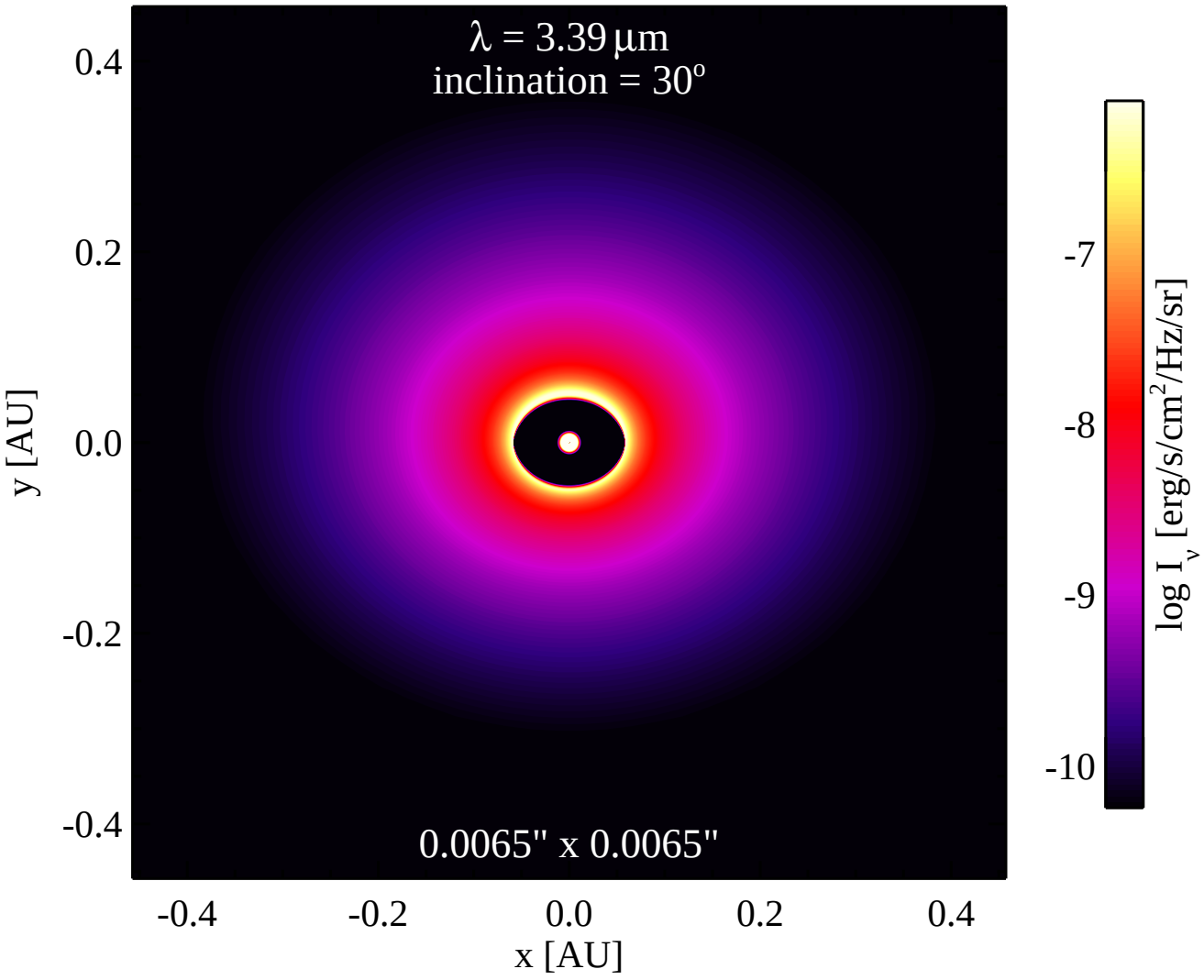

λ = 1.48 μm
inclination = 30°
0.010" x 0.010"
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
y [AU]
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
x [AU]
-7
-8
-9
-10
-11
log I_ν [erg/s/cm²/Hz/sr]

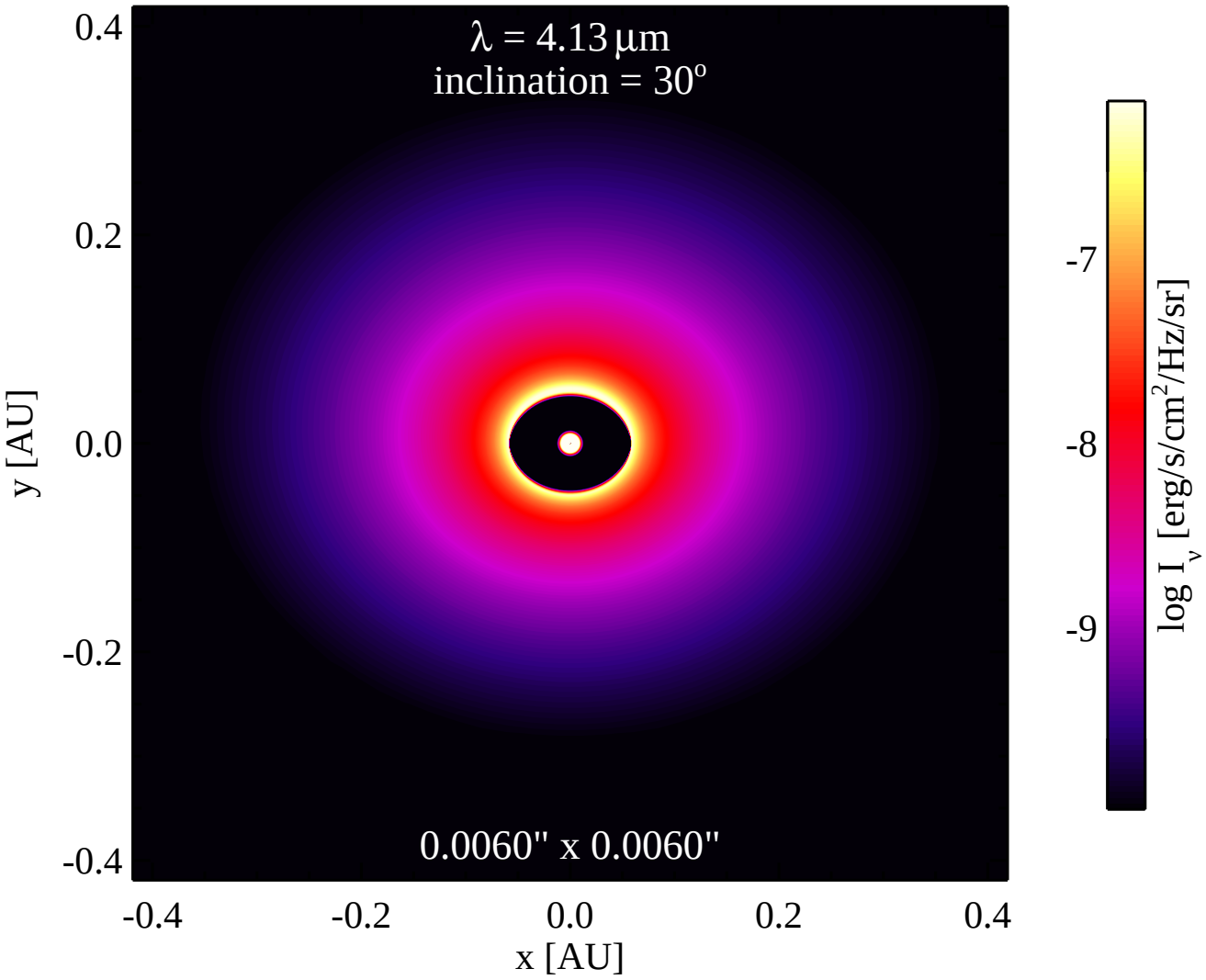

λ = 1.87 μm
inclination = 30°
0.0046" x 0.0046"
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
y [AU]
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

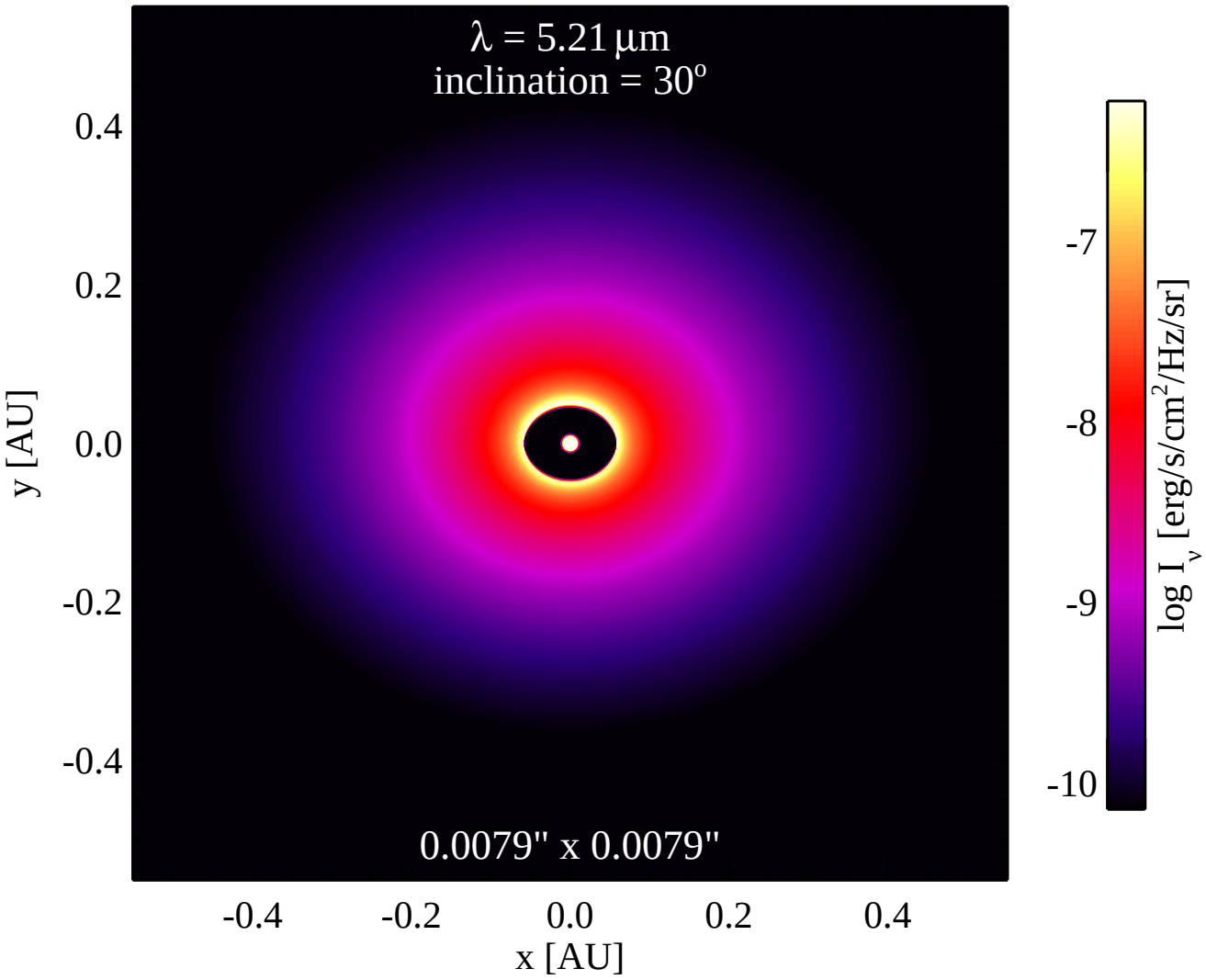

λ = 2.36 μm
inclination = 30°
0.0038" x 0.0038"
0.2
0.1
0.0
-0.1
-0.2
y [AU]
-0.2
-0.1
0.0
0.1
0.2
x [AU]
-7
-8
-9
log I_ν [erg/s/cm²/Hz/sr]

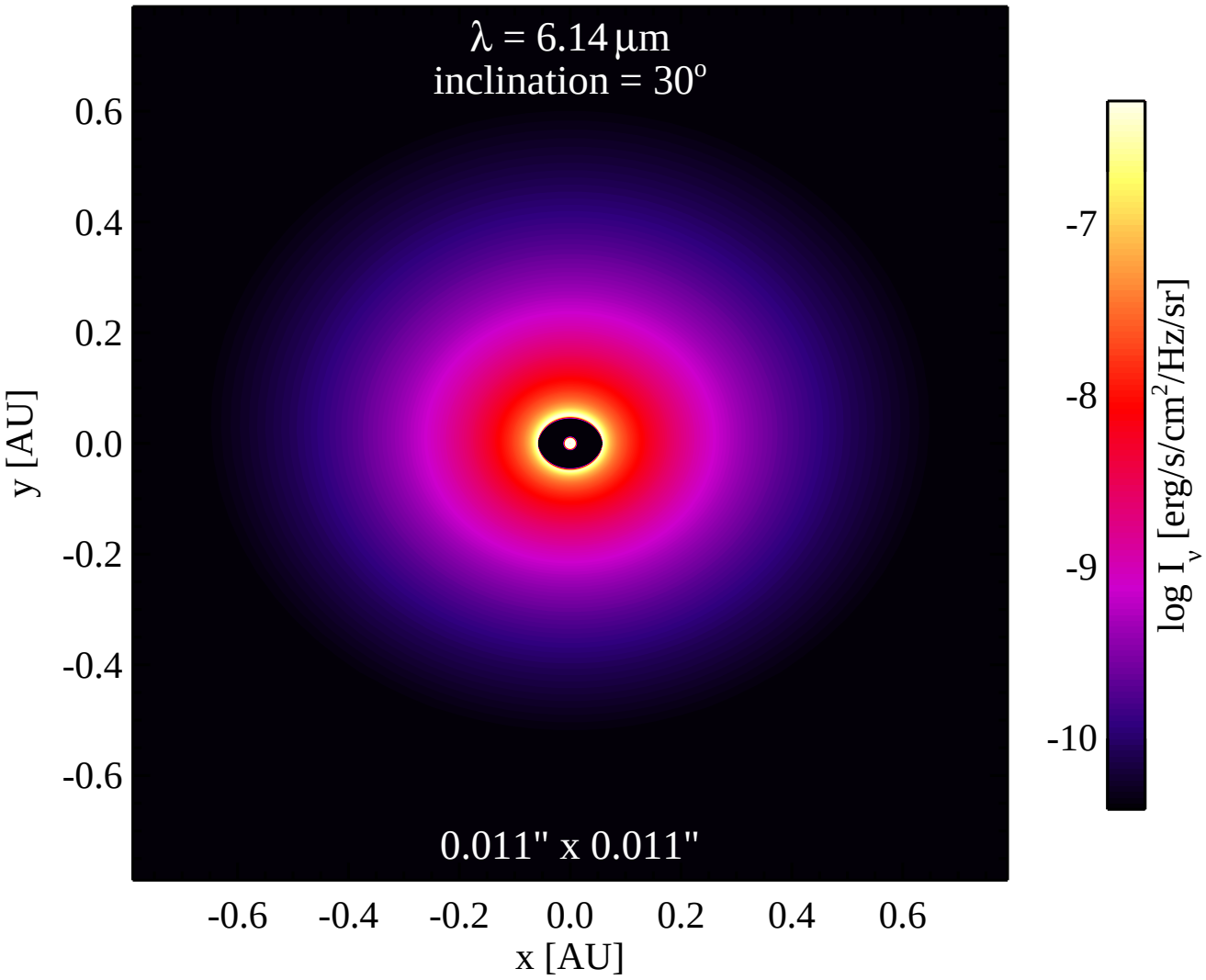

λ = 2.98 μm
inclination = 30°
0.0044" x 0.0044"
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
y [AU]
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
x [AU]
-7
-8
-9
log I_ν [erg/s/cm²/Hz/sr]

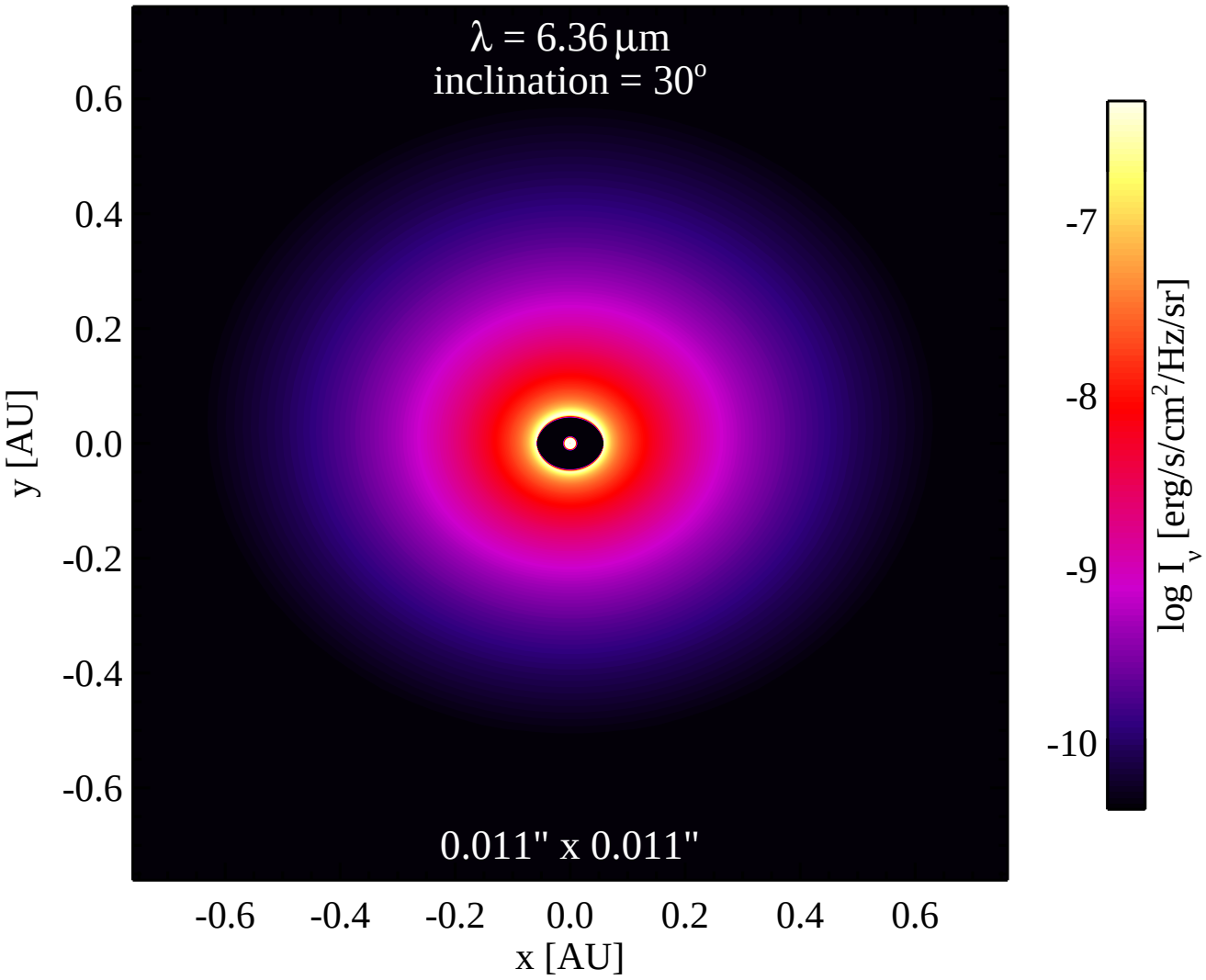

λ = 3.27 μm
inclination = 30°
0.014" x 0.014"
0.5
0.0
-0.5
y [AU]
-0.5
0.0
0.5
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

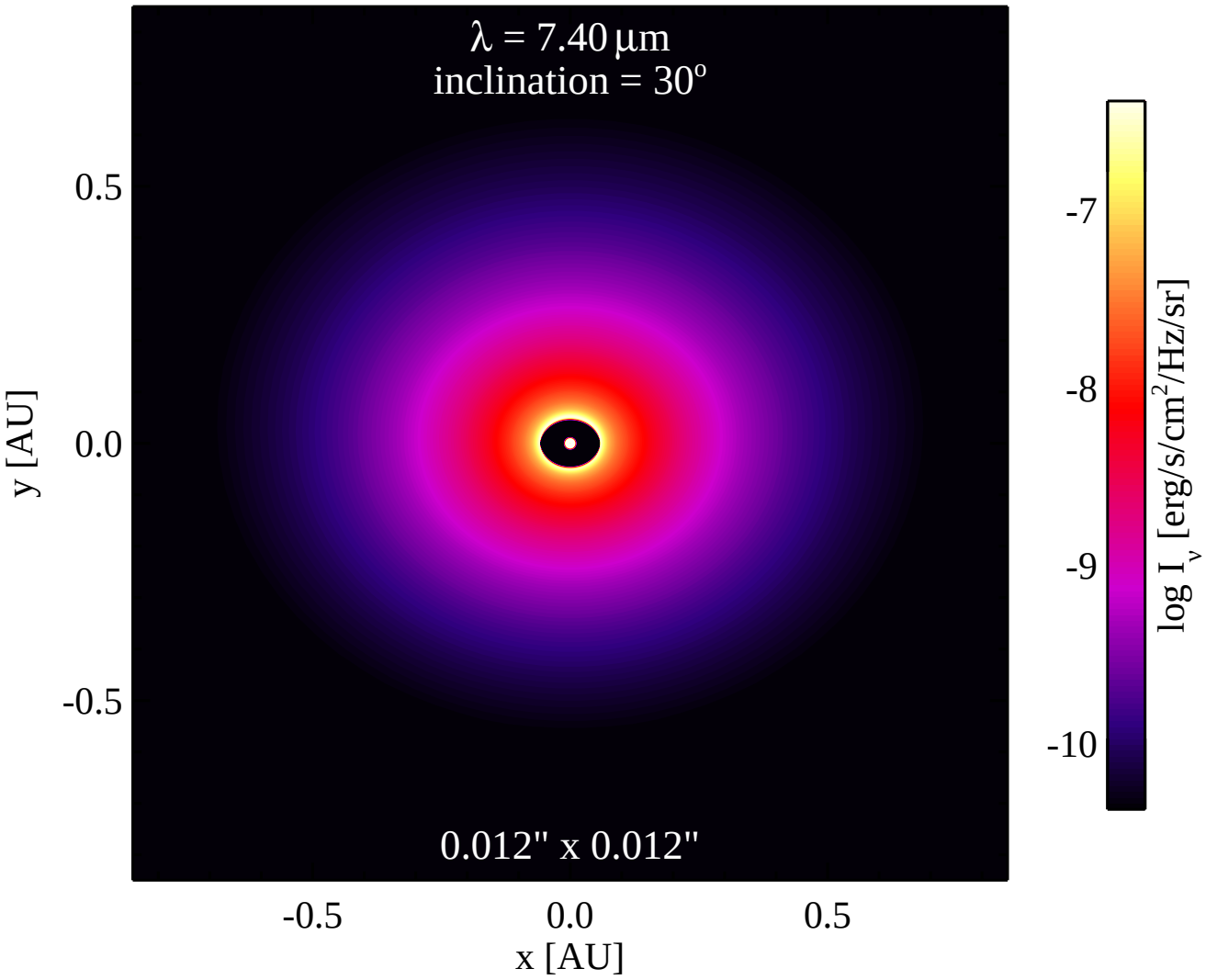

λ = 3.39 μm
inclination = 30°
0.0065" x 0.0065"
0.4
0.2
0.0
-0.2
-0.4
y [AU]
-0.4
-0.2
0.0
0.2
0.4
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

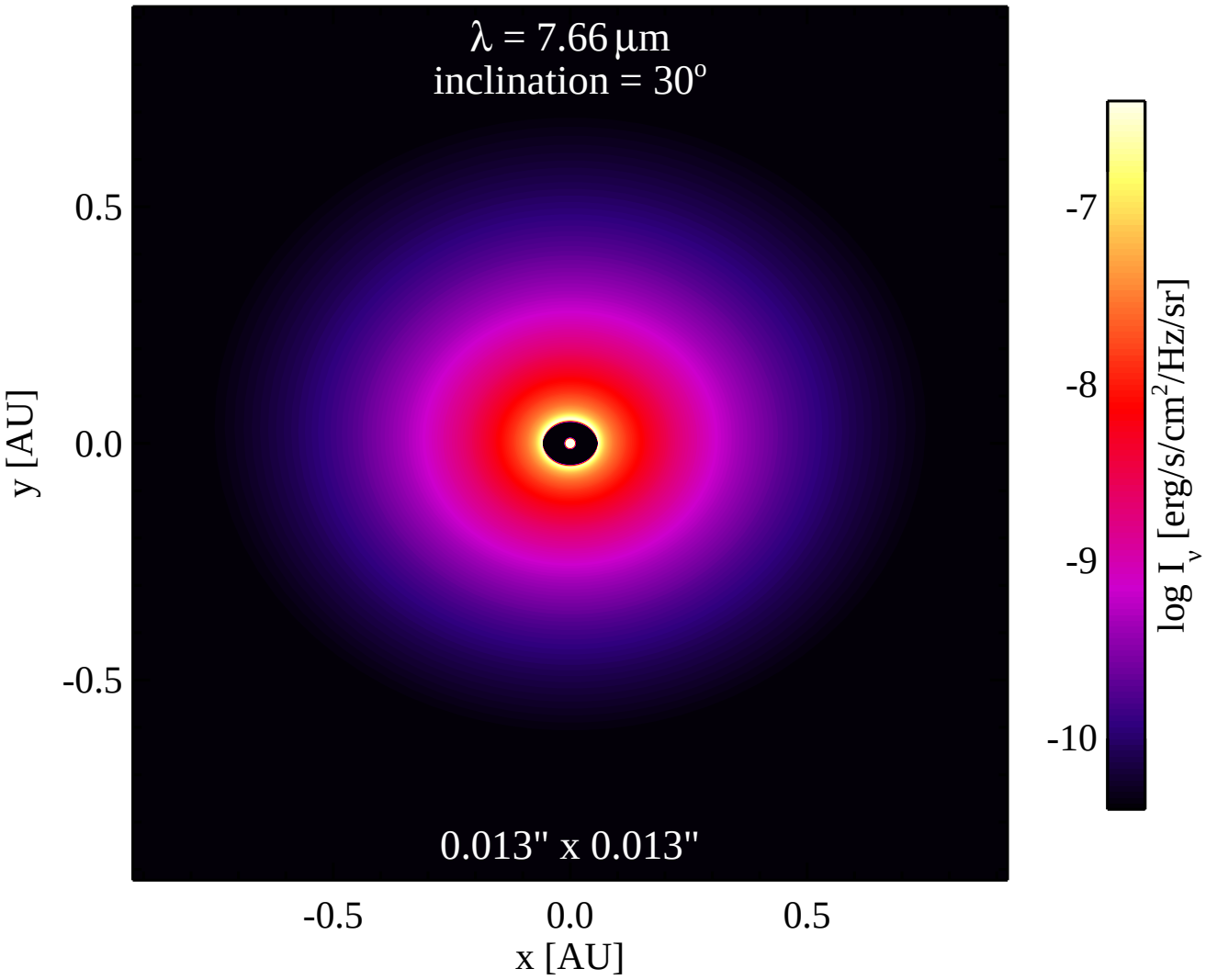

λ = 4.13 μm
inclination = 30°
0.0060" x 0.0060"
0.4
0.2
0.0
-0.2
-0.4
y [AU]
-0.4
-0.2
0.0
0.2
0.4
x [AU]
-7
-8
-9
log I_ν [erg/s/cm²/Hz/sr]

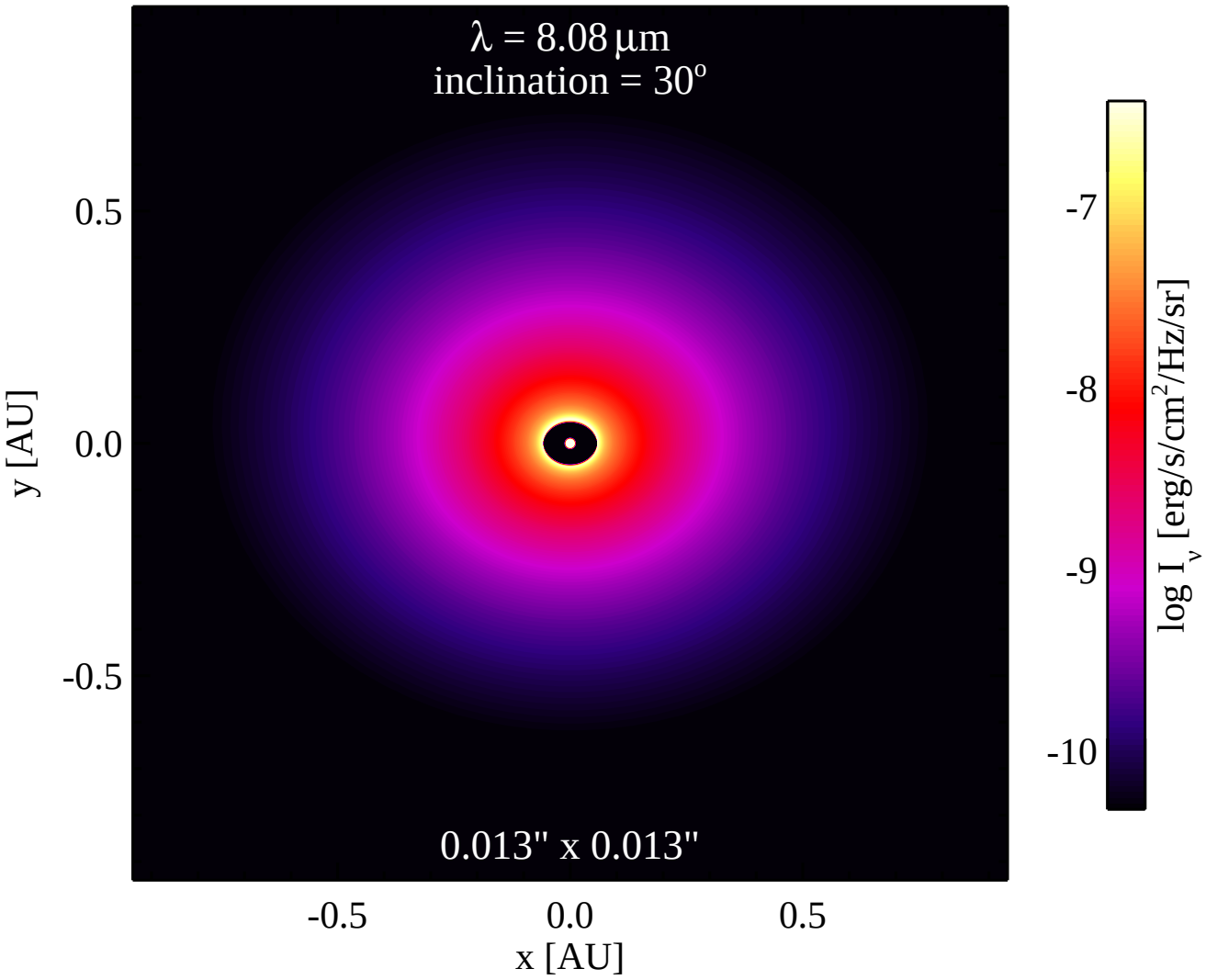

λ = 5.21 μm
inclination = 30°
0.0079" x 0.0079"
0.4
0.2
0.0
-0.2
-0.4
y [AU]
-0.4
-0.2
0.0
0.2
0.4
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

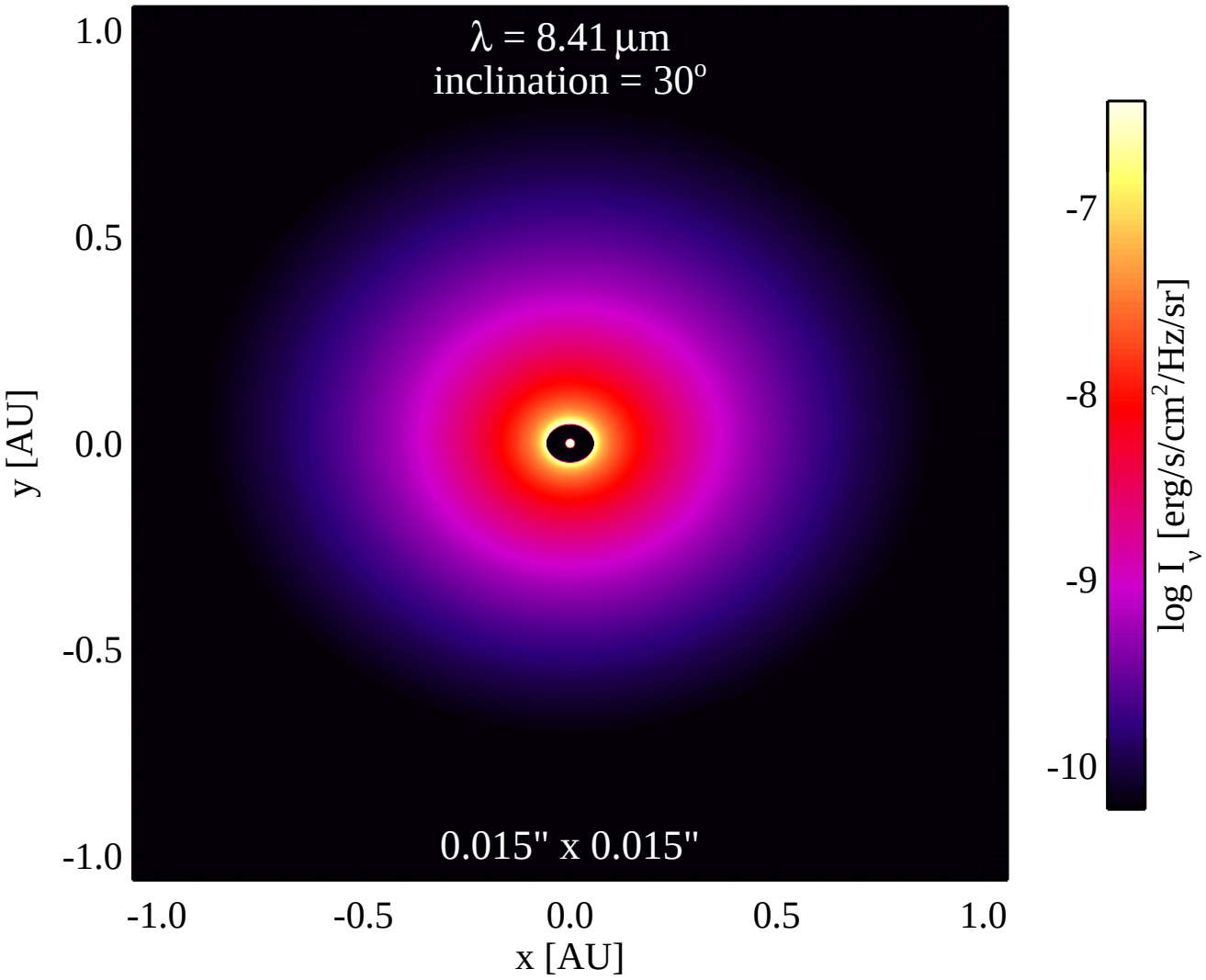

λ = 6.14 μm
inclination = 30°
0.011" x 0.011"
y [AU]
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
x [AU]
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
log I_ν [erg/s/cm²/Hz/sr]
-7
-8
-9
-10

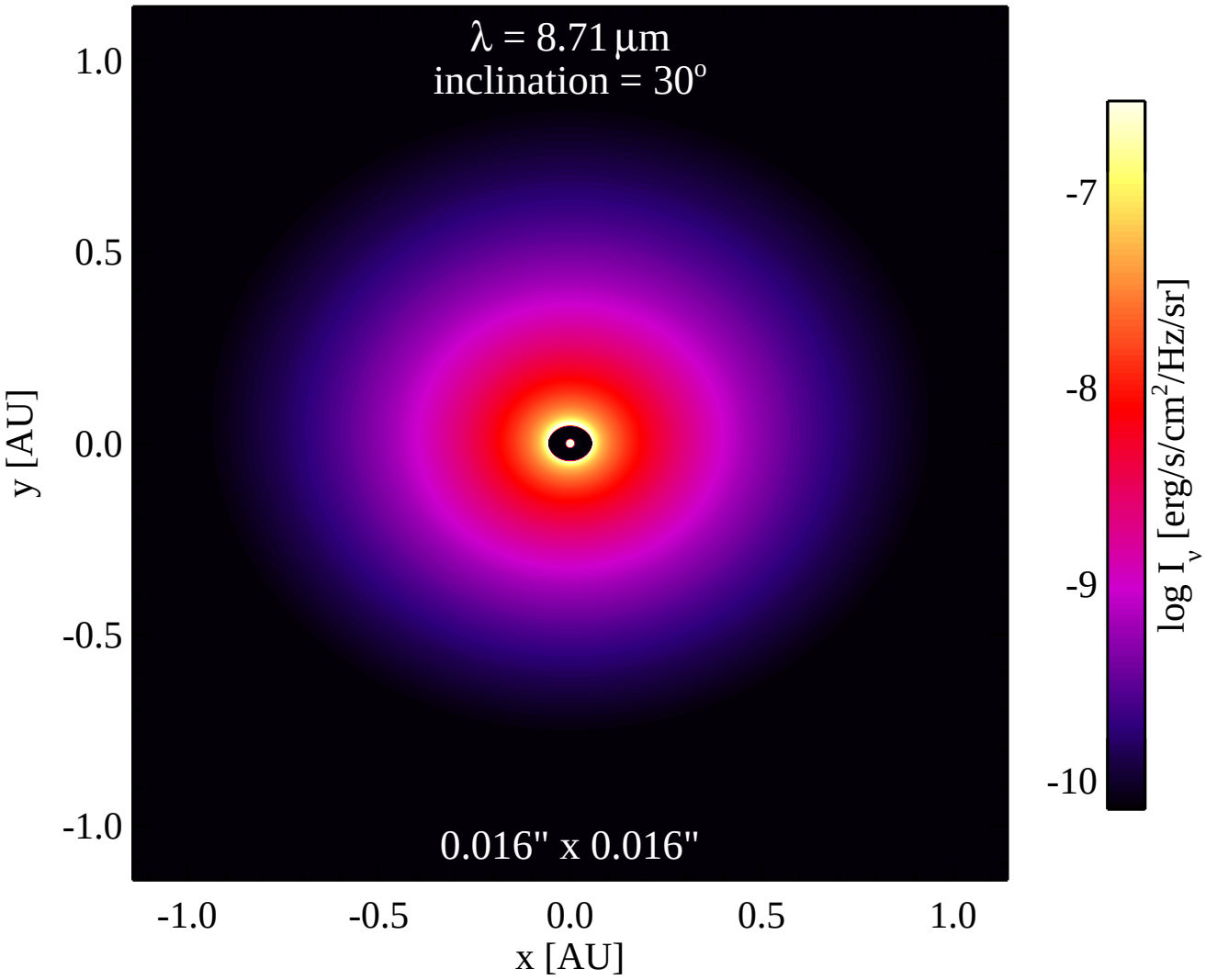

λ = 6.36 μm
inclination = 30°
0.011" x 0.011"
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
y [AU]
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

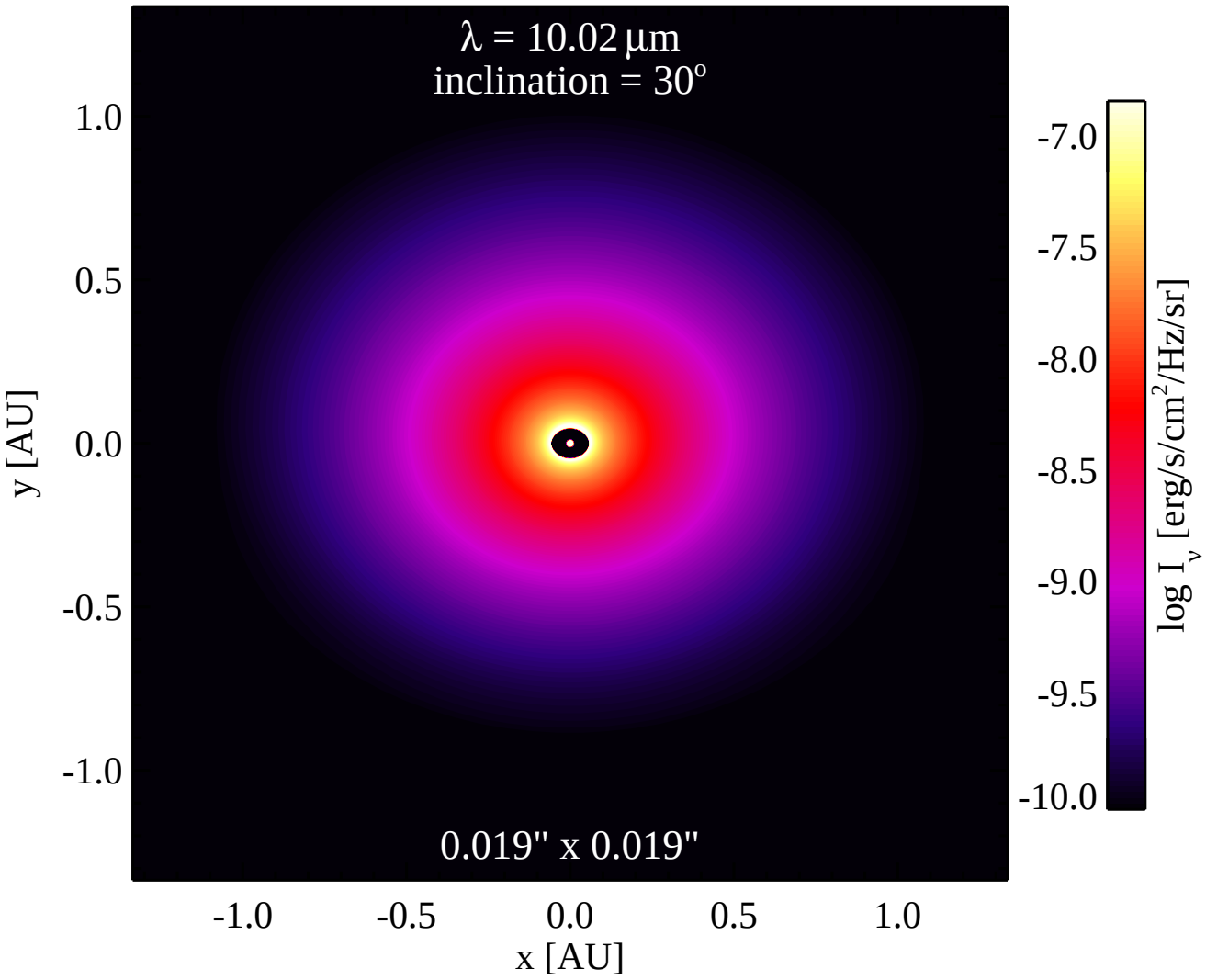

λ = 7.40 μm
inclination = 30°
0.012" x 0.012"
0.5
0.0
-0.5
y [AU]
-0.5
0.0
0.5
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

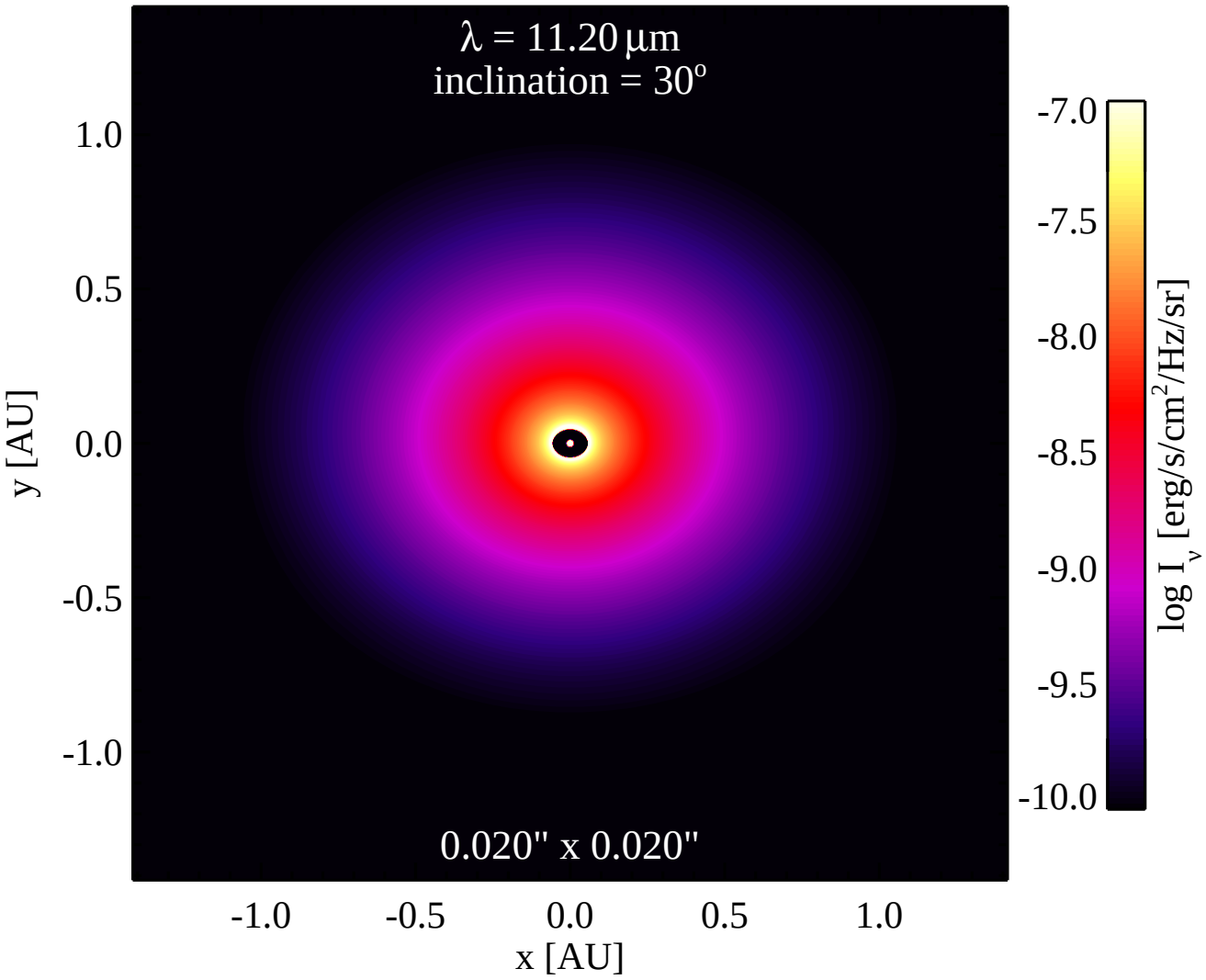

λ = 7.66 μm
inclination = 30°
0.013" x 0.013"
0.5
0.0
-0.5
y [AU]
-0.5
0.0
0.5
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

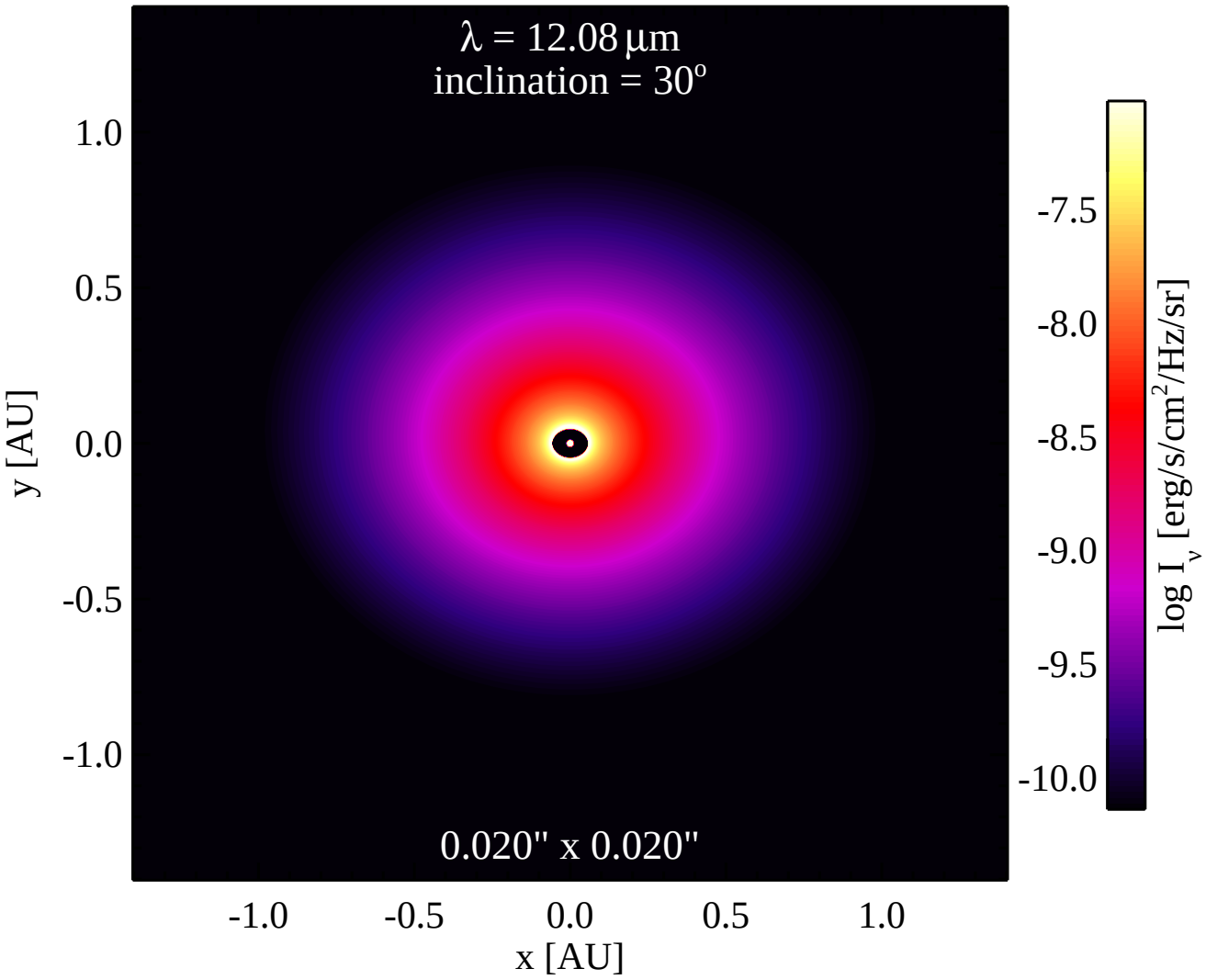

λ = 8.08 μm
inclination = 30°
0.013" x 0.013"
0.5
0.0
-0.5
y [AU]
-0.5
0.0
0.5
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

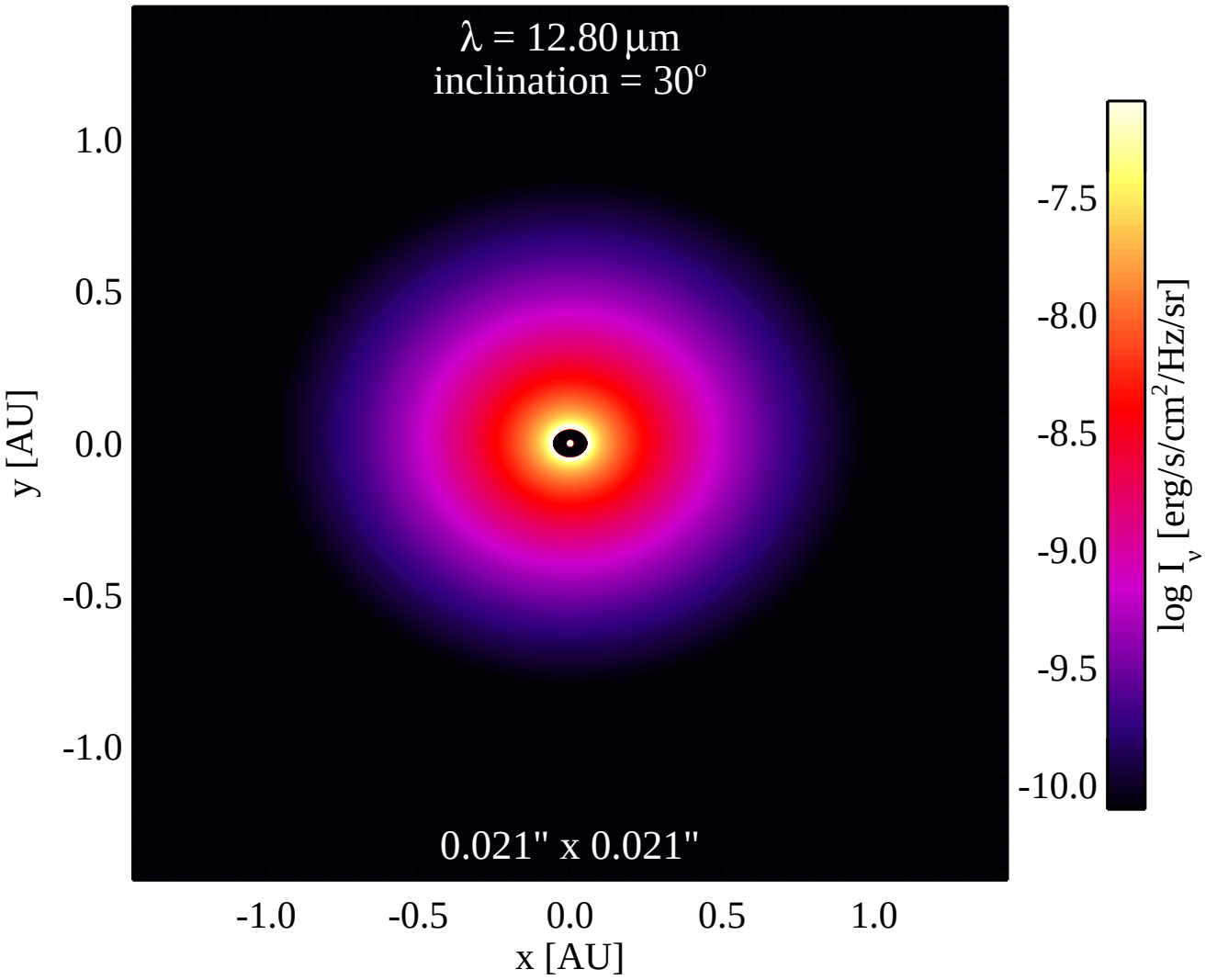

λ = 8.41 μm
inclination = 30°
0.015" x 0.015"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

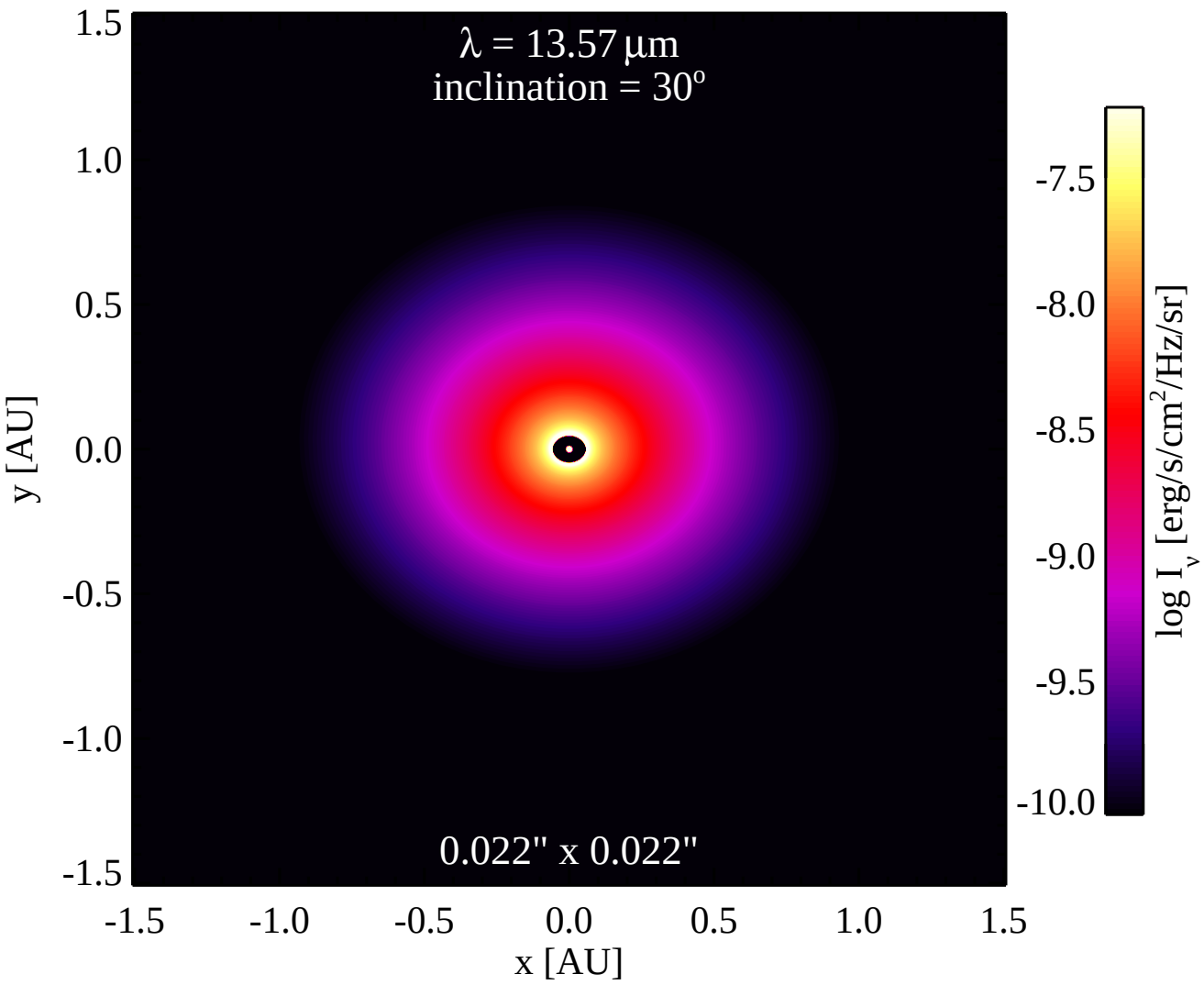

λ = 8.71 μm
inclination = 30°
0.016" x 0.016"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7
-8
-9
-10
log I_ν [erg/s/cm²/Hz/sr]

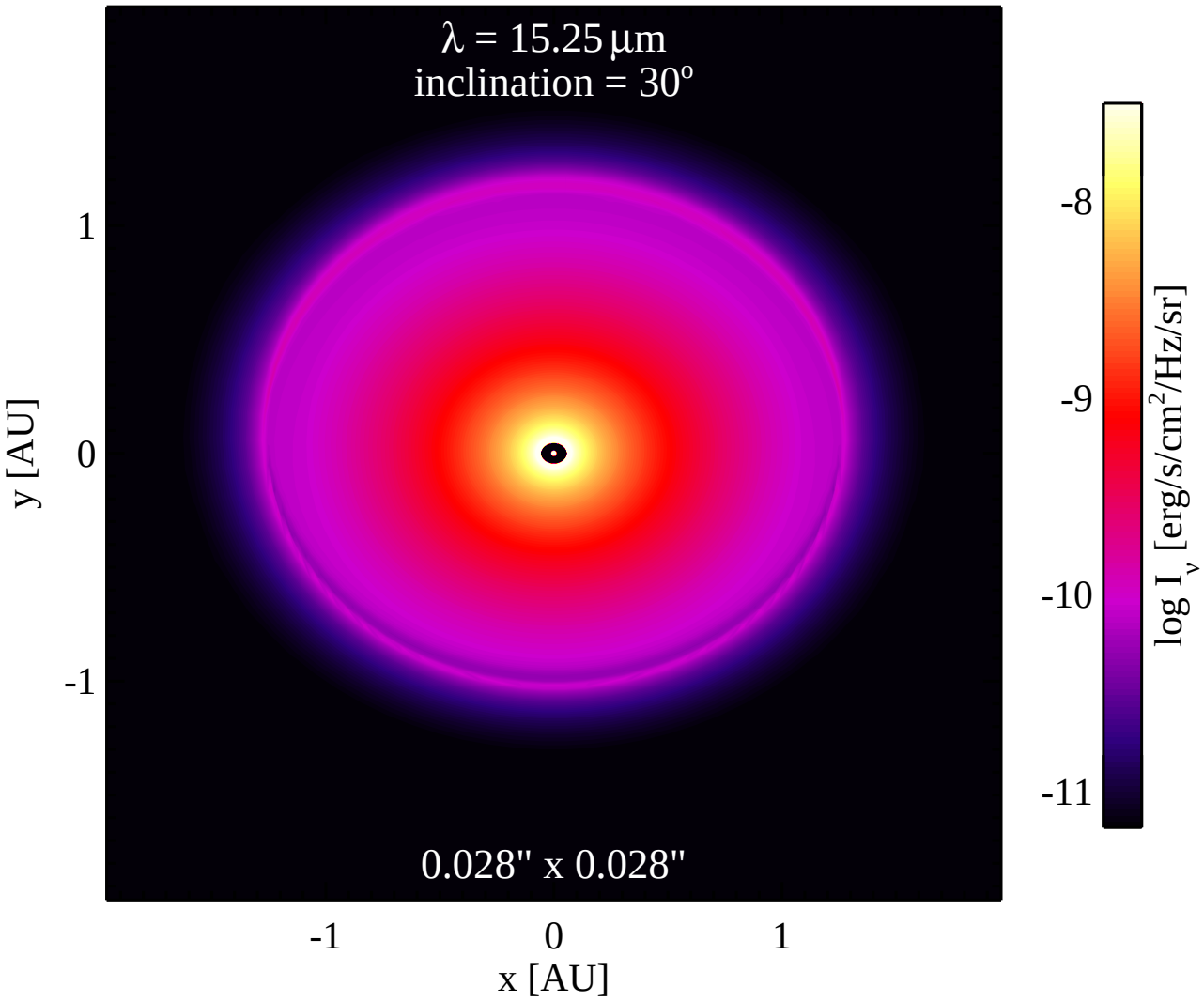

λ = 10.02 μm
inclination = 30°
0.019" x 0.019"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7.0
-7.5
-8.0
-8.5
-9.0
-9.5
-10.0
log I_ν [erg/s/cm²/Hz/sr]

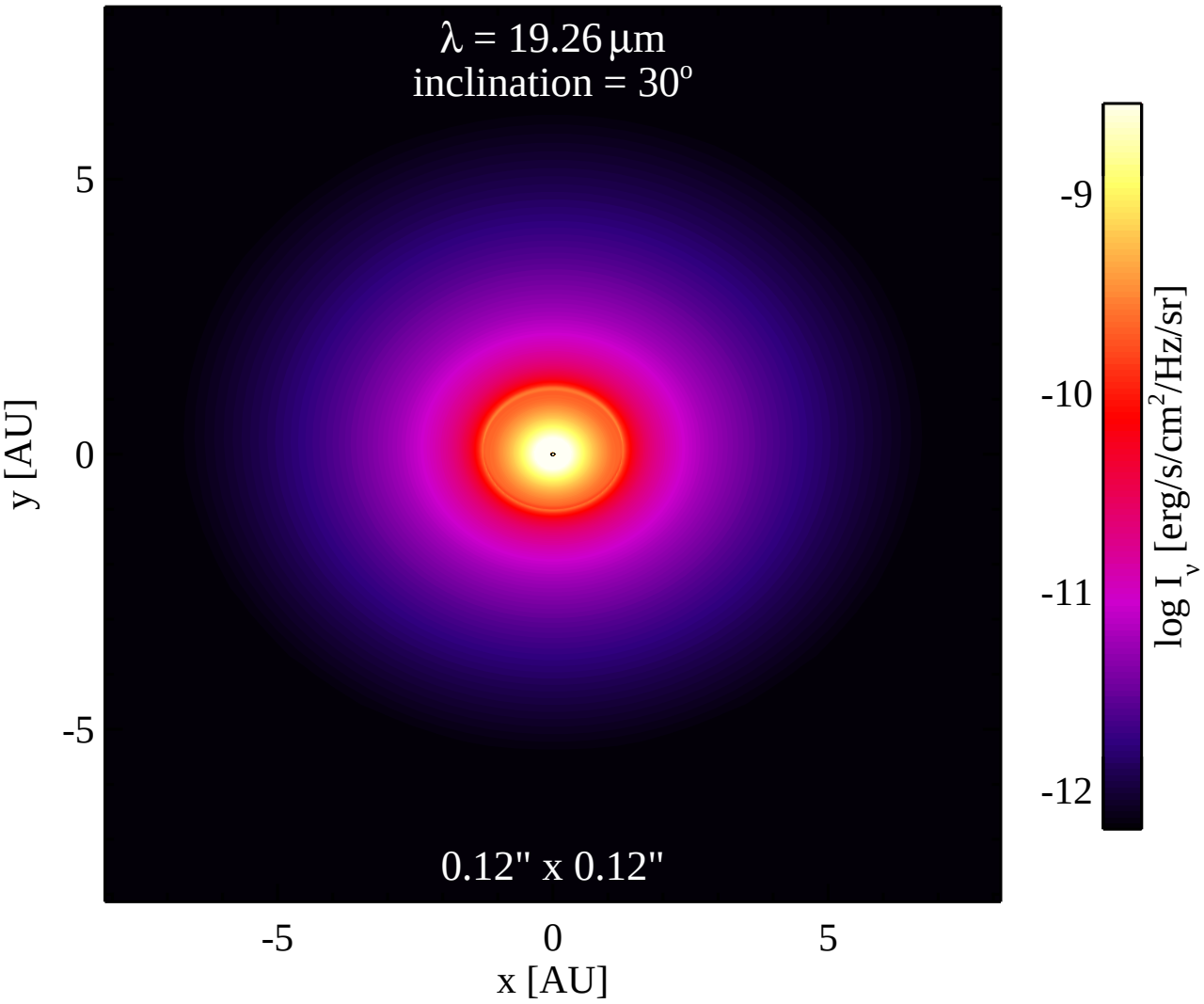

λ = 11.20 μm
inclination = 30°
0.020" x 0.020"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7.0
-7.5
-8.0
-8.5
-9.0
-9.5
-10.0
log I_ν [erg/s/cm²/Hz/sr]

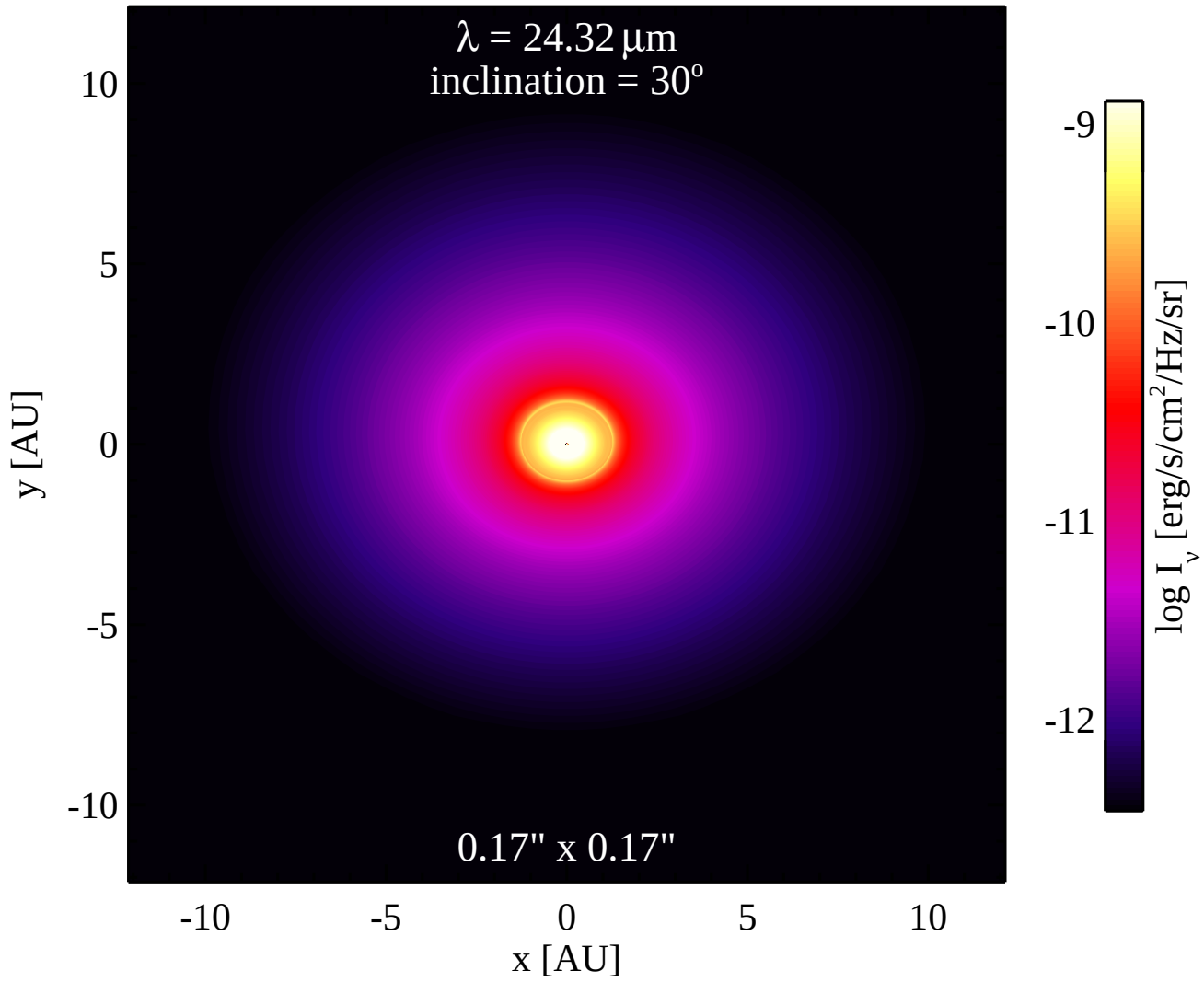

λ = 12.08 μm
inclination = 30°
0.020" x 0.020"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7.5
-8.0
-8.5
-9.0
-9.5
-10.0
log I_ν [erg/s/cm²/Hz/sr]

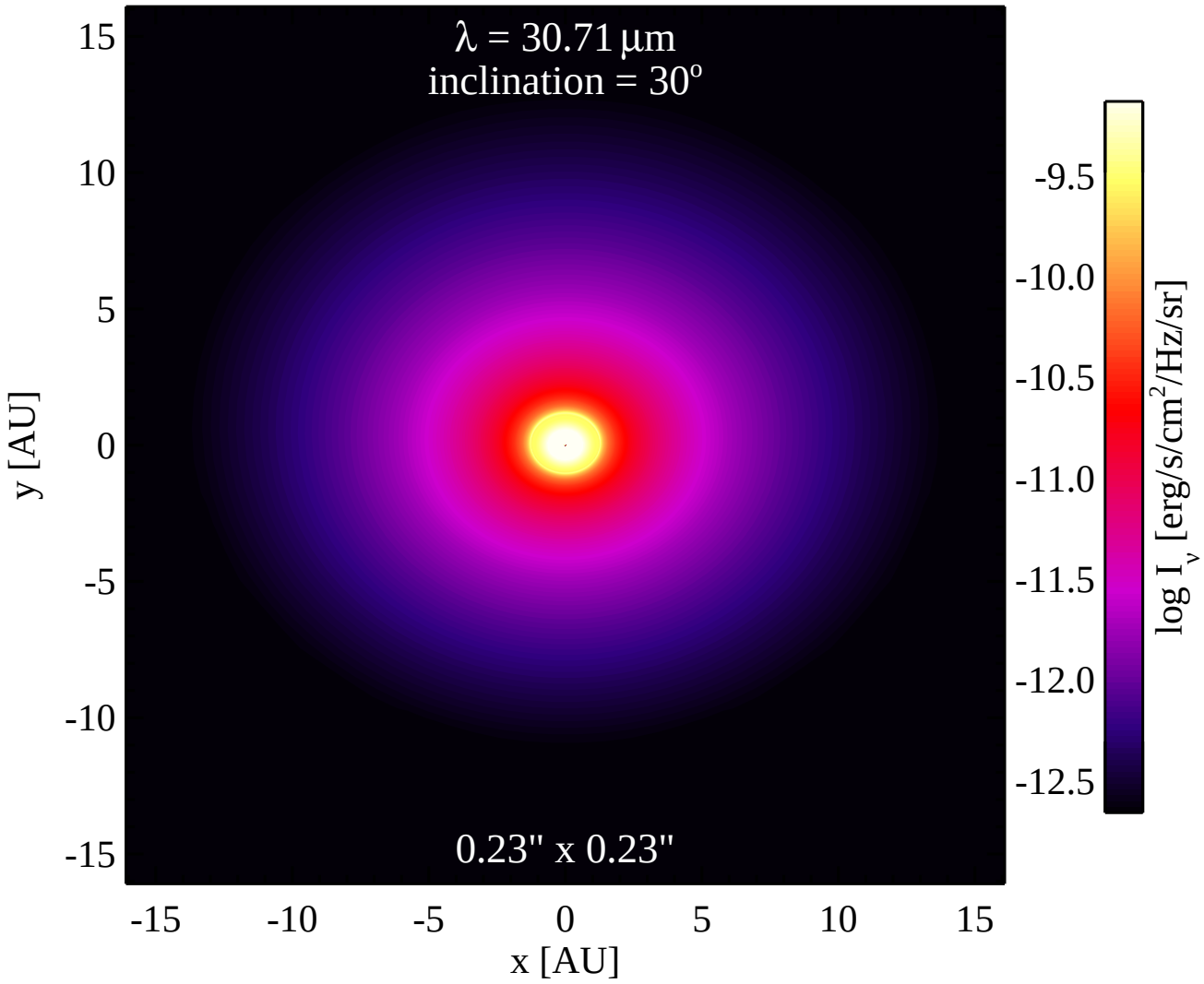

λ = 12.80 μm
inclination = 30°
0.021" x 0.021"
1.0
0.5
0.0
-0.5
-1.0
y [AU]
-1.0
-0.5
0.0
0.5
1.0
x [AU]
-7.5
-8.0
-8.5
-9.0
-9.5
-10.0
log I_ν [erg/s/cm²/Hz/sr]

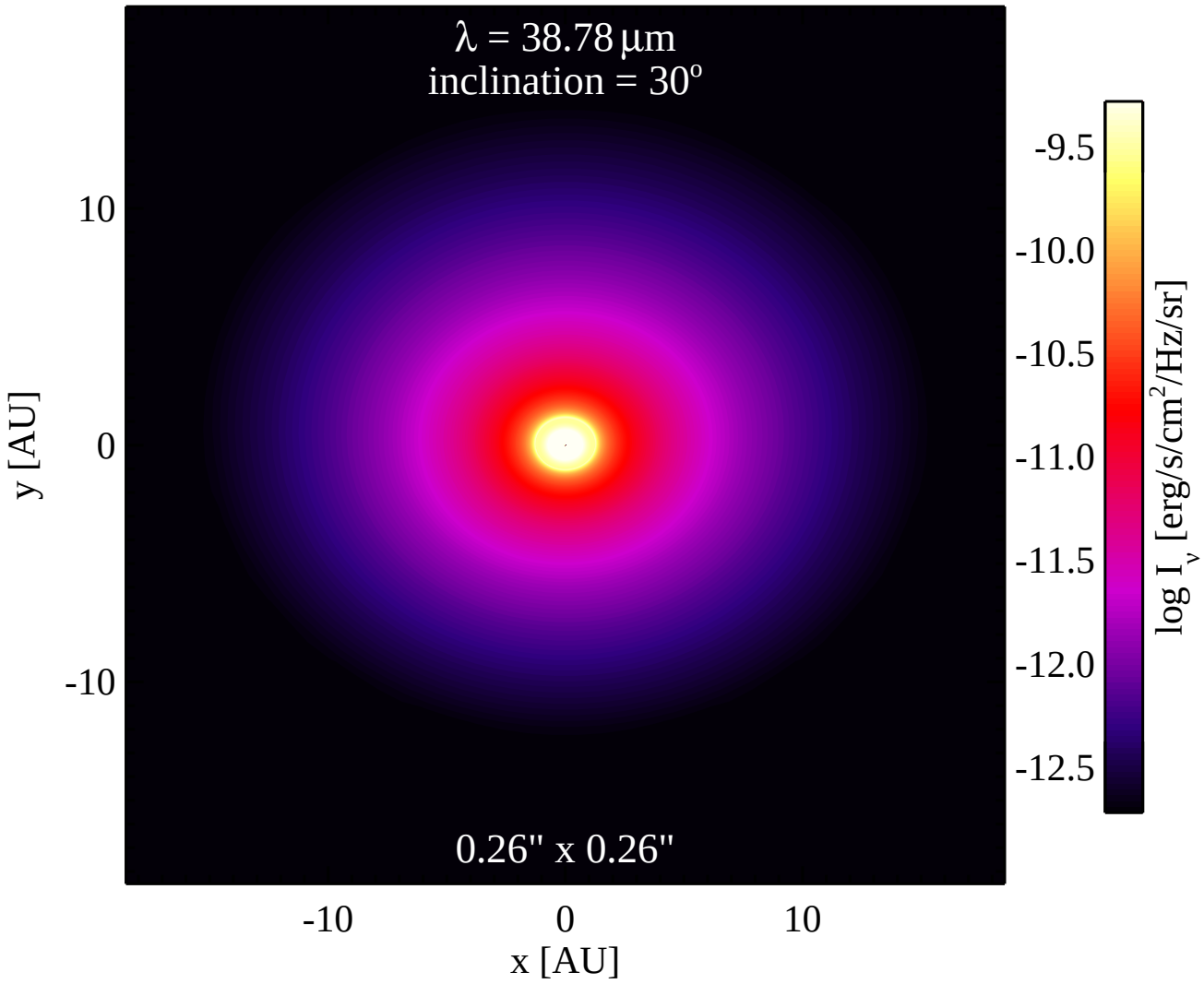

λ = 13.57 μm
inclination = 30°
0.022" x 0.022"
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
y [AU]
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
x [AU]
-7.5
-8.0
-8.5
-9.0
-9.5
-10.0
log I_ν [erg/s/cm²/Hz/sr]

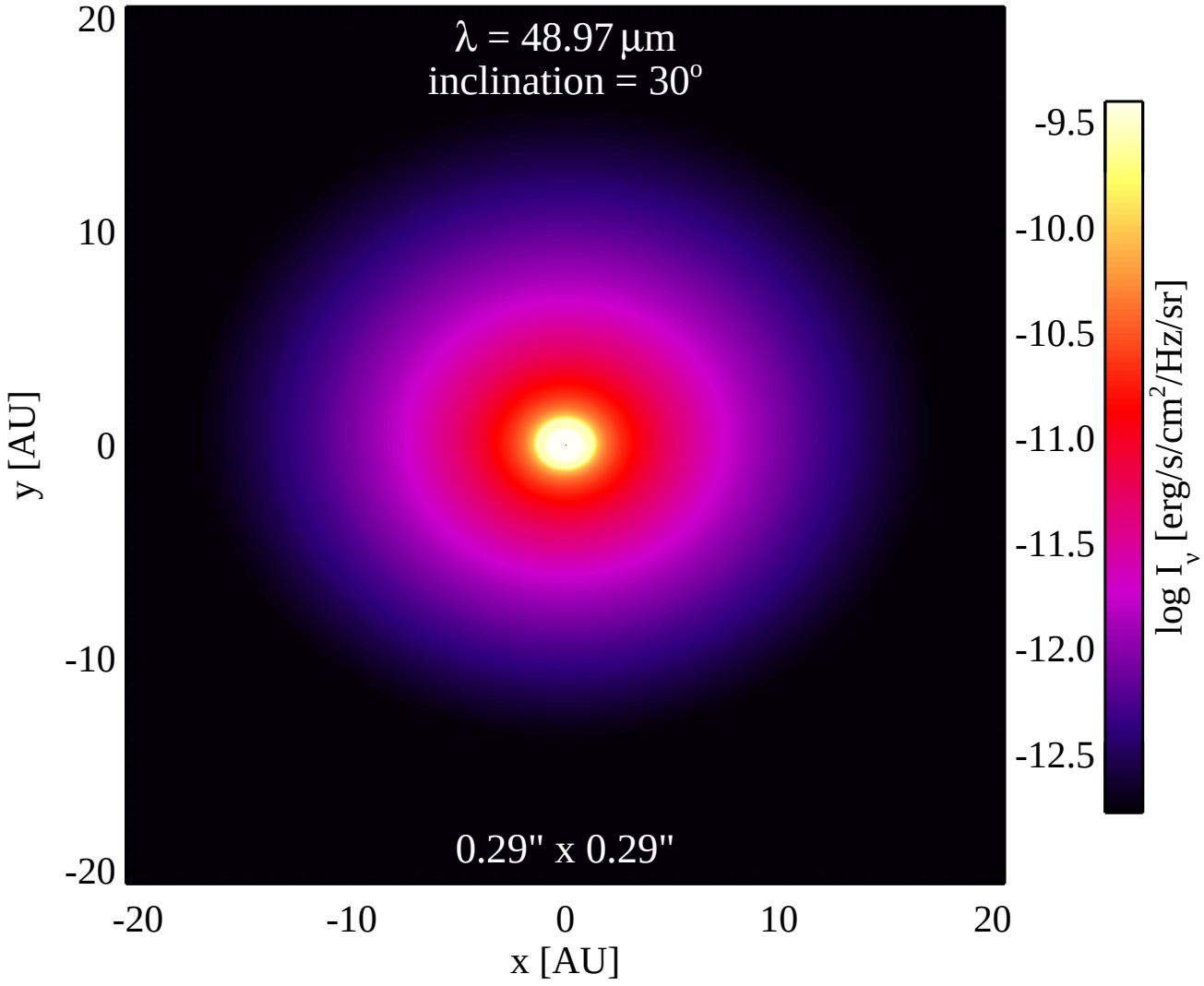

λ = 15.25 μm
inclination = 30°
0.028" x 0.028"
y [AU]
1
0
-1
x [AU]
-1
0
1
log I_ν [erg/s/cm²/Hz/sr]
-8
-9
-10
-11

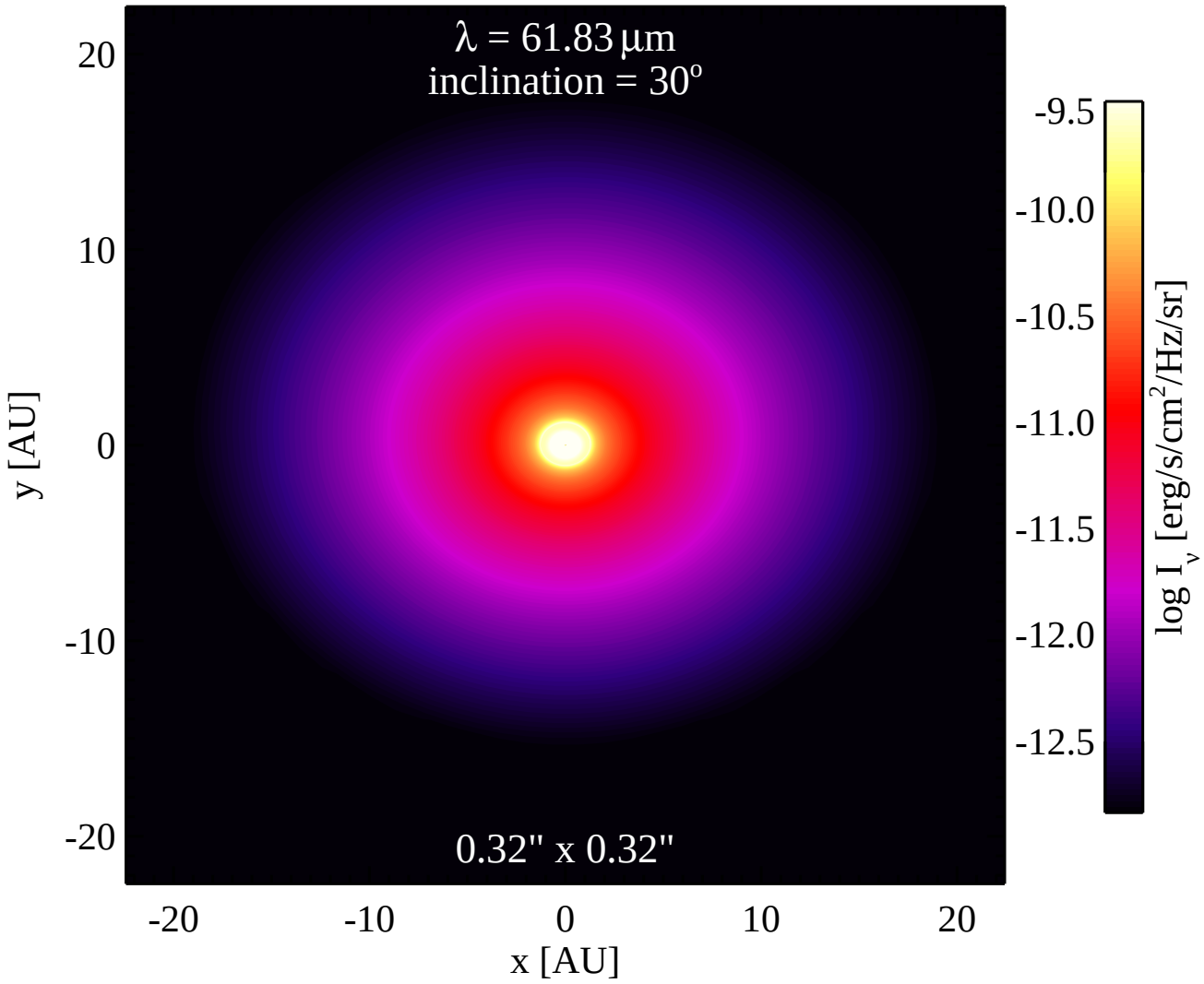

λ = 19.26 μm
inclination = 30°
0.12" x 0.12"
y [AU]
5
0
-5
-5
0
5
x [AU]
-9
-10
-11
-12
log I_ν [erg/s/cm²/Hz/sr]

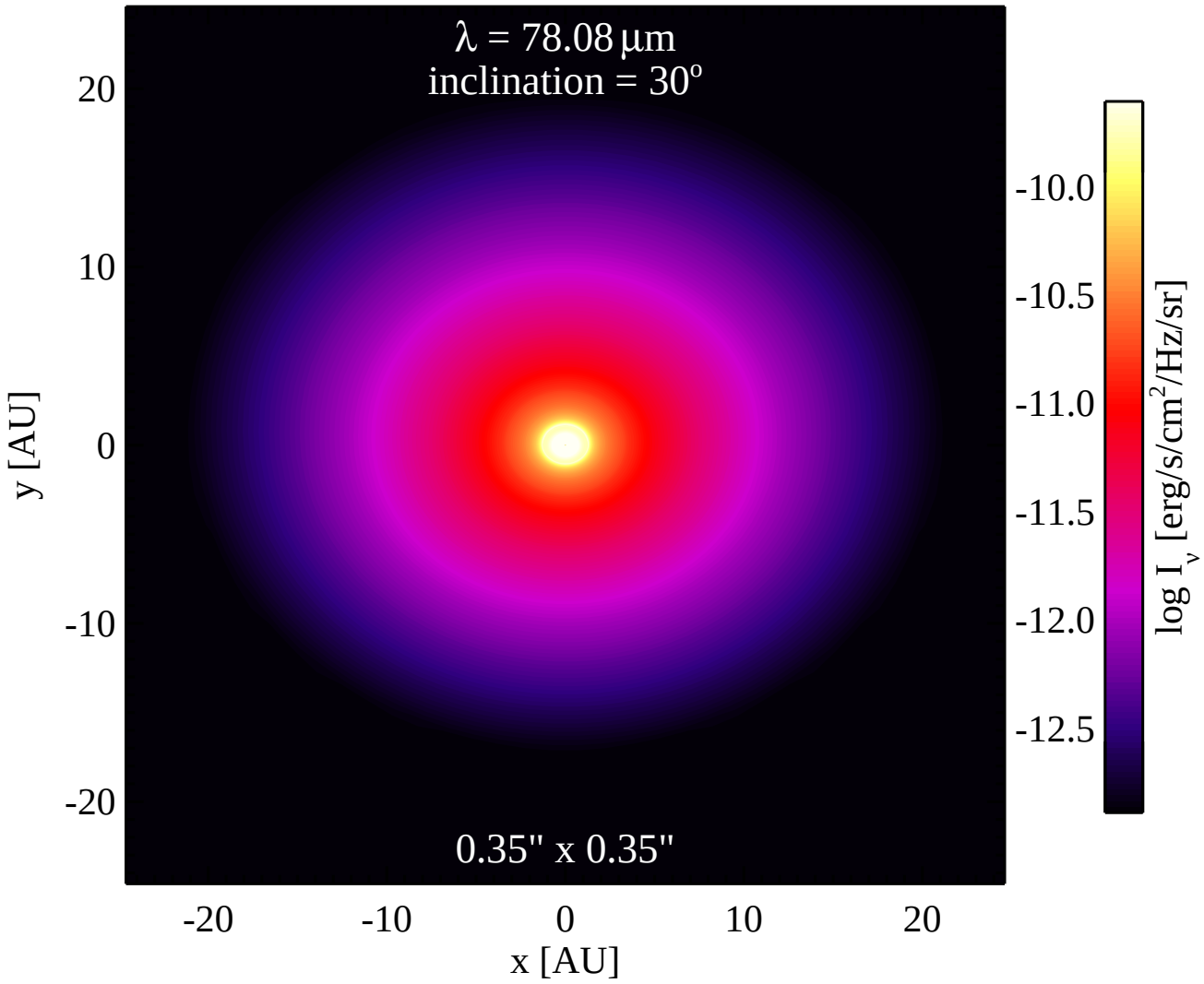

λ = 24.32 μm
inclination = 30°
0.17" x 0.17"
10
5
0
-5
-10
y [AU]
-10
-5
0
5
10
x [AU]
-9
-10
-11
-12
log I_ν [erg/s/cm²/Hz/sr]

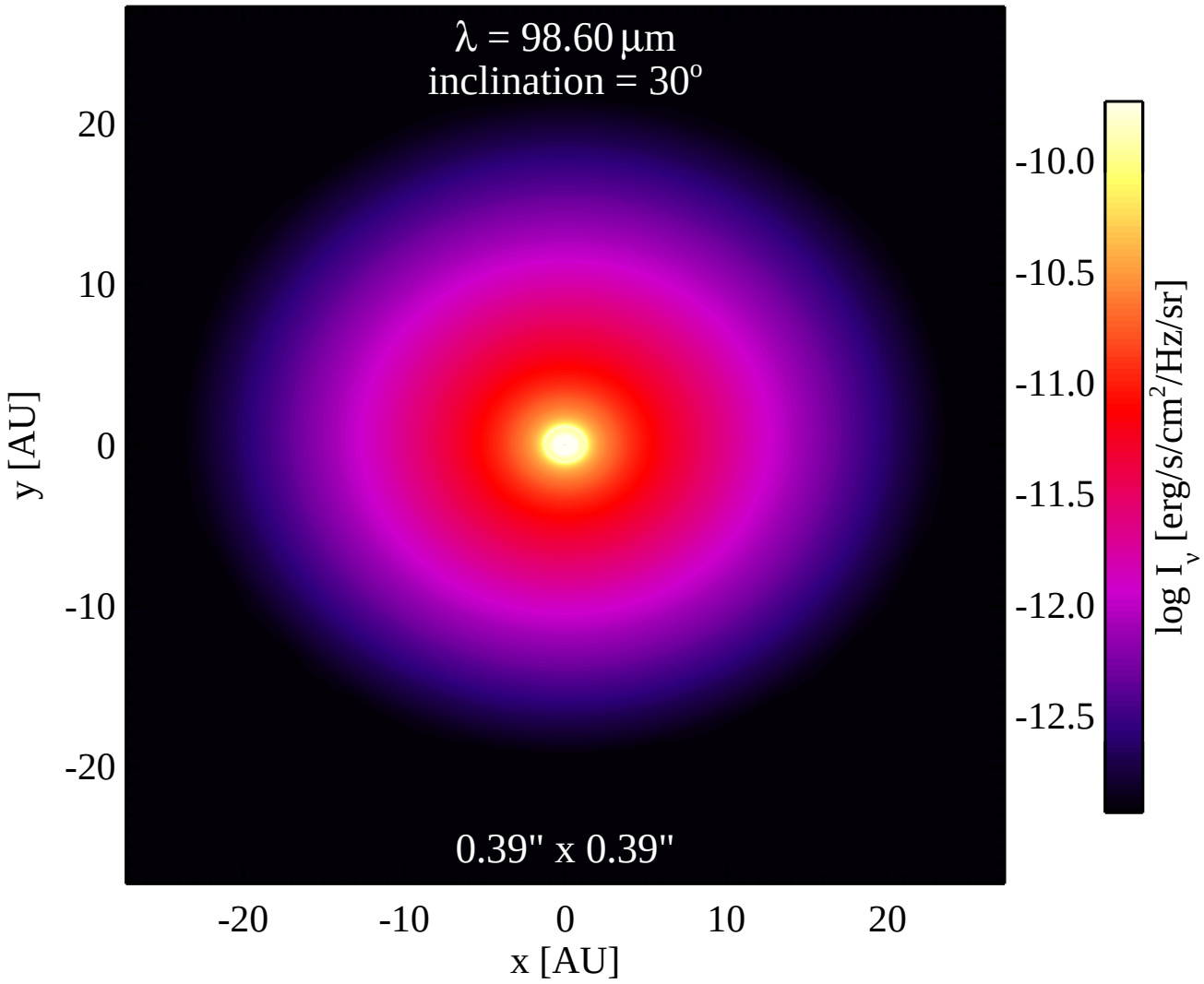

λ = 30.71 μm
inclination = 30°
0.23" x 0.23"
15
10
5
0
-5
-10
-15
y [AU]
-15
-10
-5
0
5
10
15
x [AU]
-9.5
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

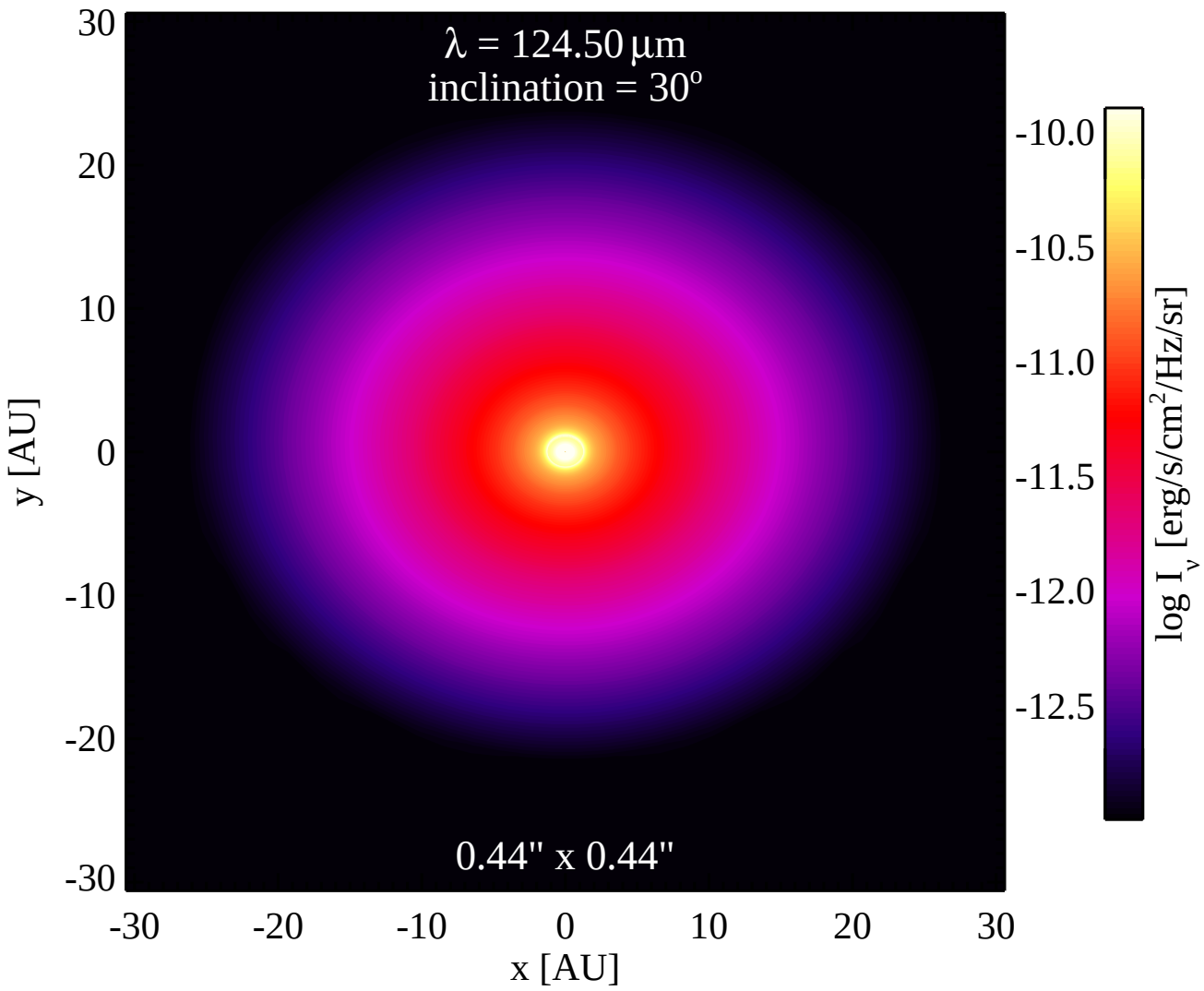

λ = 38.78 μm
inclination = 30°
0.26" x 0.26"
10
0
-10
y [AU]
-10
0
10
x [AU]
-9.5
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

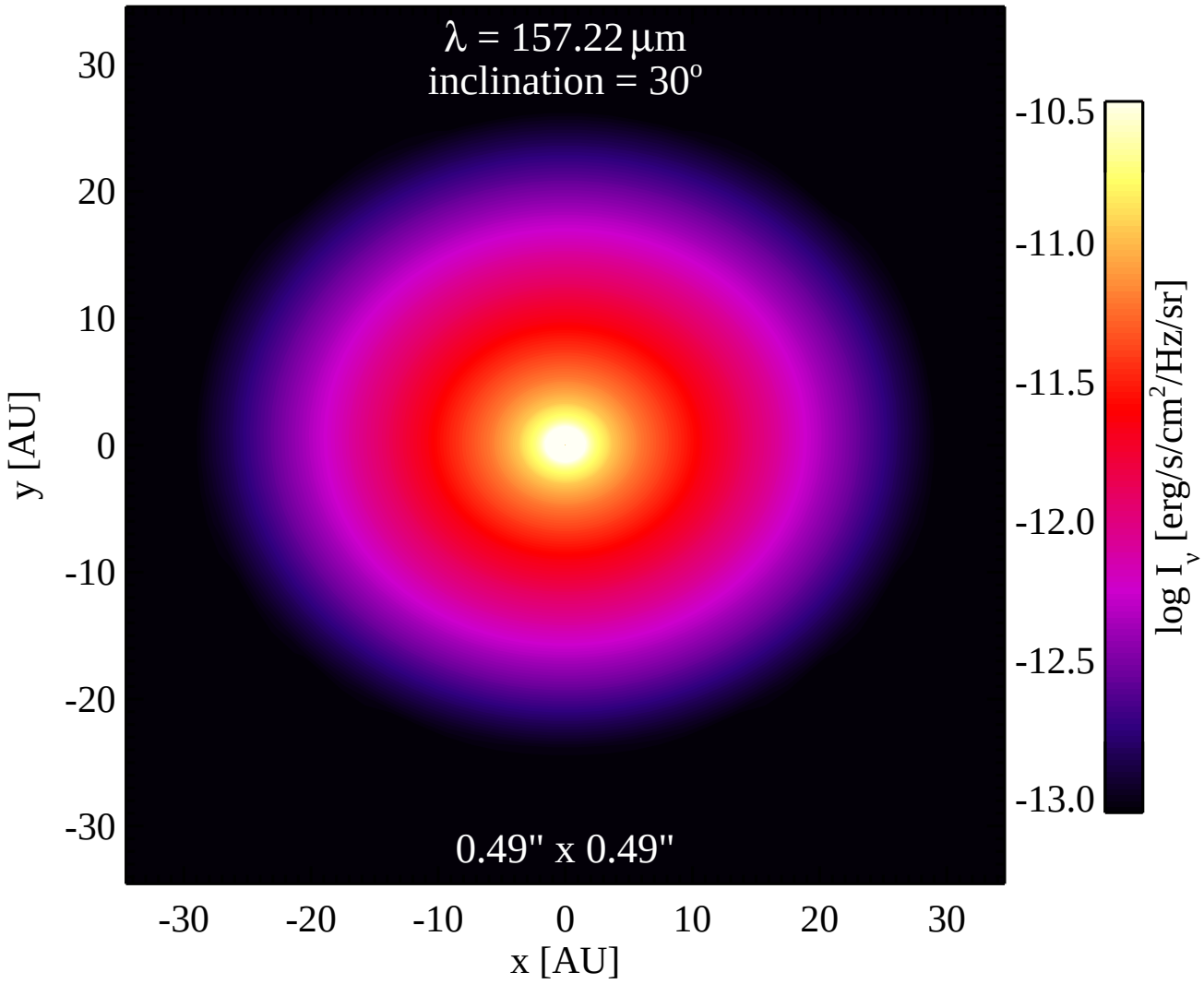

λ = 48.97 μm
inclination = 30°
0.29" x 0.29"
20
10
0
-10
-20
y [AU]
-20
-10
0
10
20
x [AU]
-9.5
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

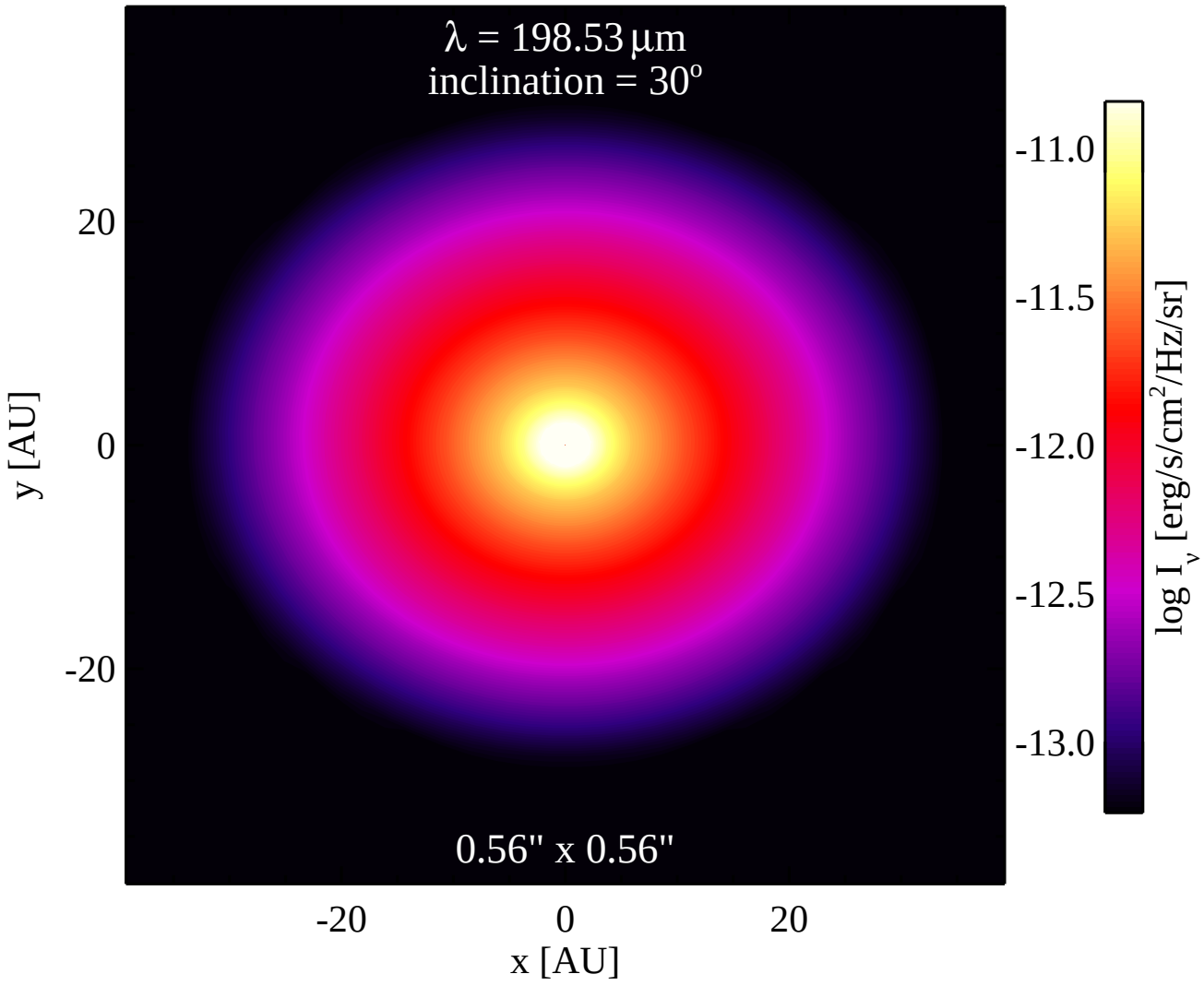

λ = 61.83 μm
inclination = 30°
0.32" x 0.32"
20
10
0
-10
-20
y [AU]
-20
-10
0
10
20
x [AU]
-9.5
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

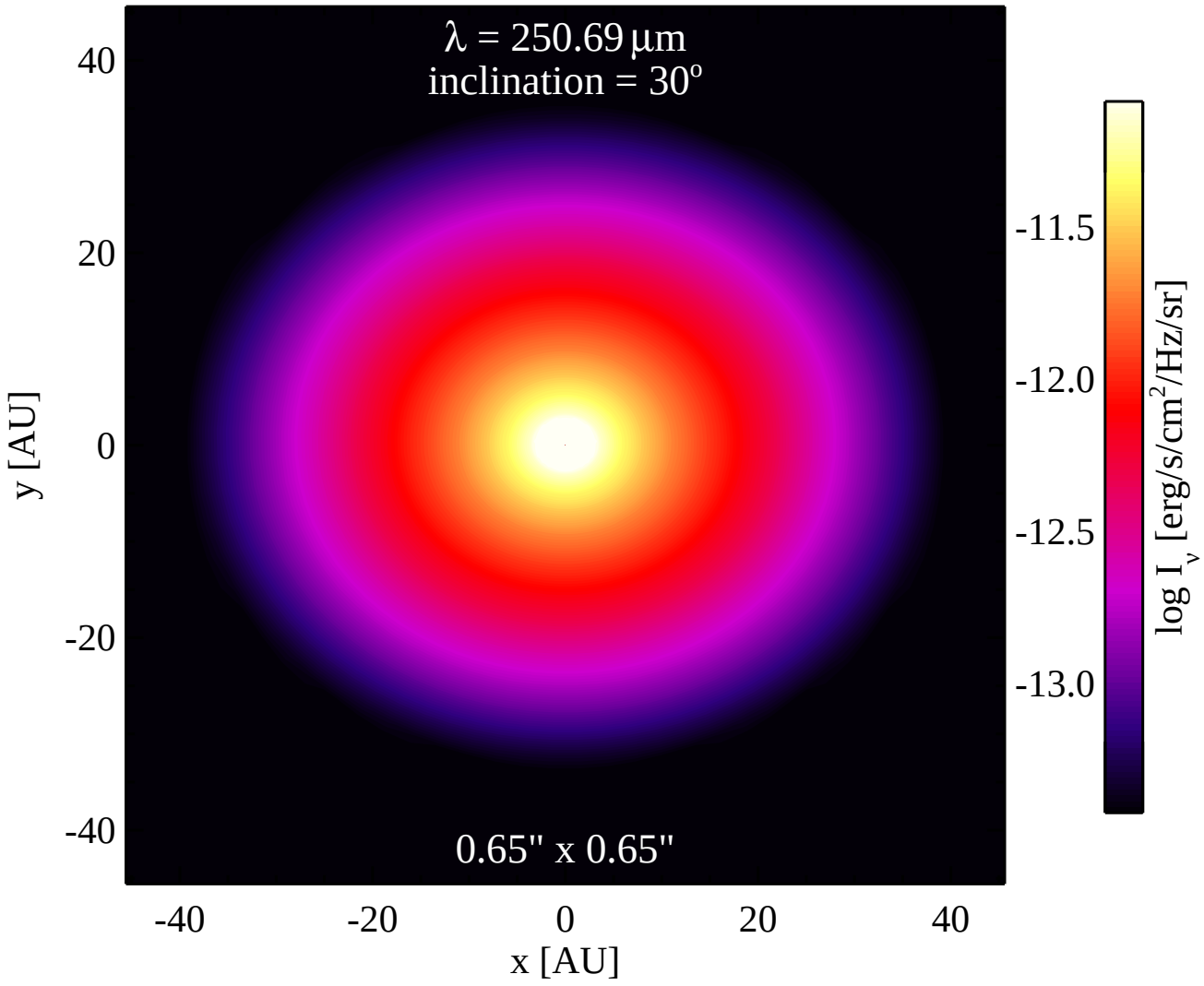

λ = 78.08 μm
inclination = 30°
0.35" x 0.35"
20
10
0
-10
-20
y [AU]
-20
-10
0
10
20
x [AU]
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

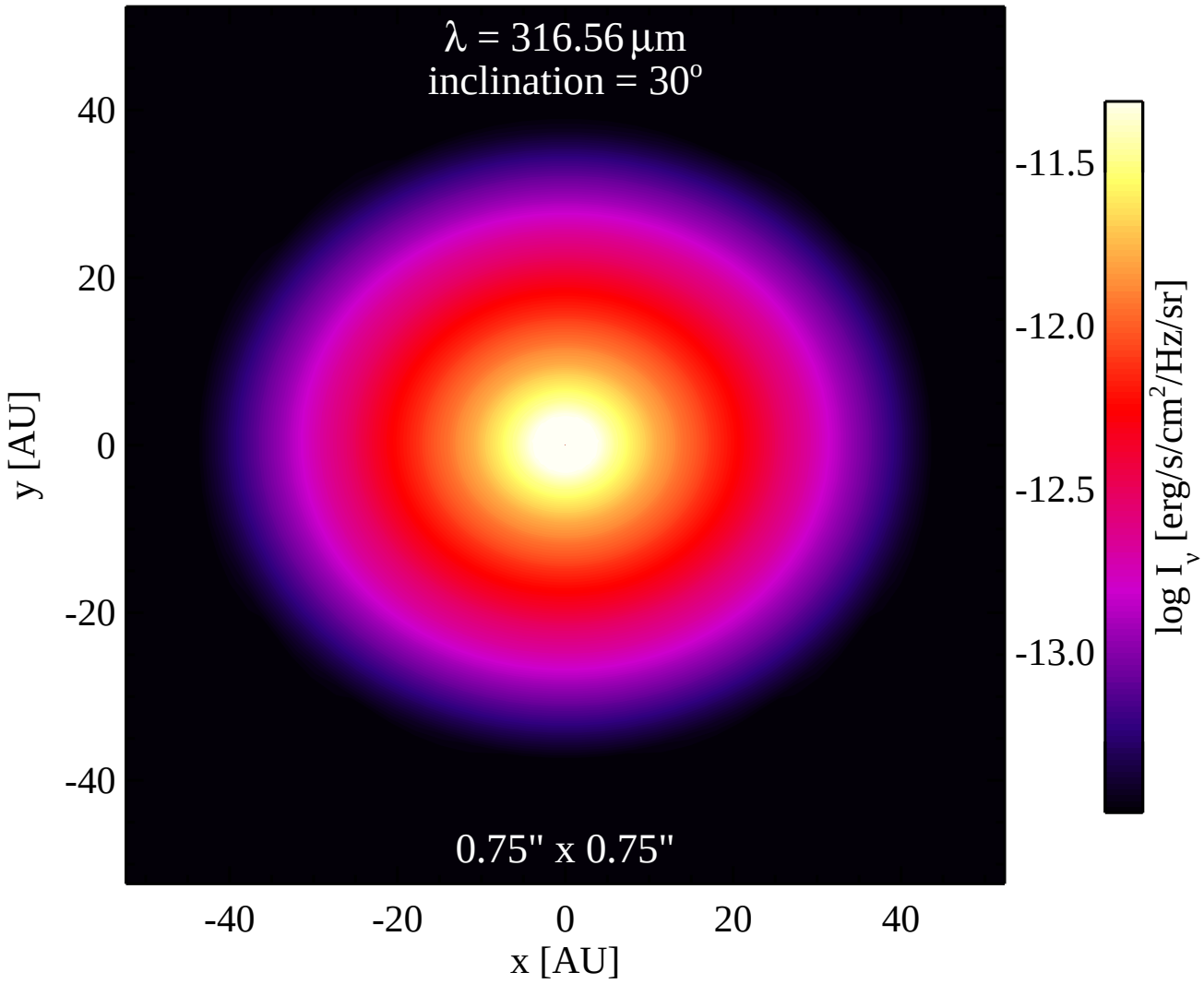

λ = 98.60 μm
inclination = 30°
0.39" x 0.39"
20
10
0
-10
-20
y [AU]
-20
-10
0
10
20
x [AU]
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

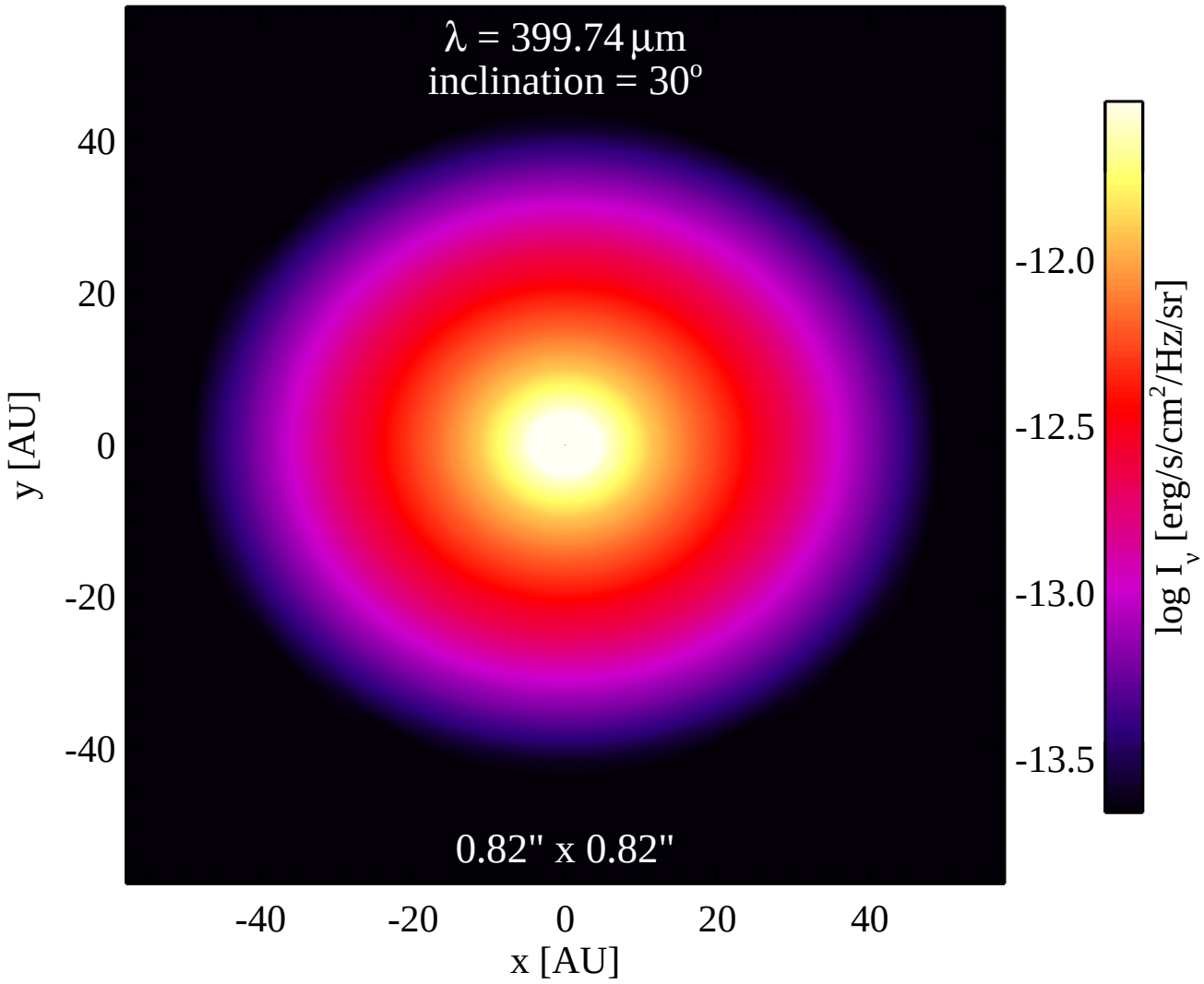

λ = 124.50 μm
inclination = 30°
0.44" x 0.44"
30
20
10
0
-10
-20
-30
y [AU]
-30
-20
-10
0
10
20
30
x [AU]
-10.0
-10.5
-11.0
-11.5
-12.0
-12.5
log I_ν [erg/s/cm²/Hz/sr]

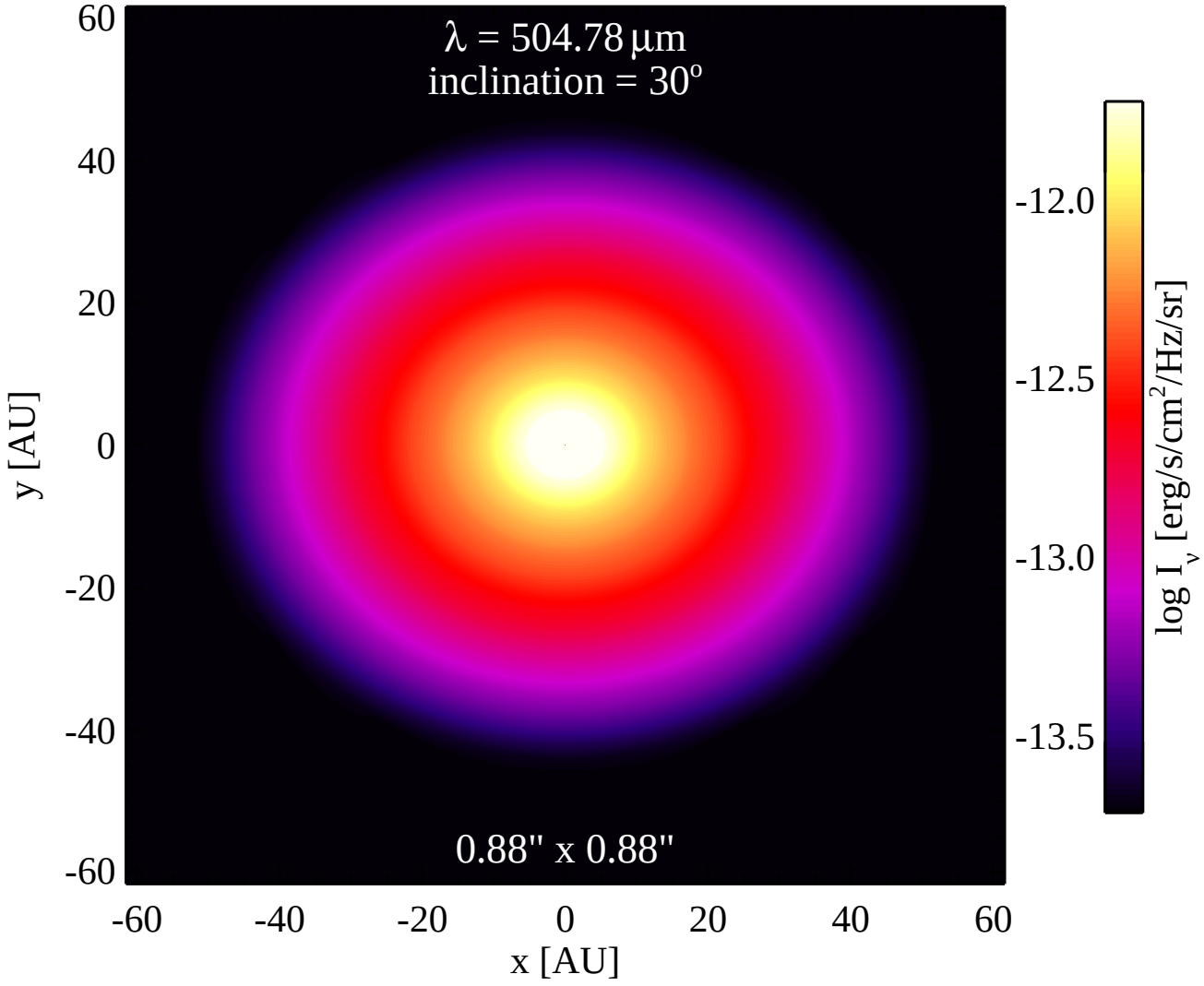

λ = 157.22 μm
inclination = 30°
0.49" x 0.49"
30
20
10
0
-10
-20
-30
y [AU]
-30
-20
-10
0
10
20
30
x [AU]
-10.5
-11.0
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

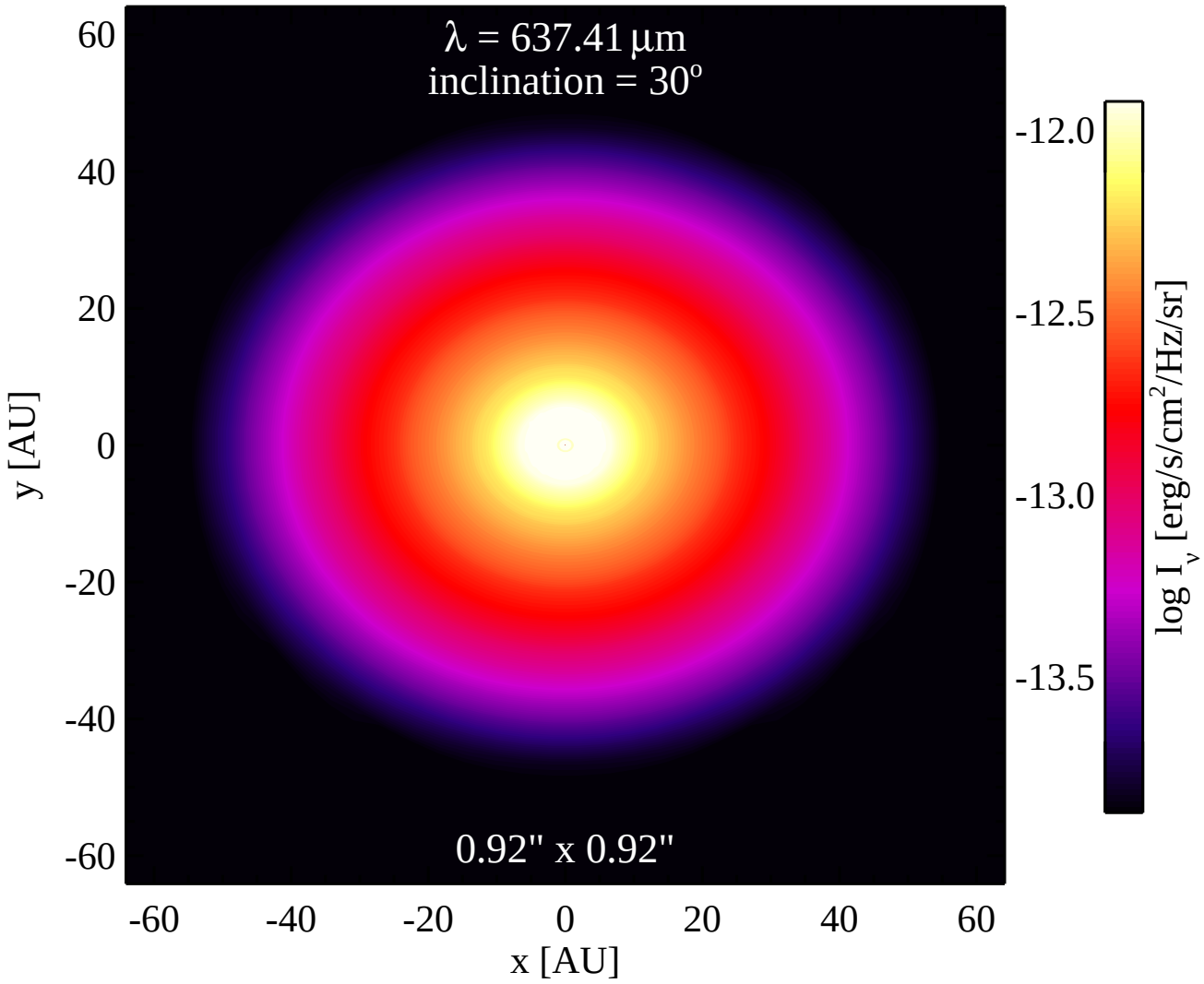

λ = 198.53 μm
inclination = 30°
0.56" x 0.56"
20
0
-20
y [AU]
-20
0
20
x [AU]
-11.0
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

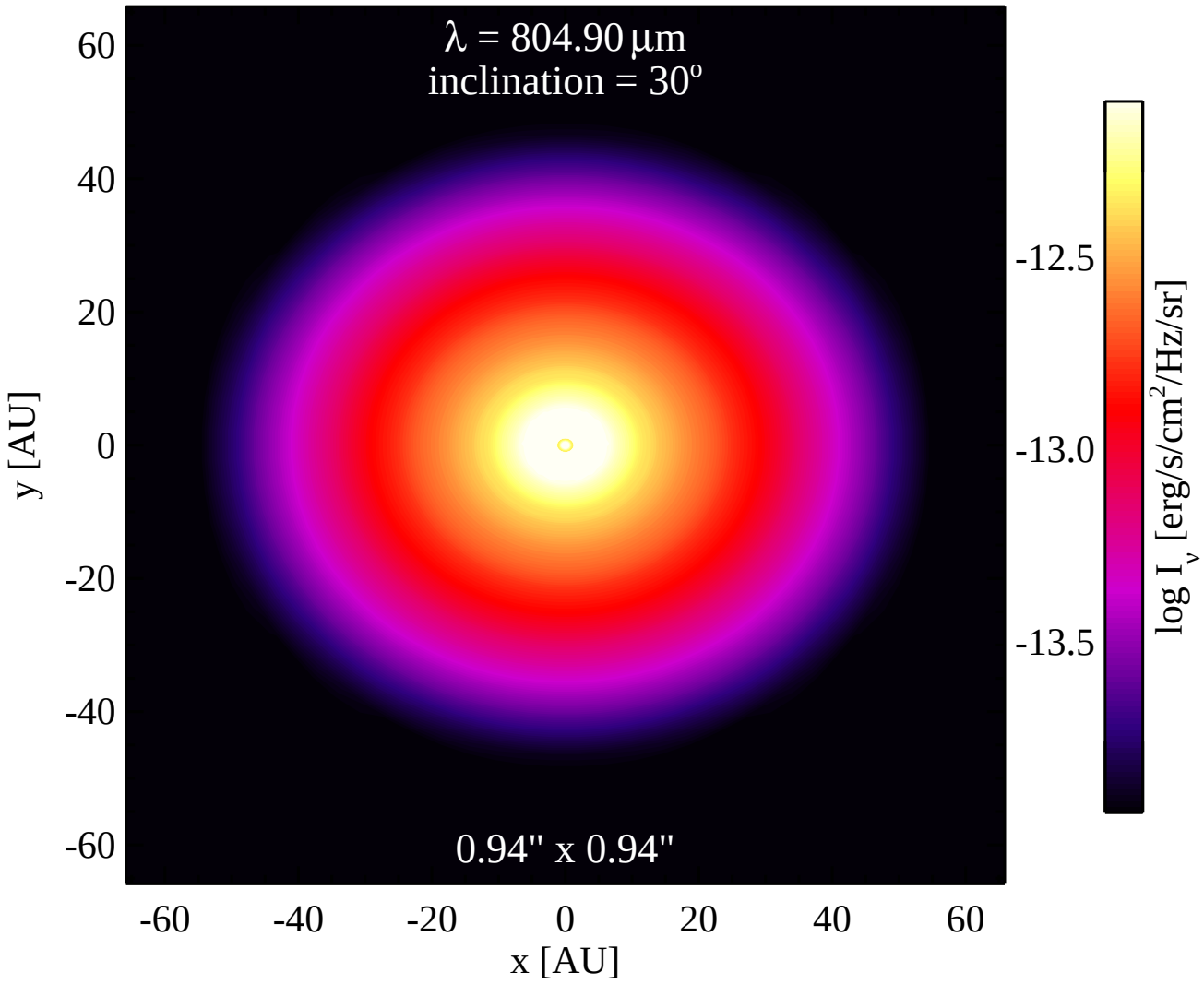

λ = 250.69 μm
inclination = 30°
0.65" x 0.65"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

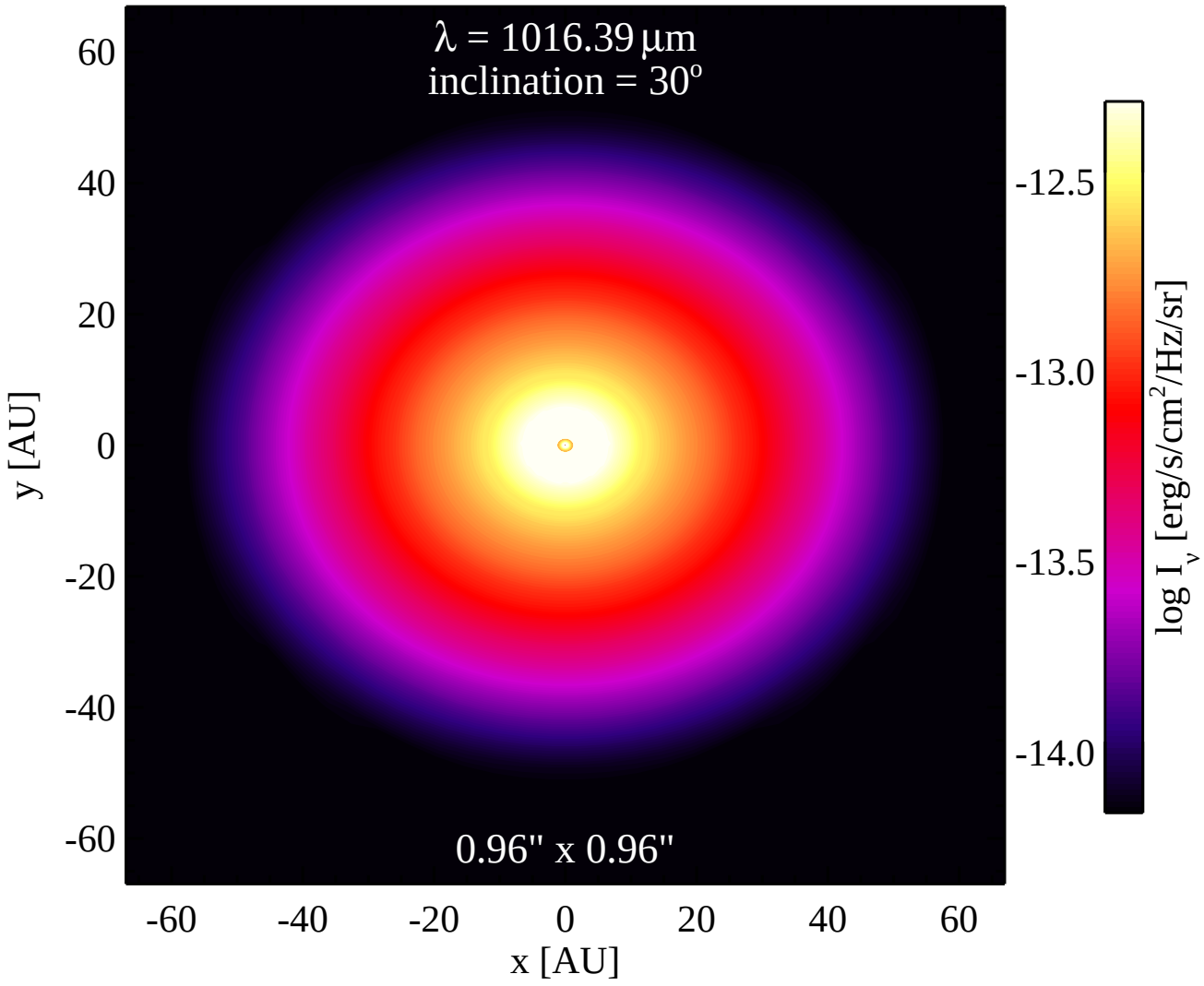

λ = 316.56 μm
inclination = 30°
0.75" x 0.75"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-11.5
-12.0
-12.5
-13.0
log I_ν [erg/s/cm²/Hz/sr]

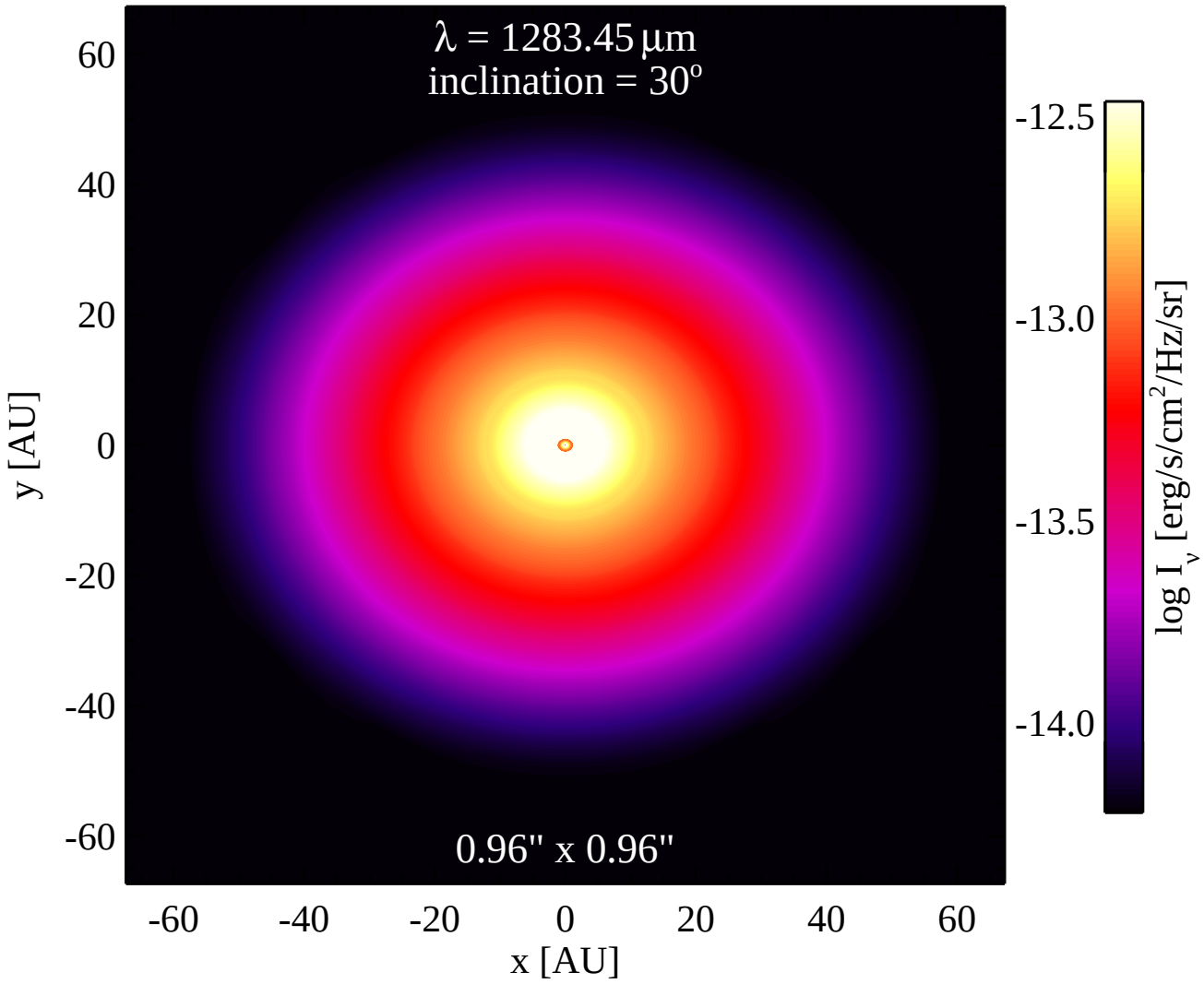

λ = 399.74 μm
inclination = 30°
0.82" x 0.82"
40
20
0
-20
-40
y [AU]
-40
-20
0
20
40
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

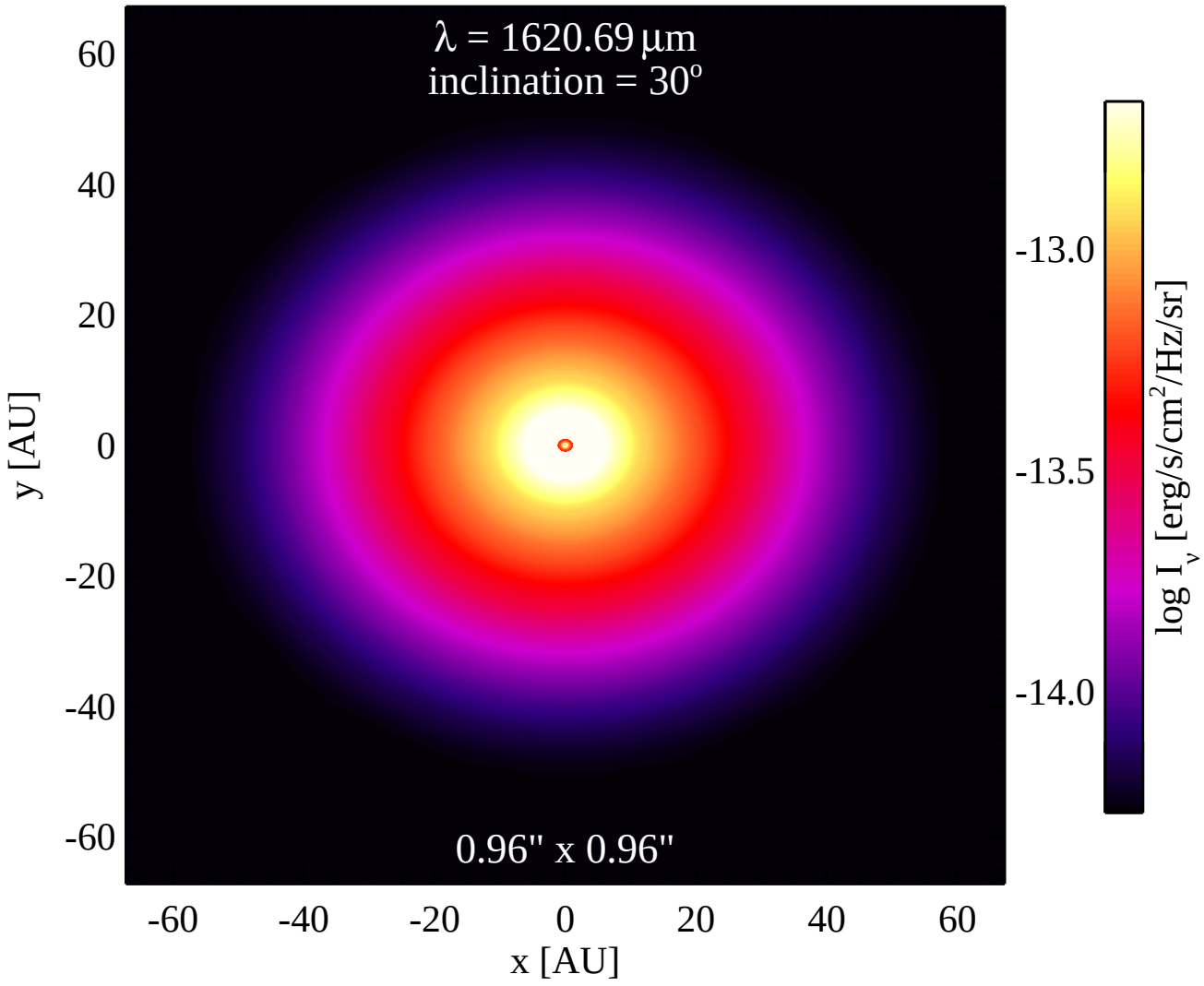

λ = 504.78 μm
inclination = 30°
0.88" x 0.88"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

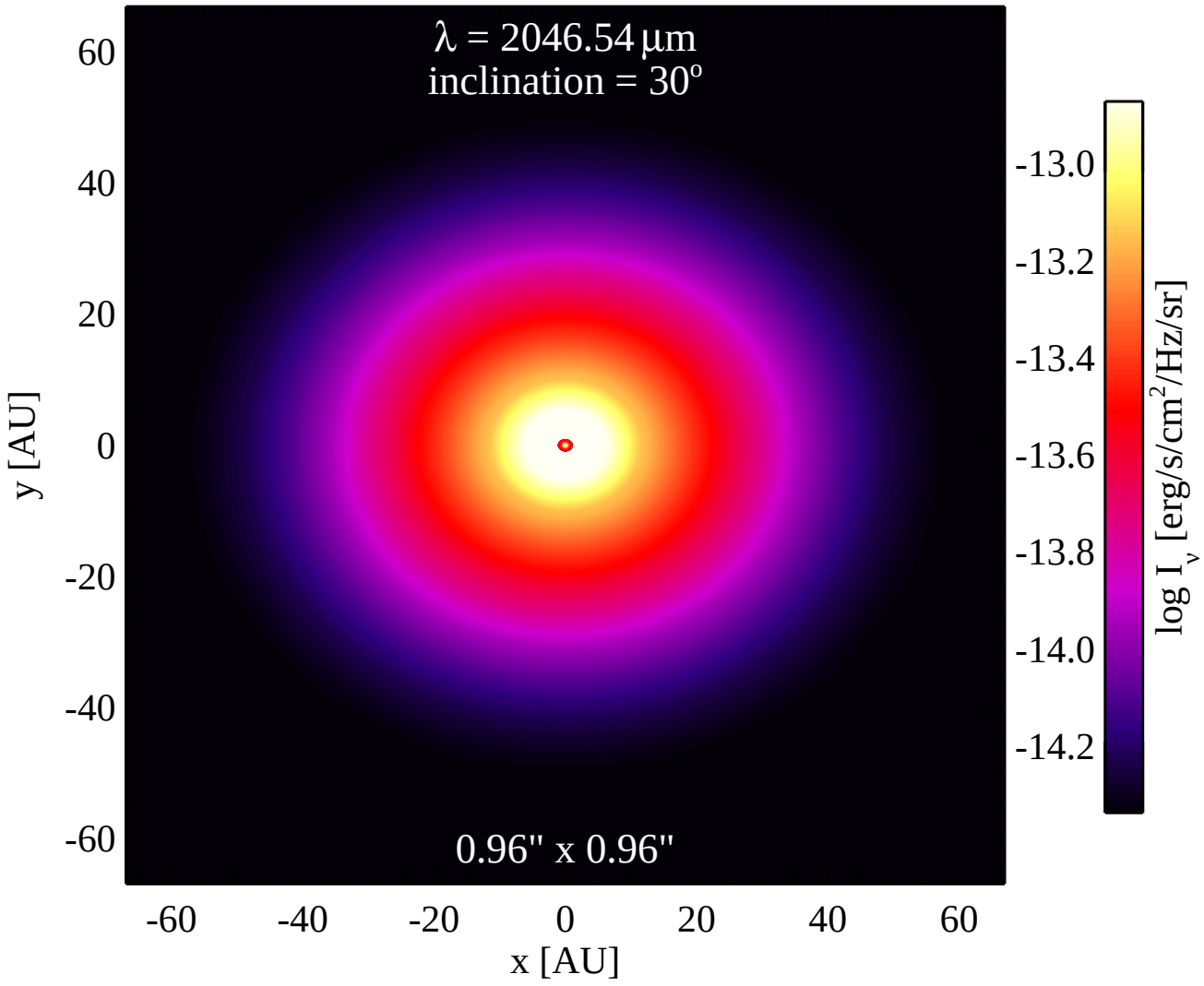

λ = 637.41 μm
inclination = 30°
0.92" x 0.92"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-12.0
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

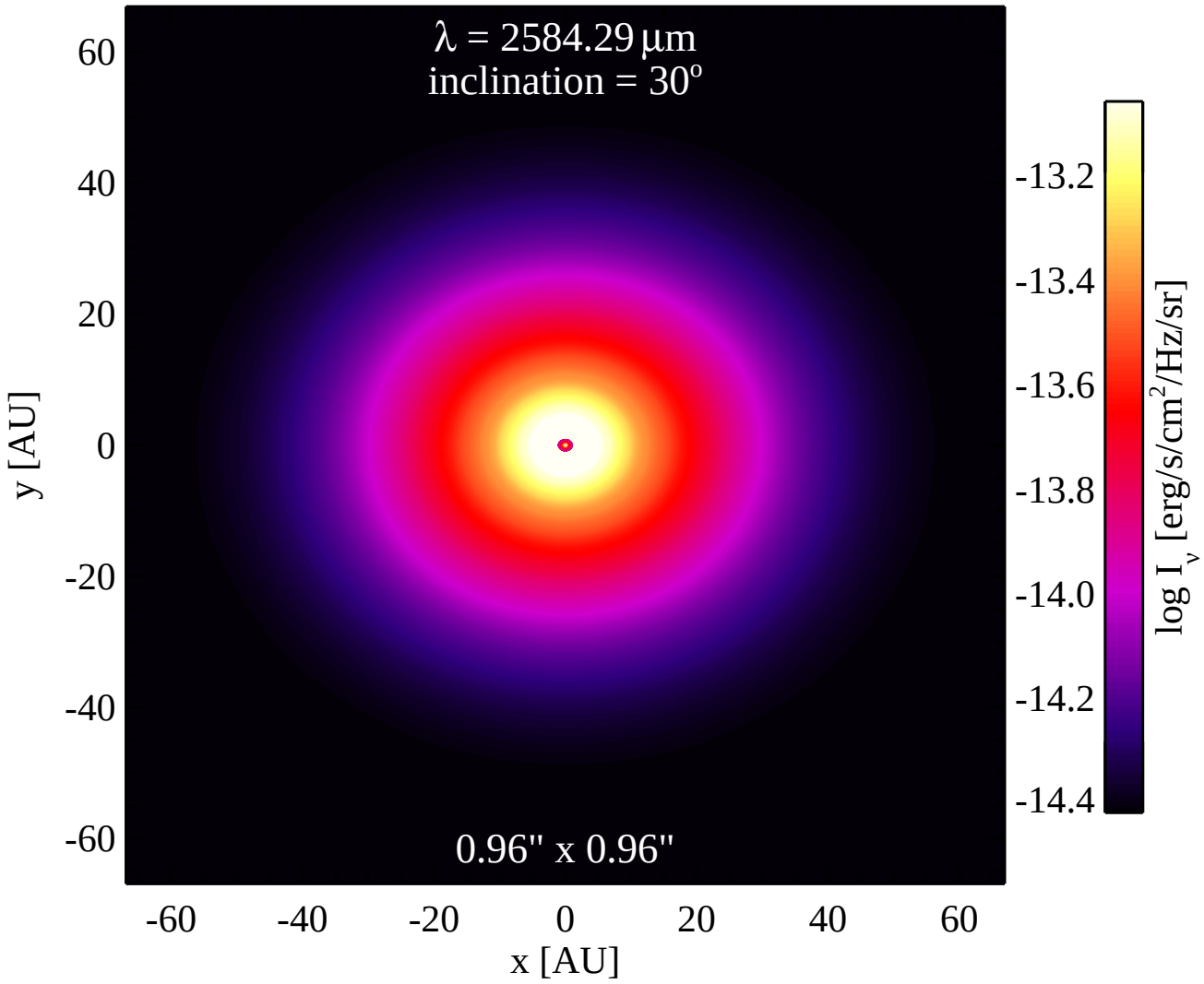

λ = 804.90 μm
inclination = 30°
0.94" x 0.94"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-12.5
-13.0
-13.5
log I_ν [erg/s/cm²/Hz/sr]

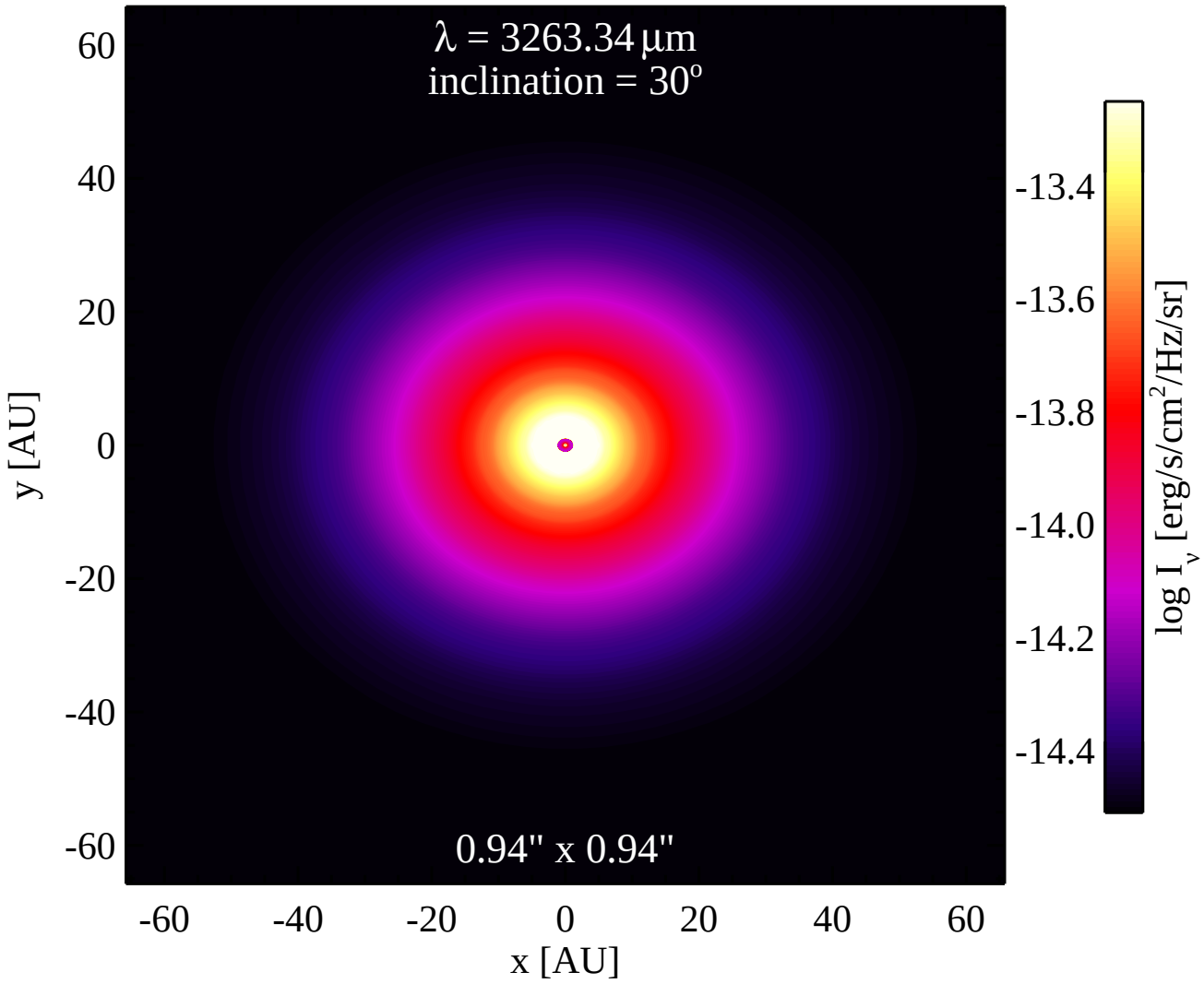

λ = 1016.39 μm
inclination = 30°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-12.5
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

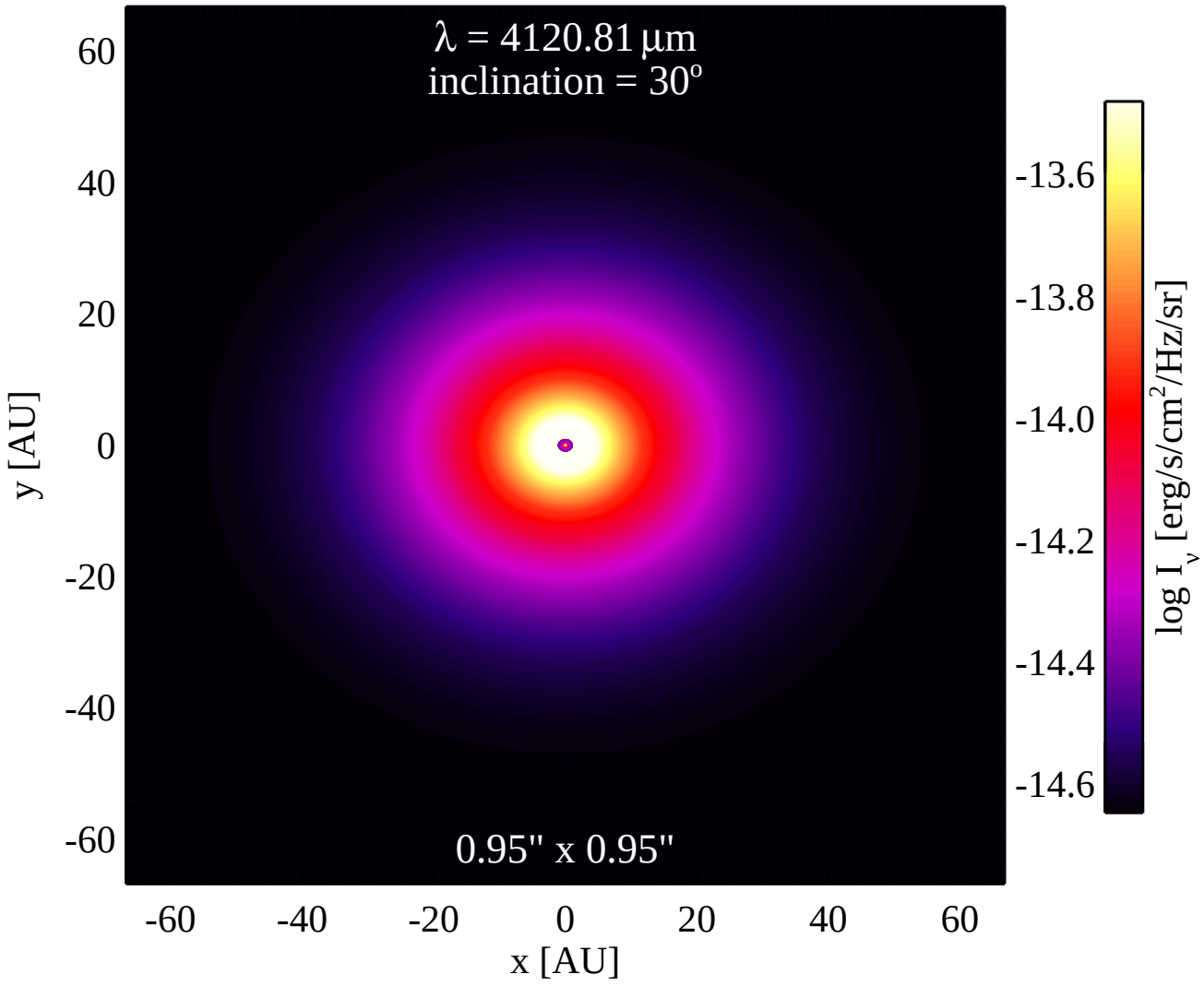

λ = 1283.45 μm
inclination = 30°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-12.5
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

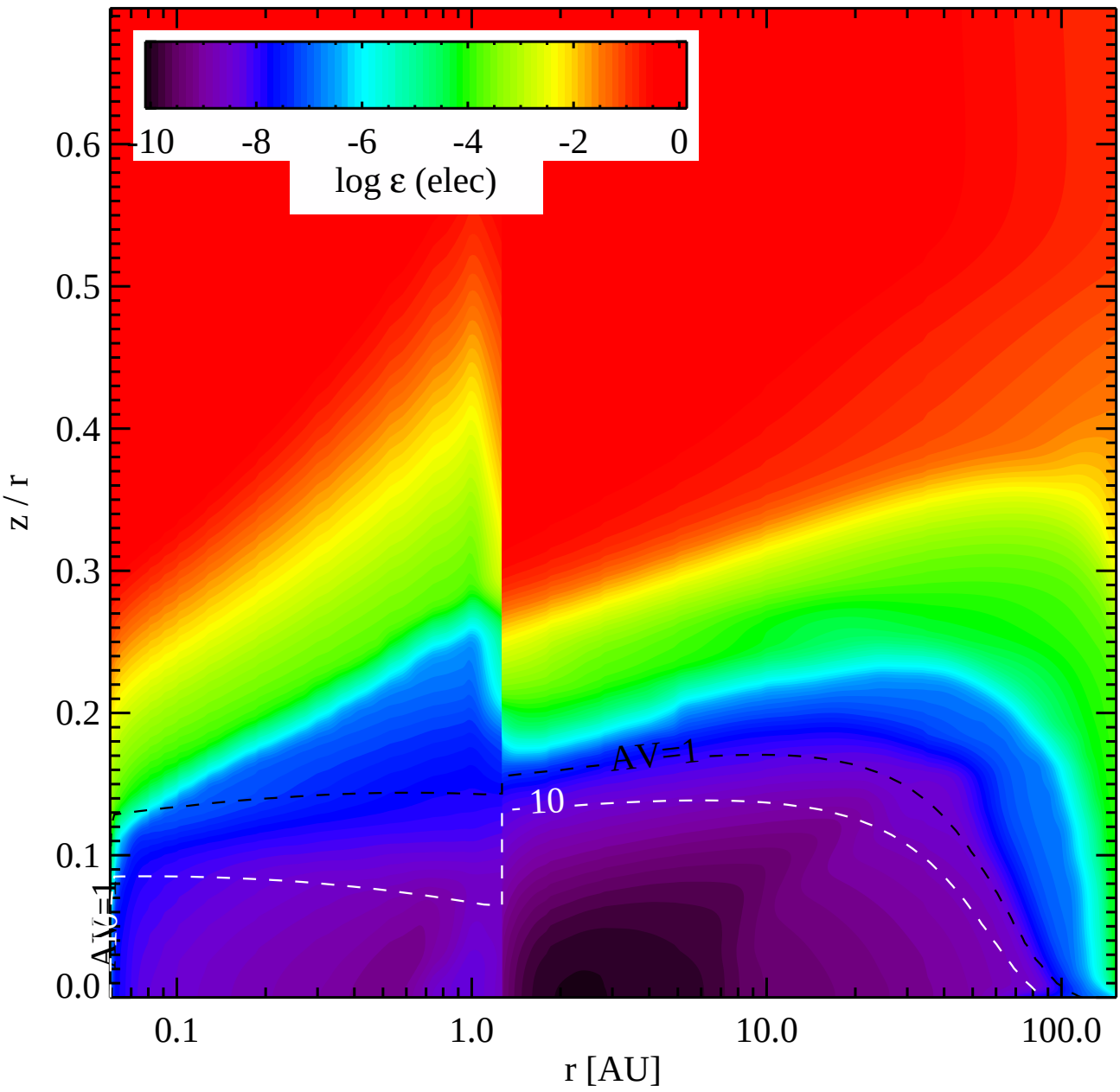

λ = 1620.69 μm
inclination = 30°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.0
-13.5
-14.0
log I_ν [erg/s/cm²/Hz/sr]

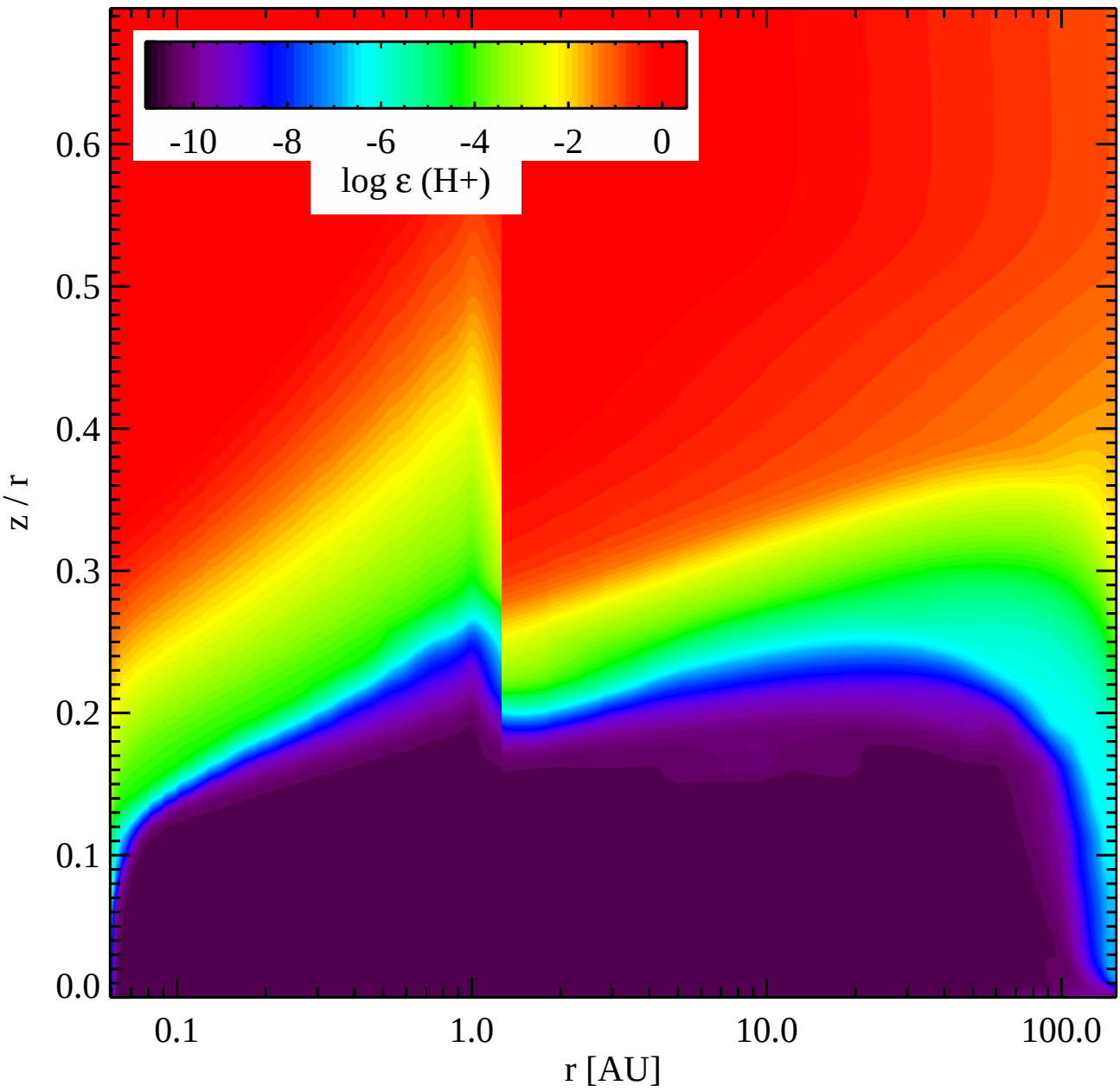

λ = 2046.54 μm
inclination = 30°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.0
-13.2
-13.4
-13.6
-13.8
-14.0
-14.2
log I_ν [erg/s/cm²/Hz/sr]

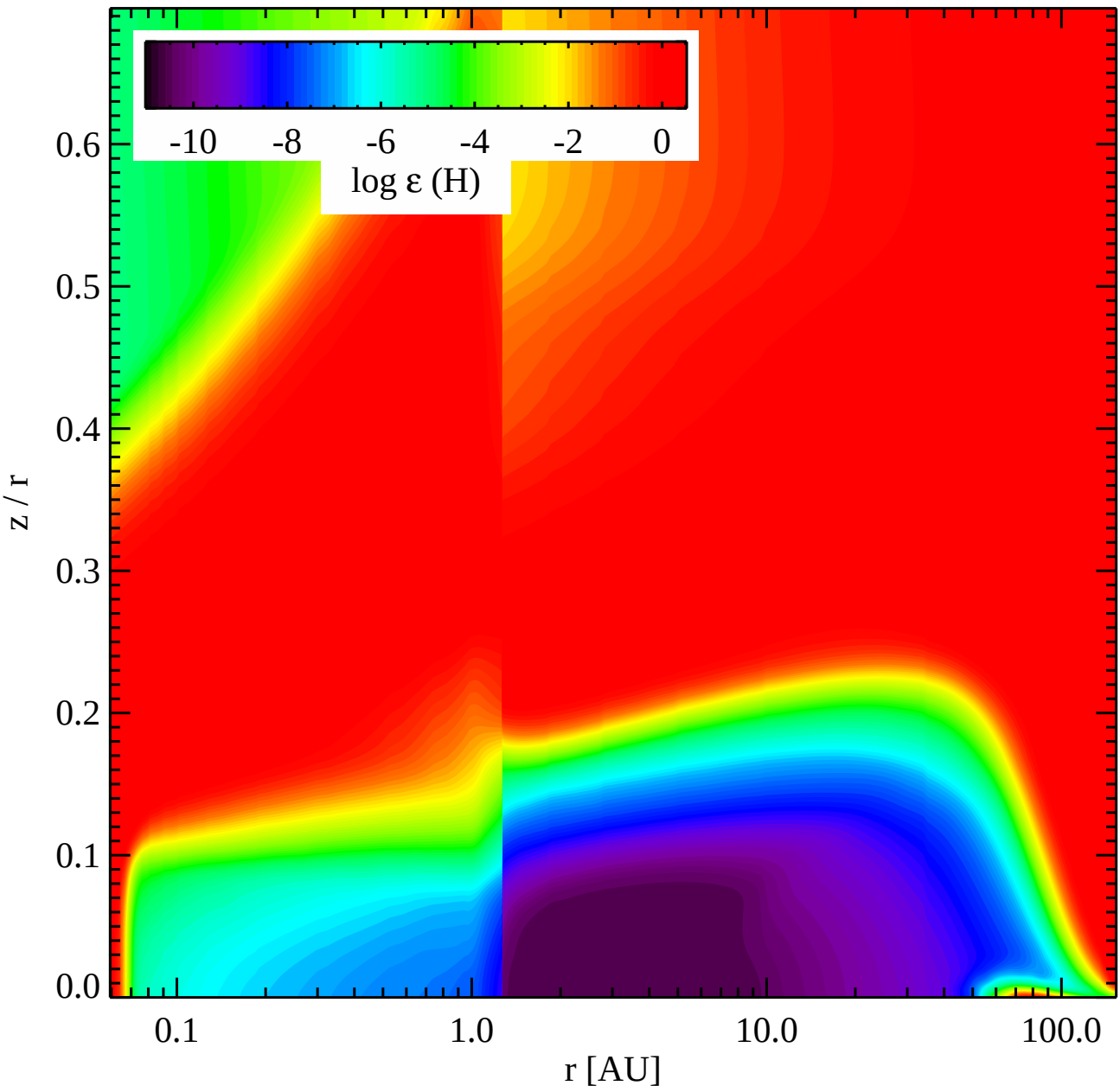

λ = 2584.29 μm
inclination = 30°
0.96" x 0.96"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.2
-13.4
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

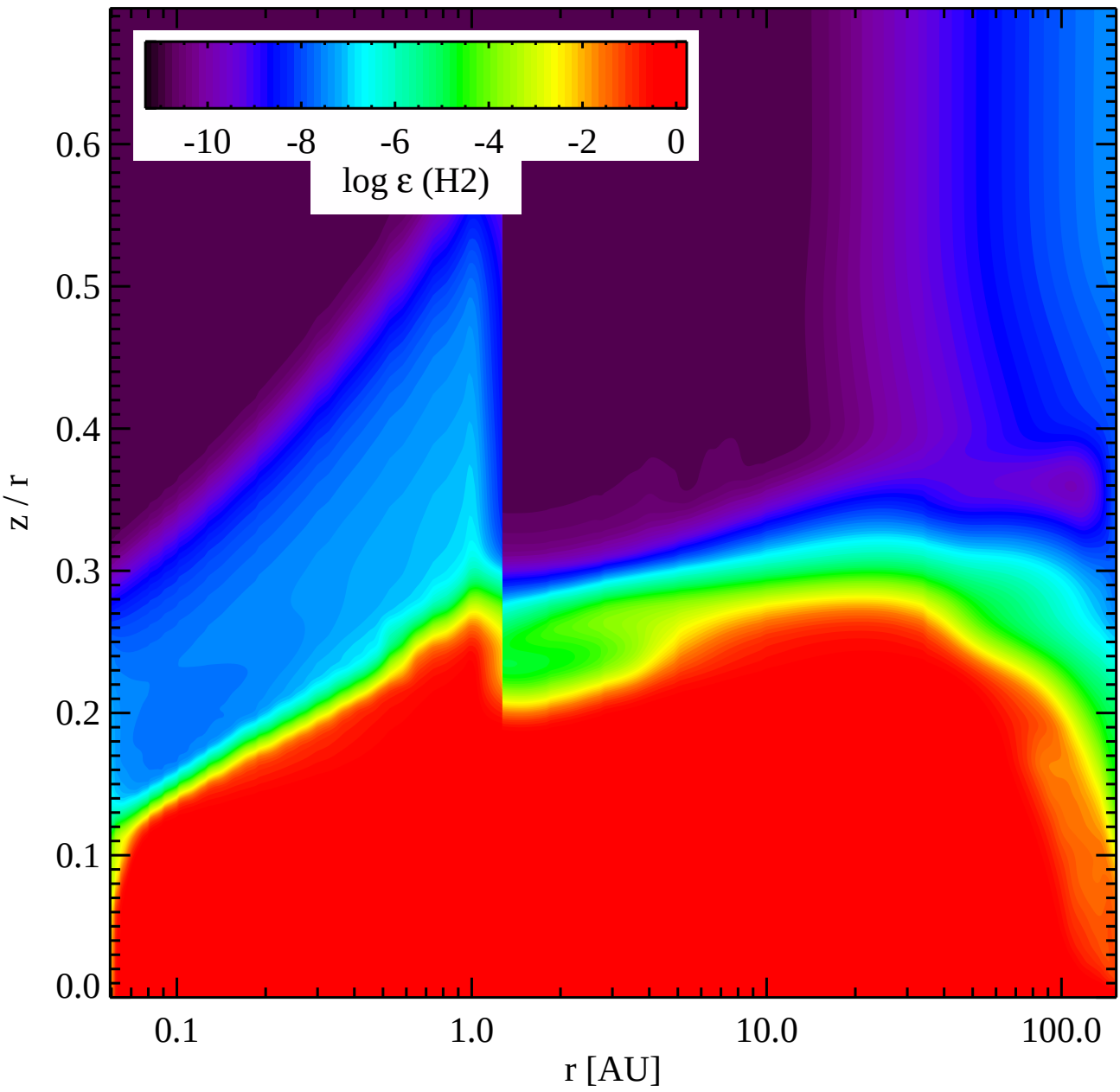

λ = 3263.34 μm
inclination = 30°
0.94" x 0.94"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.4
-13.6
-13.8
-14.0
-14.2
-14.4
log I_ν [erg/s/cm²/Hz/sr]

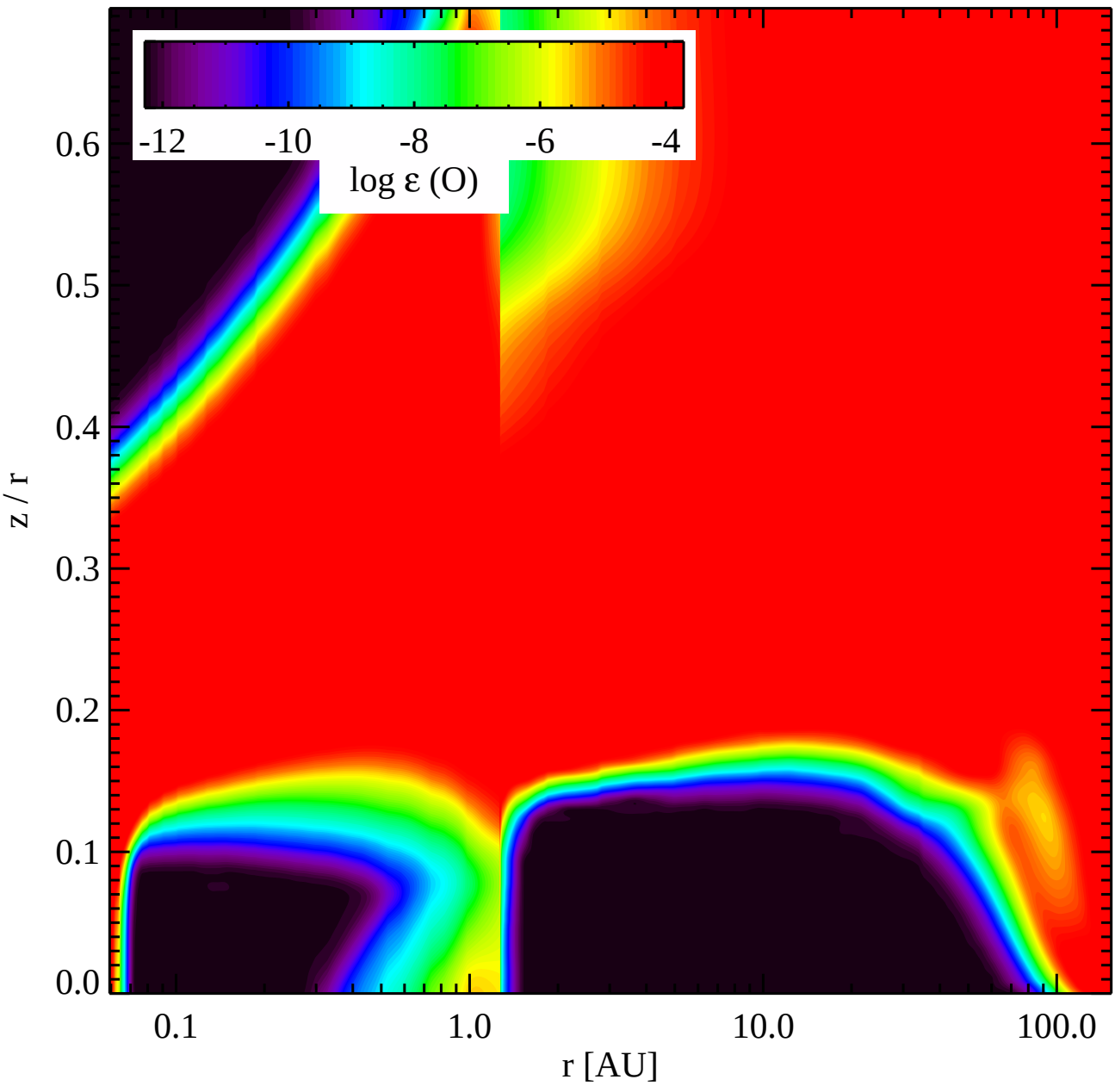

λ = 4120.81 μm
inclination = 30°
0.95" x 0.95"
60
40
20
0
-20
-40
-60
y [AU]
-60
-40
-20
0
20
40
60
x [AU]
-13.6
-13.8
-14.0
-14.2
-14.4
-14.6
log I_ν [erg/s/cm²/Hz/sr]

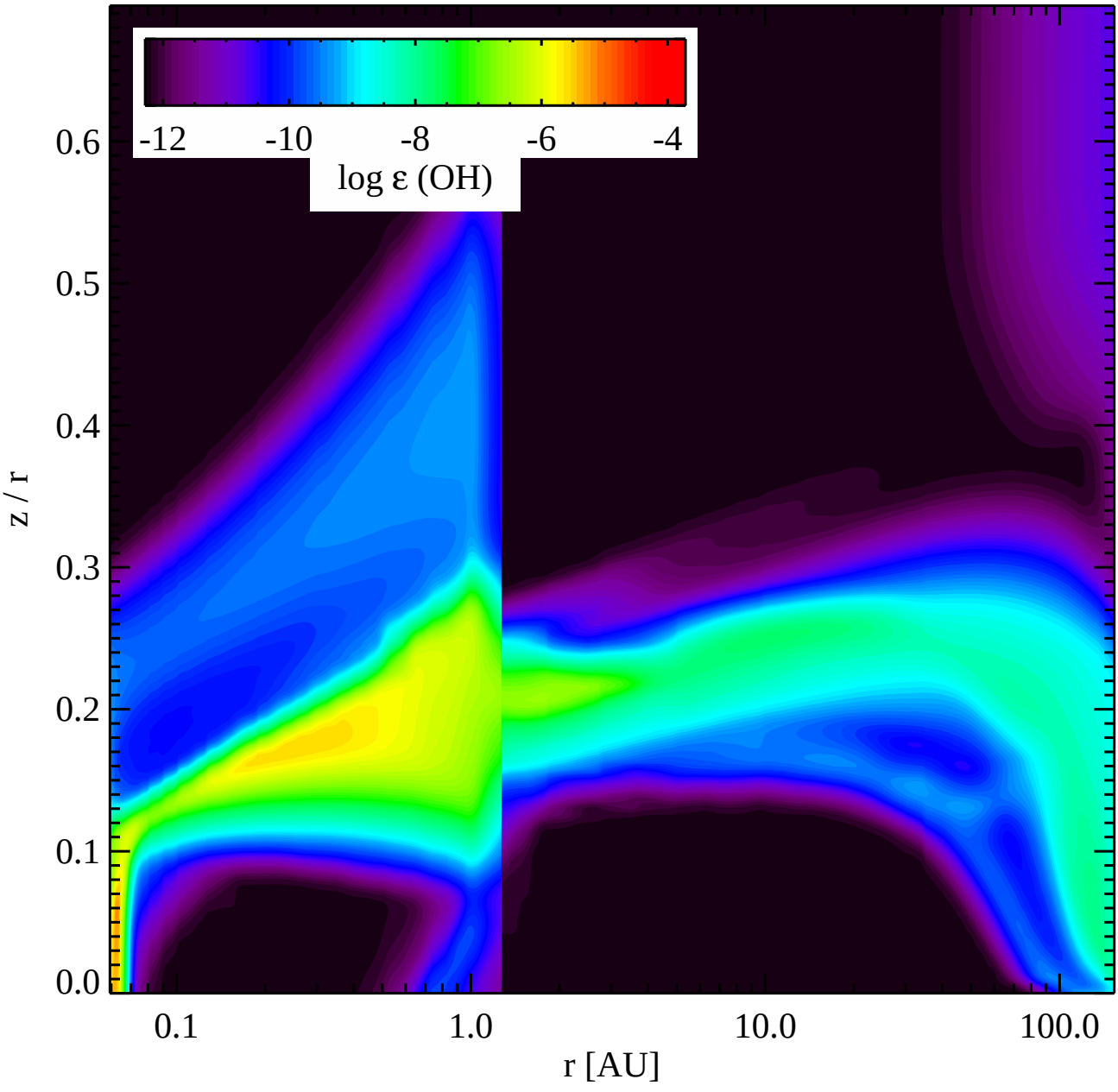

-10
-8
-6
-4
-2
0
log ε (elec)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
AV=1
AV=1
10
0.1
1.0
10.0
100.0
r [AU]

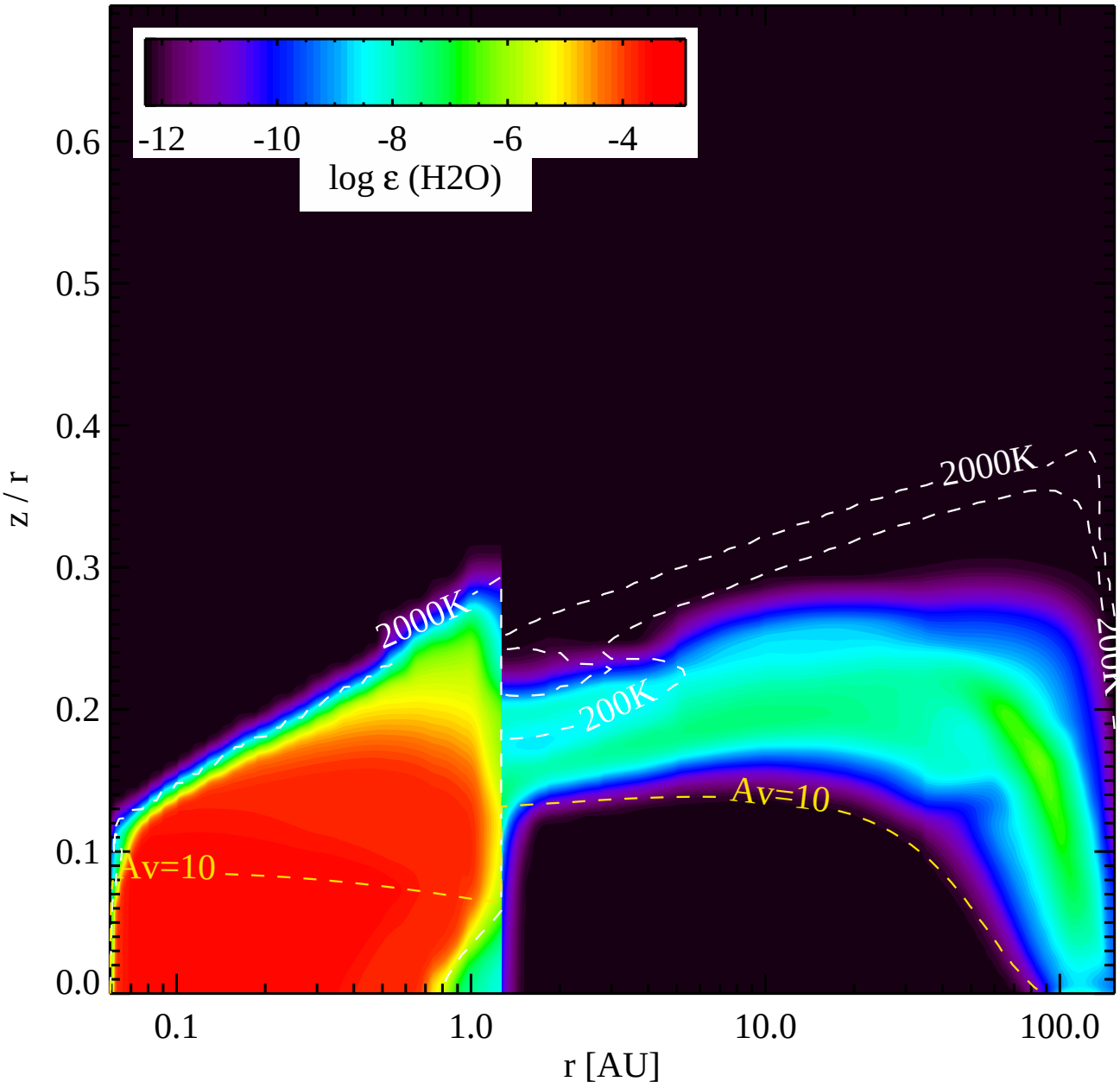

-10
-8
-6
-4
-2
0
log ε (H+)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

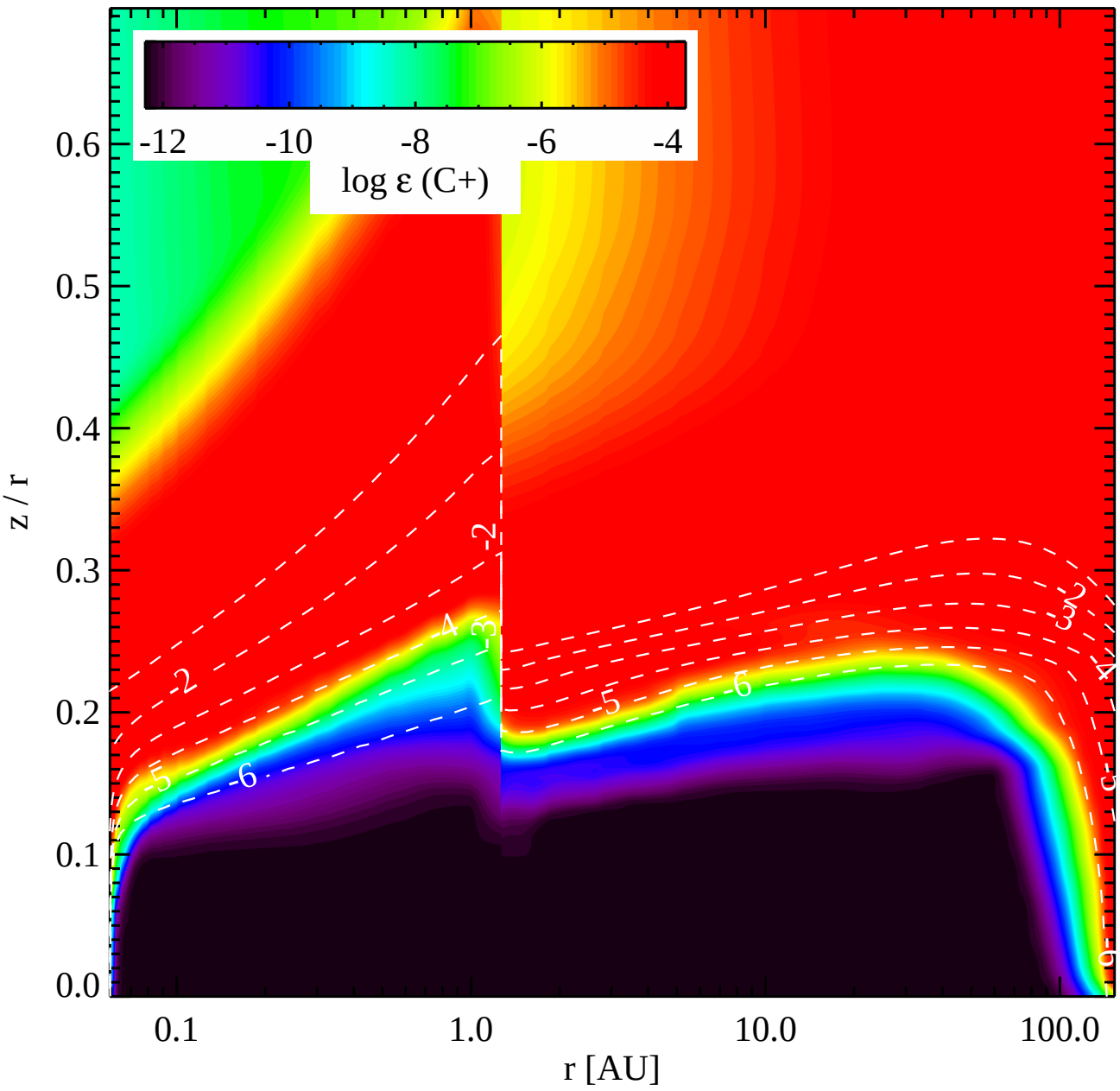

-10
-8
-6
-4
-2
0
log ε (H)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

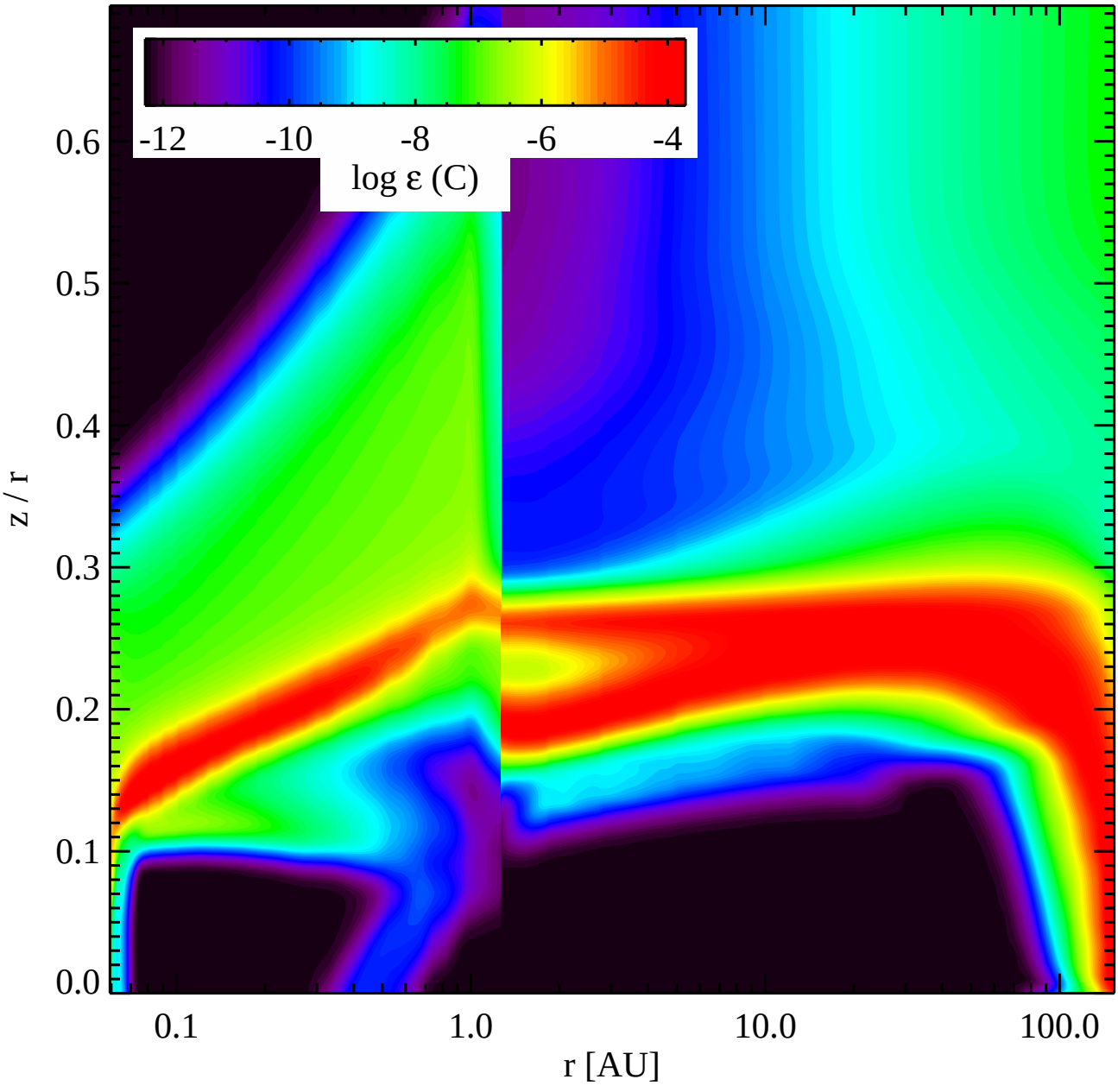

-10
-8
-6
-4
-2
0
log ε (H2)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

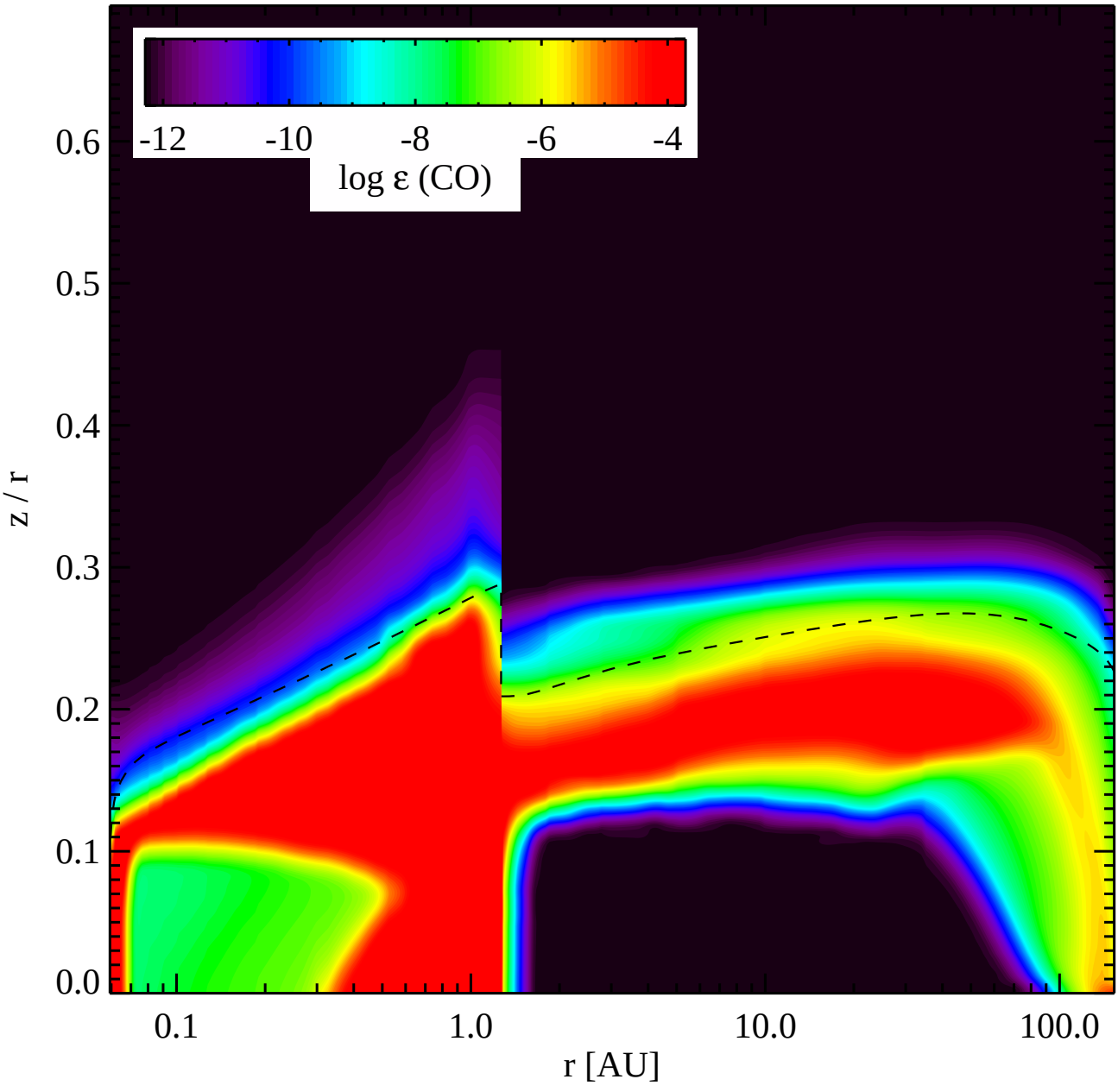

-12
-10
-8
-6
-4
log ε (O)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

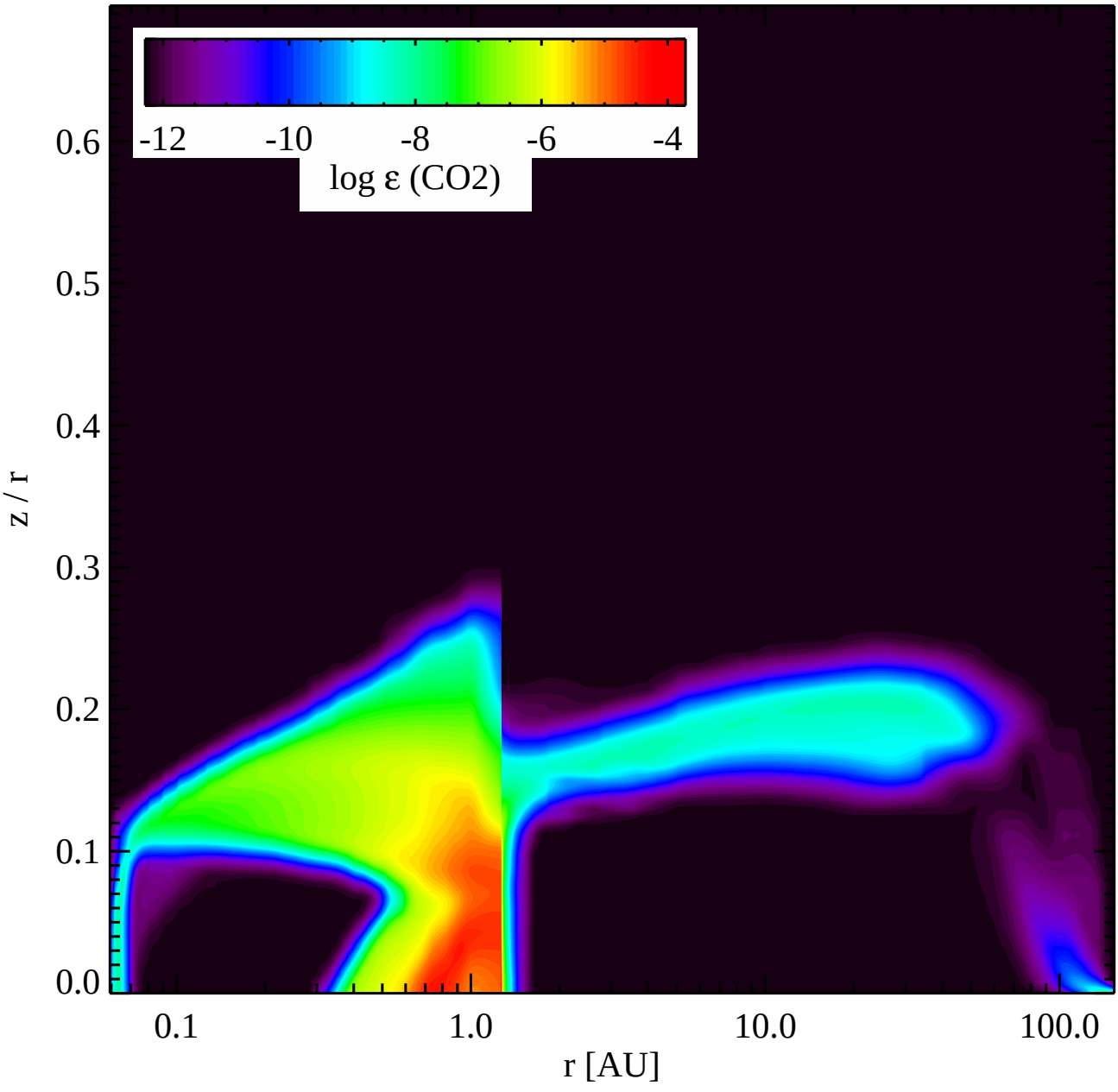

-12
-10
-8
-6
-4
log ε (OH)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

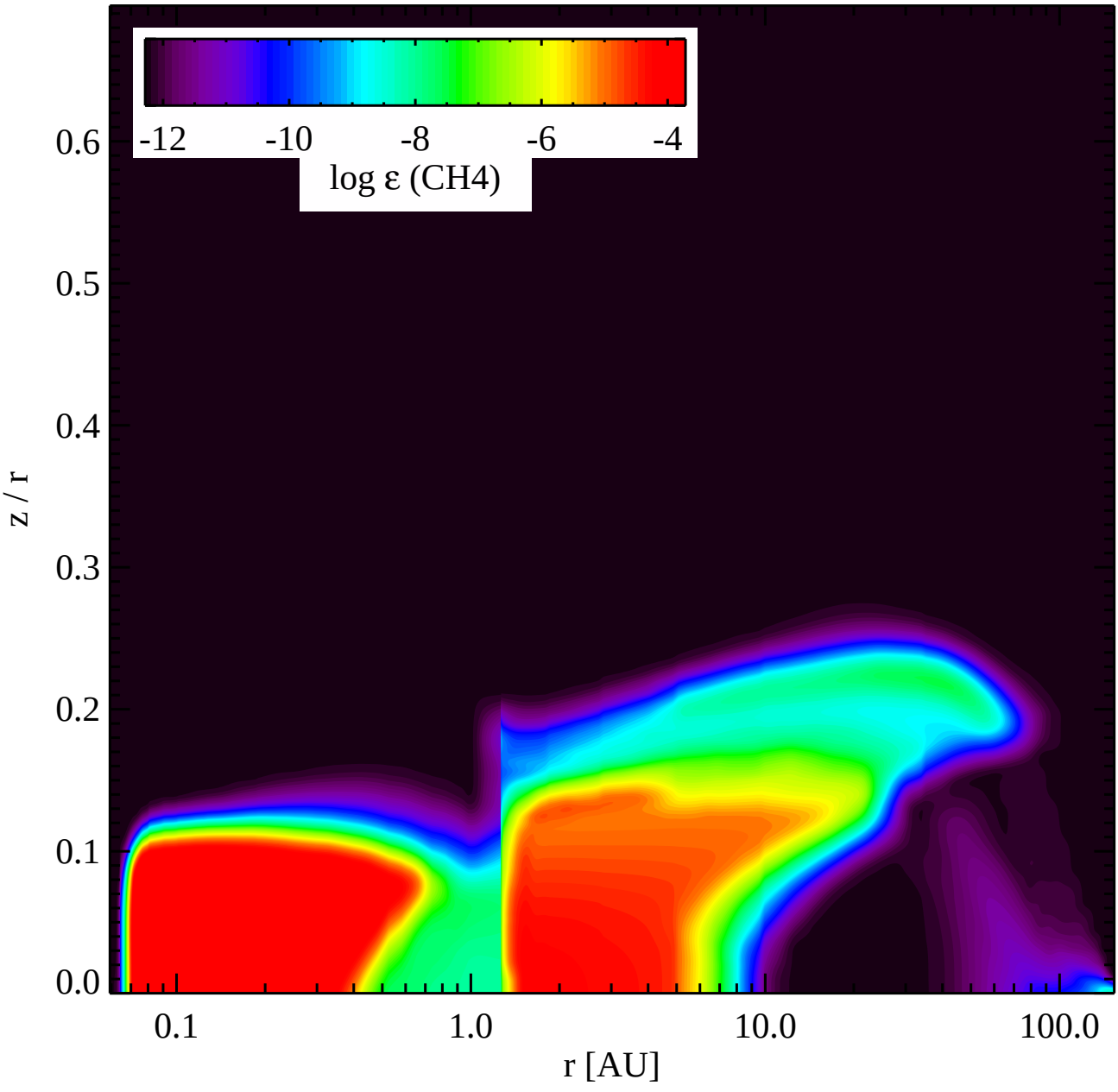

-12
-10
-8
-6
-4
log ε (H2O)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
2000K
2000K
200K
200K
Av=10
Av=10
0.1
1.0
10.0
100.0
r [AU]

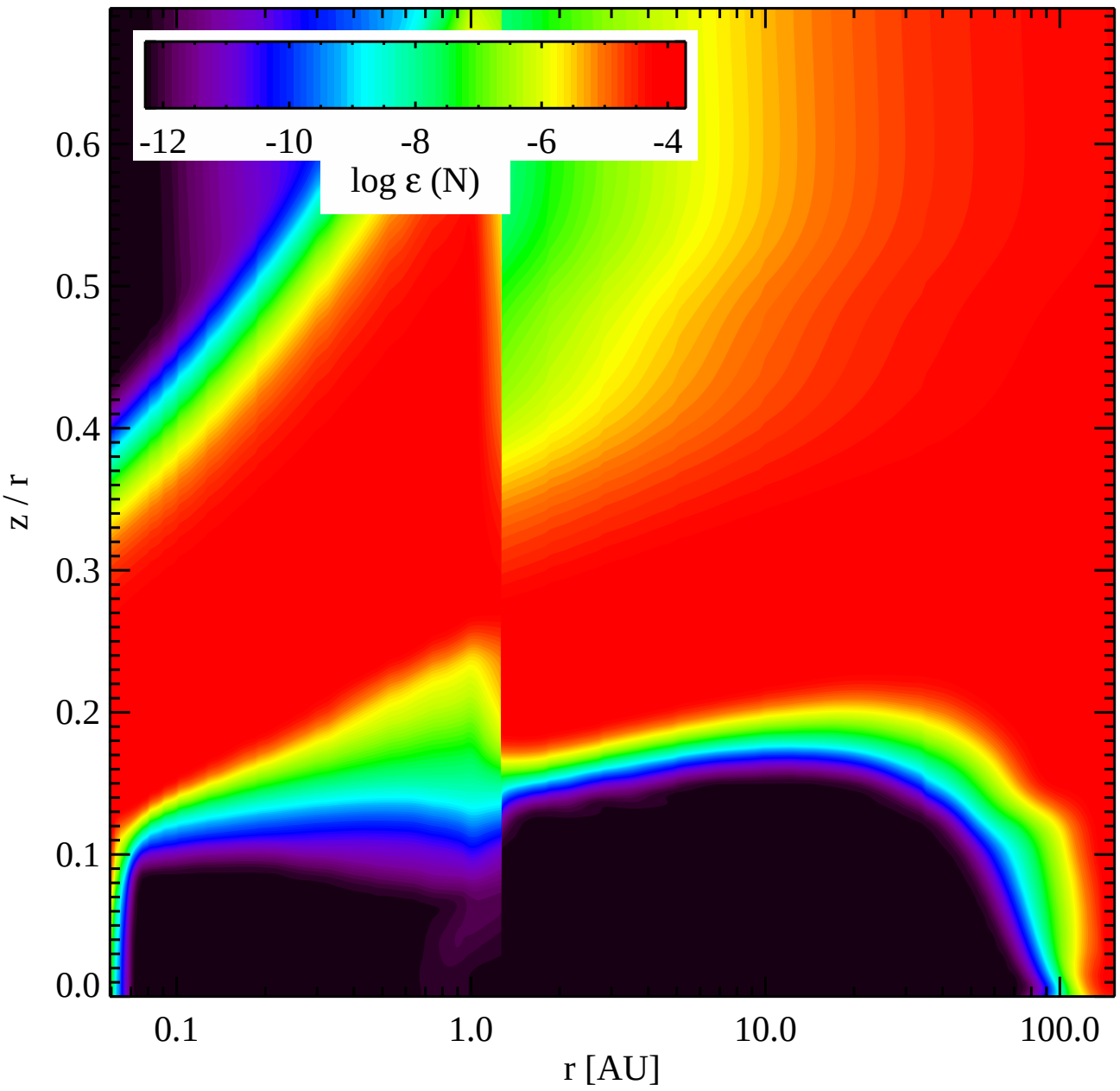

-12
-10
-8
-6
-4
log ε (C+)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
-2
-3
-4
-5
-6

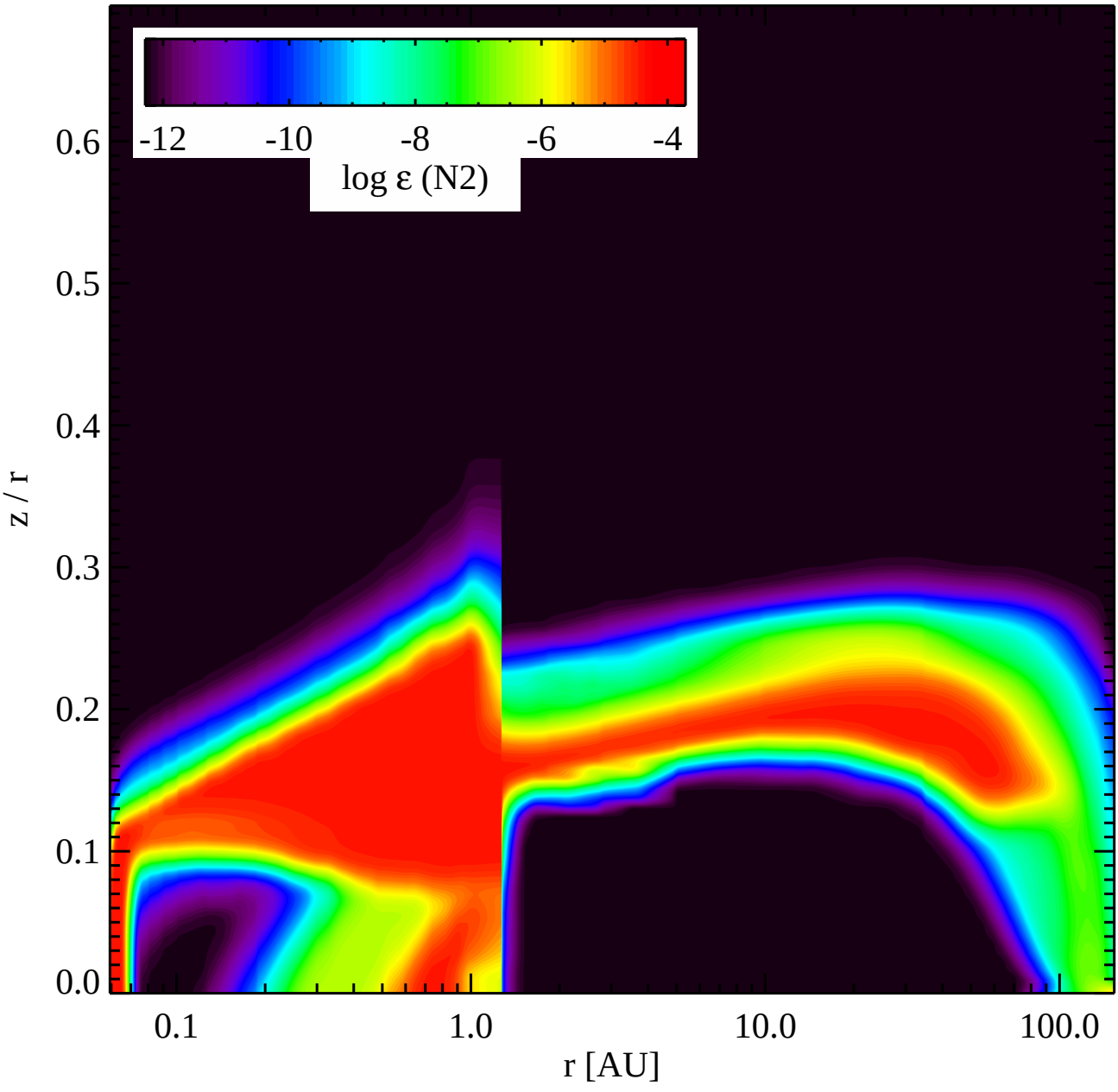

-12
-10
-8
-6
-4
log ε (C)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

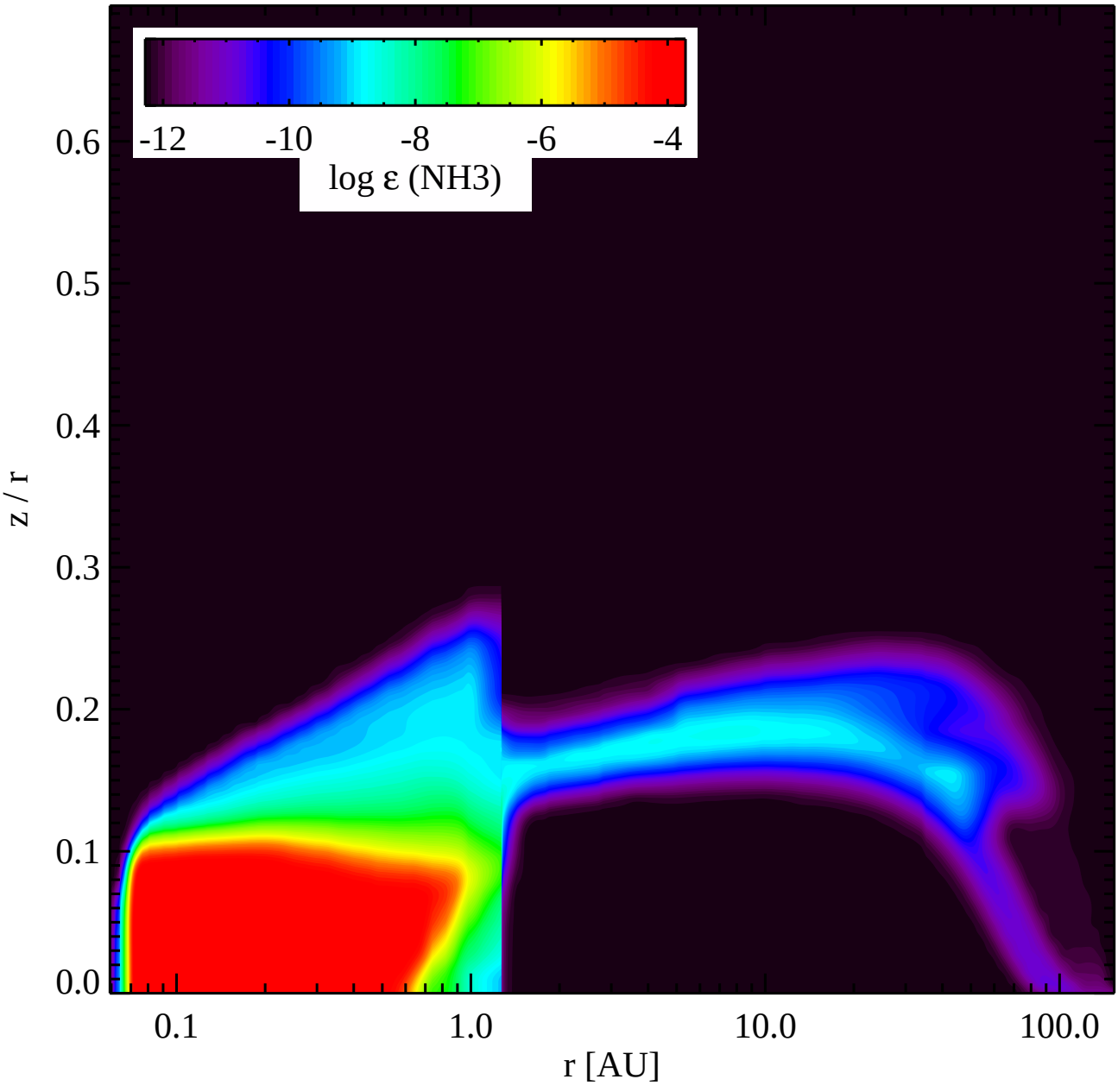

-12
-10
-8
-6
-4
log ε (CO)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

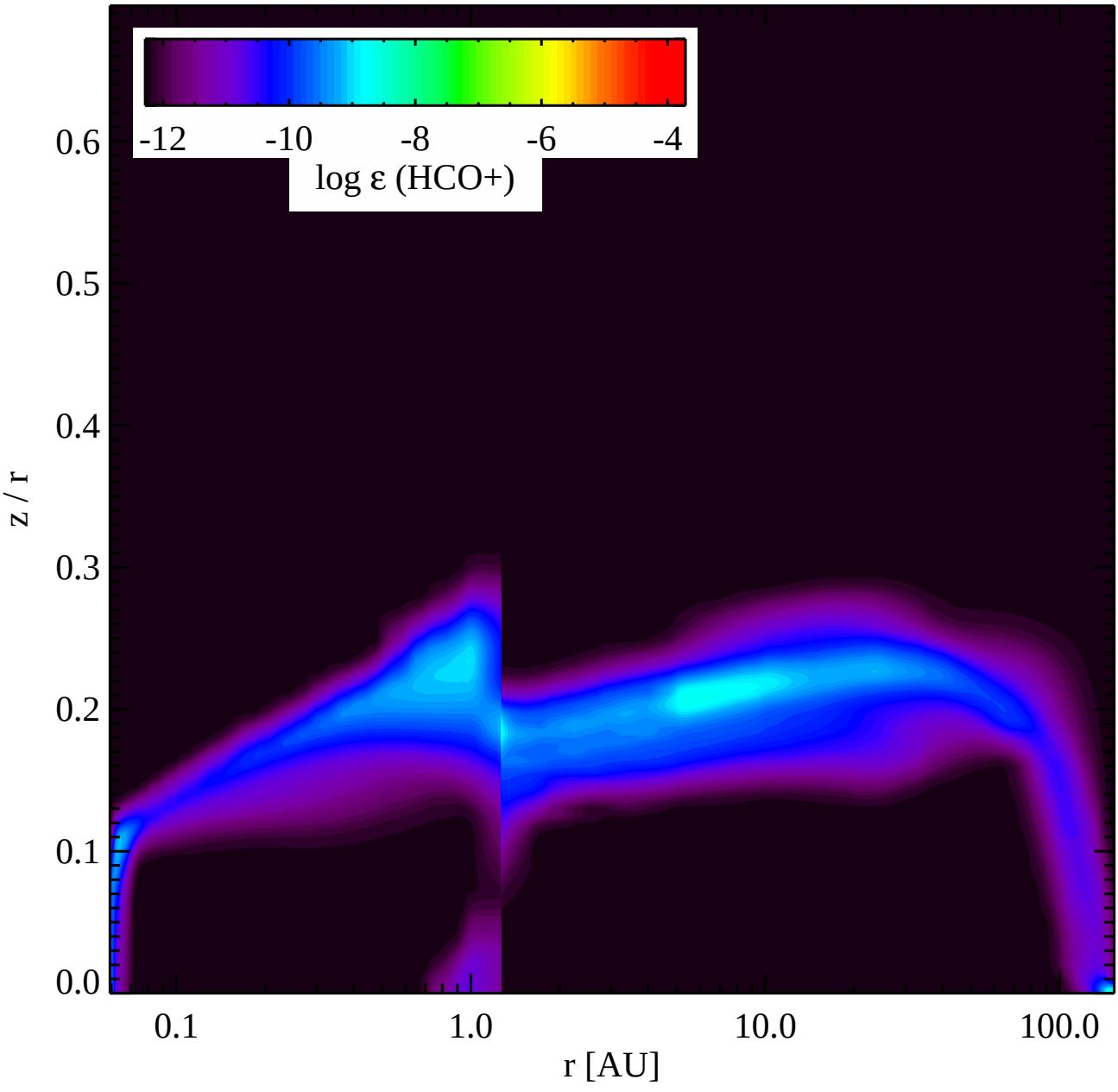

-12
-10
-8
-6
-4
log ε (CO2)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

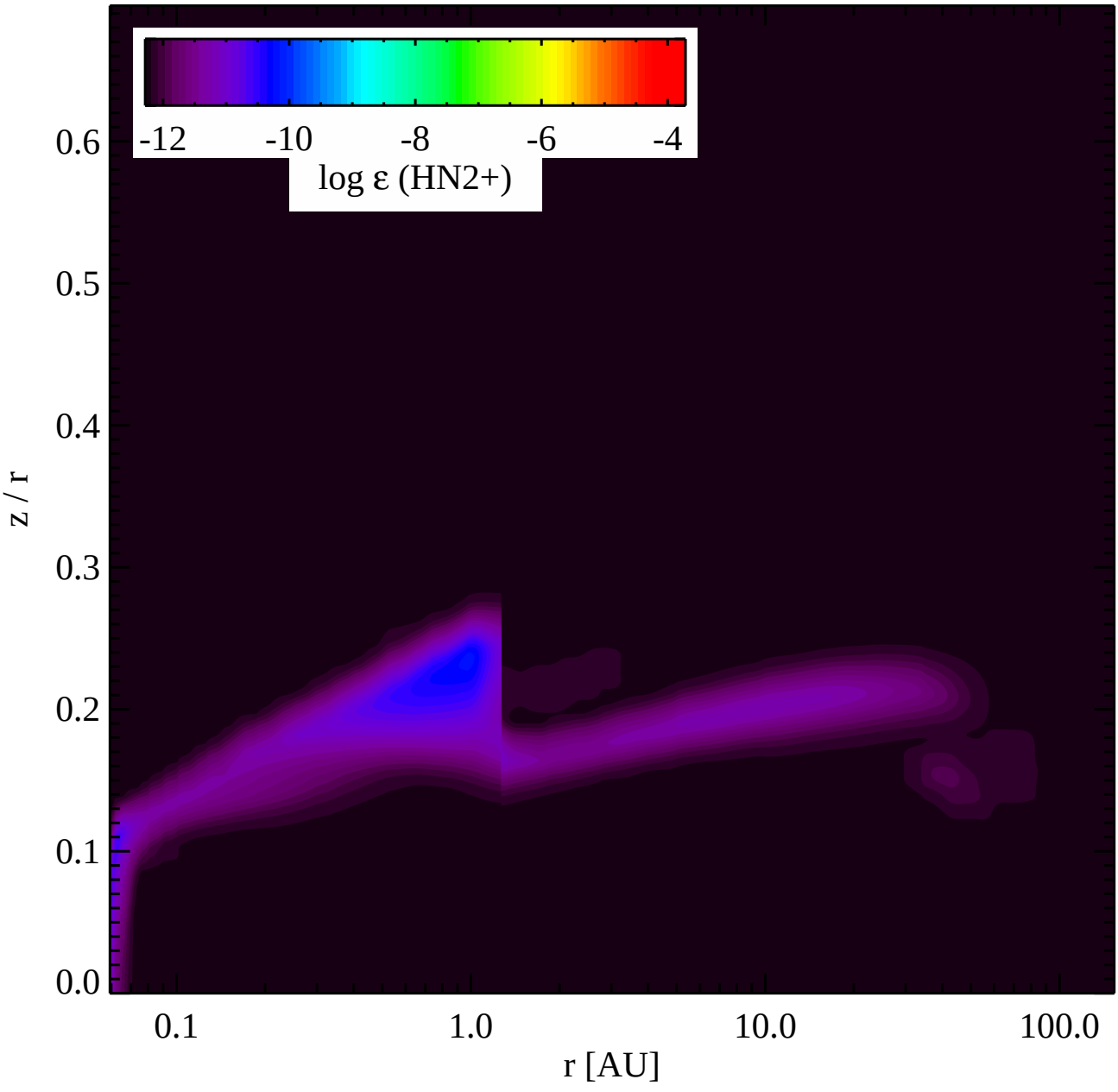

-12
-10
-8
-6
-4
log ε (CH4)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

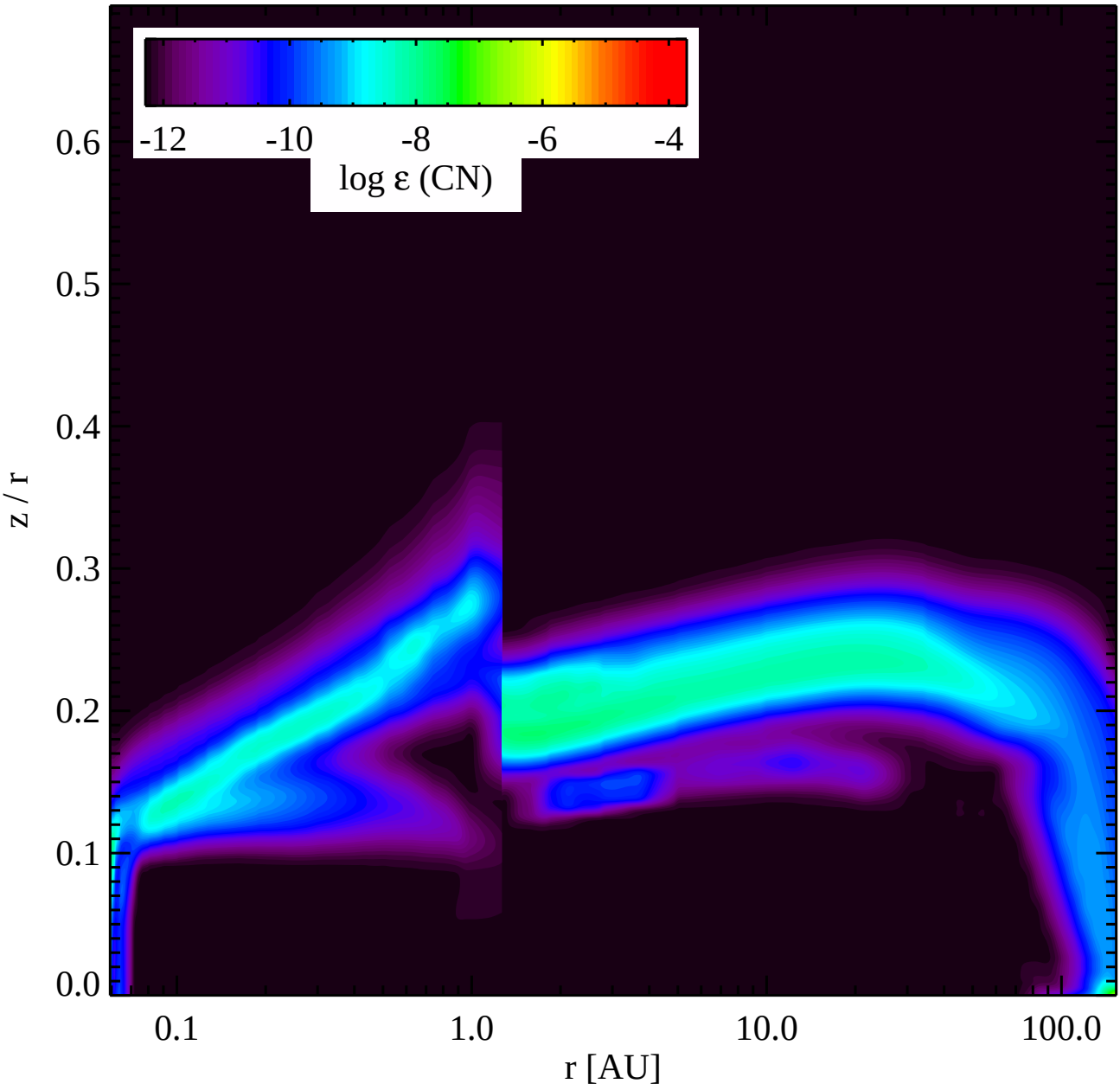

-12
-10
-8
-6
-4
log ε (N)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

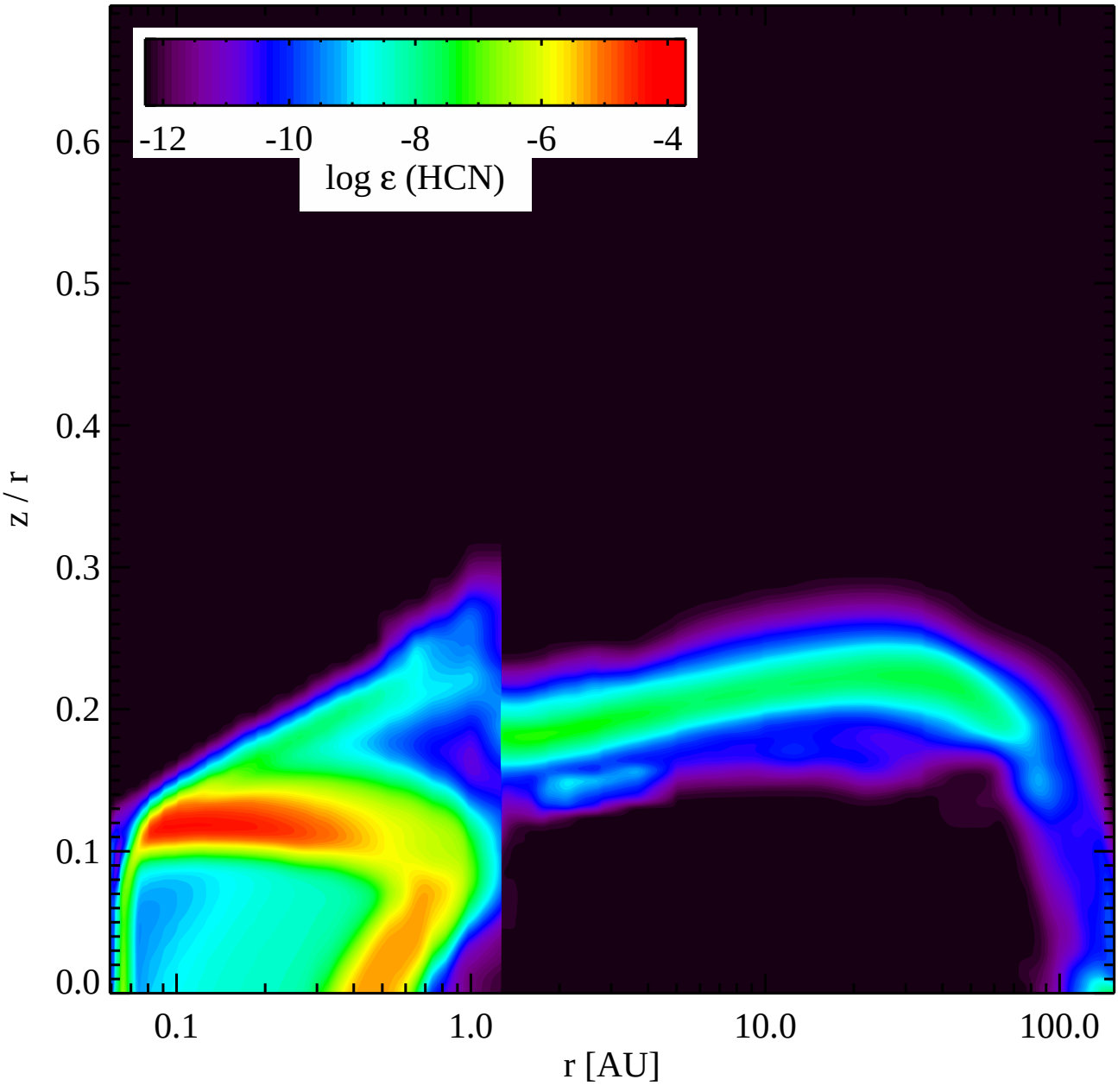

-12
-10
-8
-6
-4
log ε (N2)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

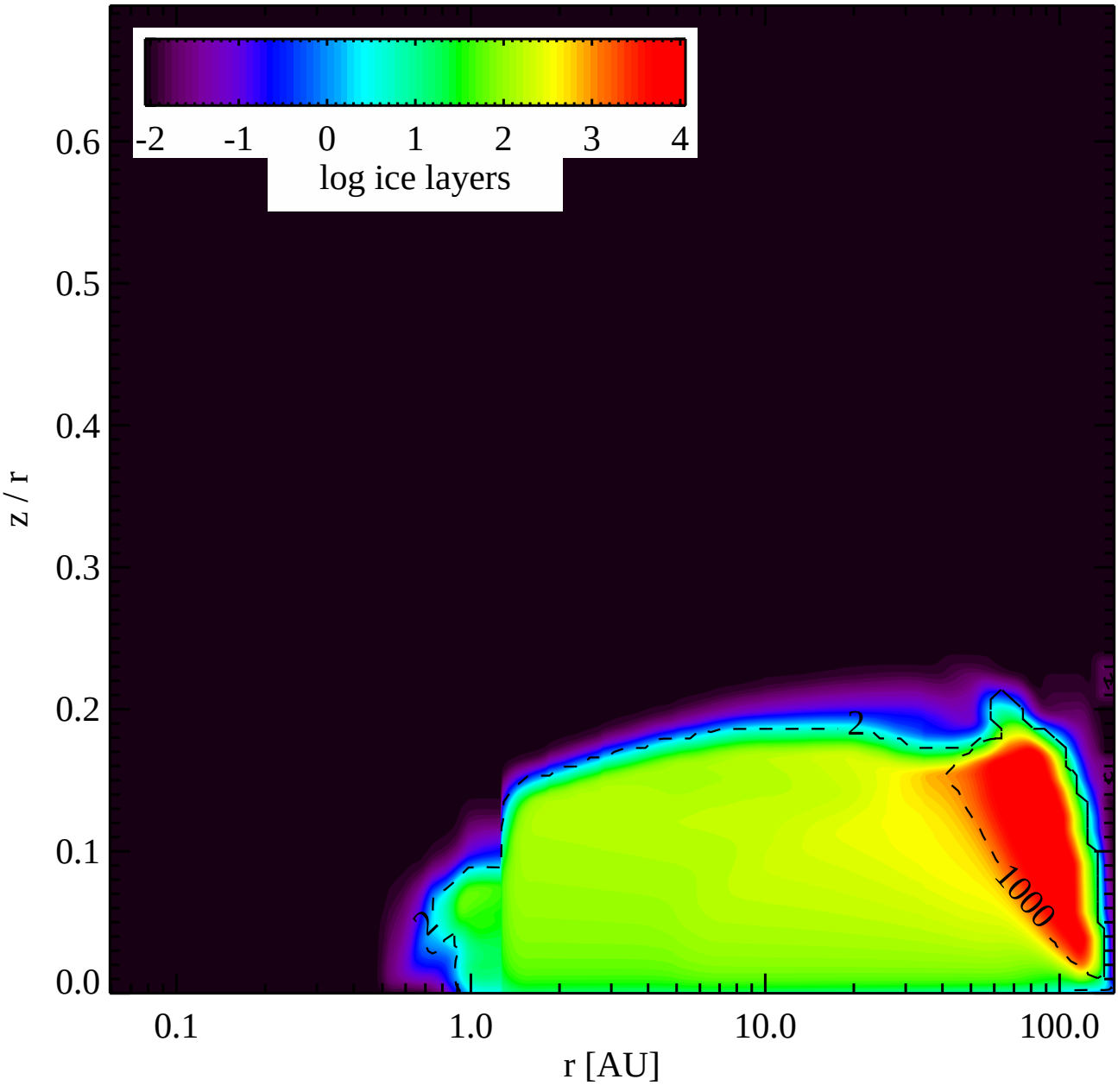

-12
-10
-8
-6
-4
log ε (NH3)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

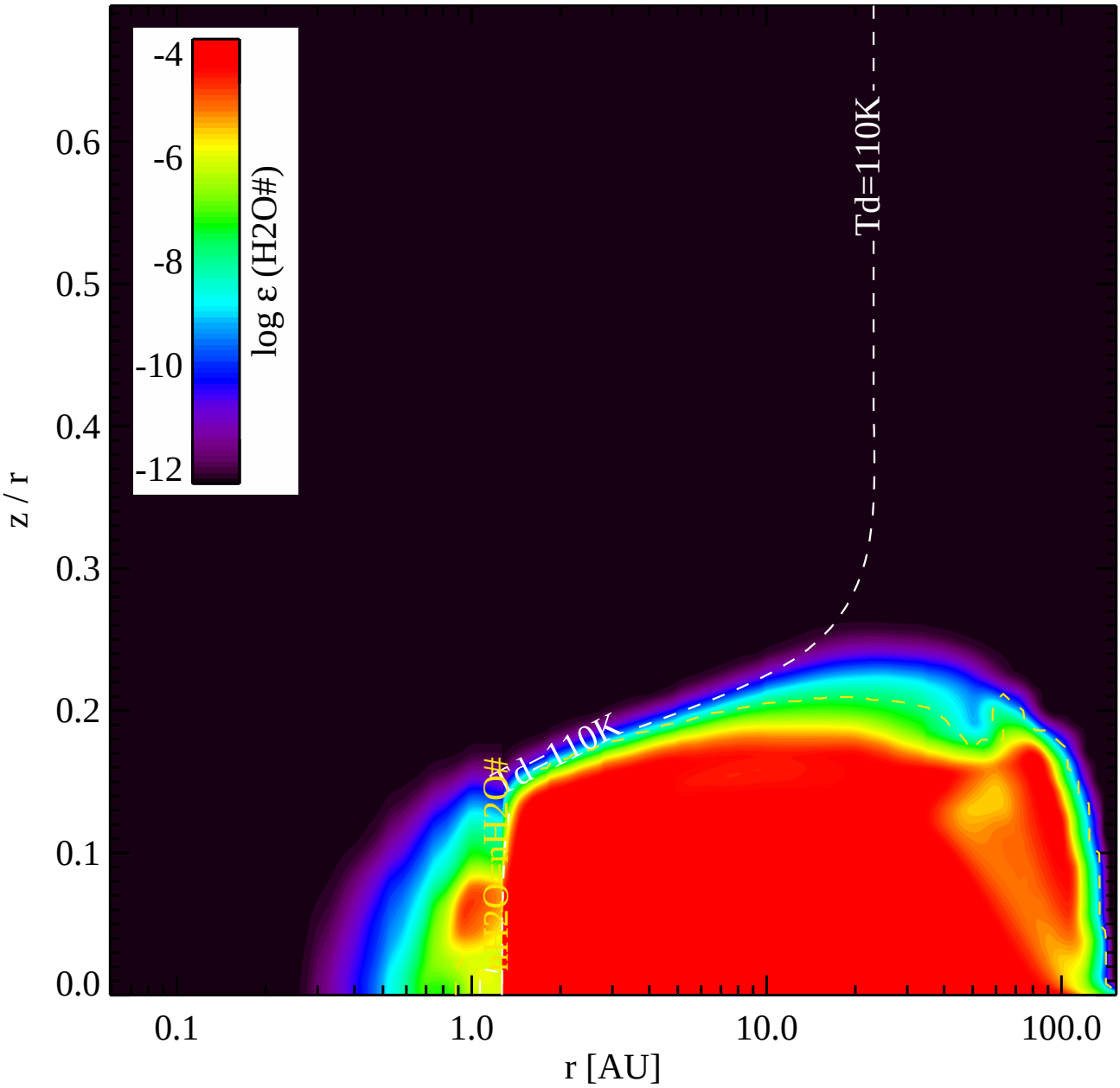

-12
-10
-8
-6
-4
log ε (HCO+)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]


-12
-10
-8
-6
-4
log ε (HN2+)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

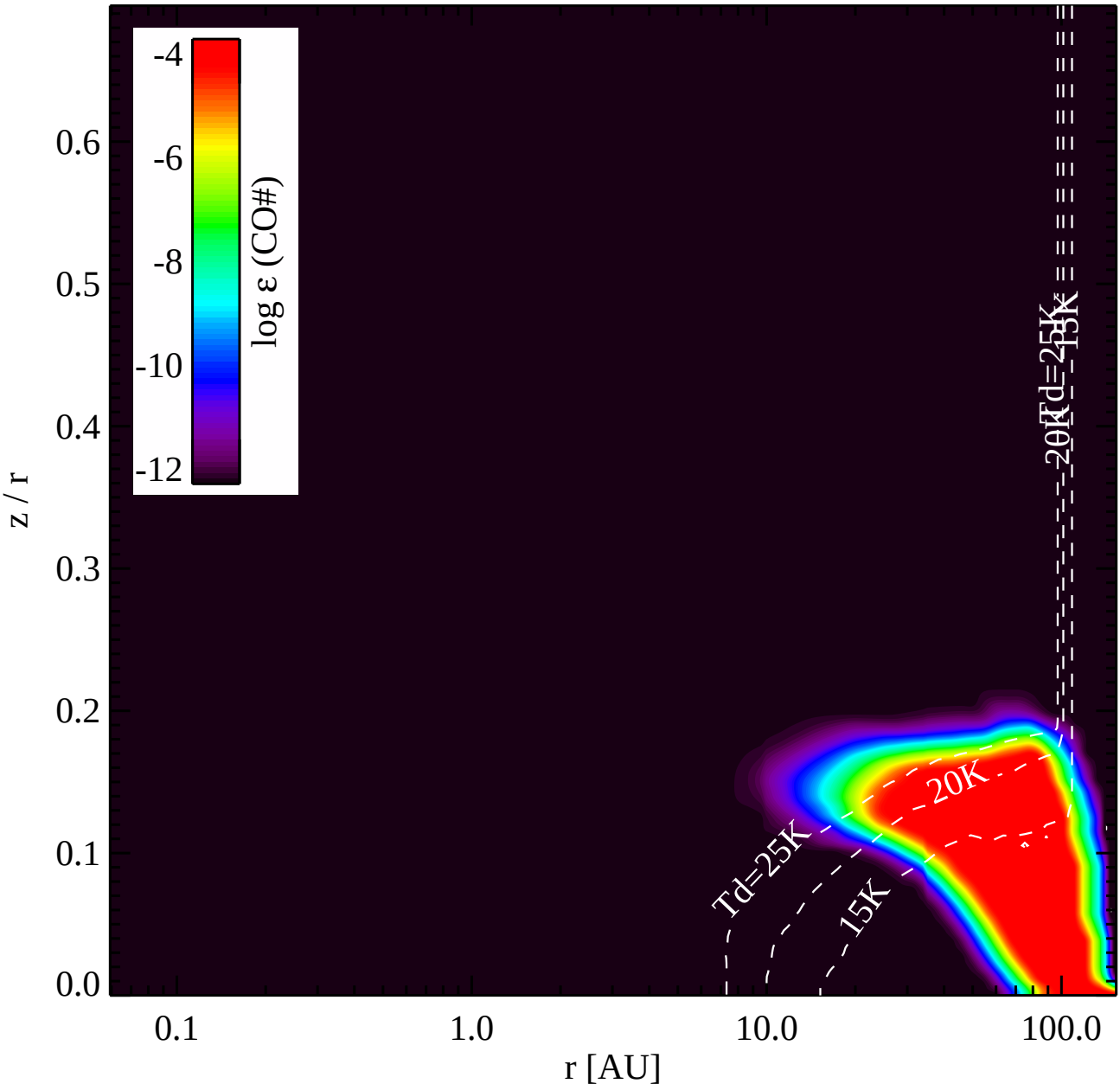

-12
-10
-8
-6
-4
log ε (CN)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

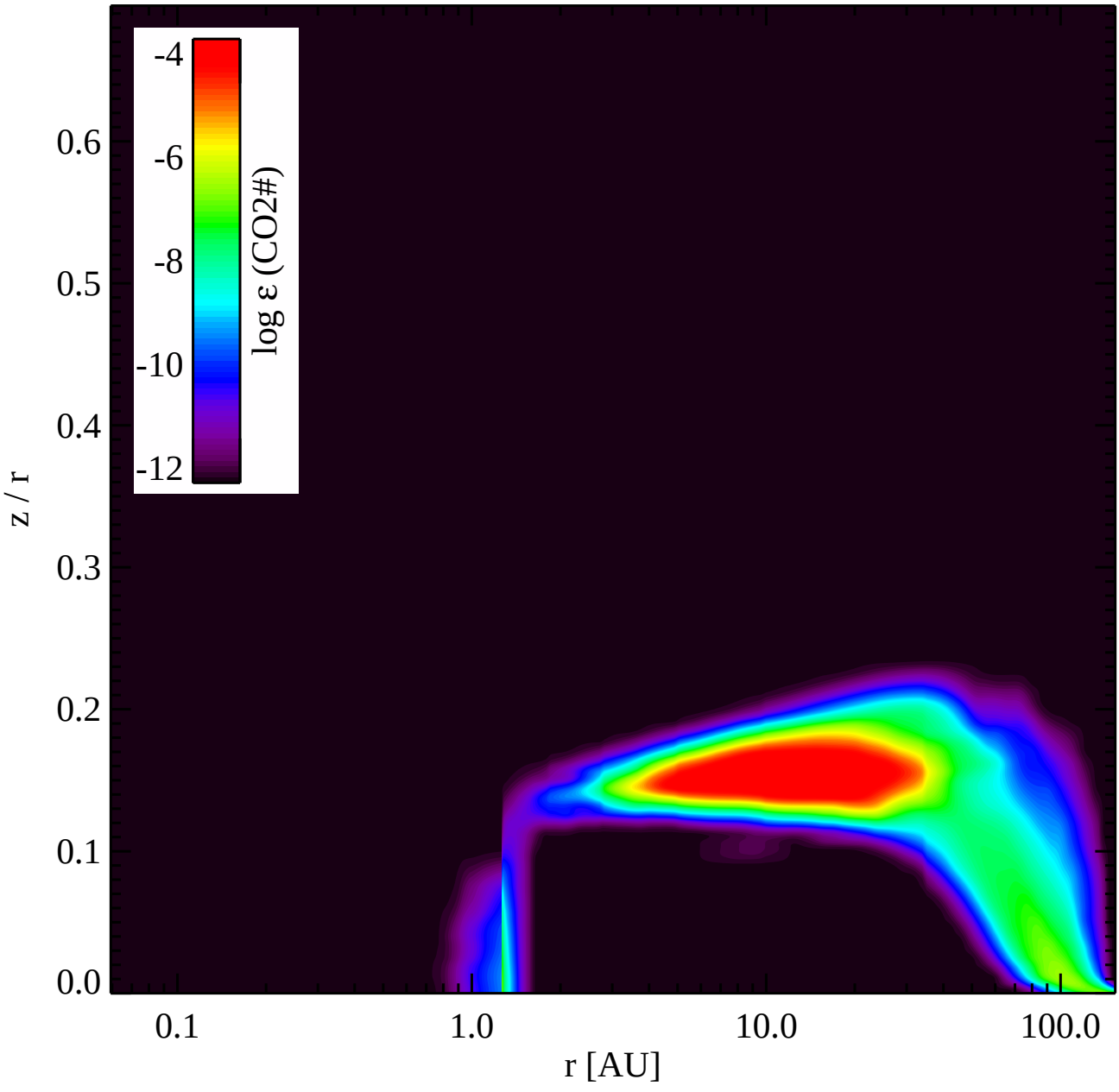

-12
-10
-8
-6
-4
log ε (HCN)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

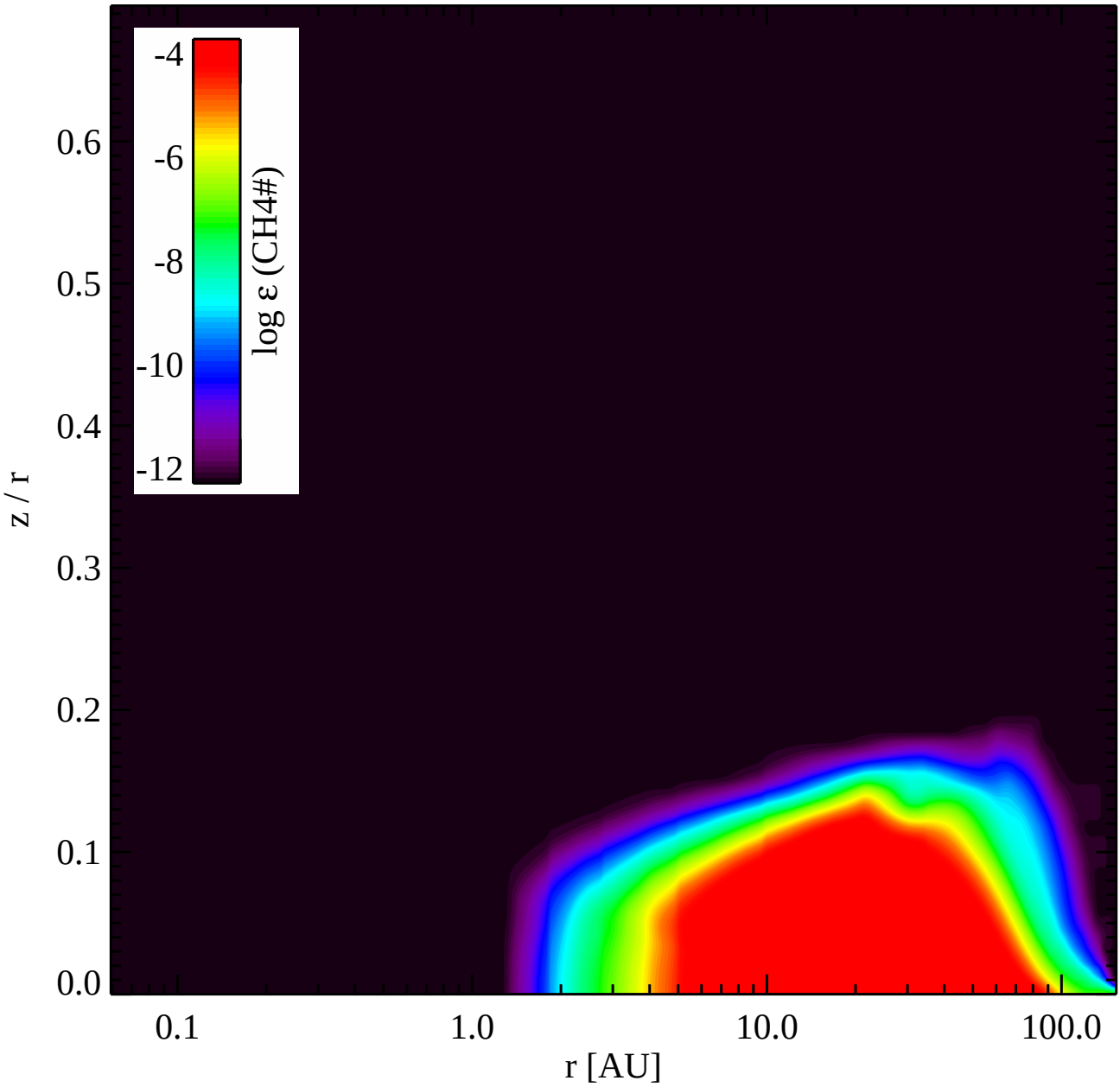

-2
-1
0
1
2
3
4
log ice layers
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
2
2
1000
0.1
1.0
10.0
100.0
r [AU]

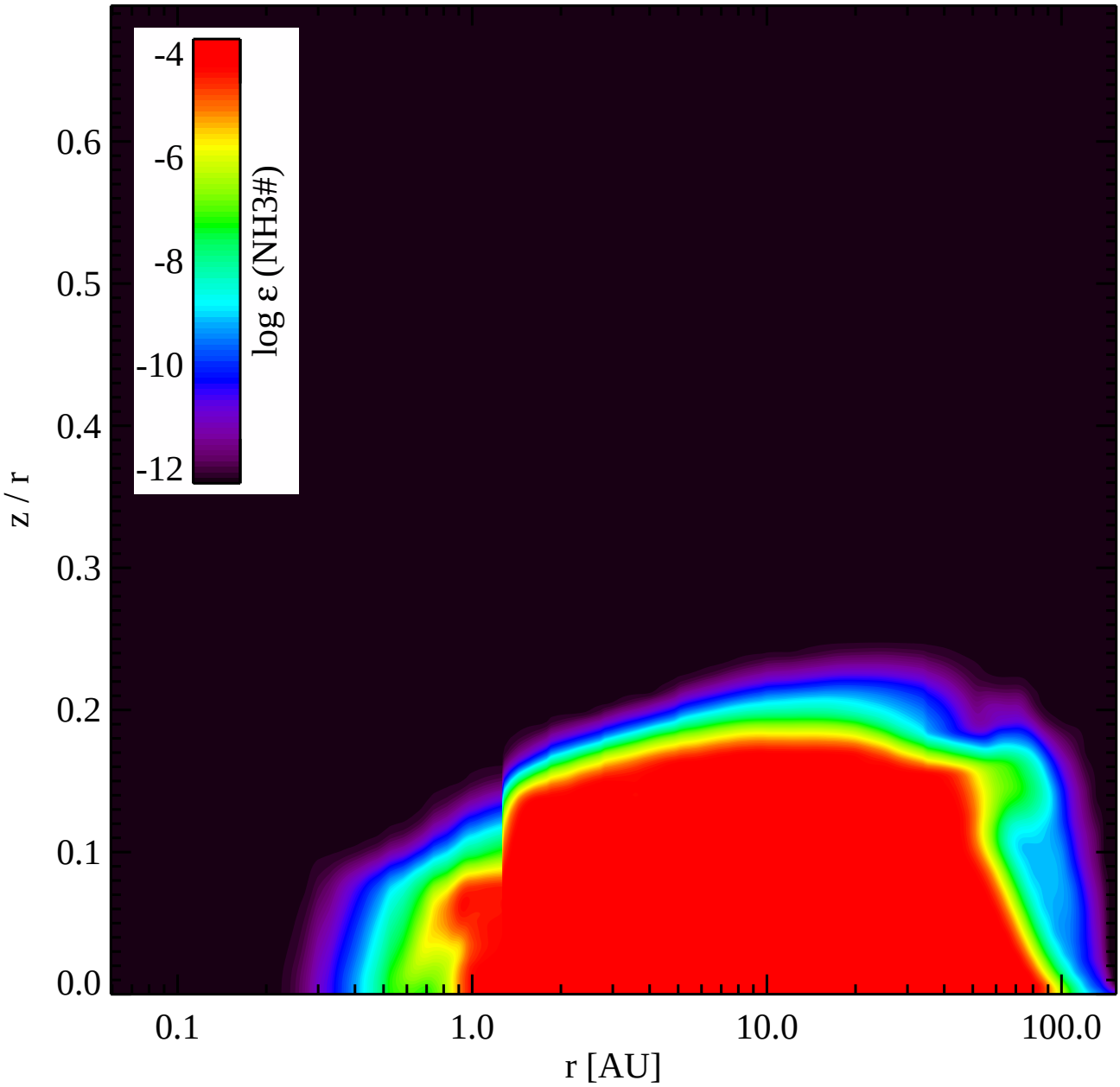


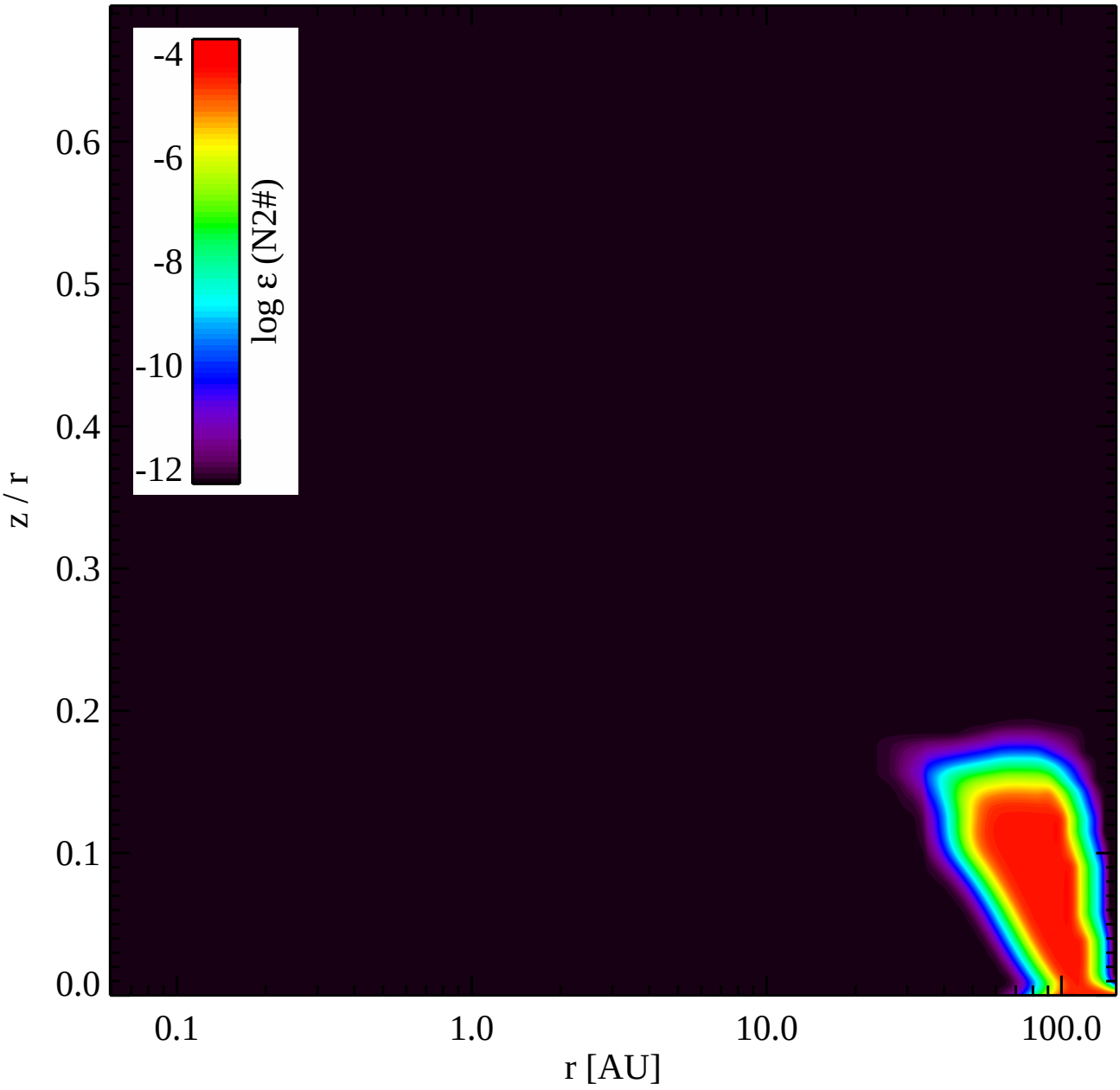
-4
-6
-8
-10
-12
log ε (H2O#)
Td=110K
Td=110K
H2O=nH2O#
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

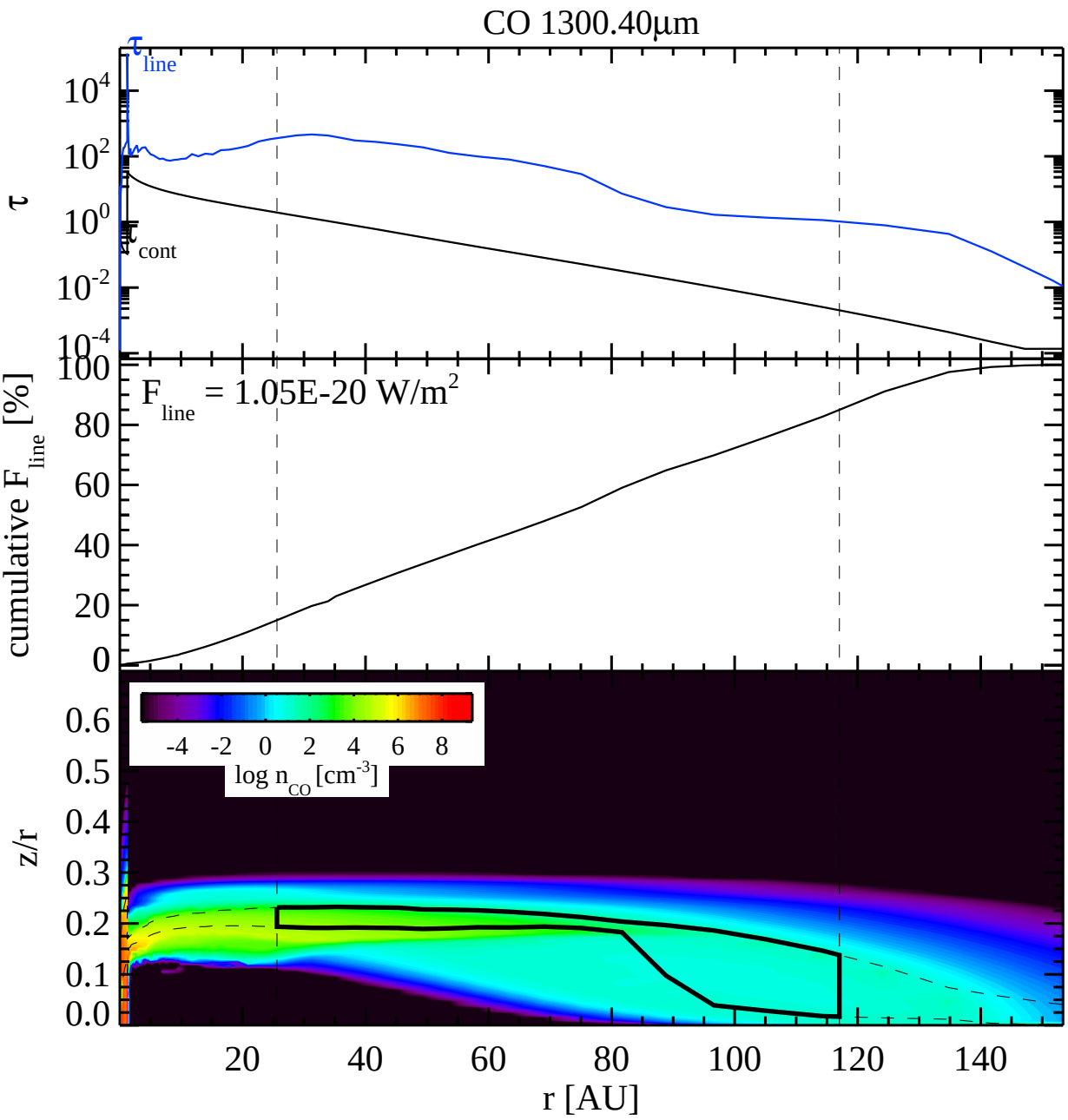

-4
-6
-8
-10
-12
log ε (CO#)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]
Td=25K
20K
15K

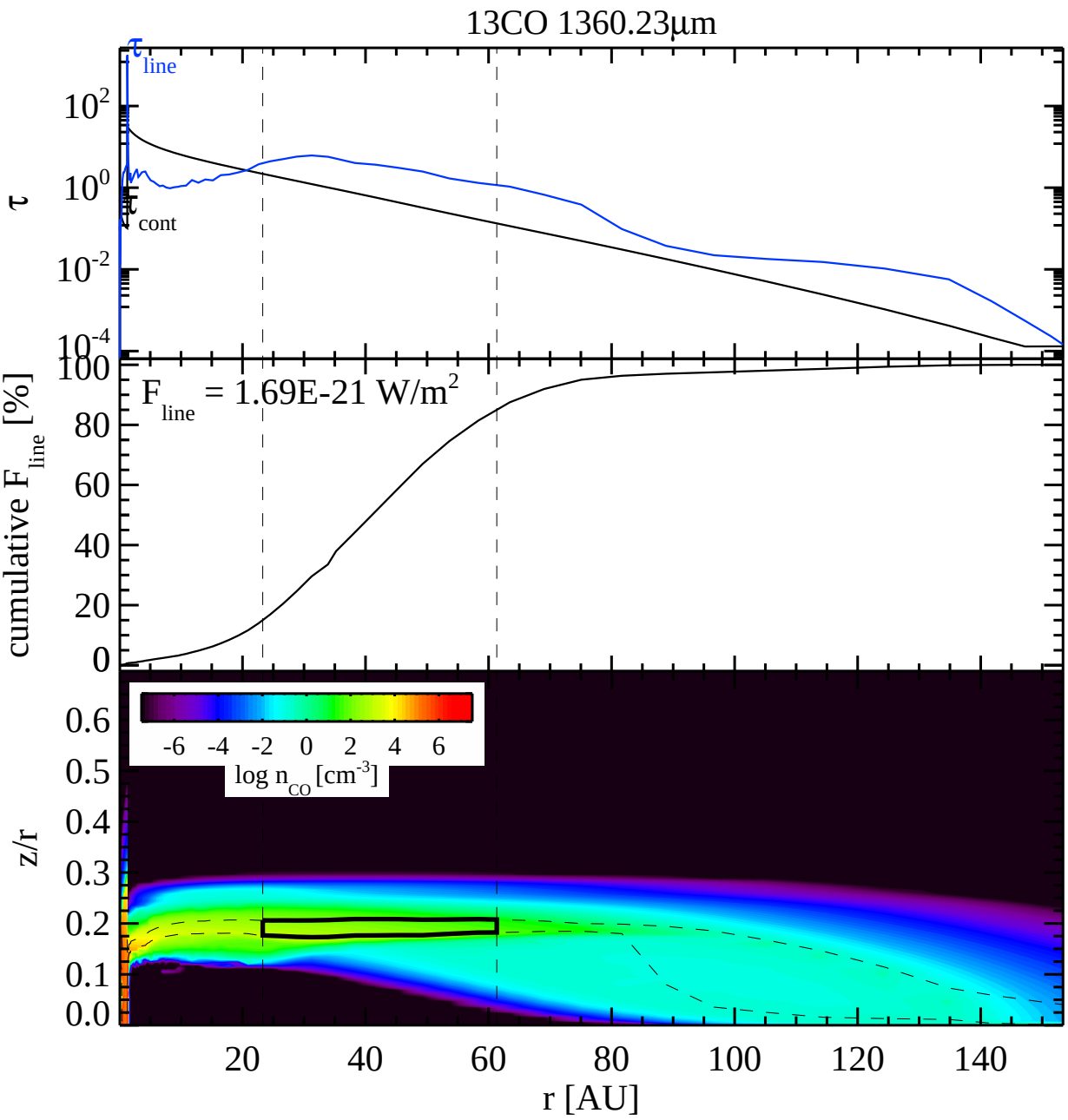

-4
-6
-8
-10
-12
log ε (CO2#)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

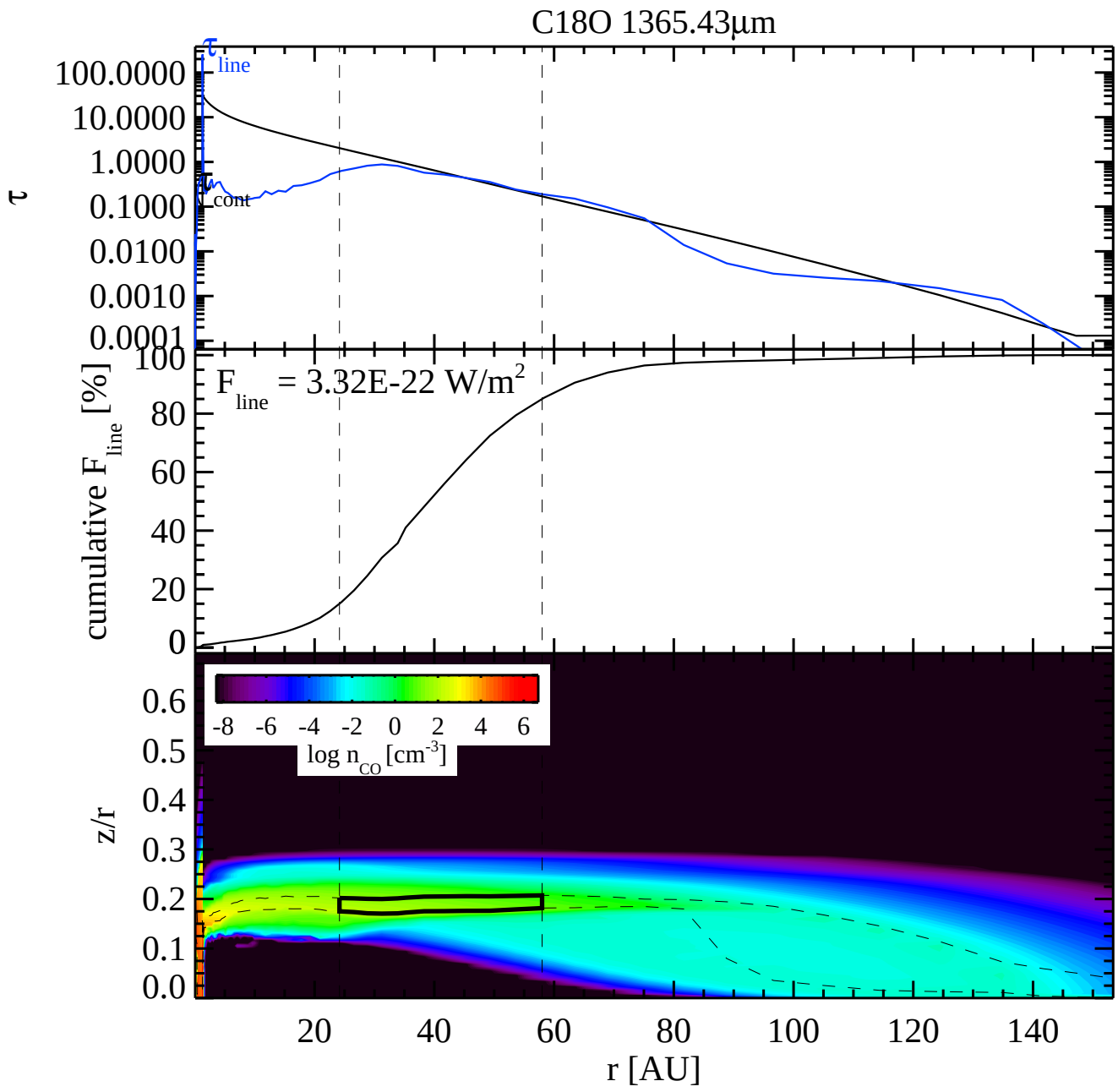

-4
-6
-8
-10
-12
log ε (CH4#)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

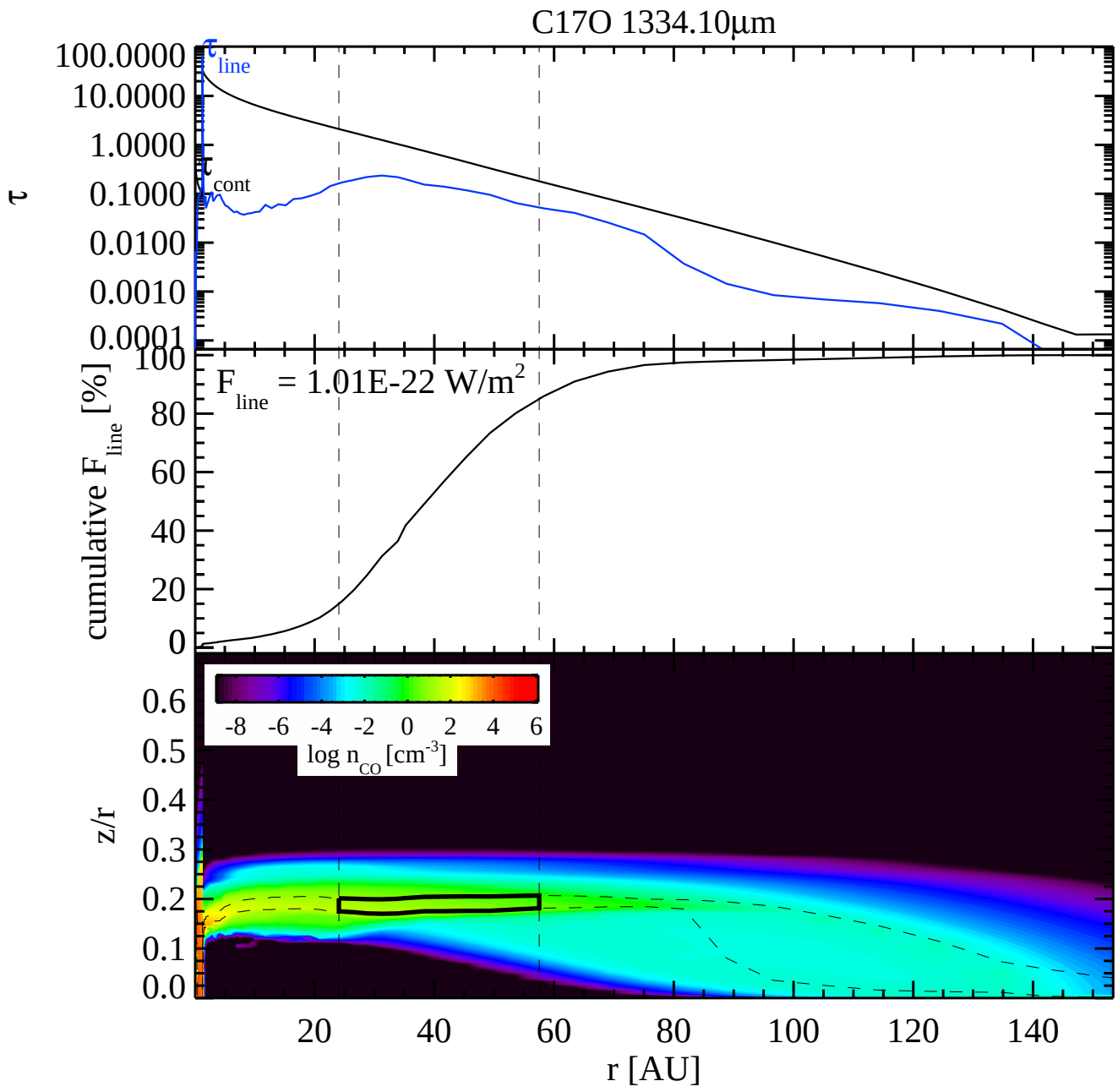

-4
-6
-8
-10
-12
log ε (NH3#)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

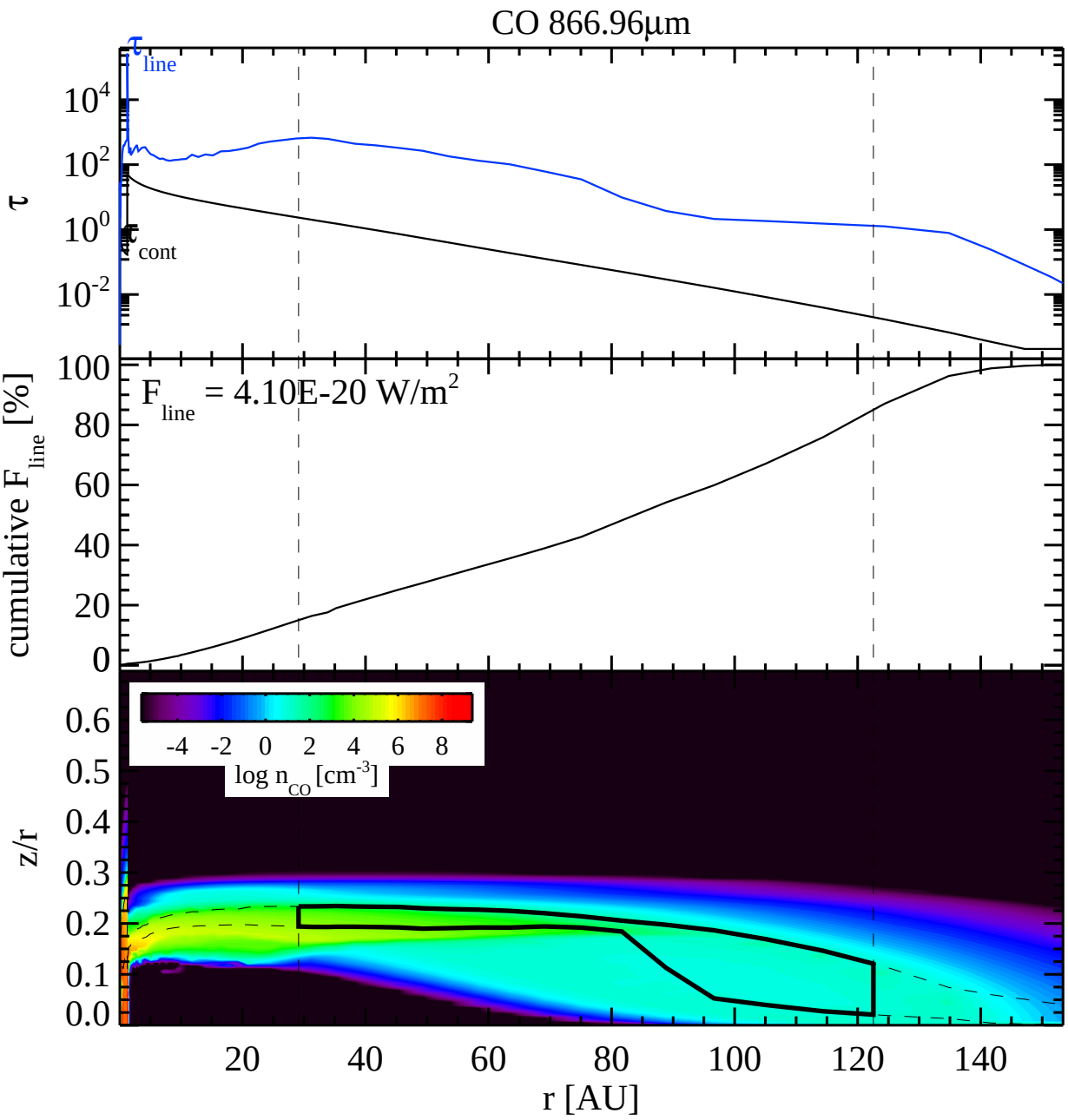

-4
-6
-8
-10
-12
log ε (N2#)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
z / r
0.1
1.0
10.0
100.0
r [AU]

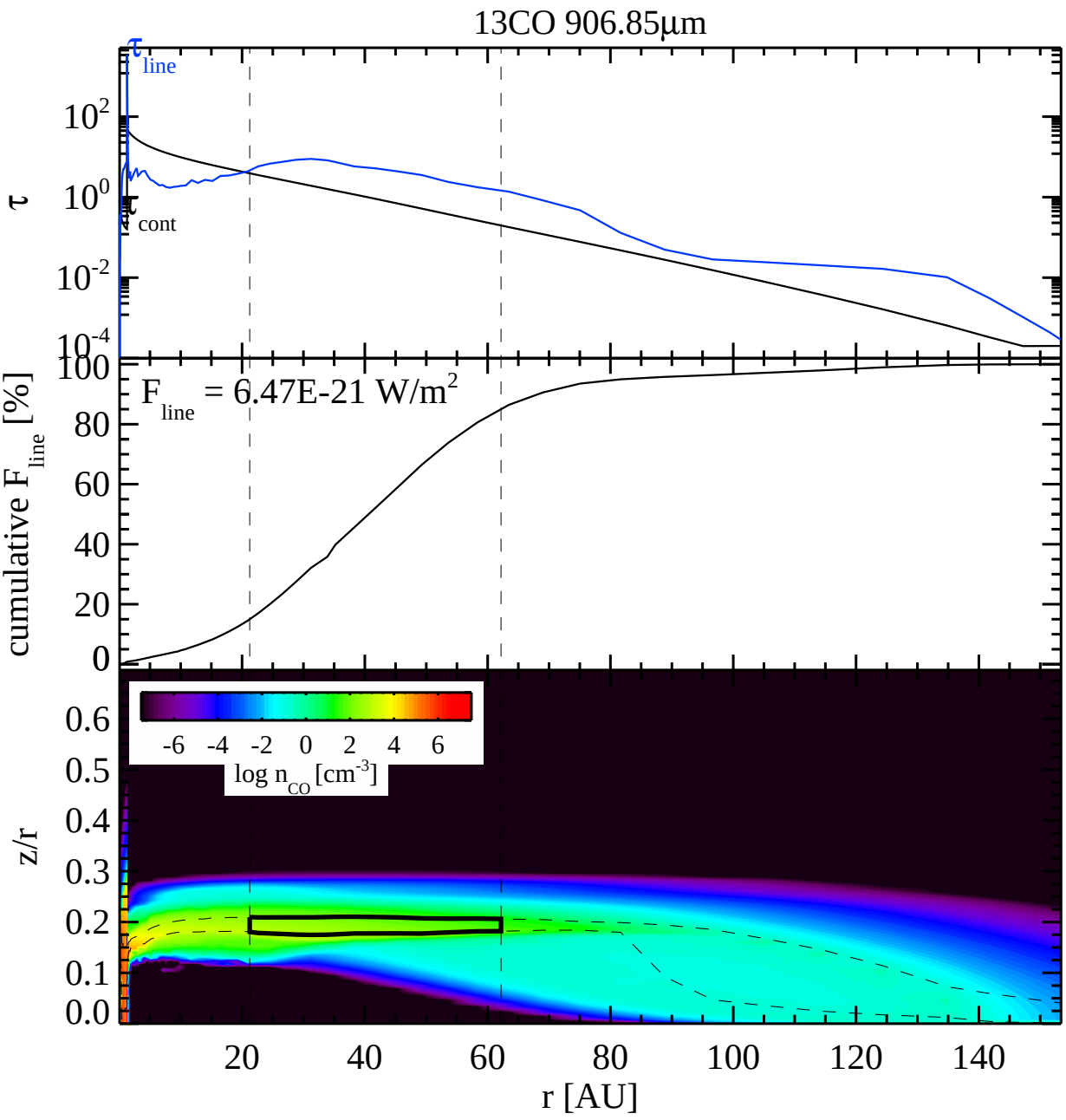

CO 1300.40µm
τ line
τ cont
τ
cumulative F line [%]
F line = 1.05E-20 W/m2
log n CO [cm-3]
z/r
r [AU]

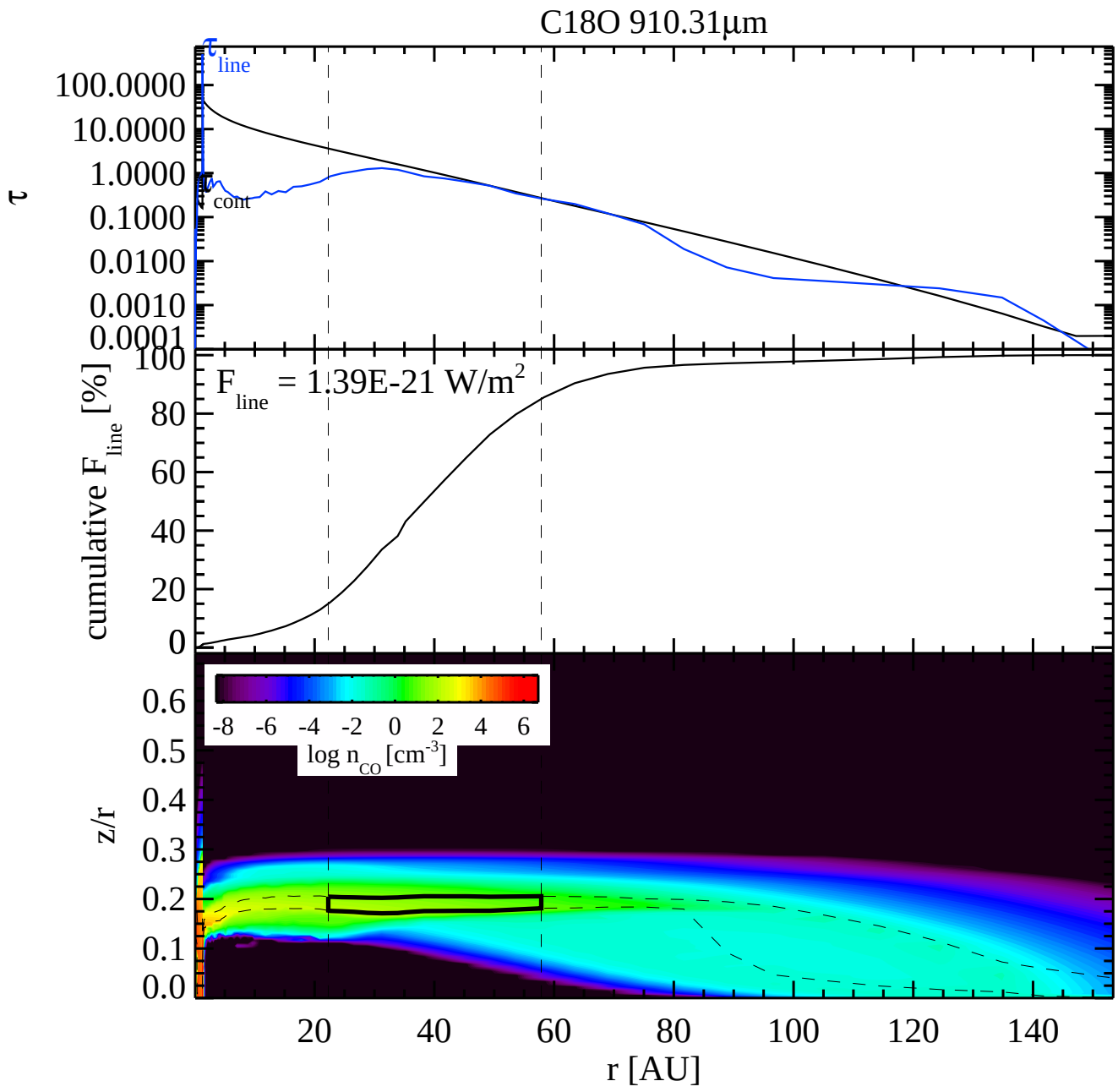

13CO 1360.23µm
τ line
τ cont
τ
10^2
10^0
10^-2
10^-4
F line = 1.69E-21 W/m^2
cumulative F line [%]
100
80
60
40
20
0
-6 -4 -2 0 2 4 6
log n CO [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20 40 60 80 100 120 140
r [AU]

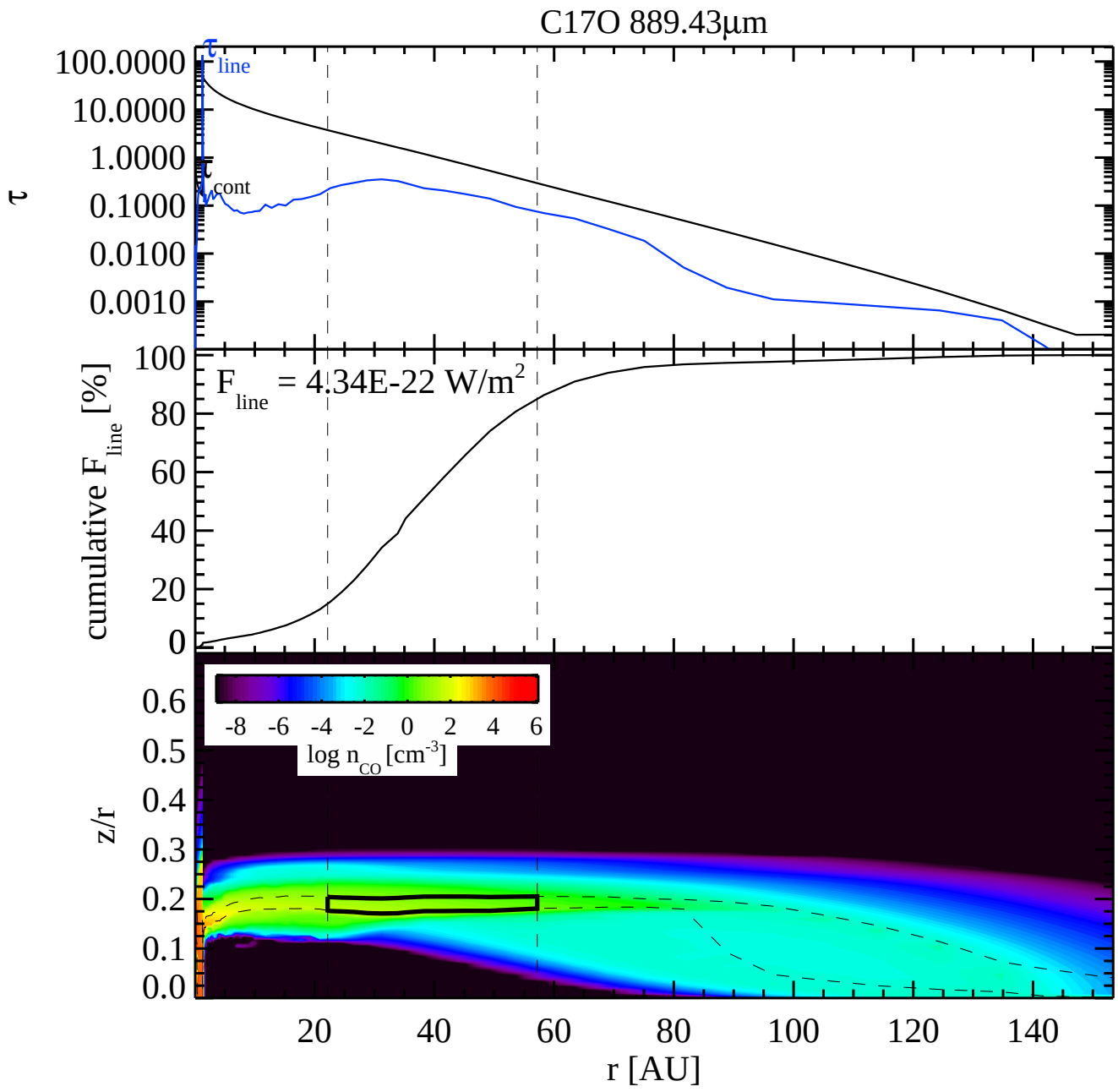

C18O 1365.43µm
τ line
τ cont
τ
100.0000
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
F line = 3.32E-22 W/m2
cumulative F line [%]
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20 40 60 80 100 120 140
r [AU]

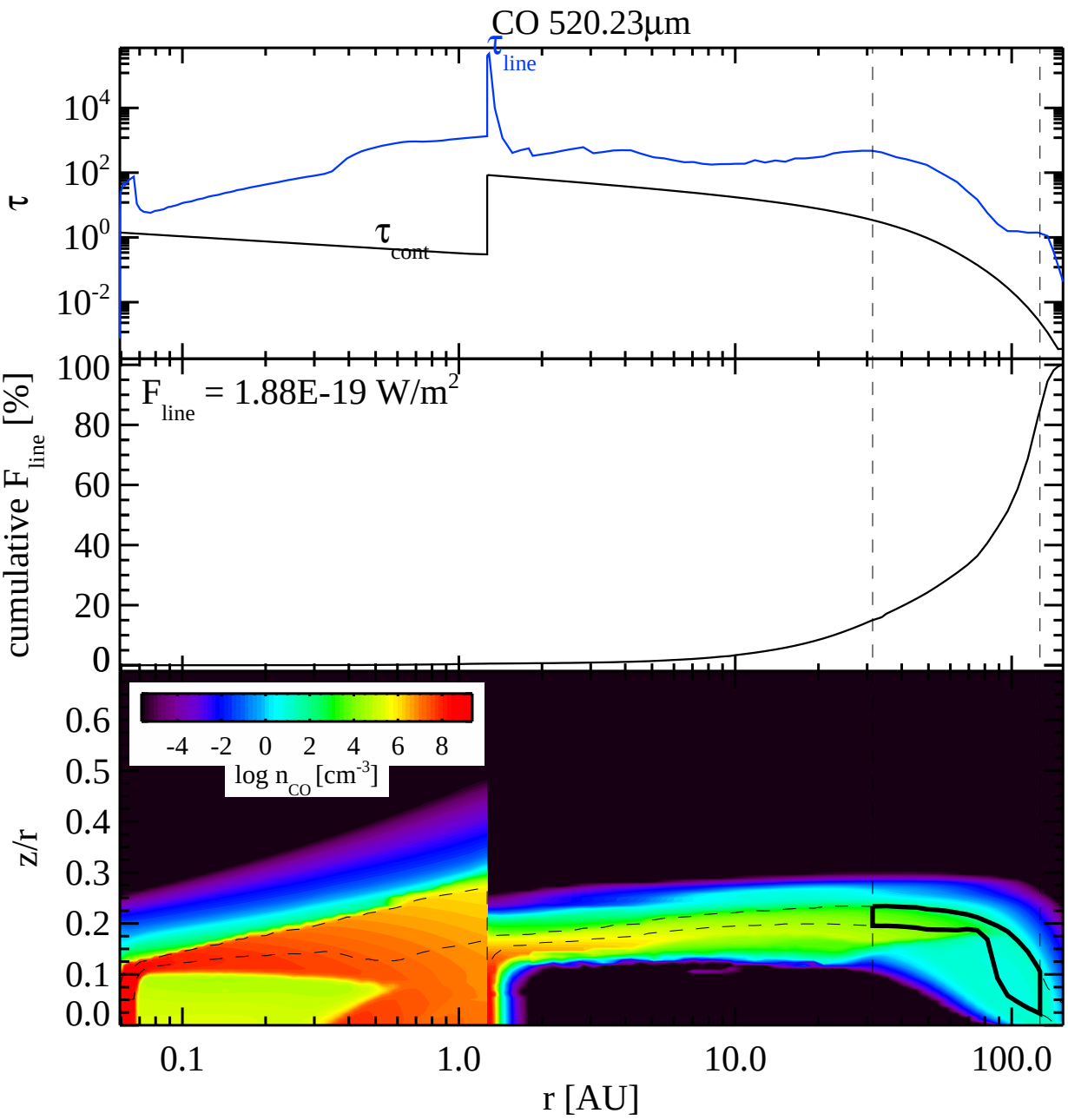

C17O 1334.10µm
τ
τ line
τ cont
100.0000
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
cumulative F line [%]
F line = 1.01E-22 W/m2
100
80
60
40
20
0
log n CO [cm-3]
-8 -6 -4 -2 0 2 4 6
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20 40 60 80 100 120 140
r [AU]

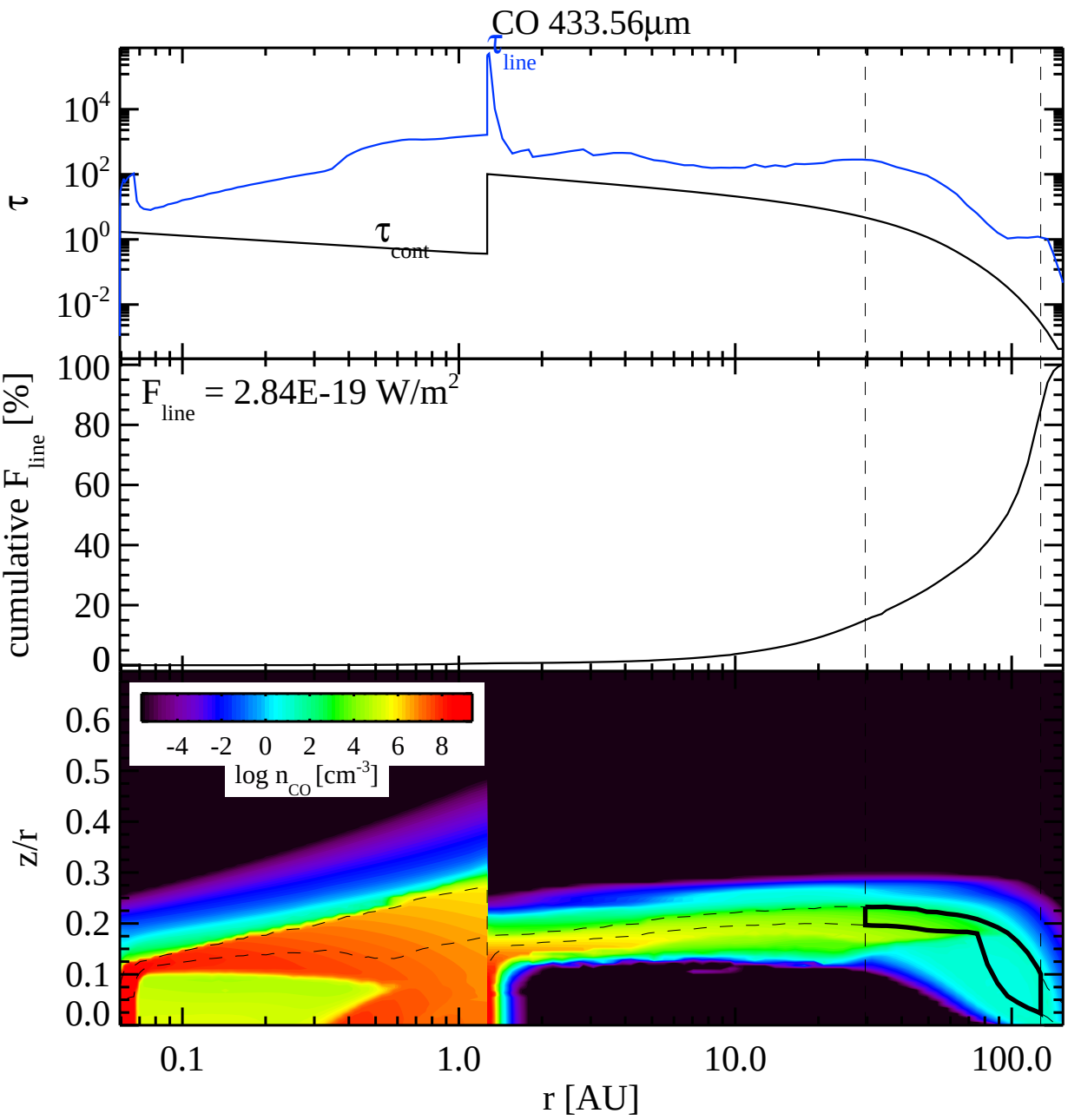

CO 866.96µm
τ line
τ cont
τ
cumulative F line [%]
F line = 4.10E-20 W/m2
log n CO [cm-3]
z/r
r [AU]

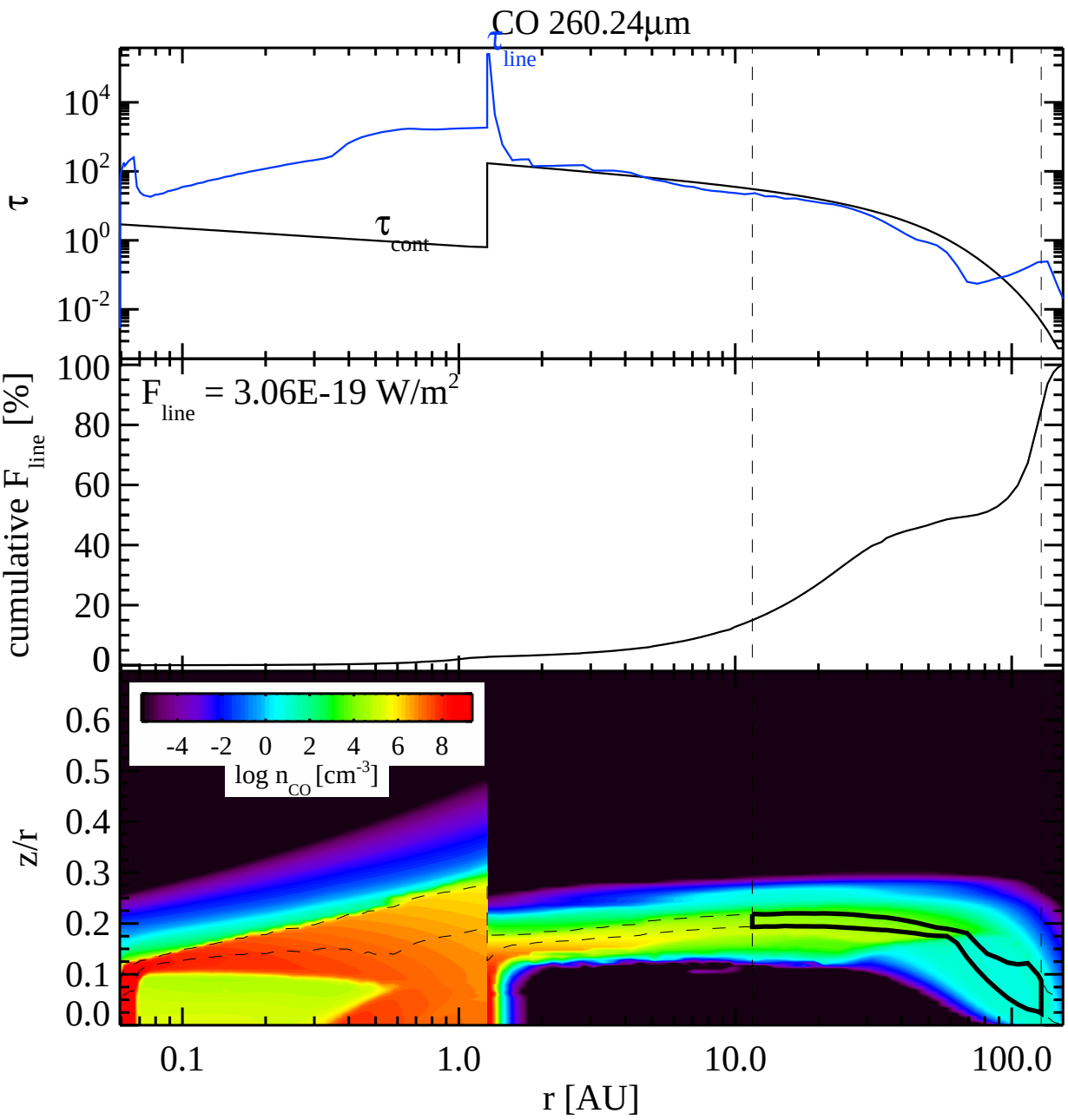

13CO 906.85µm
τ line
τ cont
τ
cumulative F line [%]
F line = 6.47E-21 W/m2
log n CO [cm-3]
-6 -4 -2 0 2 4 6
z/r
r [AU]

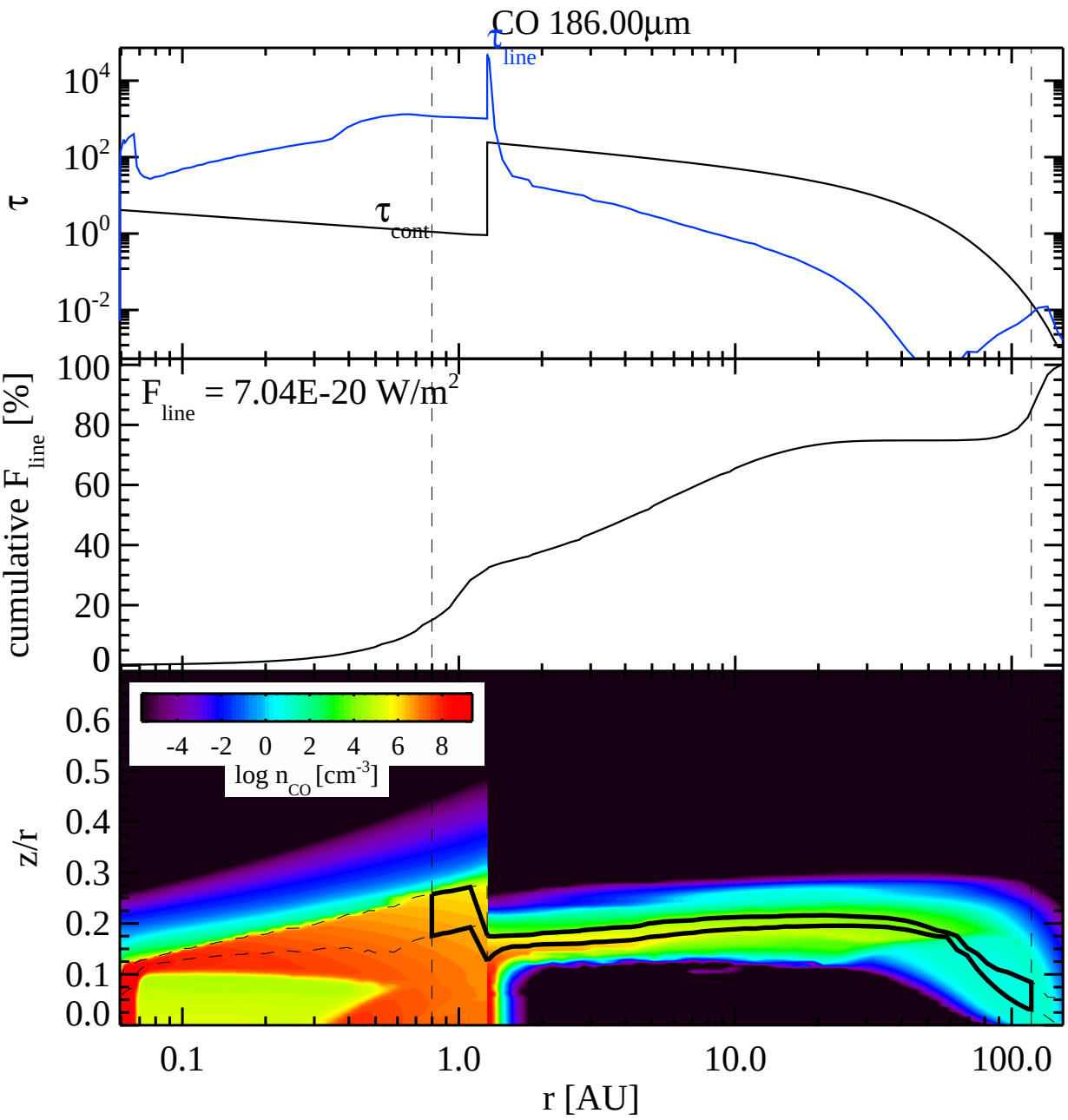

C18O 910.31µm
τ line
τ cont
100.0000
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
τ
F line = 1.39E-21 W/m2
cumulative F line [%]
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20 40 60 80 100 120 140
r [AU]

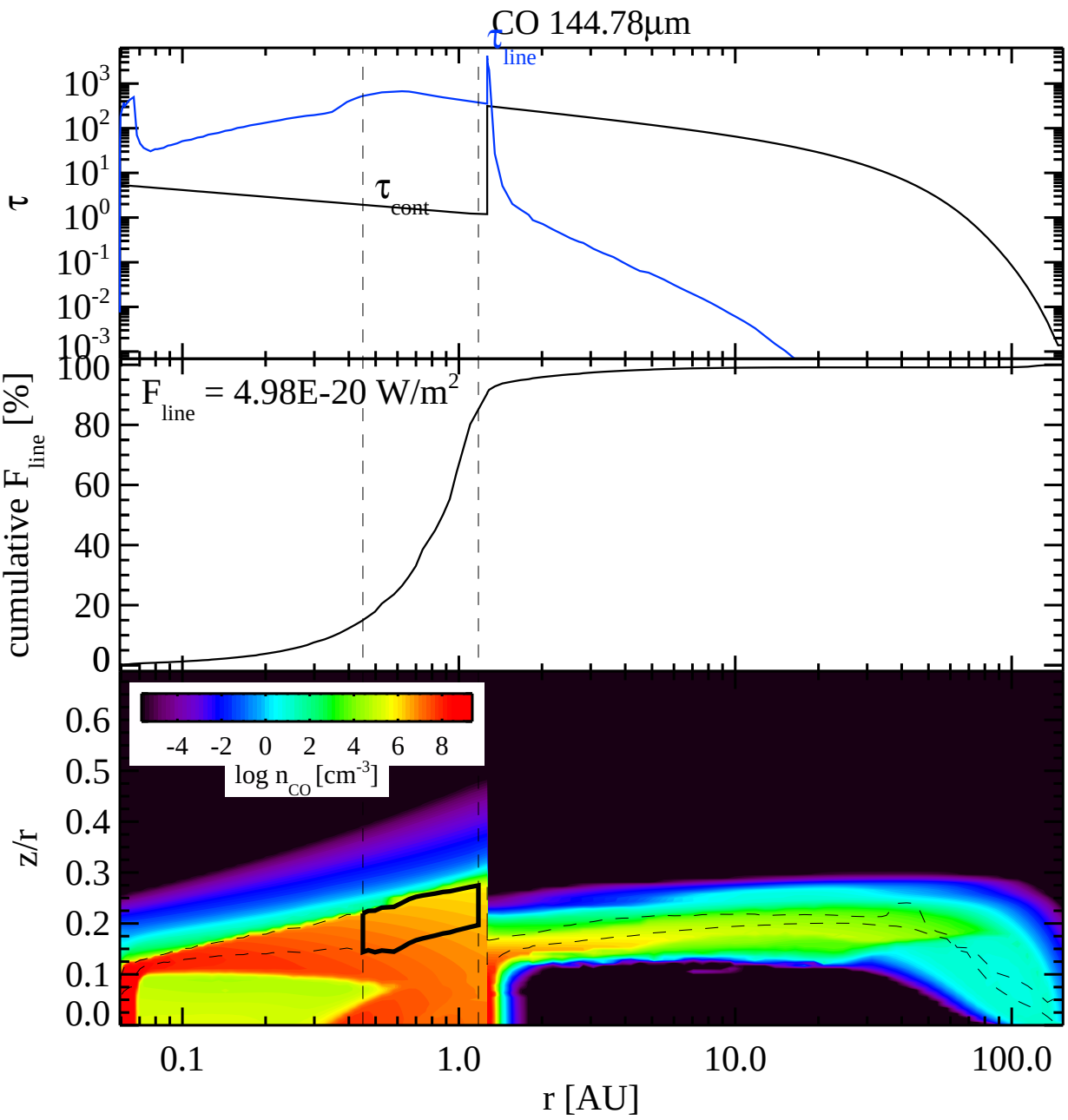

C17O 889.43µm
τ
τ line
τ cont
100.0000
10.0000
1.0000
0.1000
0.0100
0.0010
cumulative F line [%]
F line = 4.34E-22 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
20
40
60
80
100
120
140
r [AU]

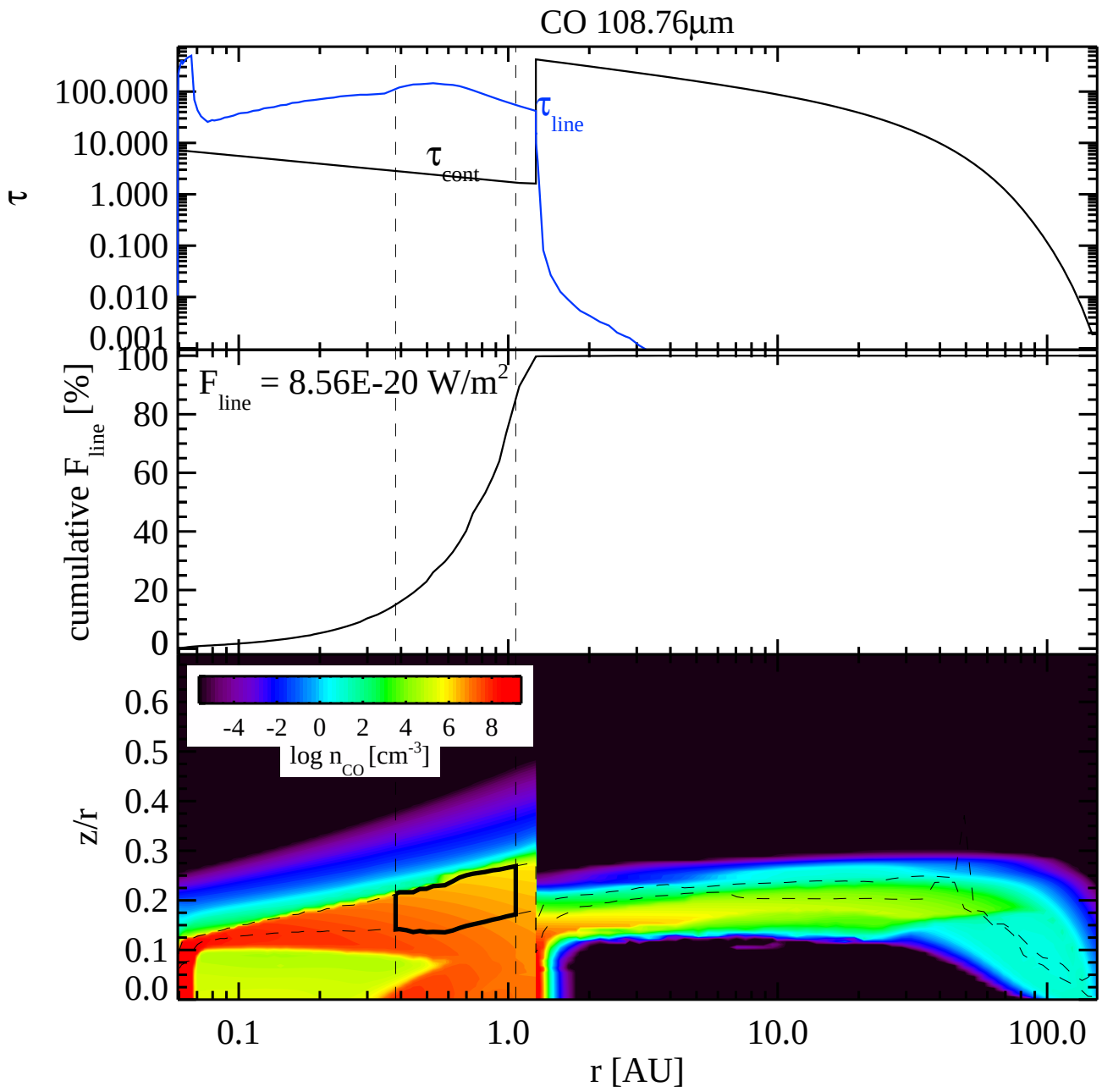

CO 520.23µm
τ line
τ cont
τ
10^4
10^2
10^0
10^-2
F line = 1.88E-19 W/m^2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

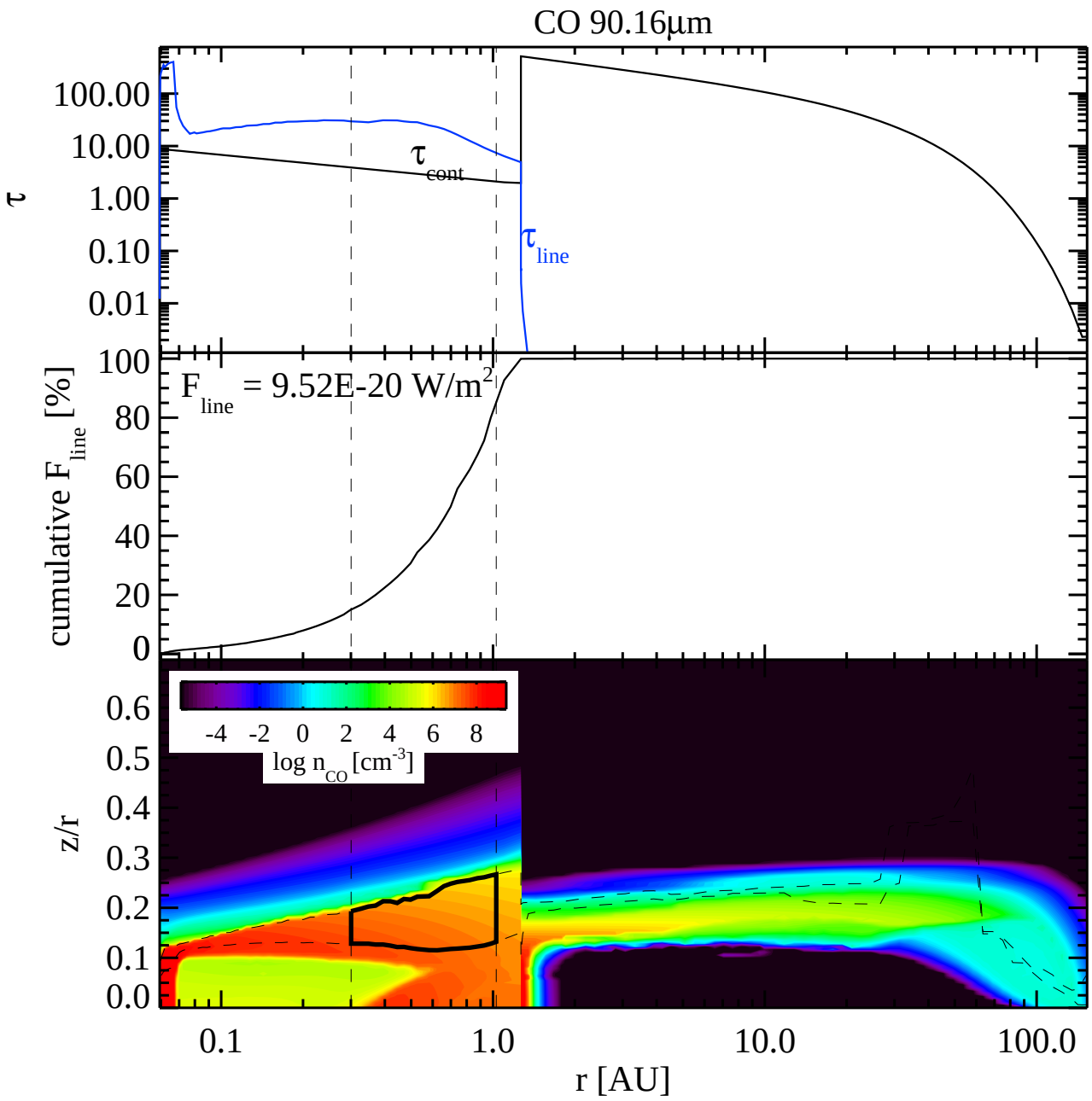

CO 433.56µm
τ line
τ cont
τ
cumulative F line [%]
F line = 2.84E-19 W/m2
log n CO [cm-3]
z/r
r [AU]

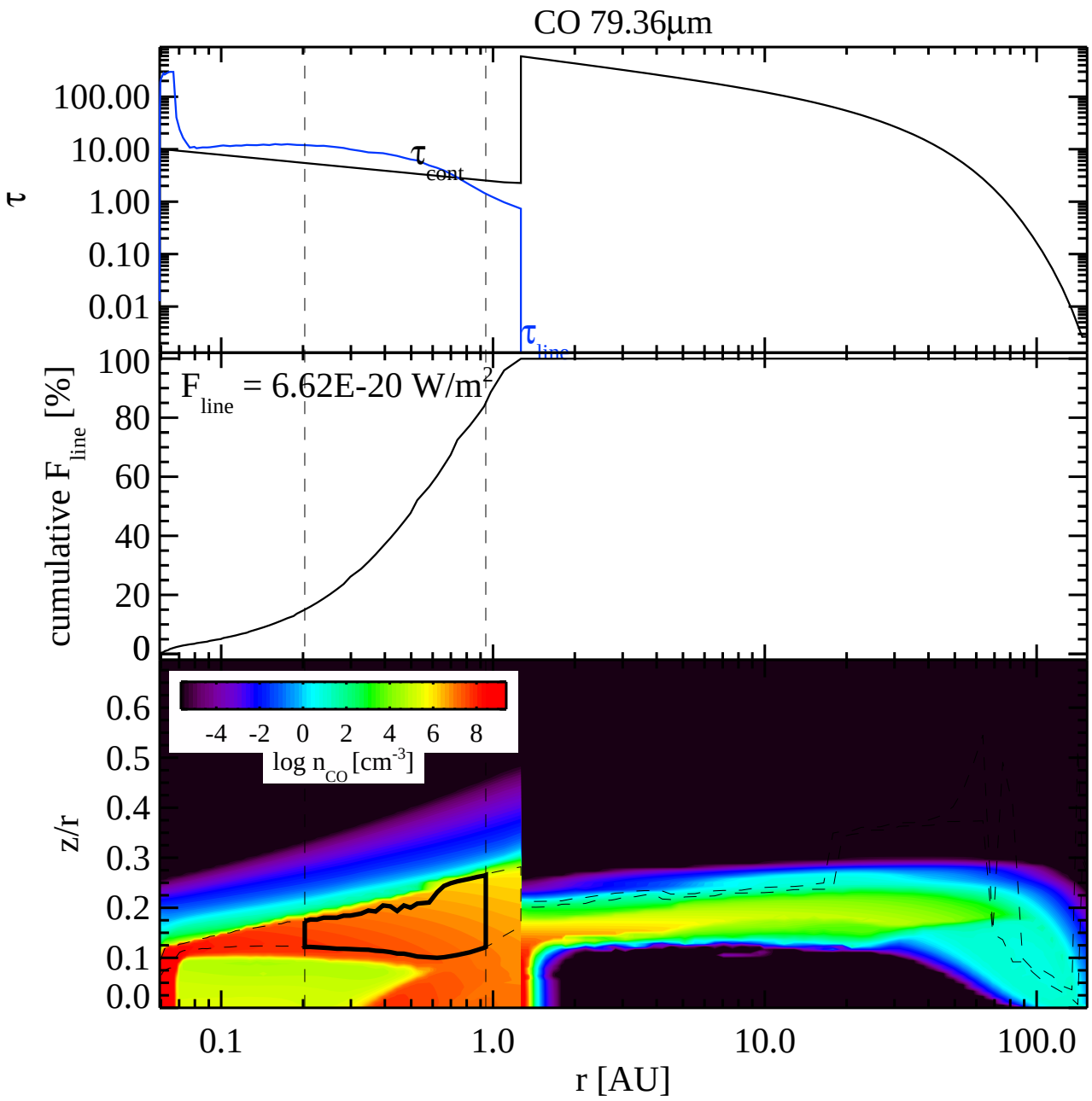

CO 260.24μm
τ line
τ cont
τ
10^4
10^2
10^0
10^-2
F line = 3.06E-19 W/m^2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

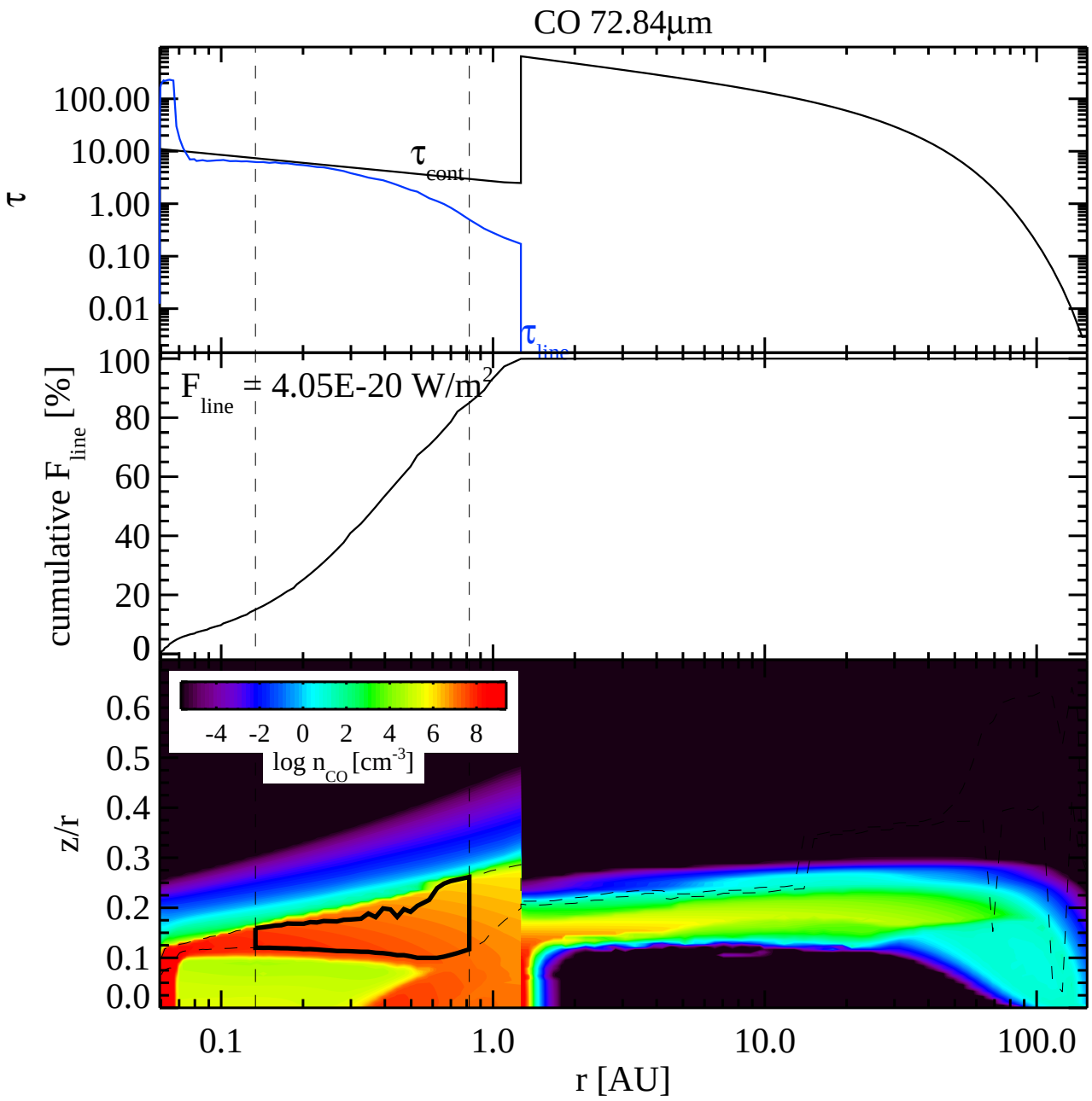

CO 186.00µm
τ line
τ cont
τ
10^4
10^2
10^0
10^-2
F line = 7.04E-20 W/m^2
cumulative F line [%]
100
80
60
40
20
0
log n CO [cm^-3]
-4 -2 0 2 4 6 8
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

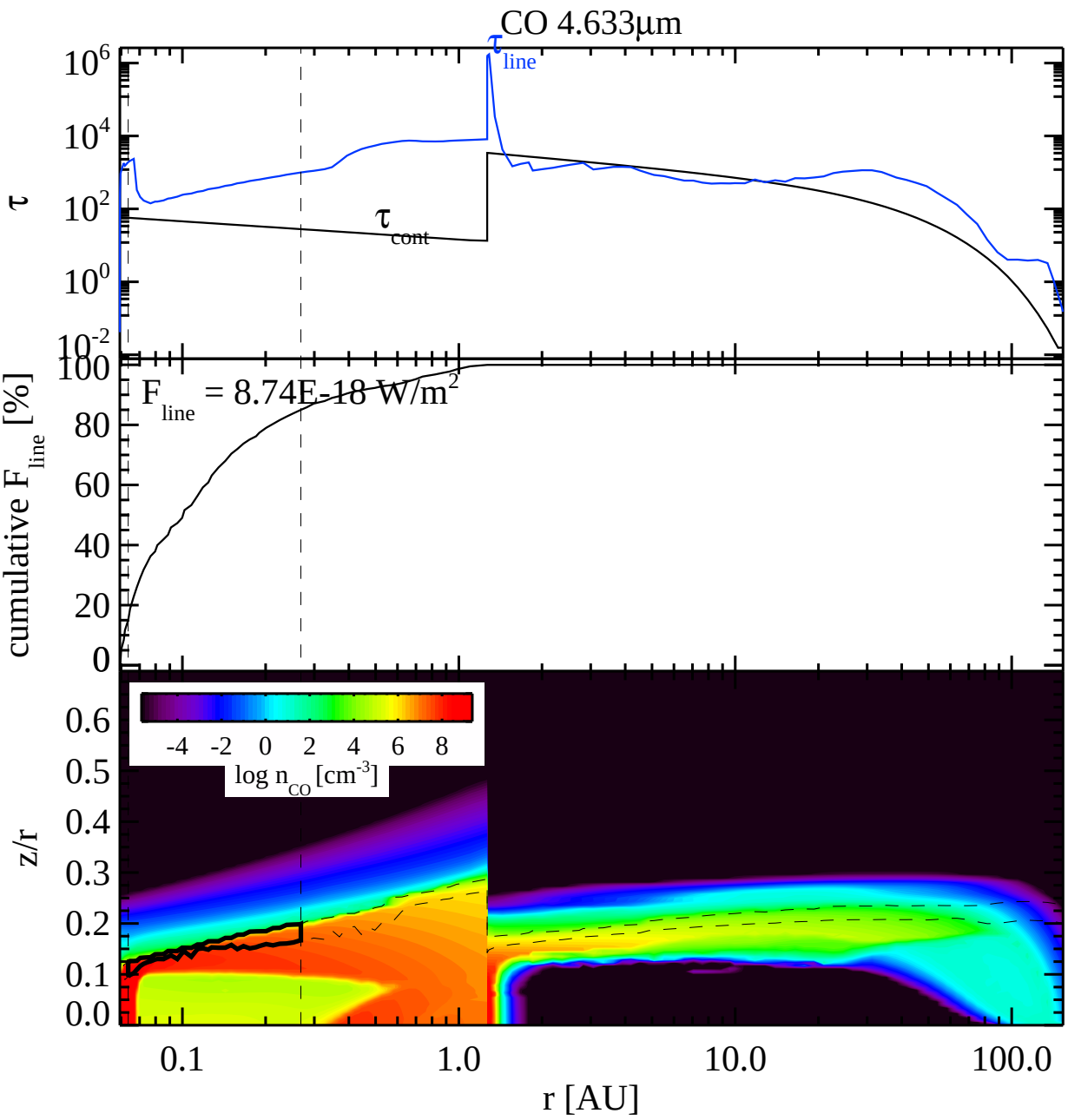

CO 144.78μm
τ line
τ cont
τ
cumulative F line [%]
F line = 4.98E-20 W/m2
log n CO [cm-3]
z/r
r [AU]

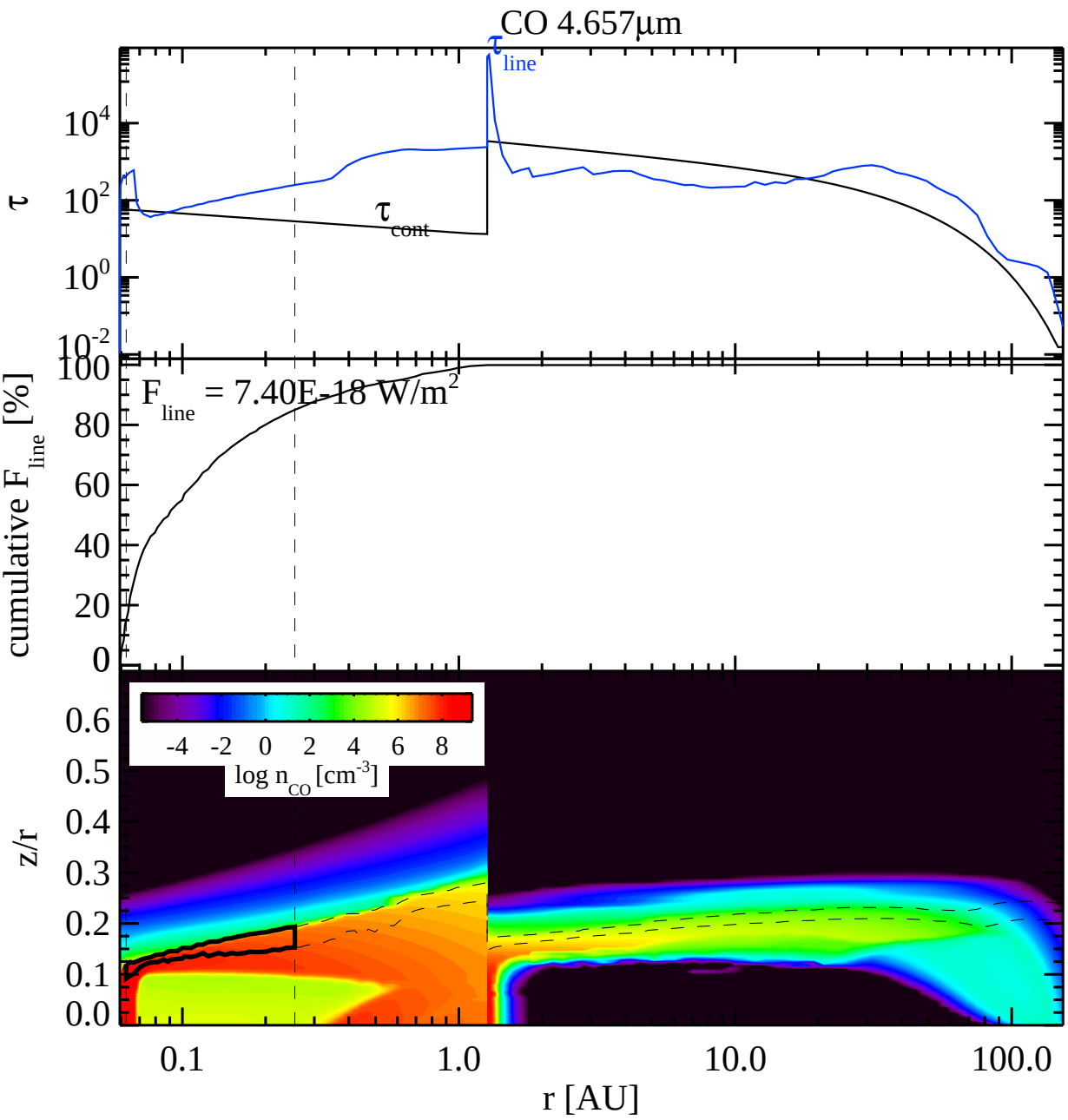

CO 108.76µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 8.56E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

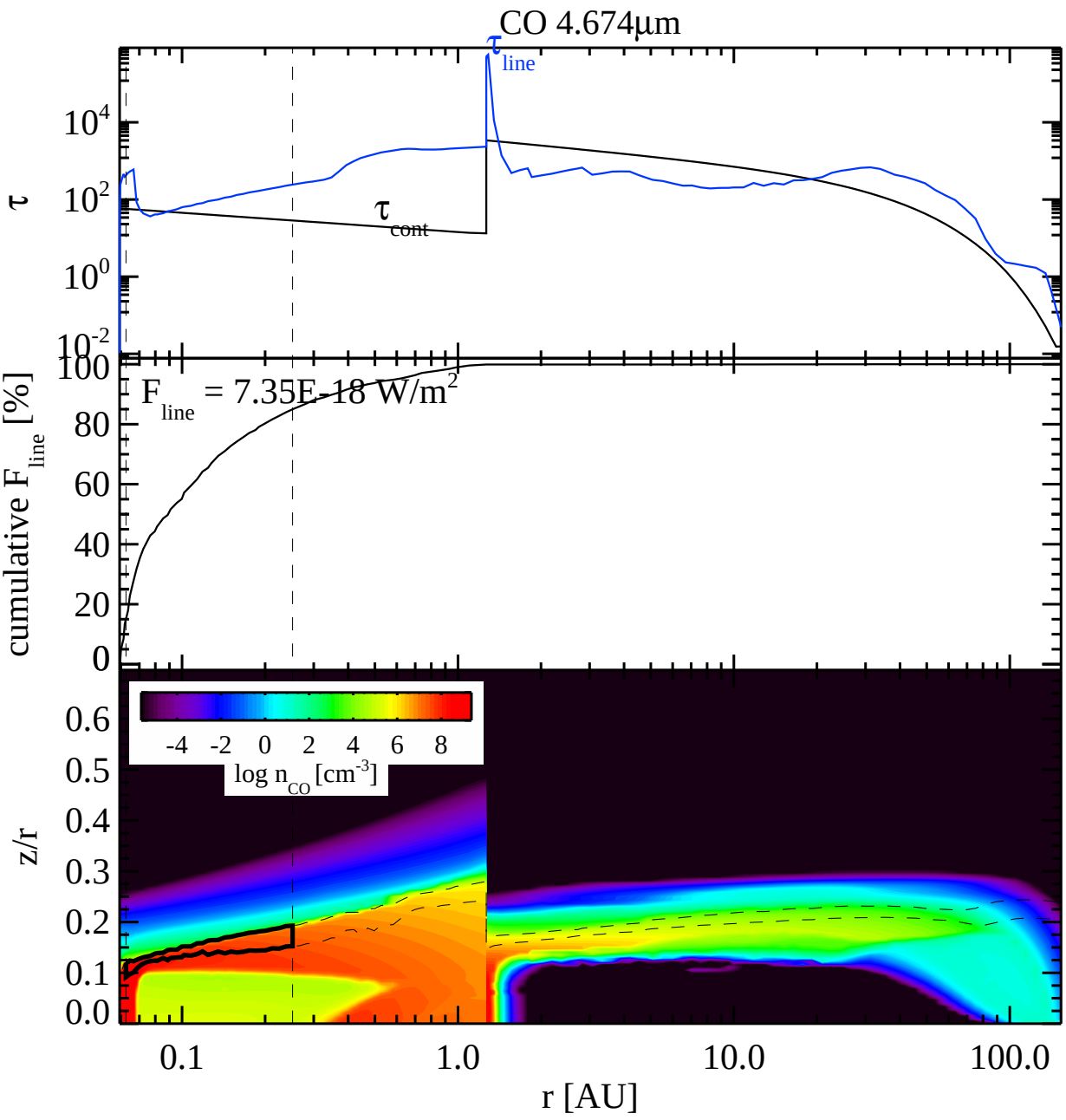

CO 90.16µm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 9.52E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

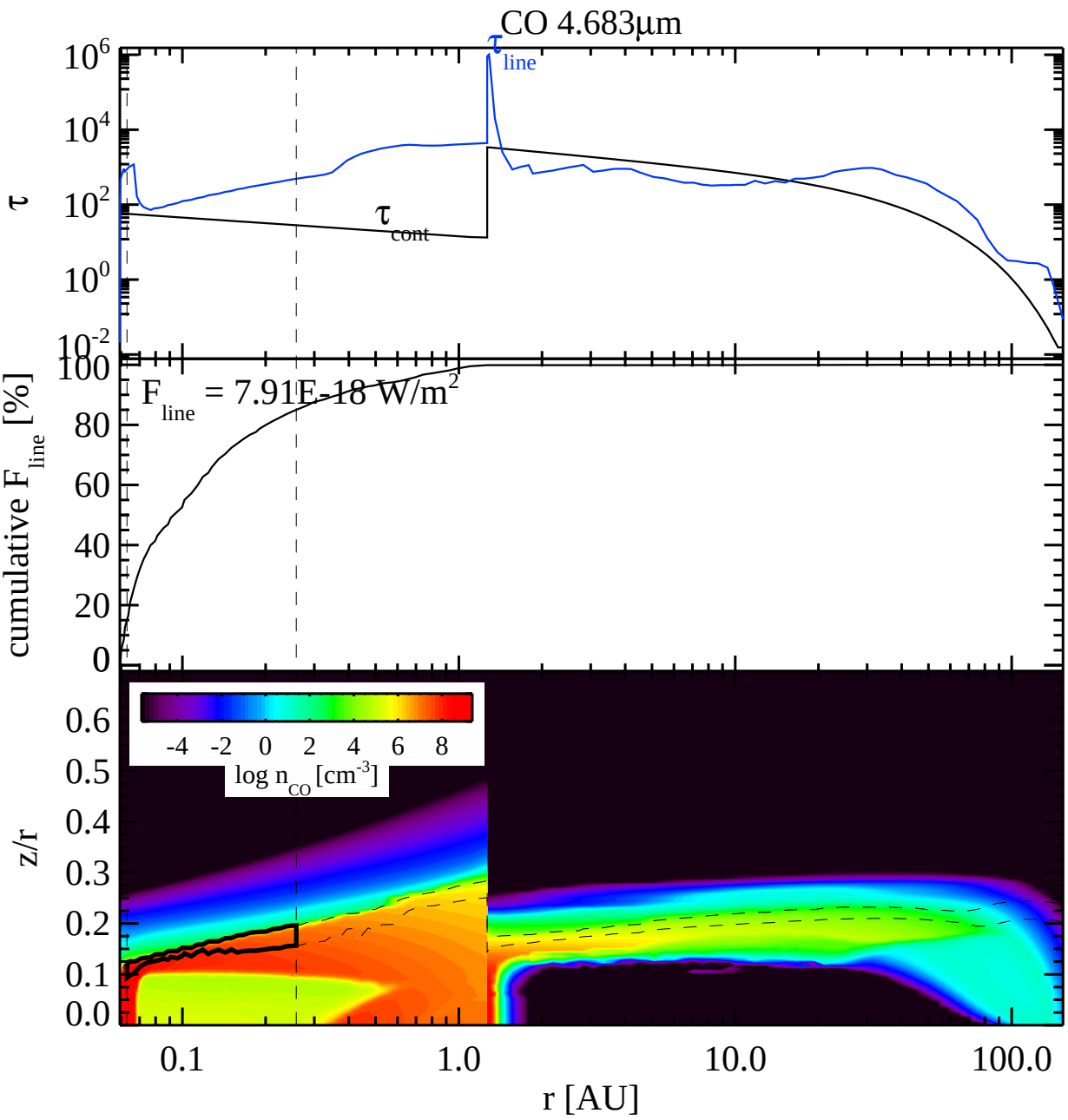

CO 79.36µm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 6.62E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

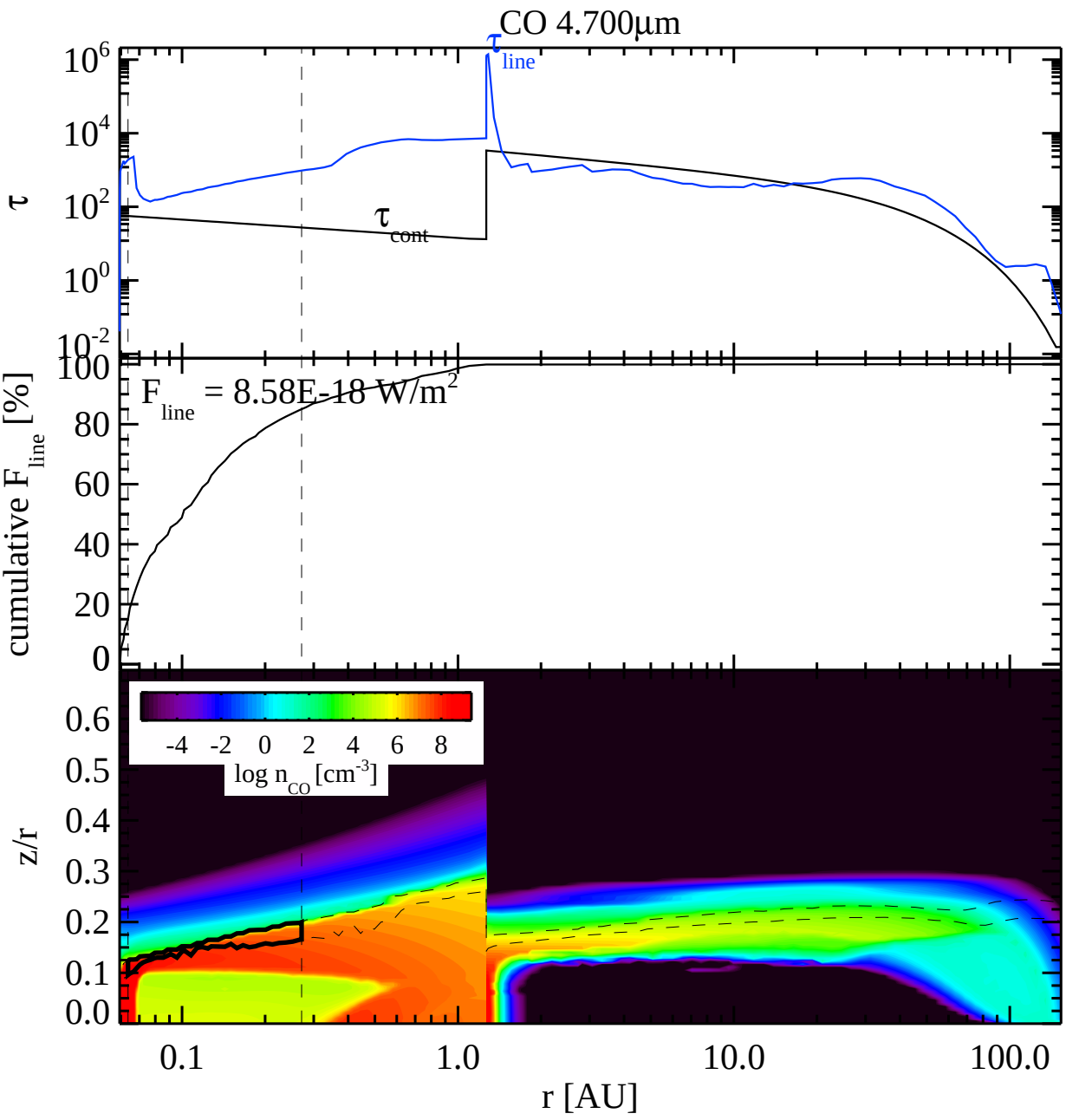

CO 72.84μm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 4.05E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

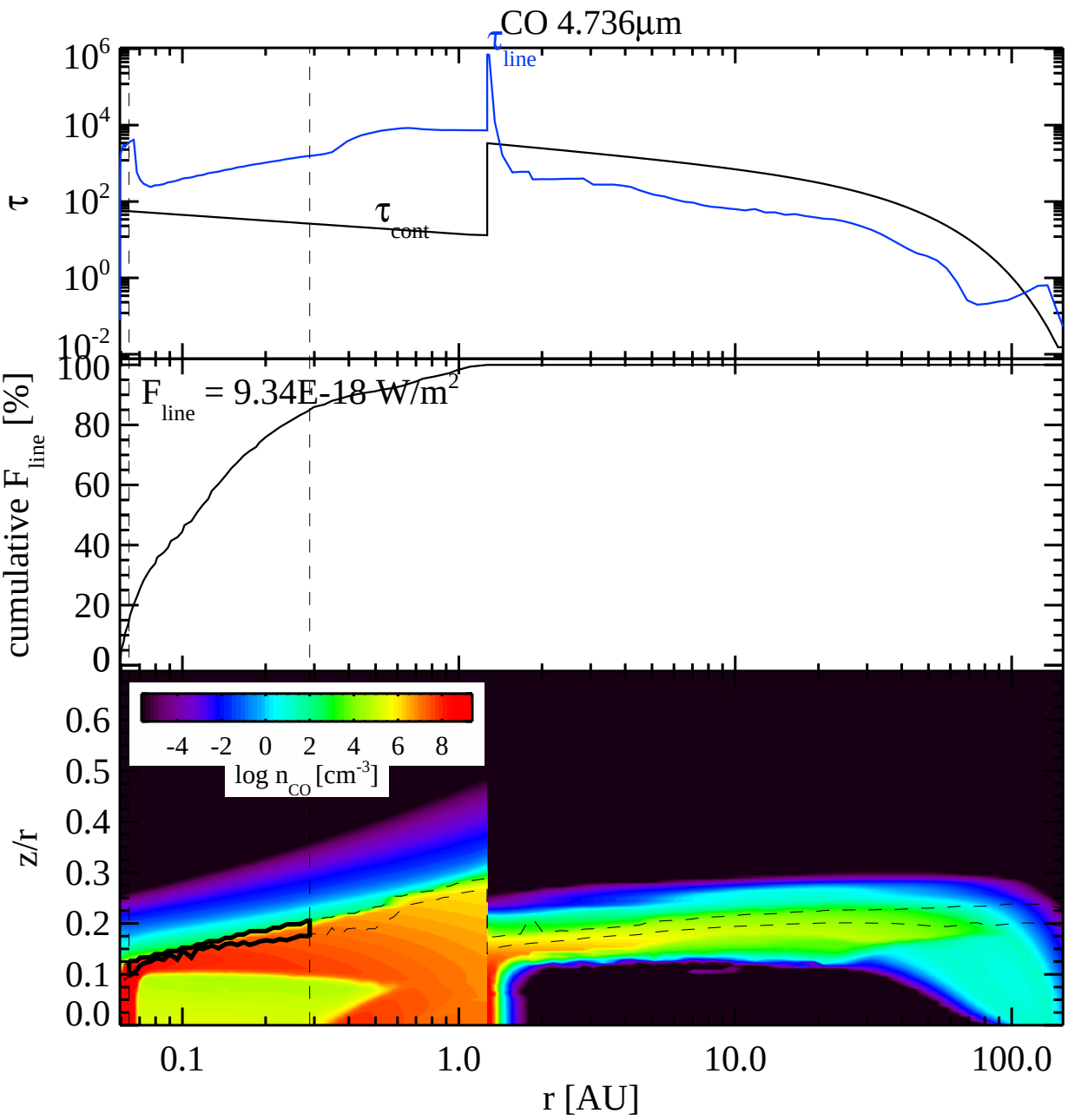

CO 4.633µm
τ line
τ cont
τ
F line = 8.74E-18 W/m2
cumulative F line [%]
log n CO [cm-3]
-4 -2 0 2 4 6 8
z/r
r [AU]
0.1
1.0
10.0
100.0

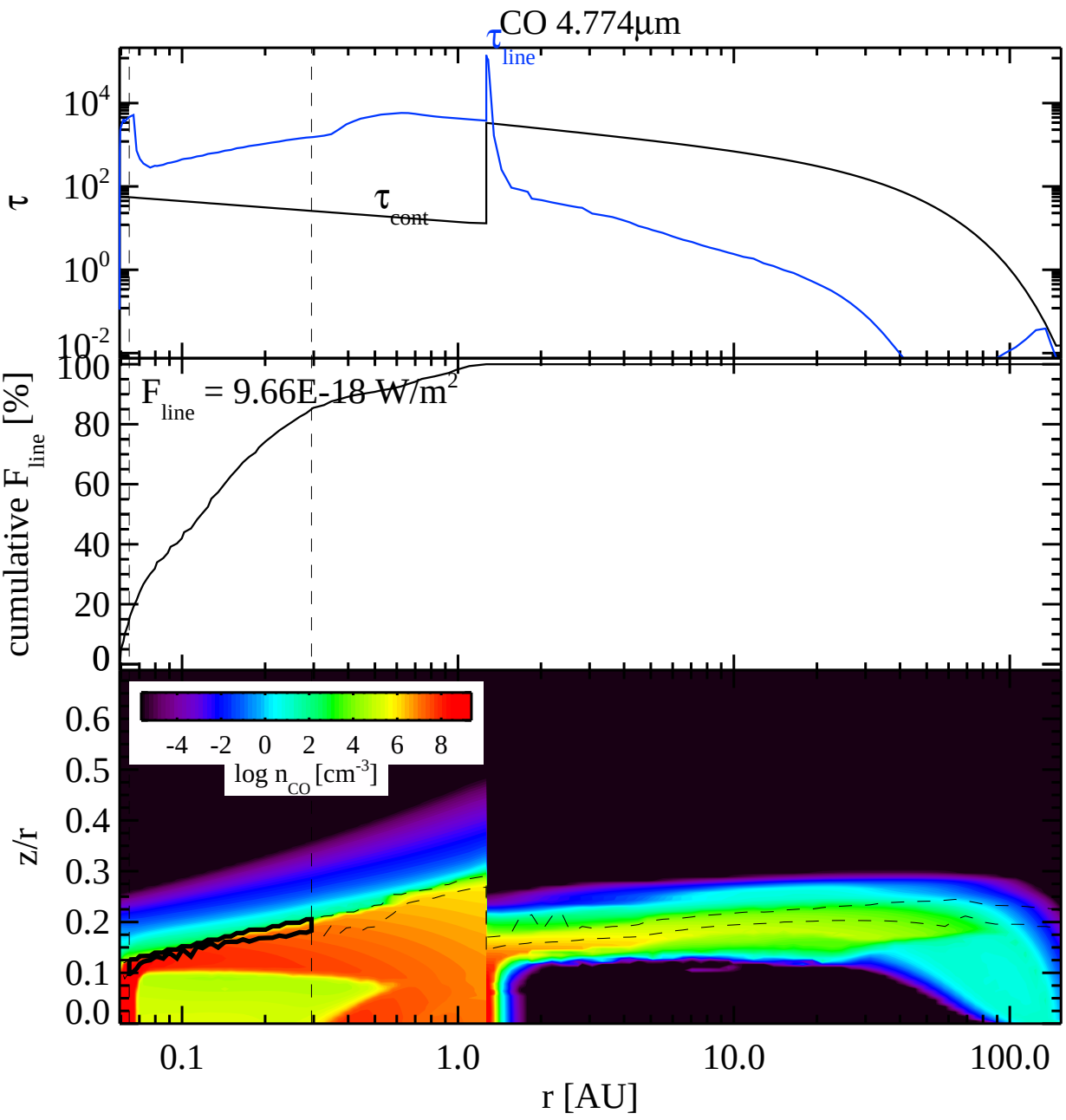

CO 4.657µm
τ line
τ cont
τ
cumulative F line [%]
F line = 7.40E-18 W/m2
log n CO [cm-3]
z/r
r [AU]

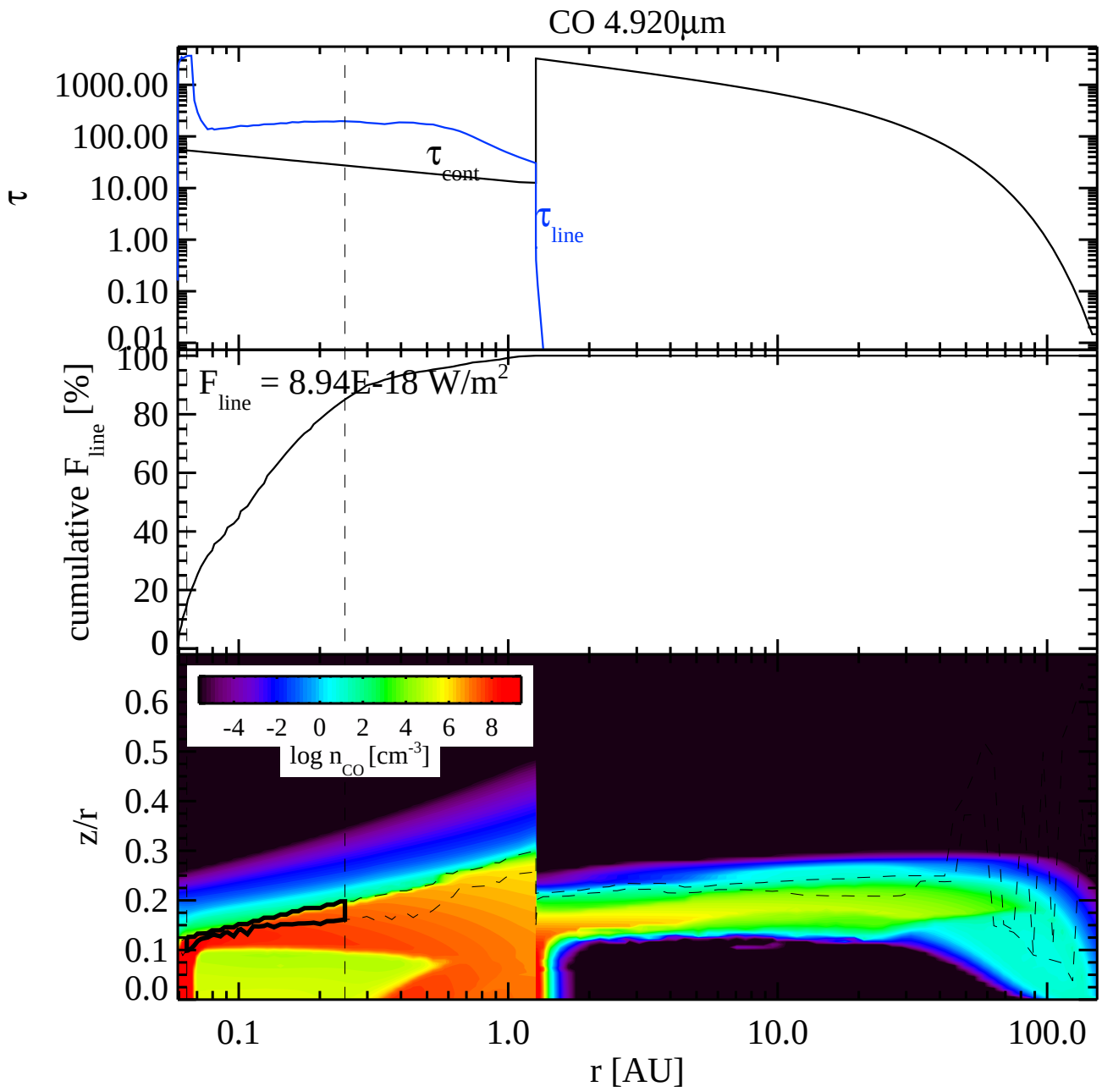

CO 4.674µm
τ line
τ cont
τ
10^4
10^2
10^0
10^-2
F line = 7.35E-18 W/m^2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

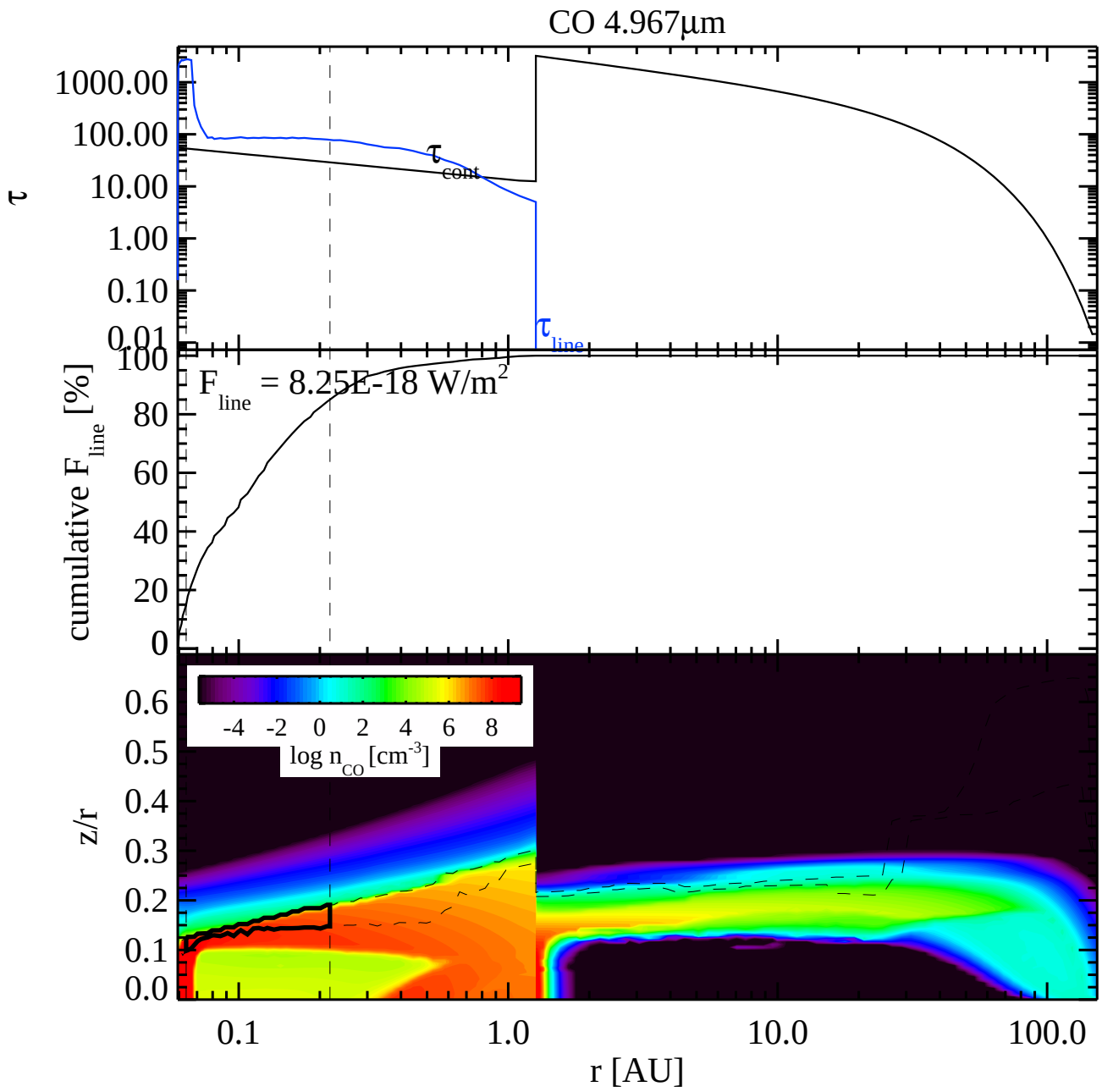

CO 4.683µm
τ line
τ cont
τ
F line = 7.91E-18 W/m2
cumulative F line [%]
log n CO [cm-3]
z/r
r [AU]

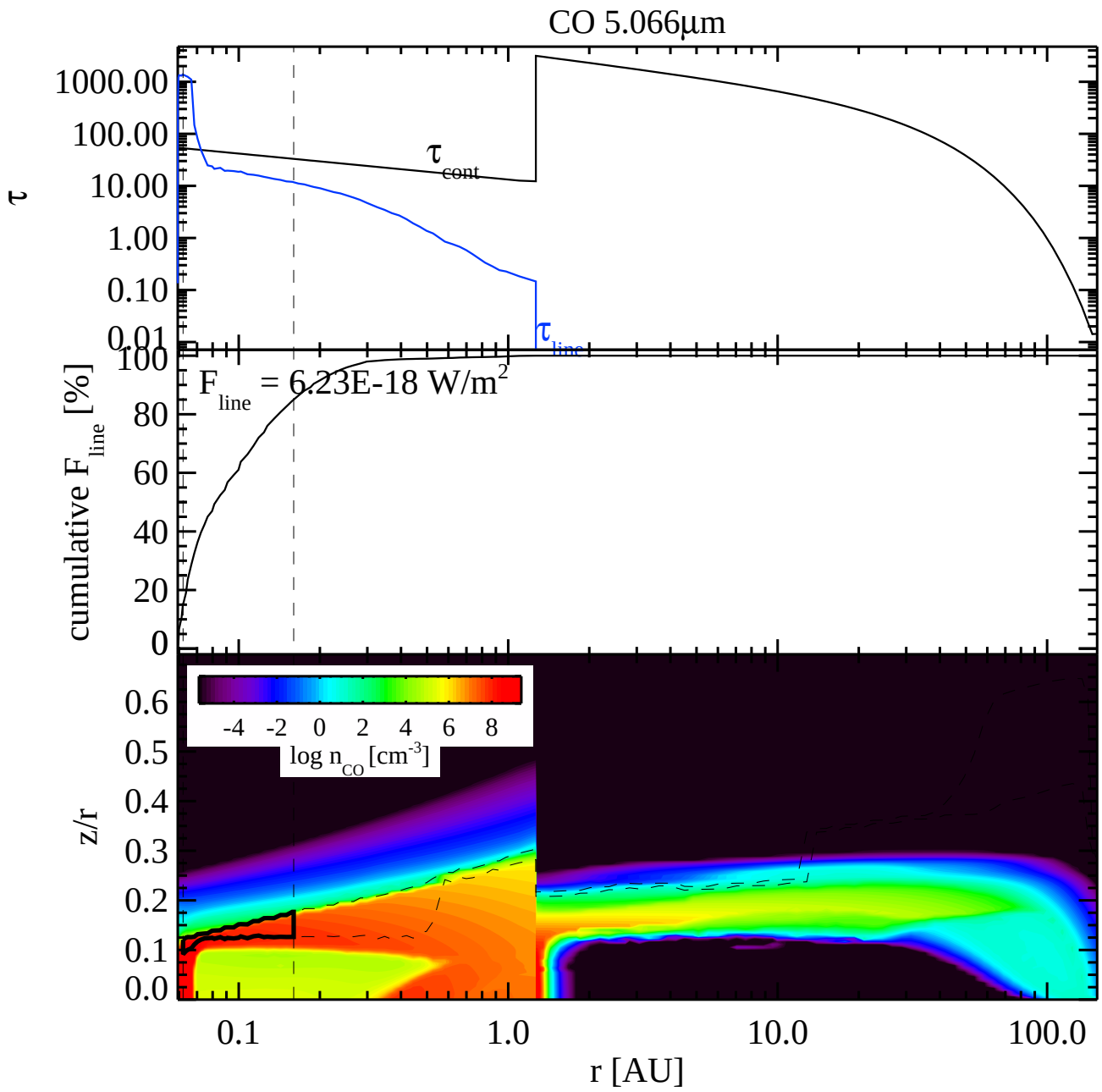

CO 4.700µm
τ line
τ cont
τ
F line = 8.58E-18 W/m2
cumulative F line [%]
log n CO [cm-3]
-4 -2 0 2 4 6 8
z/r
r [AU]
0.1
1.0
10.0
100.0

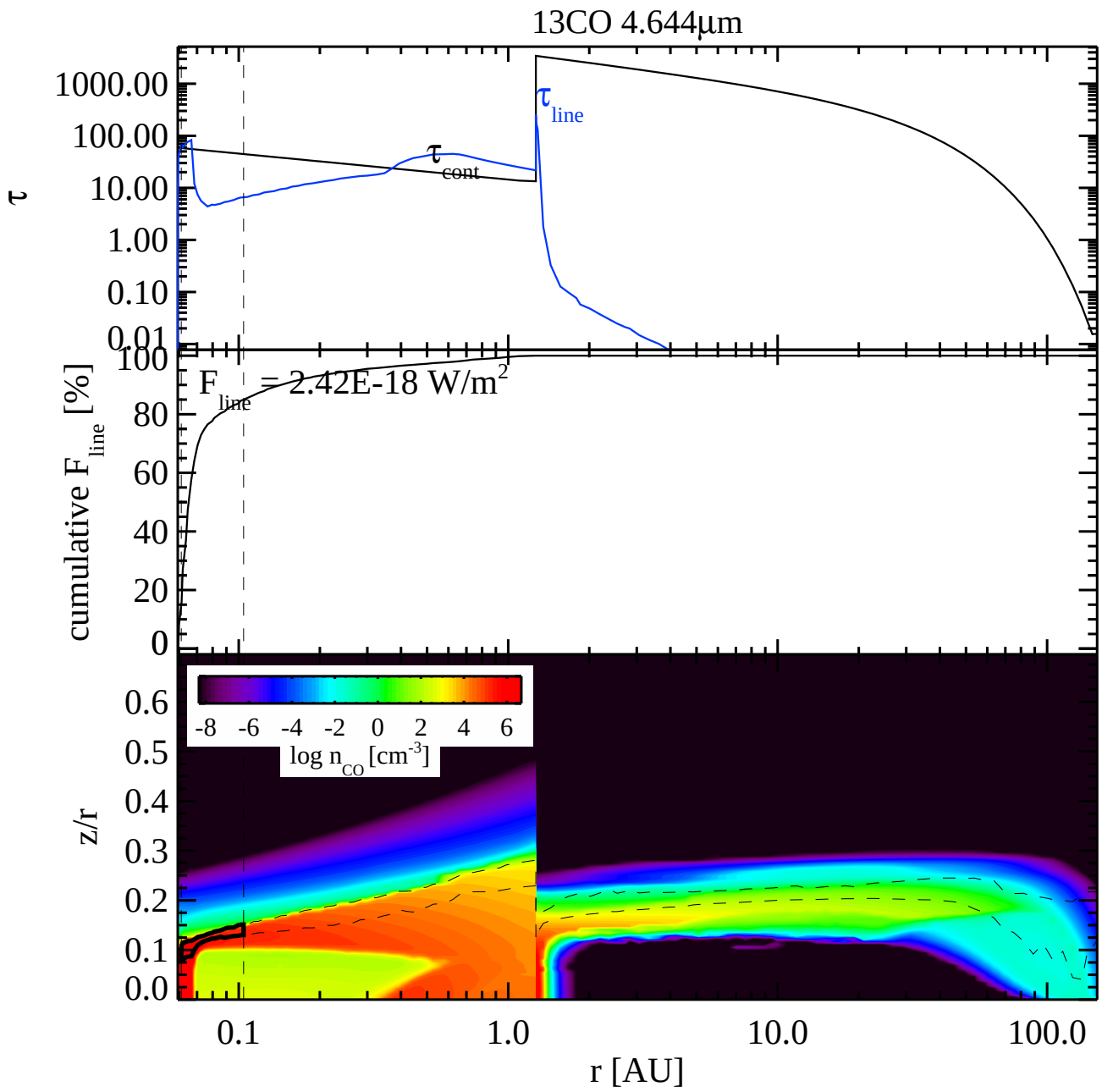

CO 4.736µm
τ line
τ cont
τ
cumulative F line [%]
F line = 9.34E-18 W/m2
log n CO [cm-3]
-4 -2 0 2 4 6 8
z/r
r [AU]
0.1
1.0
10.0
100.0

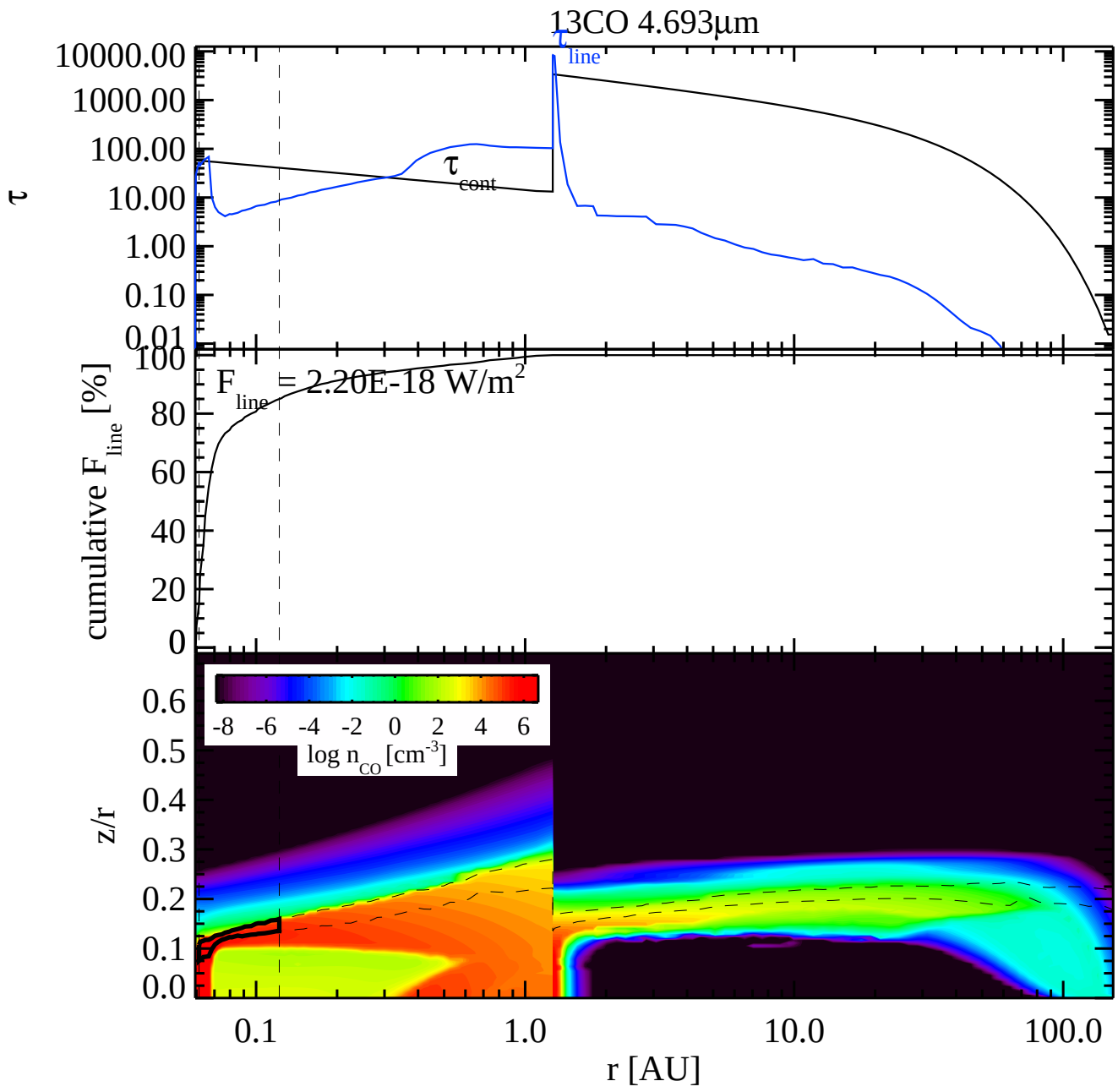

CO 4.774µm
τ line
τ cont
τ
10^4
10^2
10^0
10^-2
F line = 9.66E-18 W/m^2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n CO [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

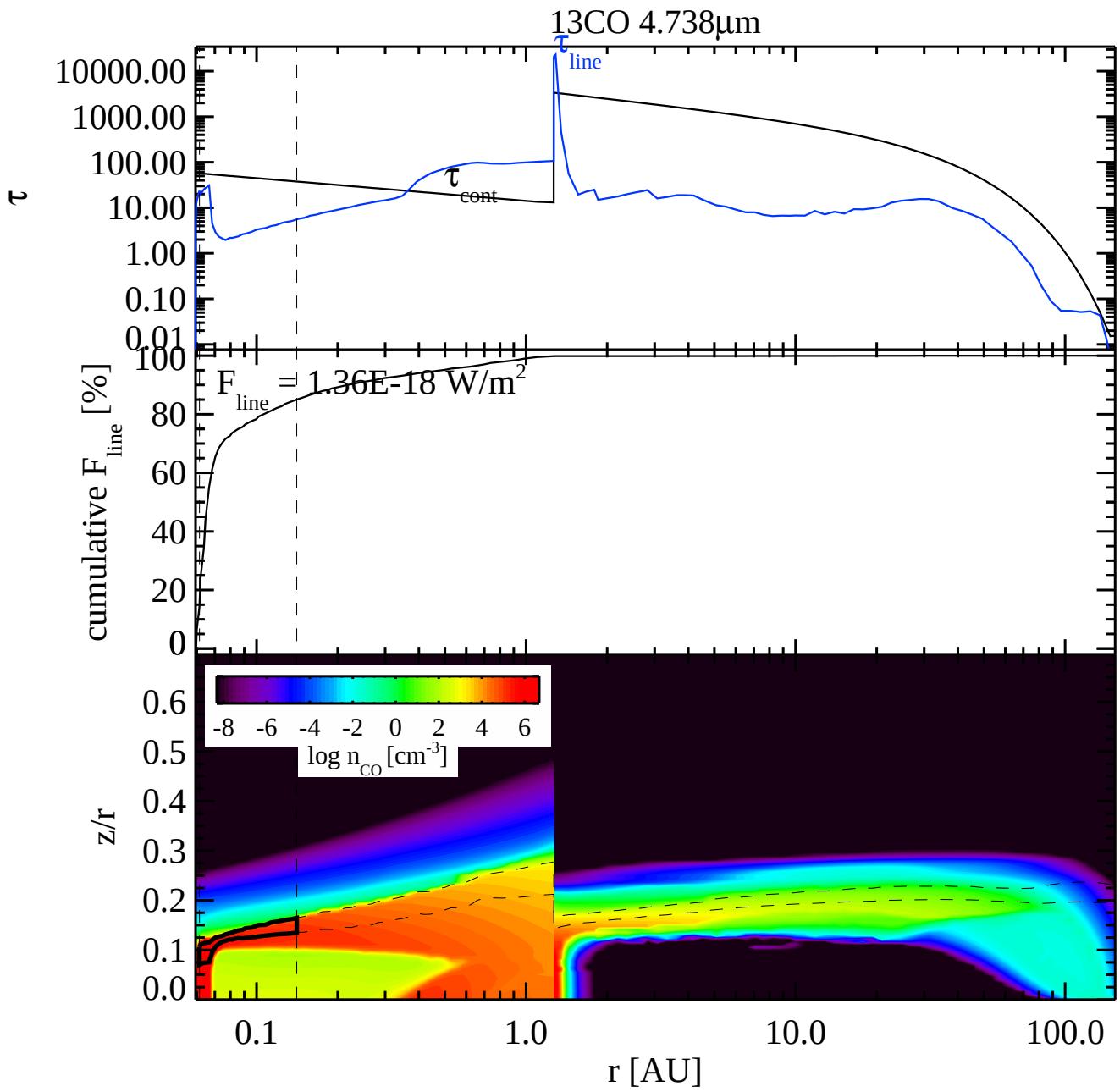

CO 4.920µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 8.94E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

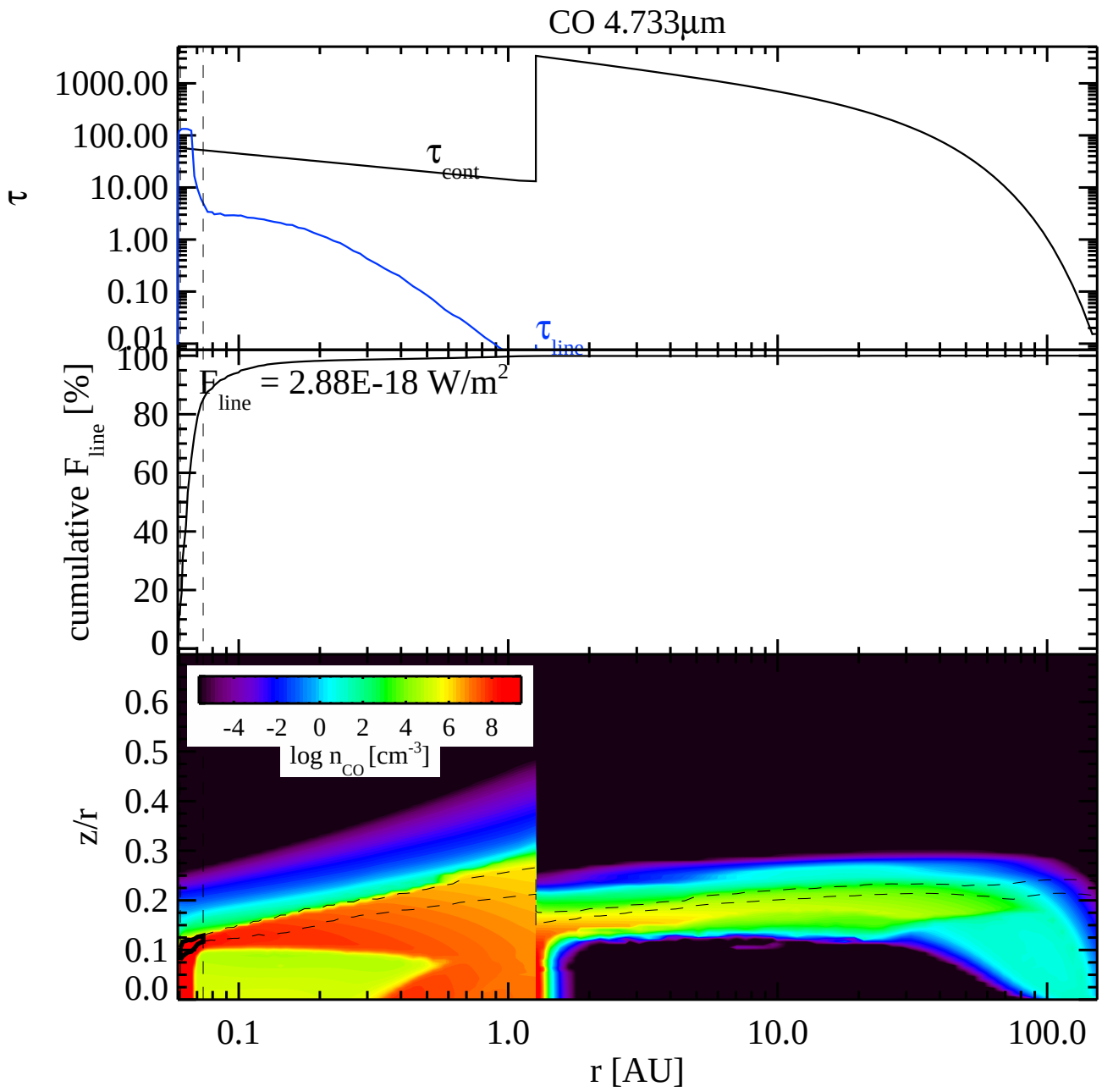

CO 4.967µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 8.25E-18 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

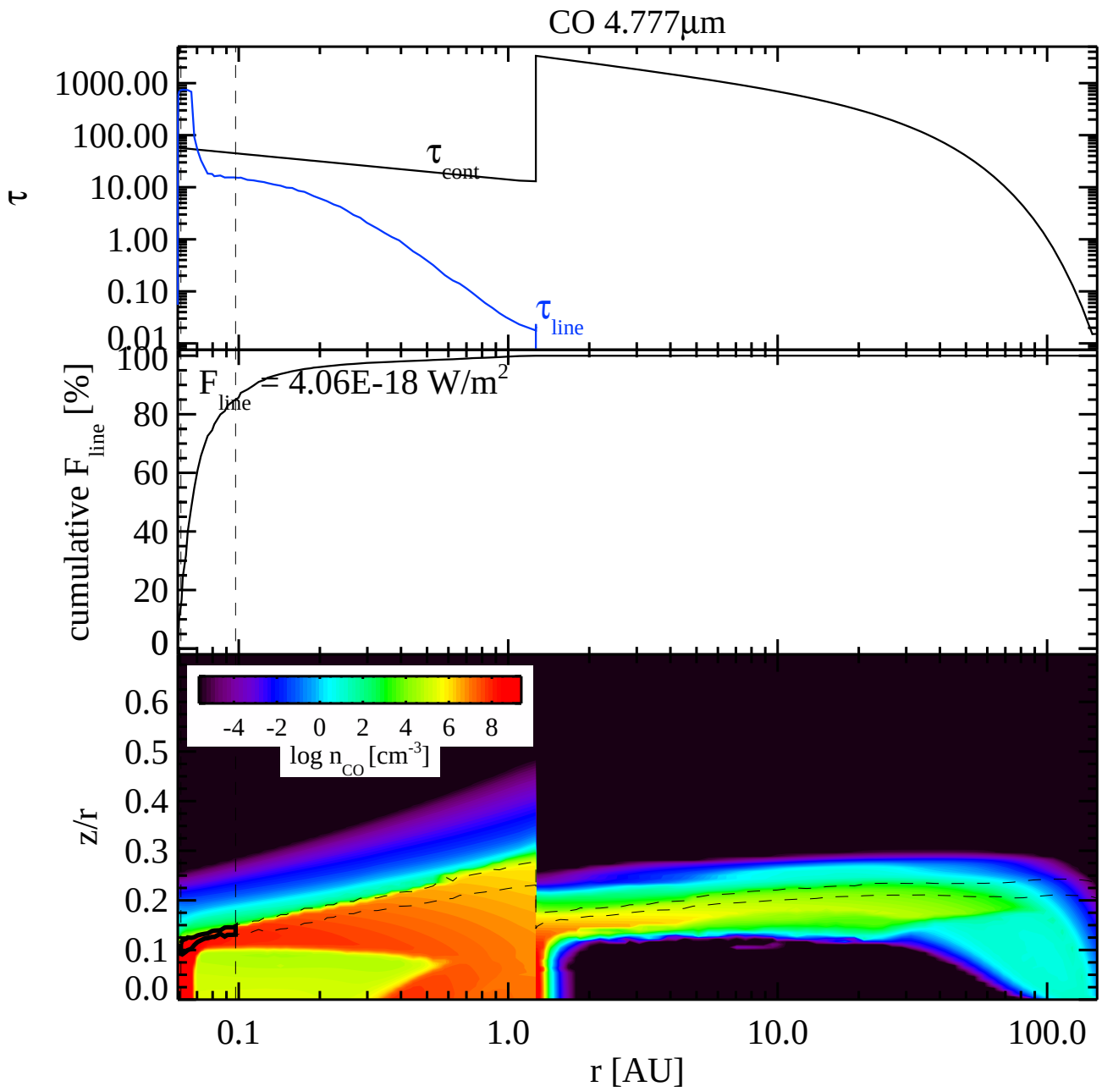

CO 5.066µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 6.23E-18 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

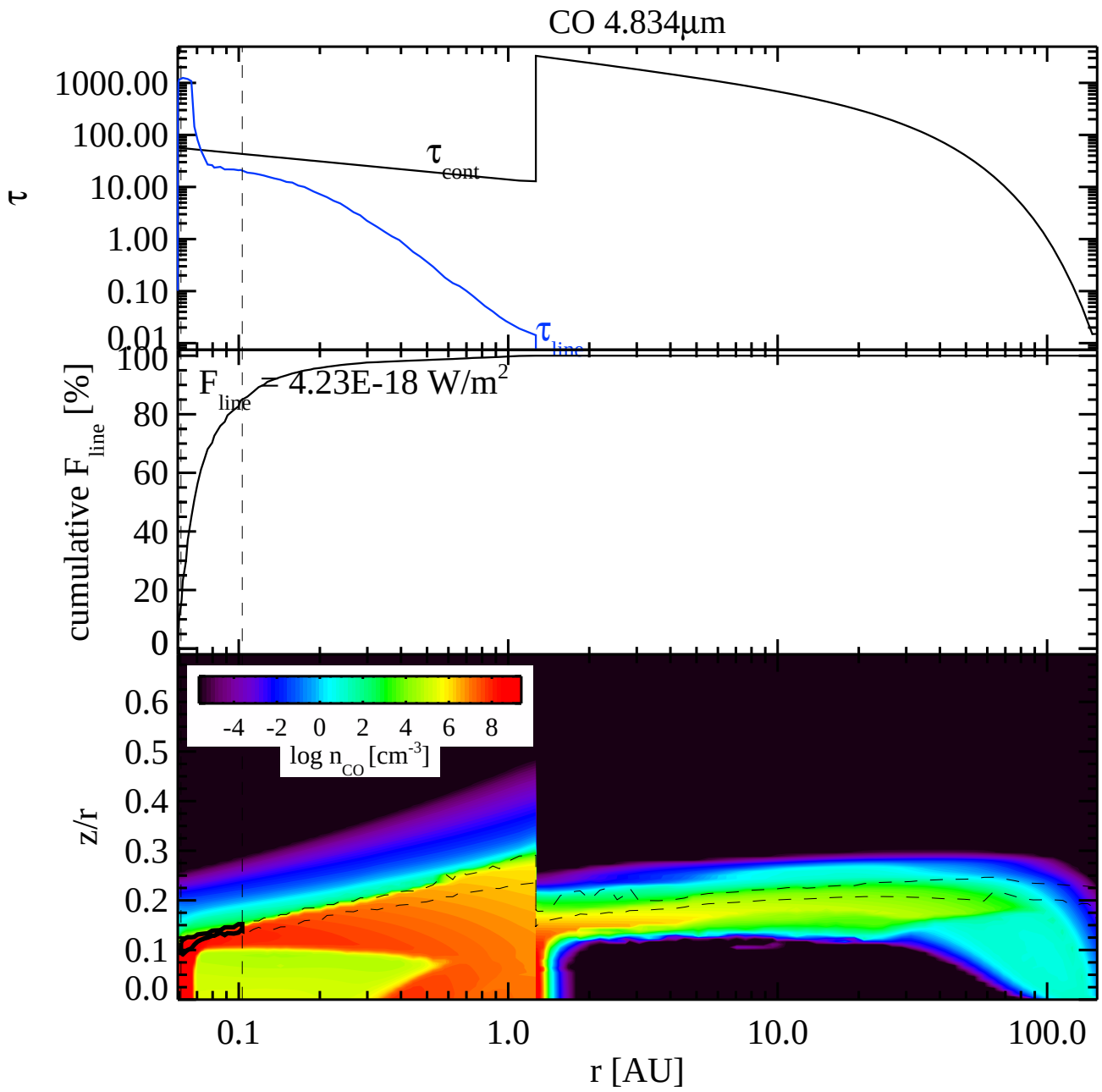

13CO 4.644µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 2.42E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

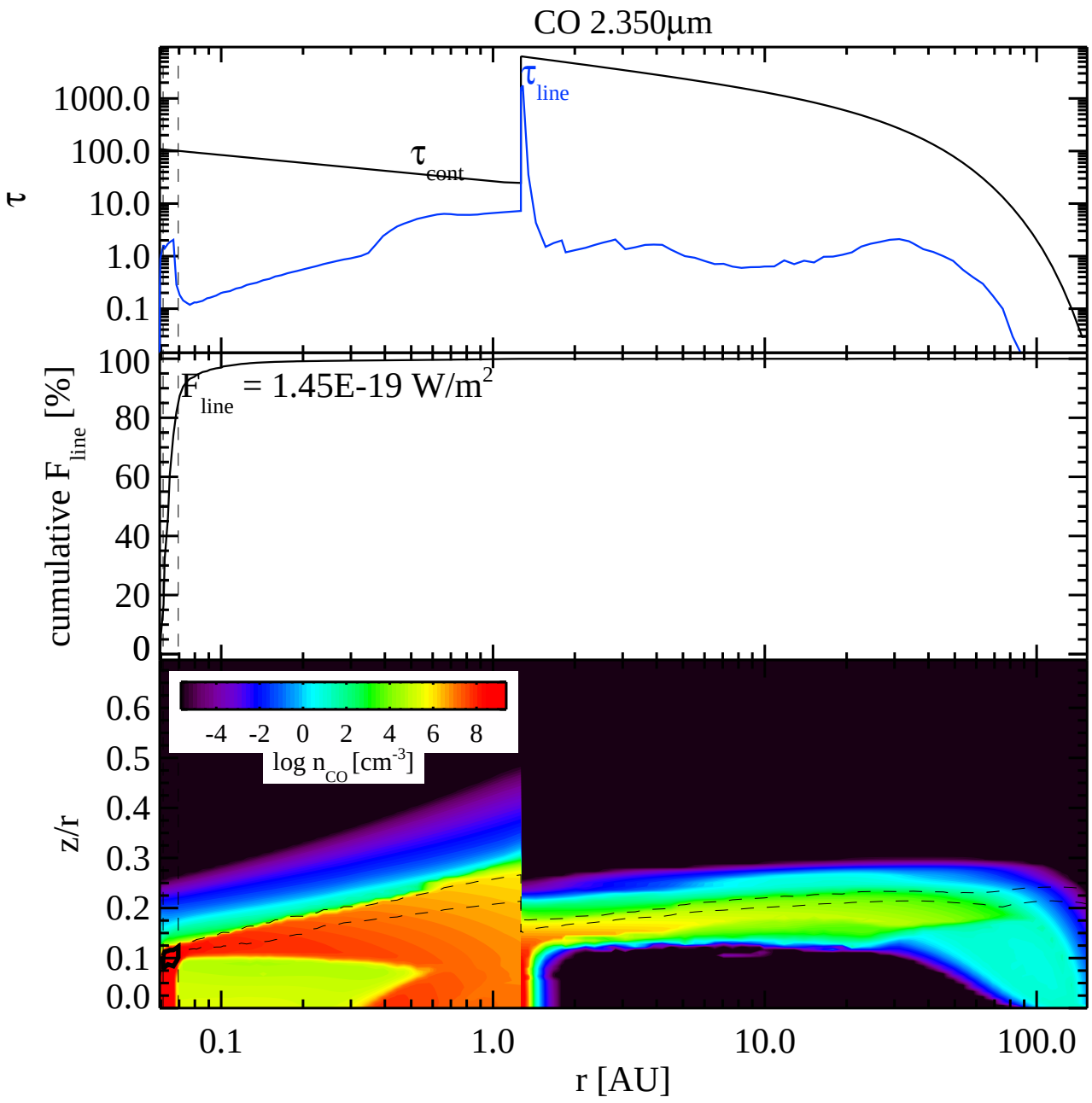

13CO 4.693µm
τ line
τ cont
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
F line = 2.20E-18 W/m2
cumulative F line [%]
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

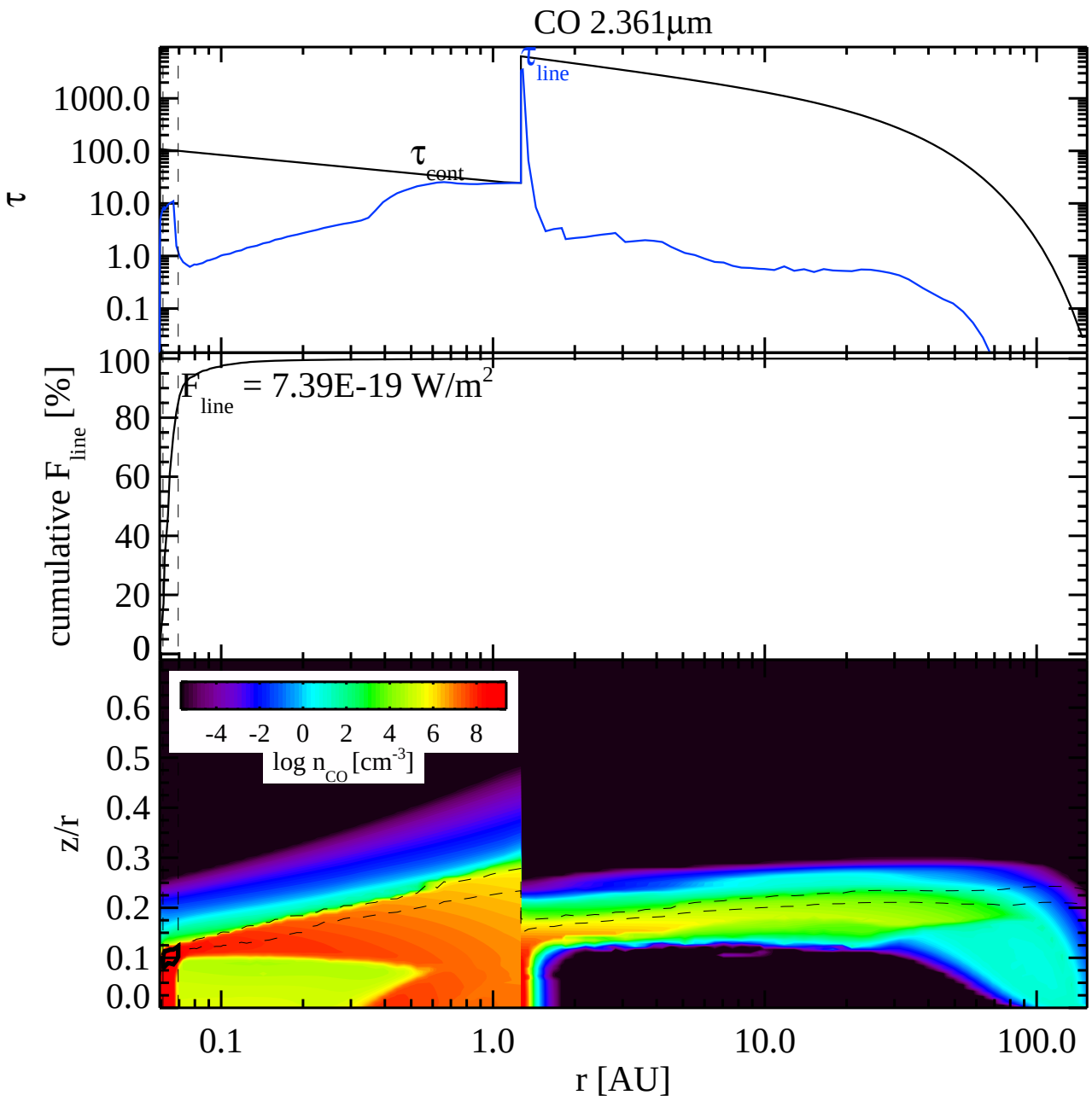

13CO 4.738µm
τ line
τ cont
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
F line = 1.36E-18 W/m2
cumulative F line [%]
100
80
60
40
20
0
-8 -6 -4 -2 0 2 4 6
log n CO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

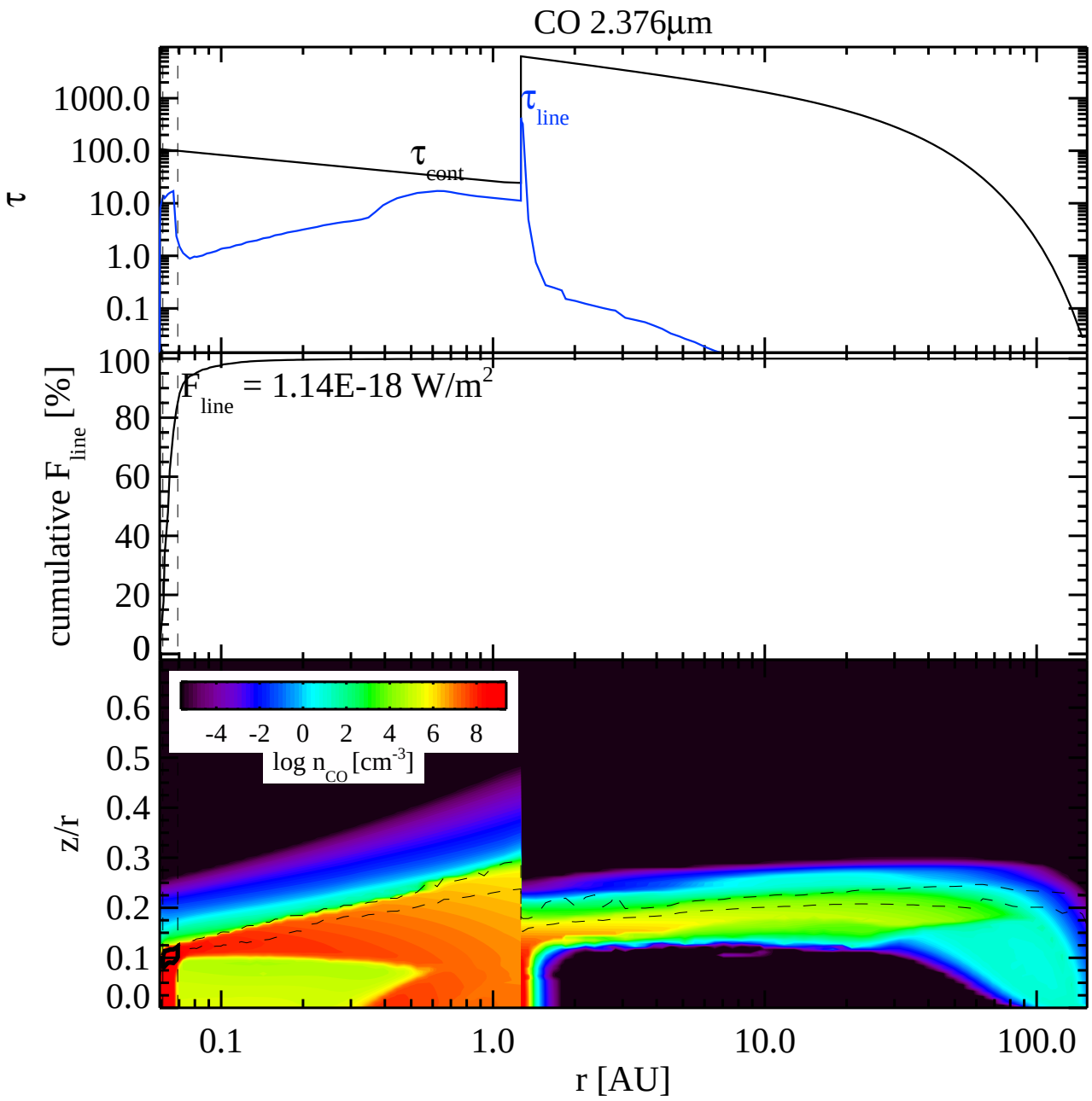

CO 4.733µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 2.88E-18 W/m2
-4 -2 0 2 4 6 8
log n CO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

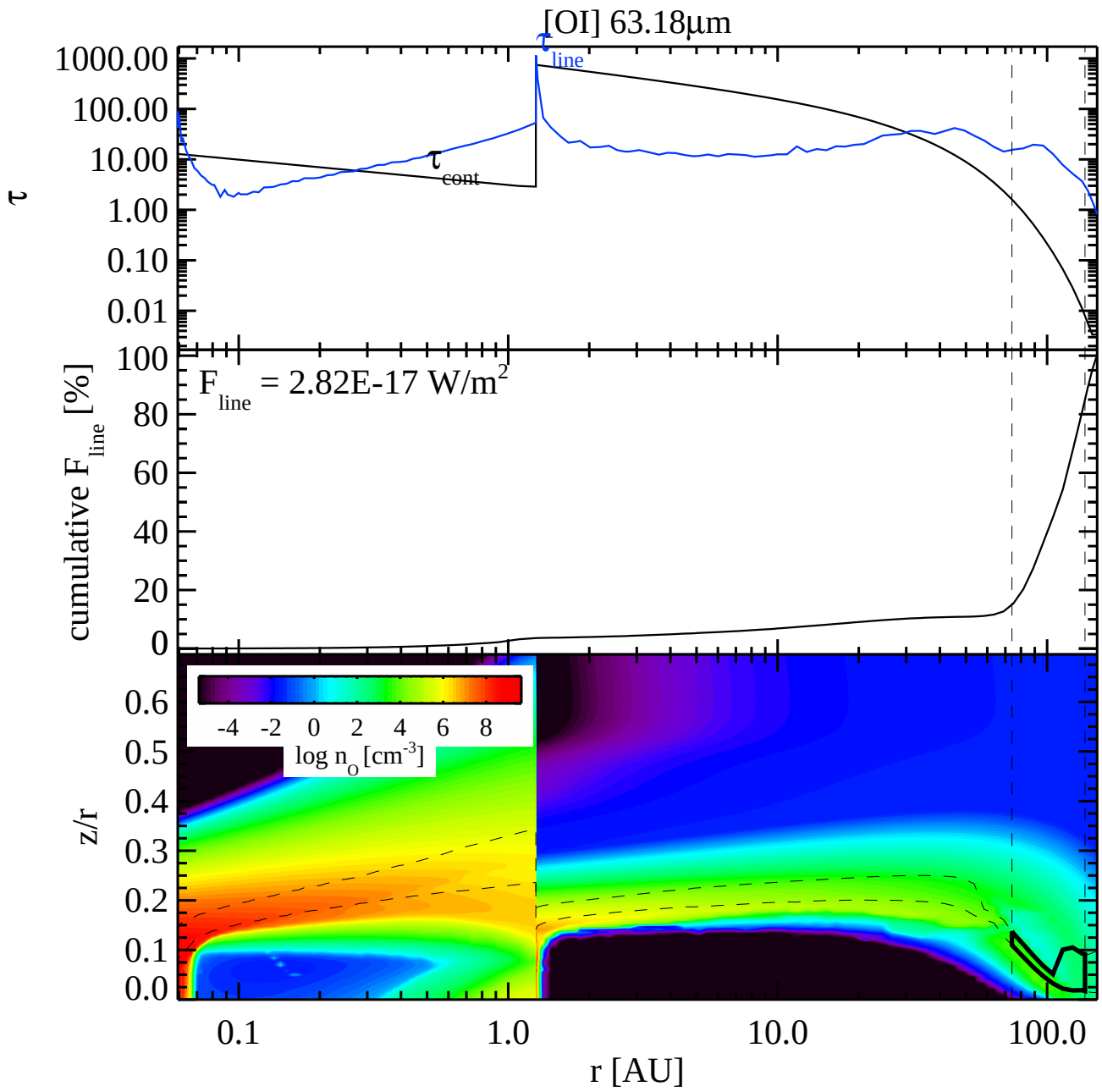

CO 4.777µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 4.06E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

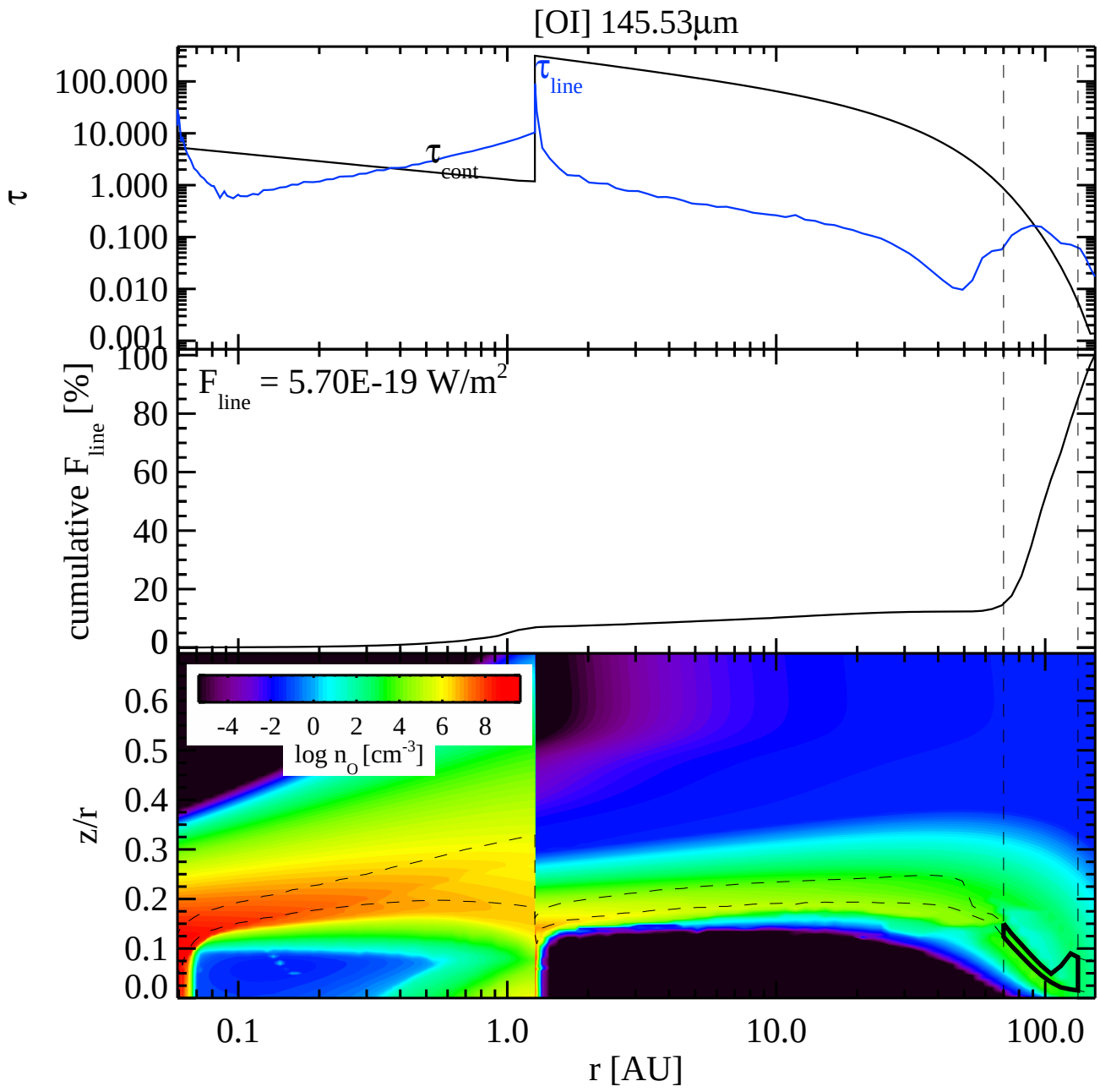

CO 4.834µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 4.23E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

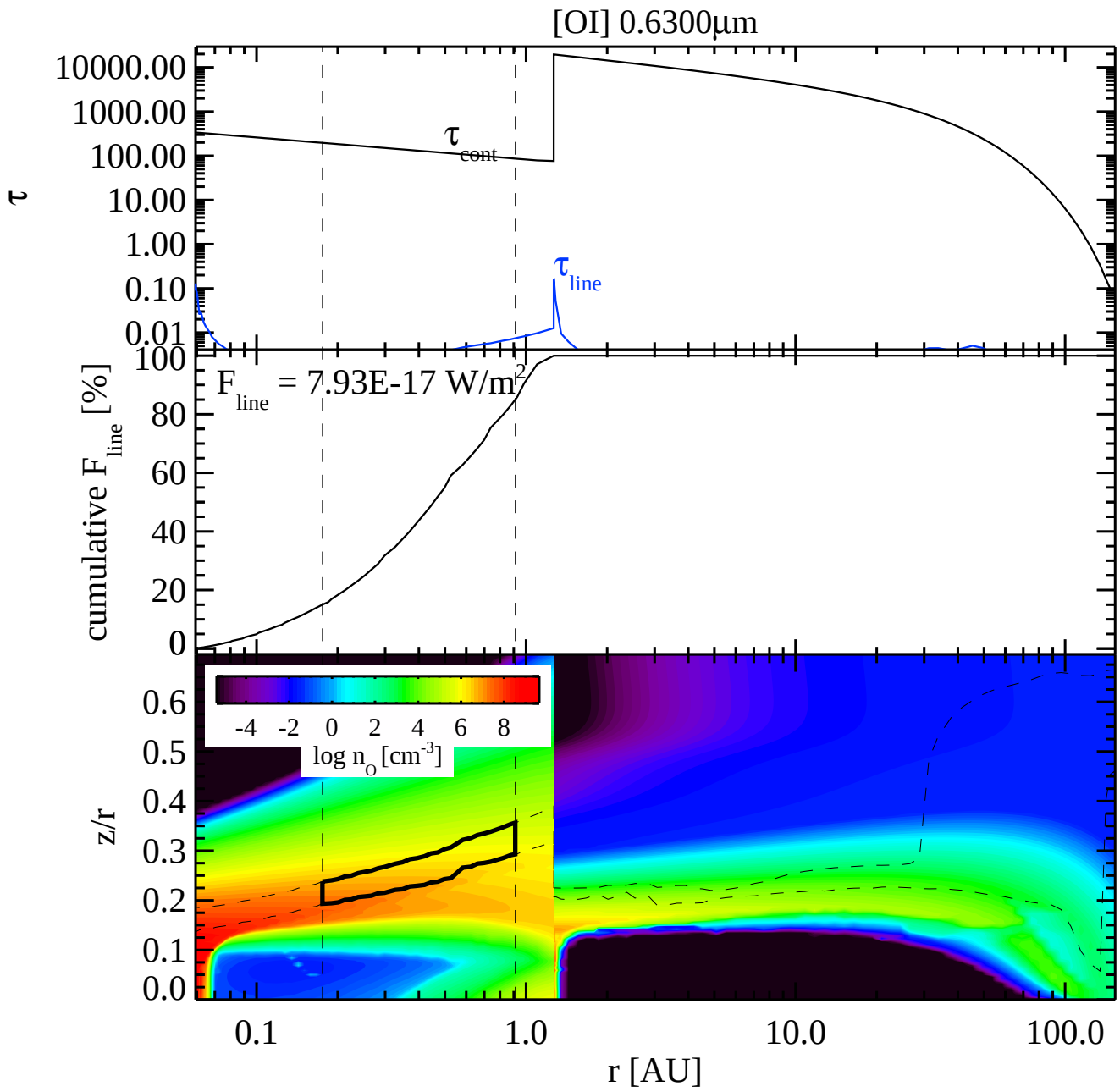

CO 2.350µm
τ
1000.0
100.0
10.0
1.0
0.1
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.45E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

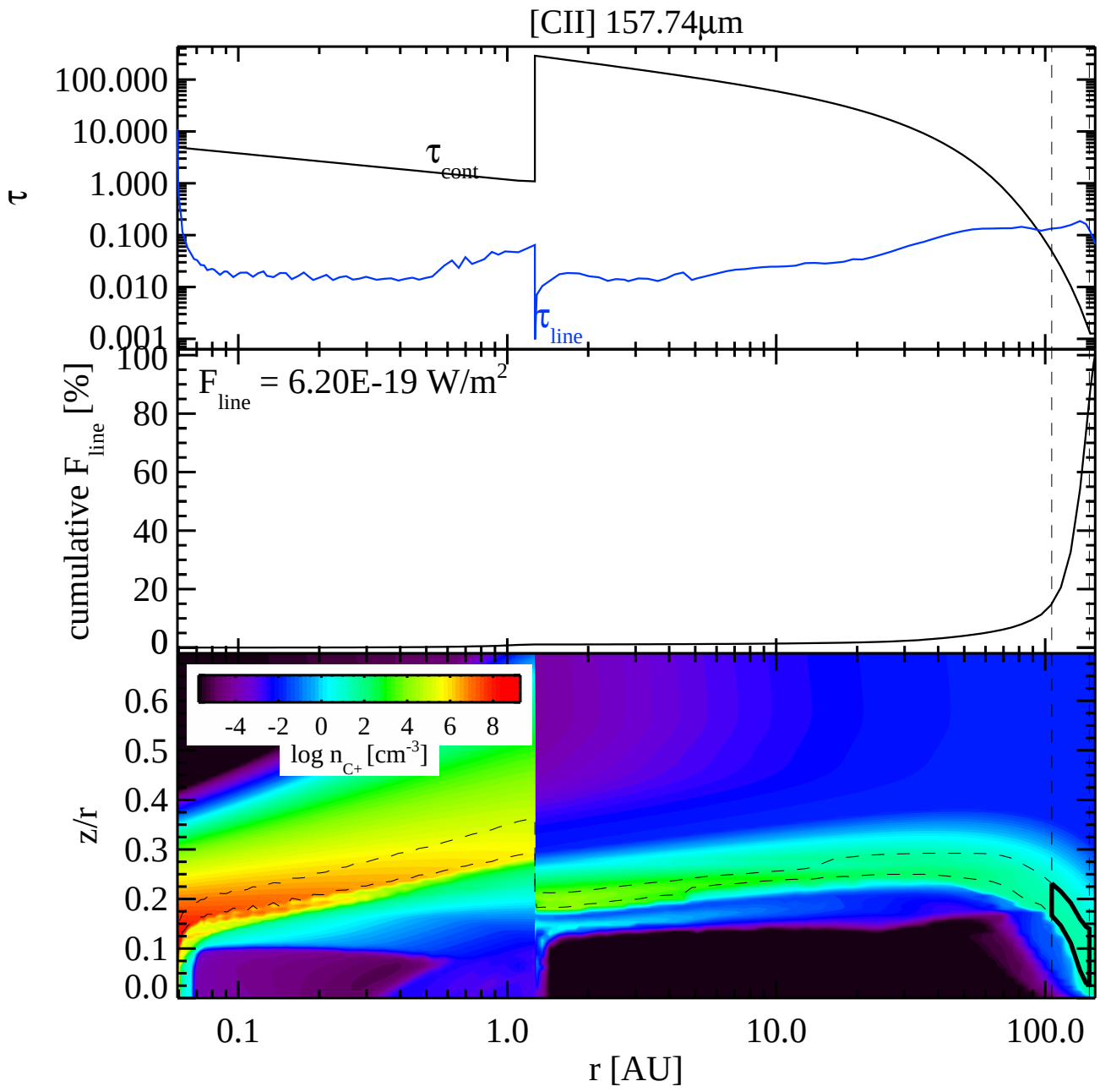

CO 2.361µm
τ
1000.0
100.0
10.0
1.0
0.1
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 7.39E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

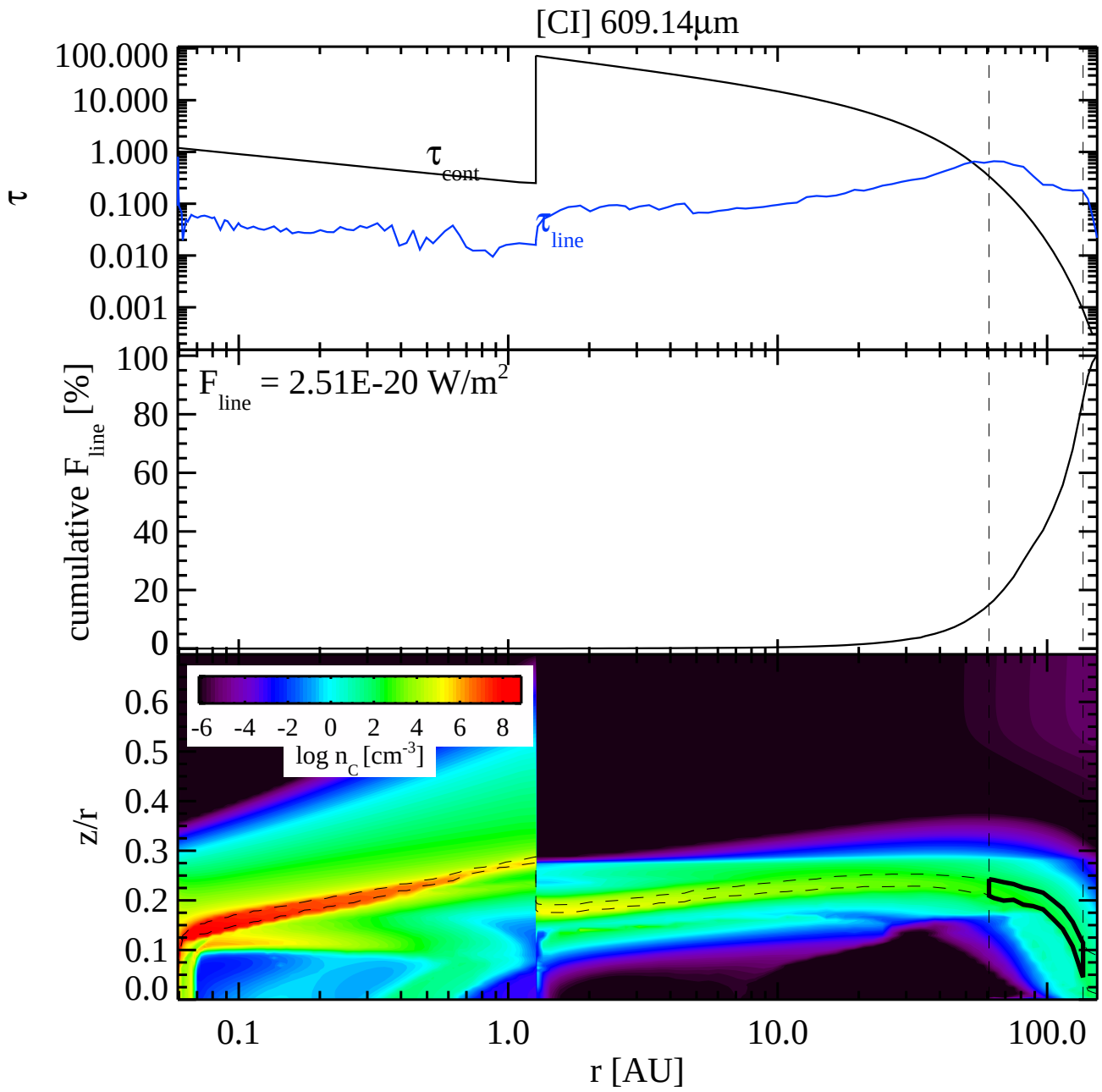

CO 2.376µm
τ
1000.0
100.0
10.0
1.0
0.1
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.14E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n CO [cm-3]
0.1
1.0
10.0
100.0
r [AU]

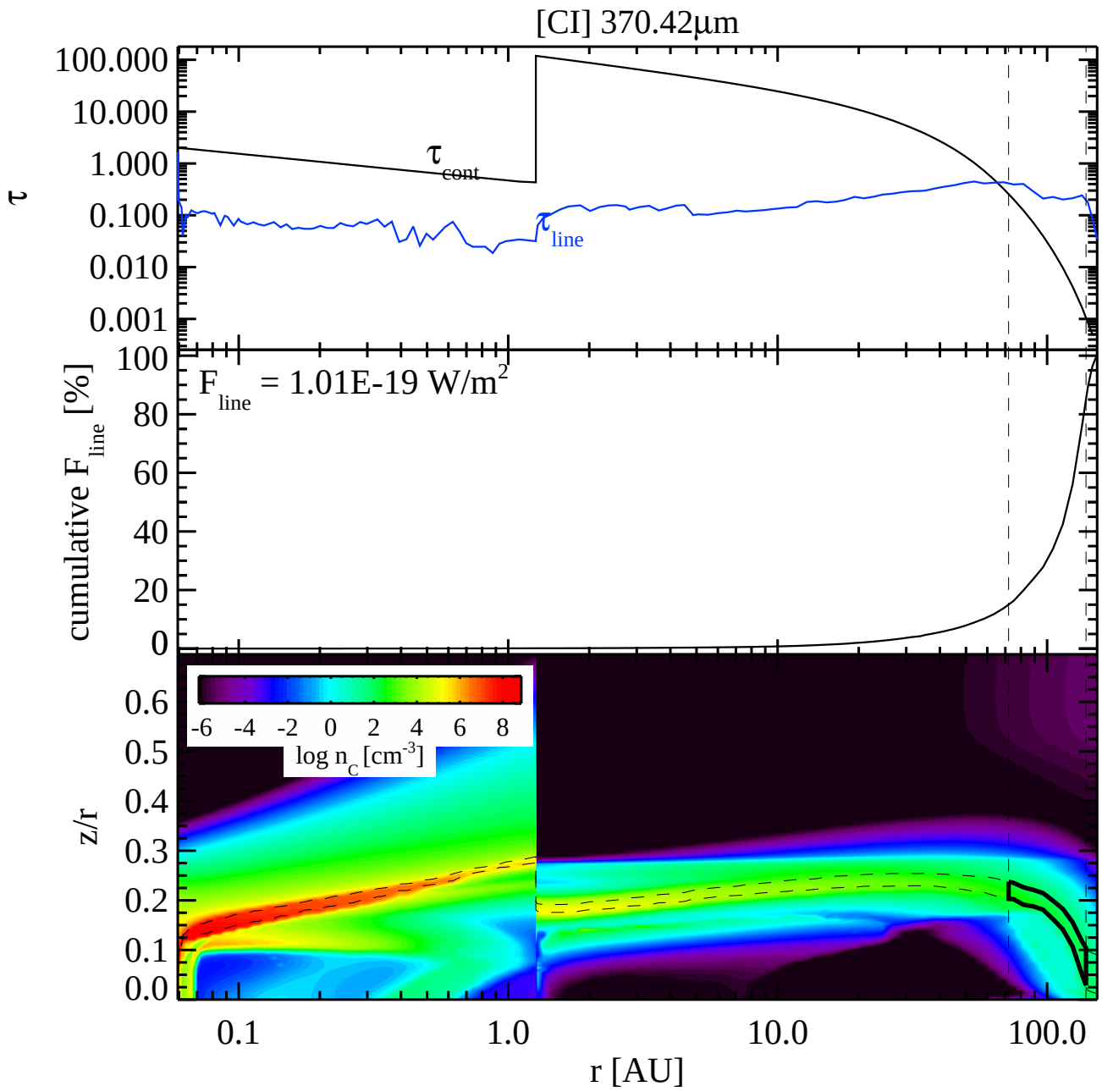

[OI] 63.18µm
τ
τ line
τ cont
1000.00
100.00
10.00
1.00
0.10
0.01
F line = 2.82E-17 W/m2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n O [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

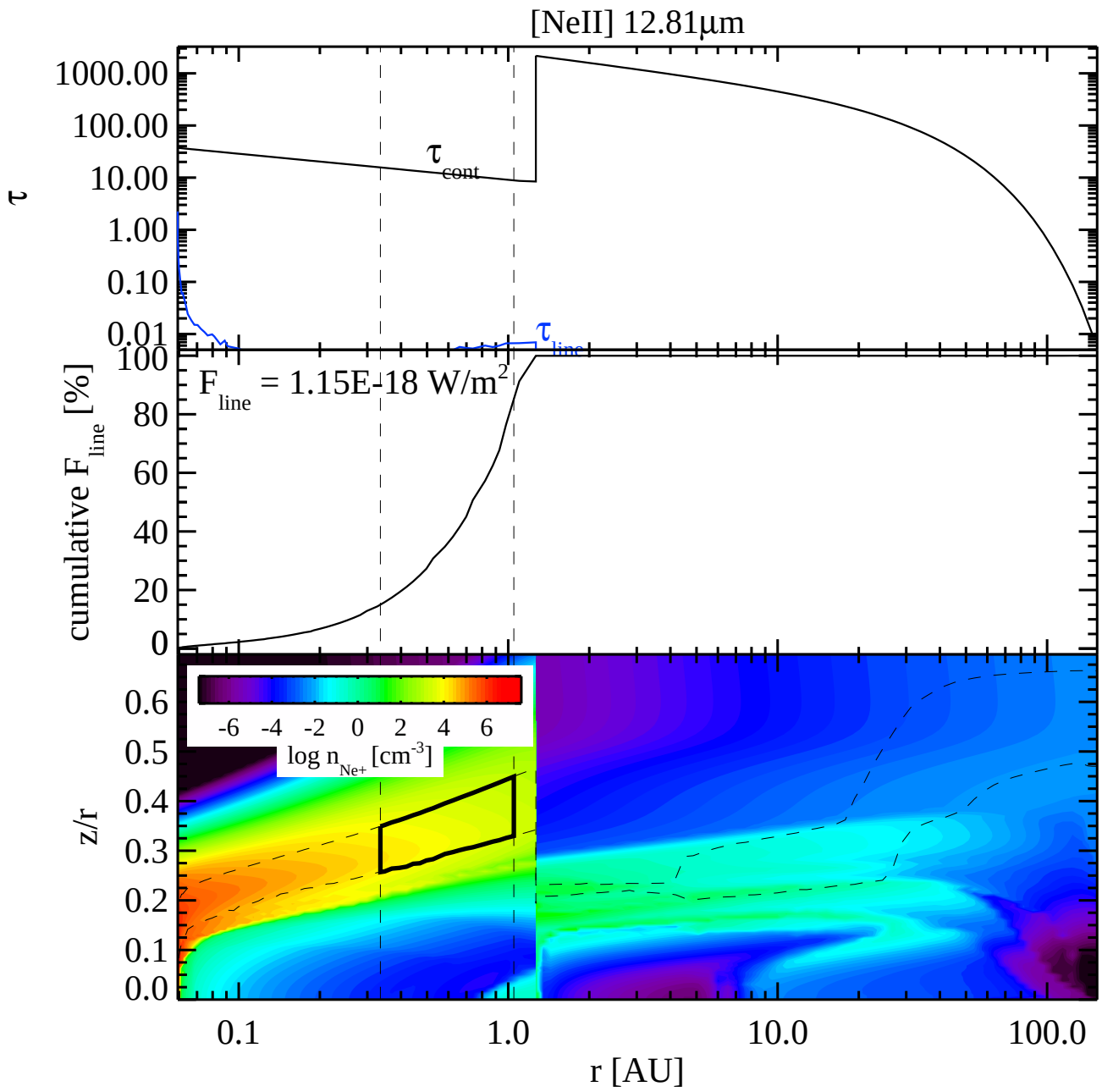

[OI] 145.53µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 5.70E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n O [cm-3]
0.1
1.0
10.0
100.0
r [AU]

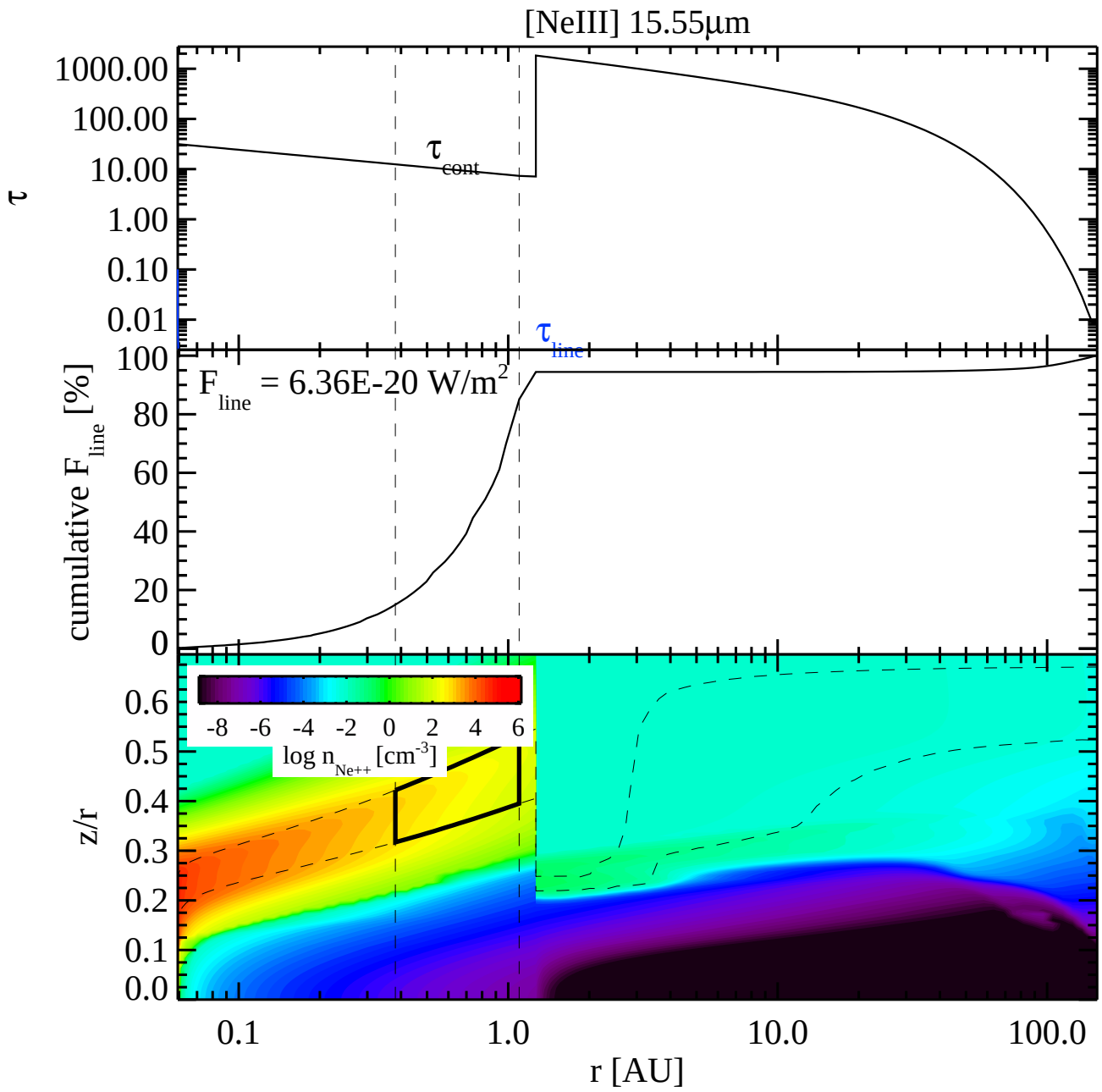

[OI] 0.6300µm
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 7.93E-17 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n O [cm-3]
0.1
1.0
10.0
100.0
r [AU]

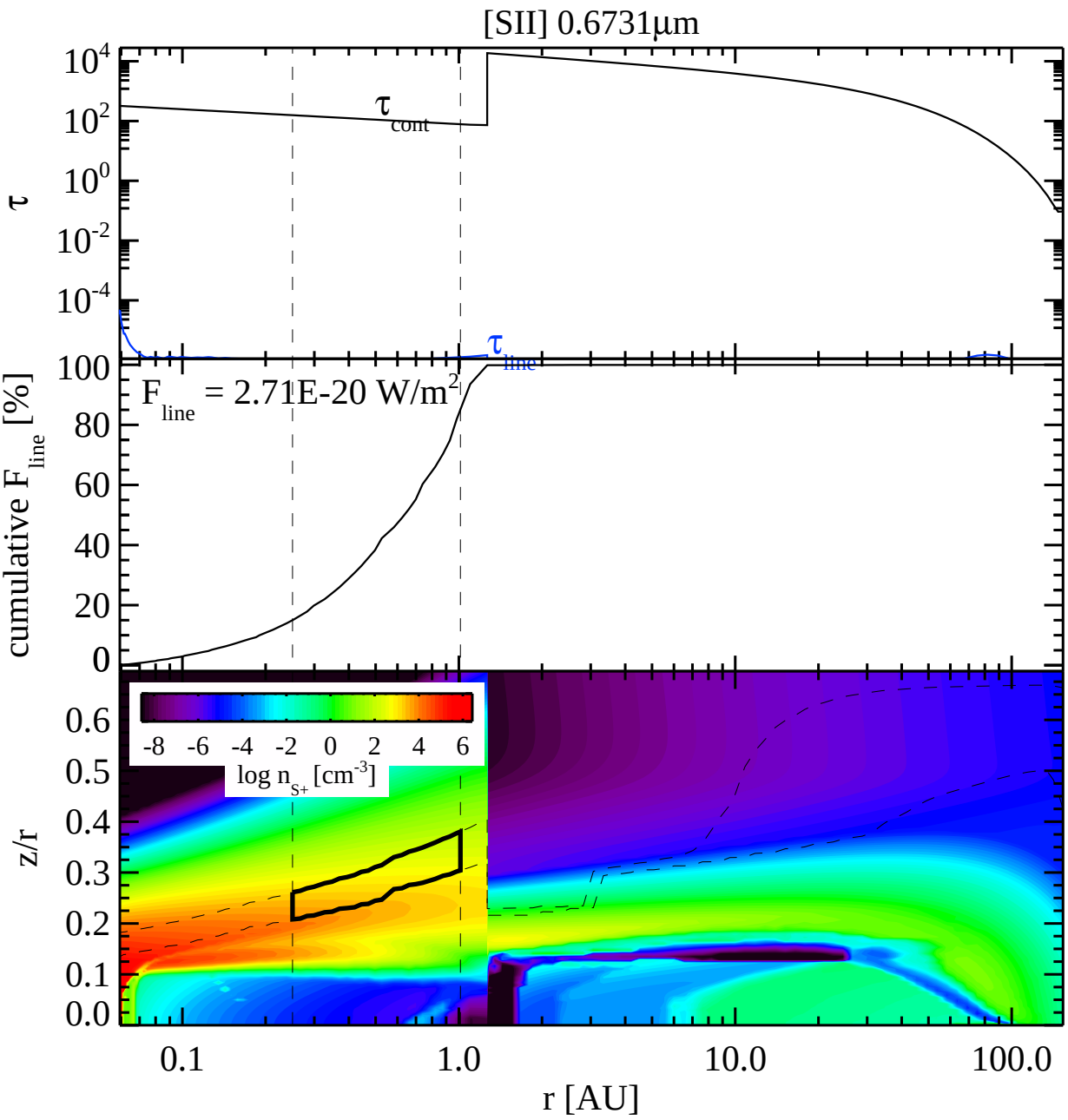

[CII] 157.74µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
F line = 6.20E-19 W/m2
cumulative F line [%]
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n C+ [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

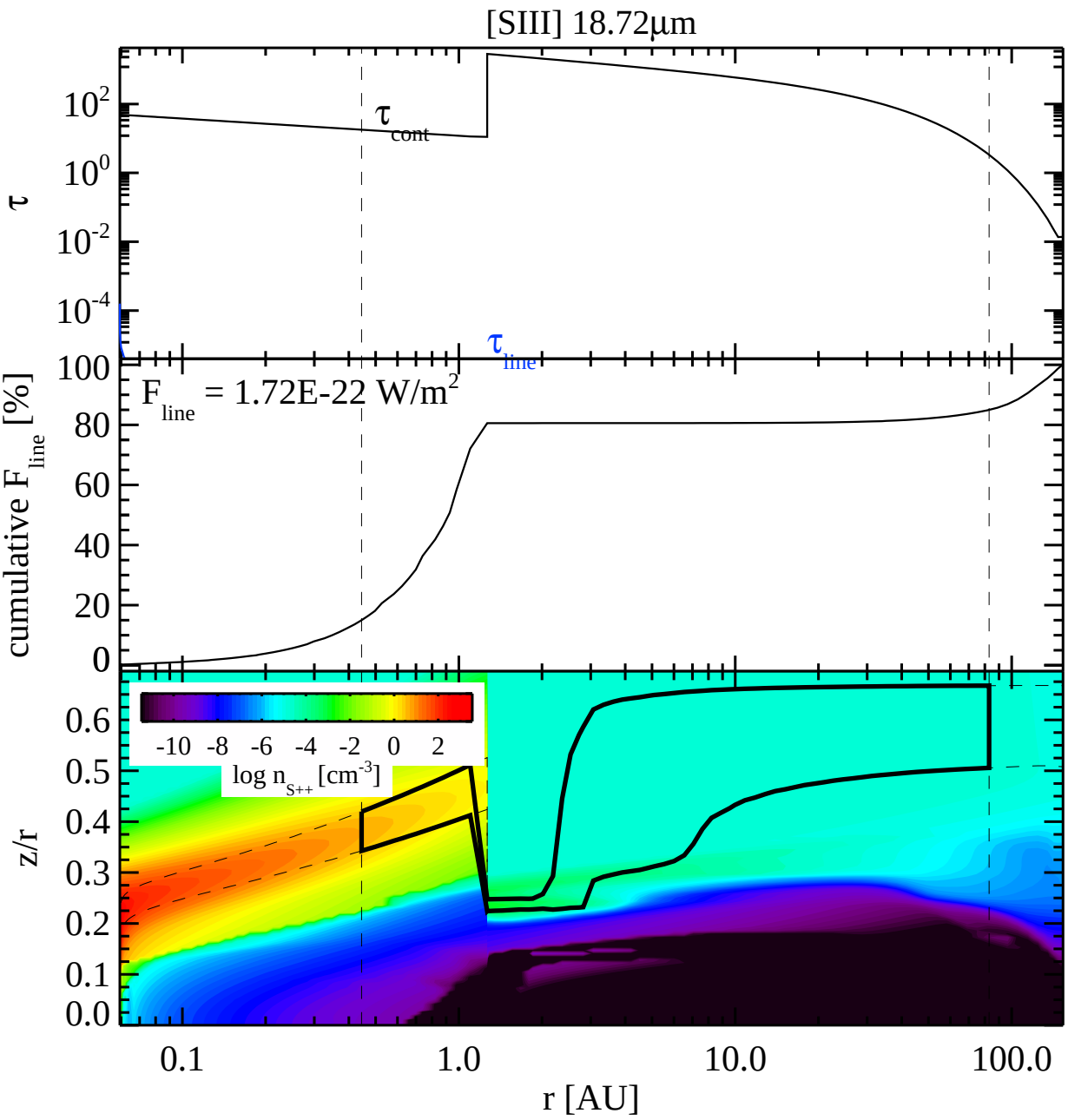

[CI] 609.14µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
cumulative F line [%]
F line = 2.51E-20 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n C [cm-3]
0.1
1.0
10.0
100.0
r [AU]

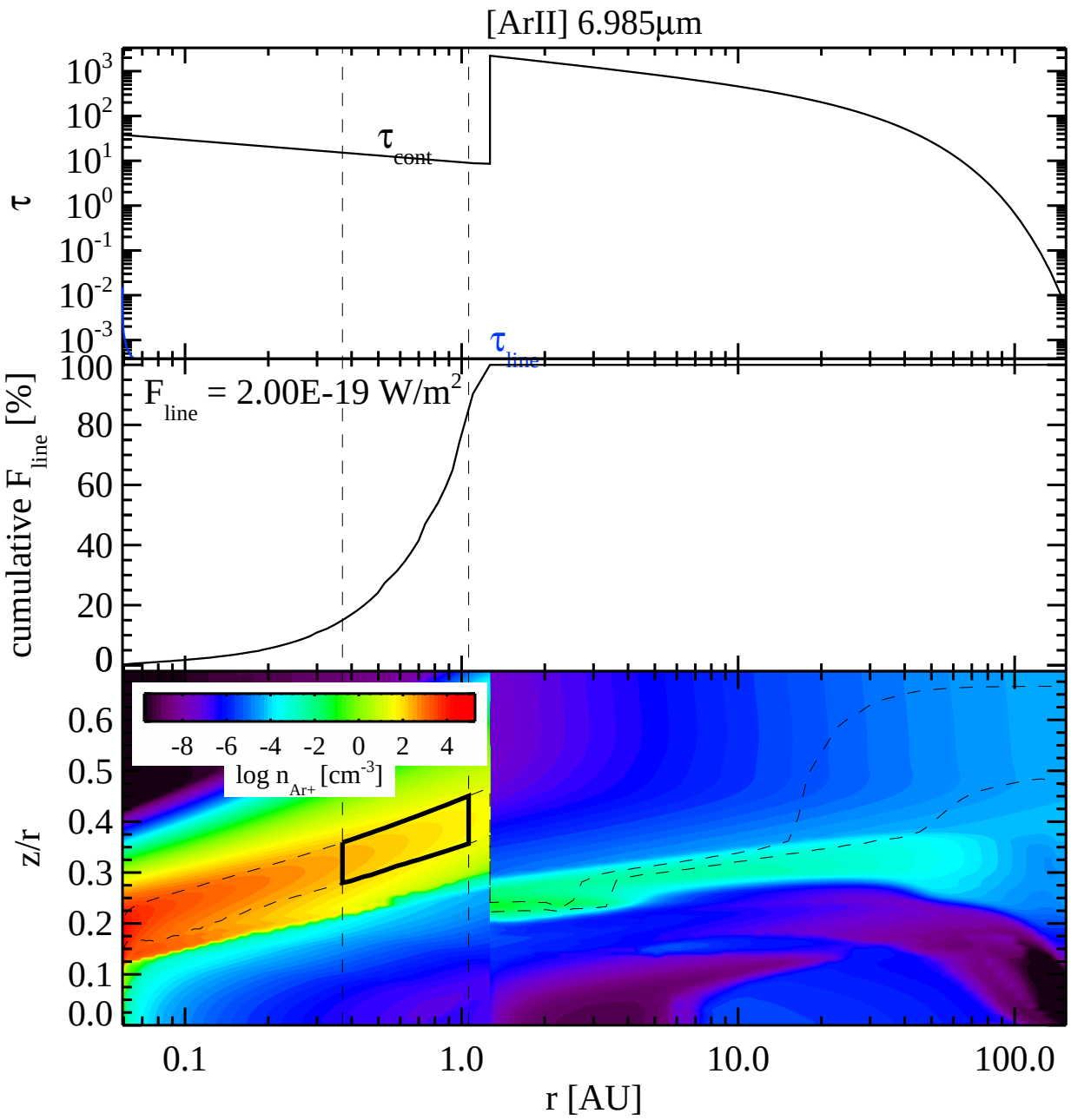

[CI] 370.42µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
F line = 1.01E-19 W/m2
cumulative F line [%]
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n C [cm-3]
0.1
1.0
10.0
100.0
r [AU]

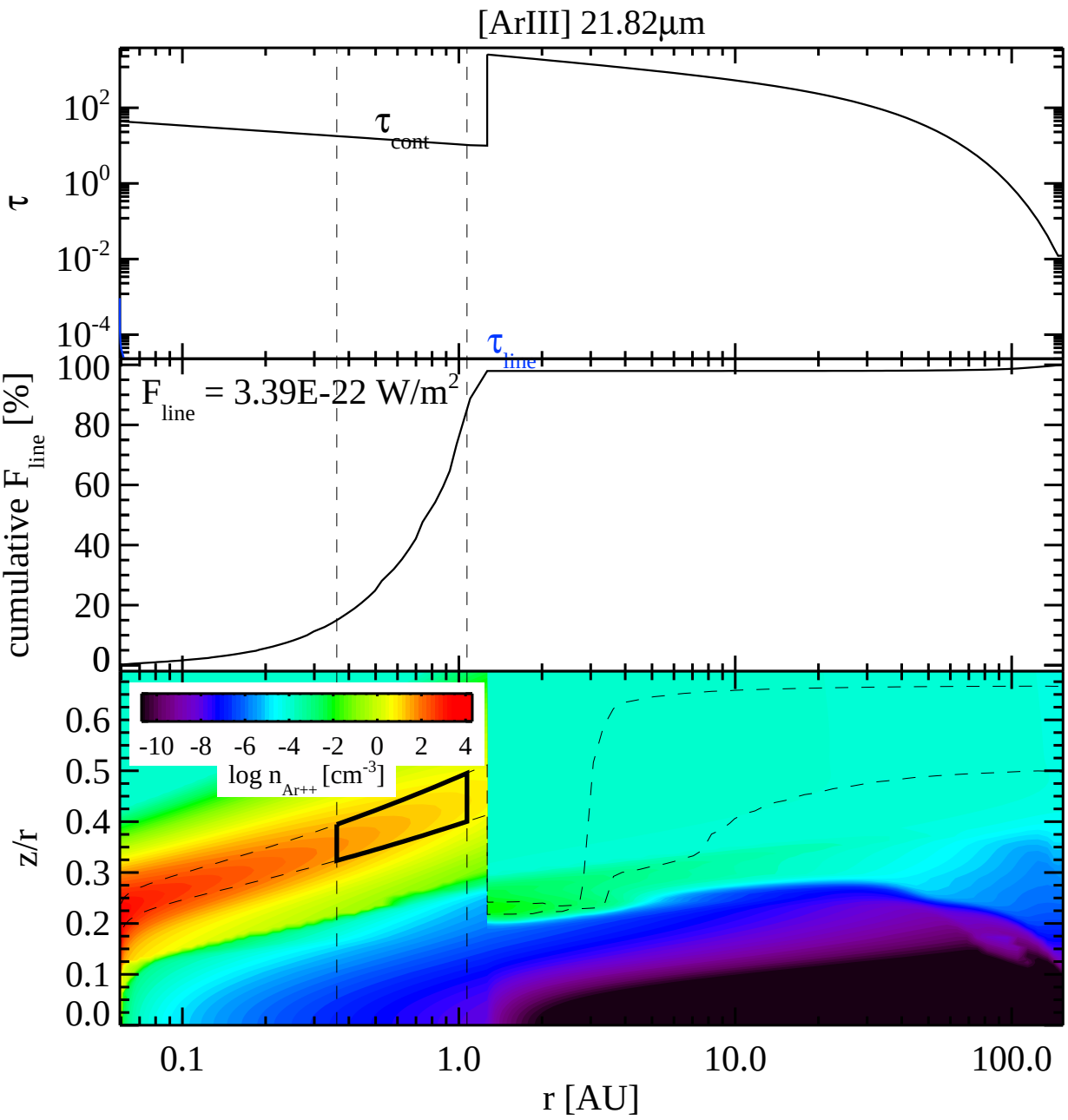

[NeII] 12.81µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.15E-18 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6
log n Ne+ [cm-3]
0.1
1.0
10.0
100.0
r [AU]

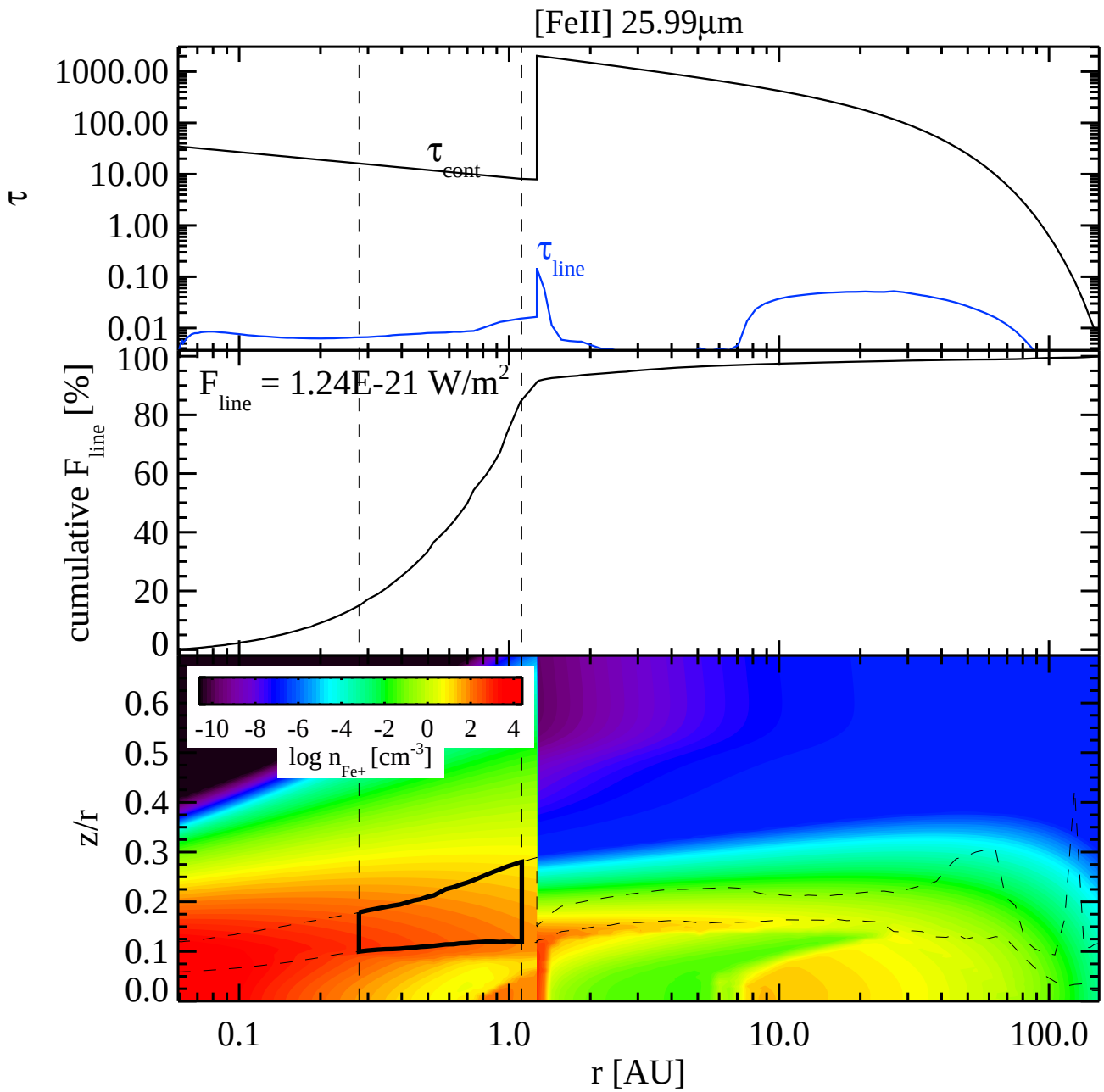

[NeIII] 15.55µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 6.36E-20 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n Ne++ [cm-3]
0.1
1.0
10.0
100.0
r [AU]

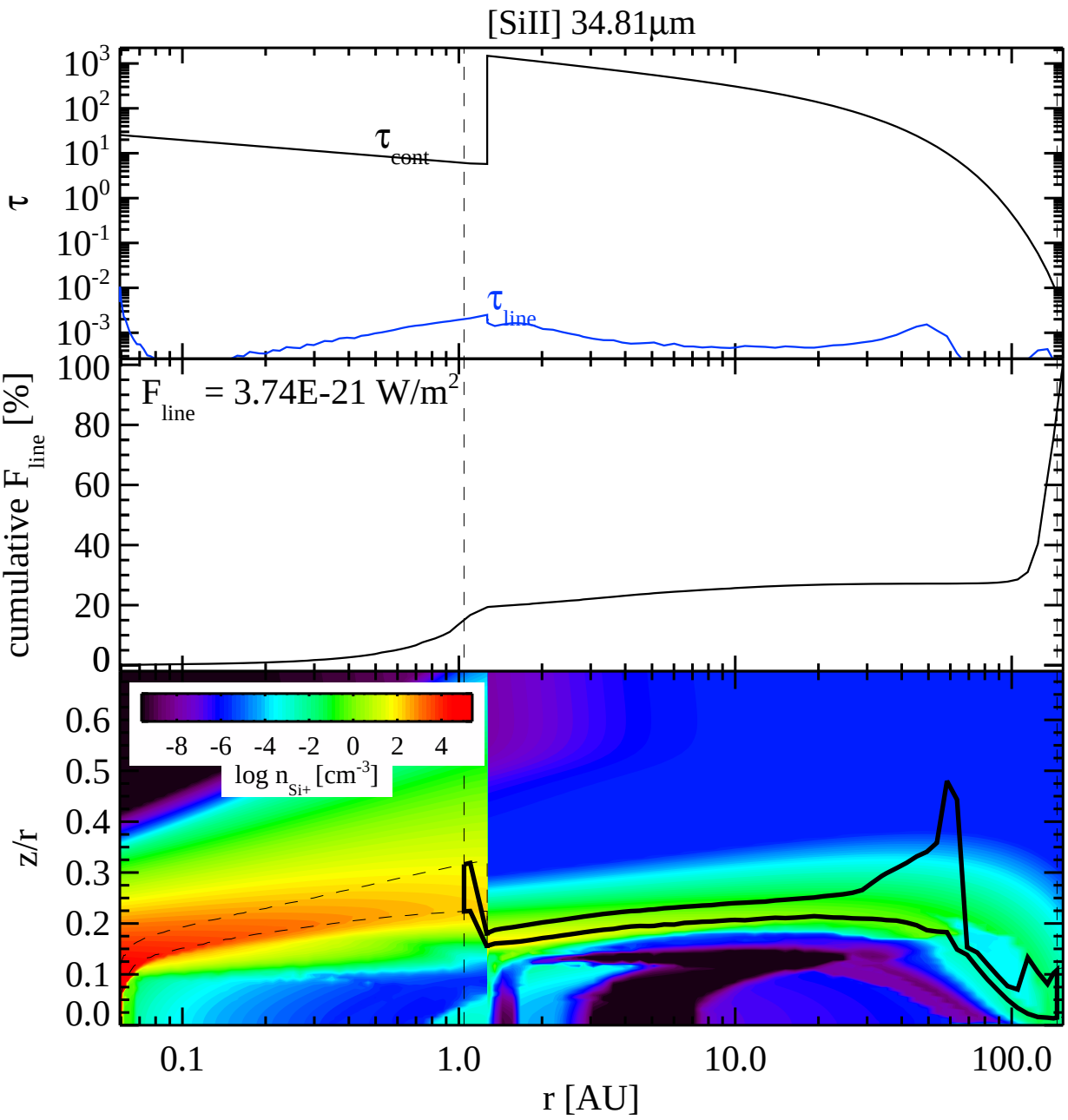

[SII] 0.6731µm
τ
10^4
10^2
10^0
10^{-2}
10^{-4}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.71E-20 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n_{S+} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

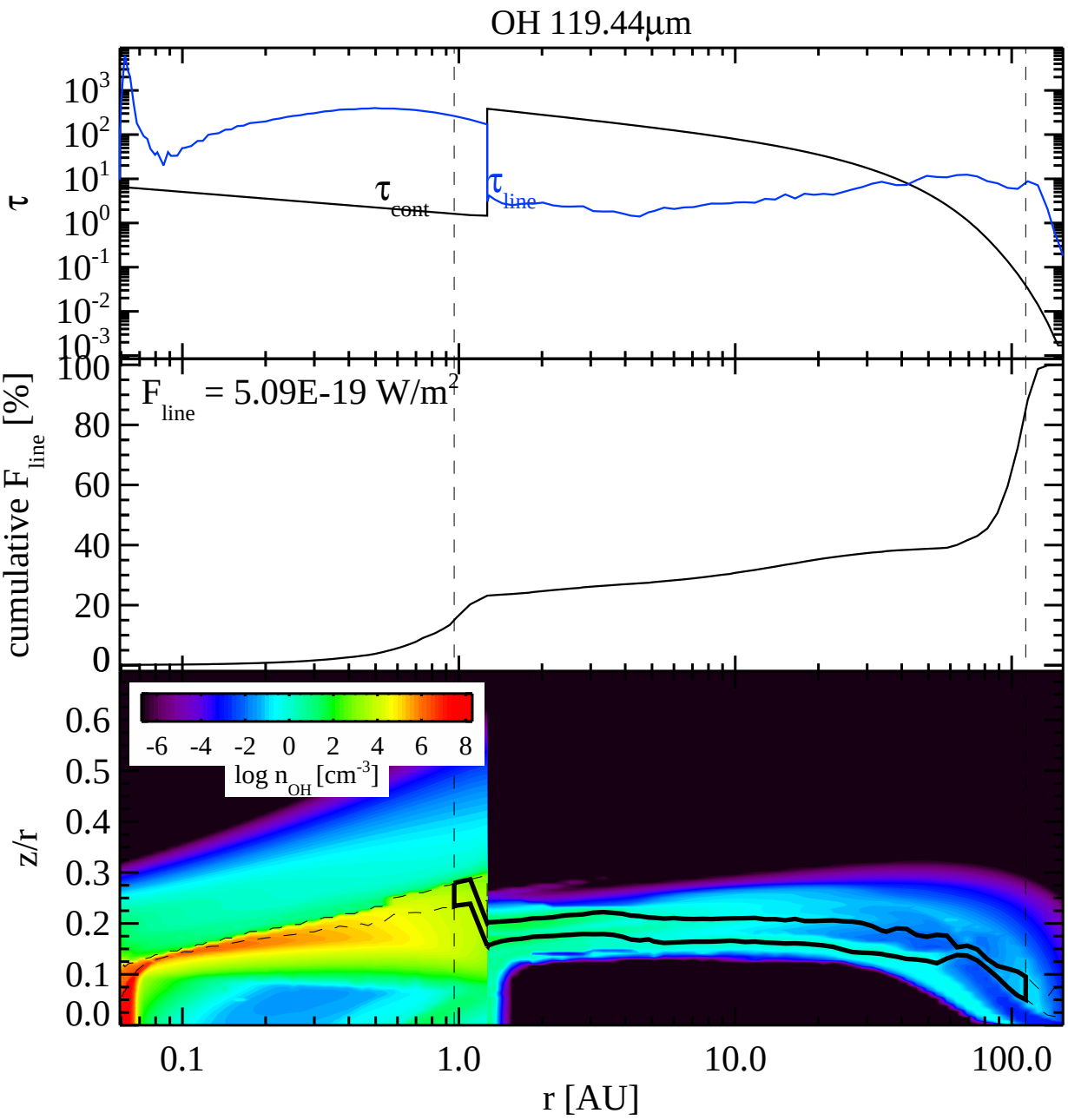

[SIII] 18.72µm
τ
10^2
10^0
10^{-2}
10^{-4}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.72E-22 W/m^2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2
log n_{S++} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

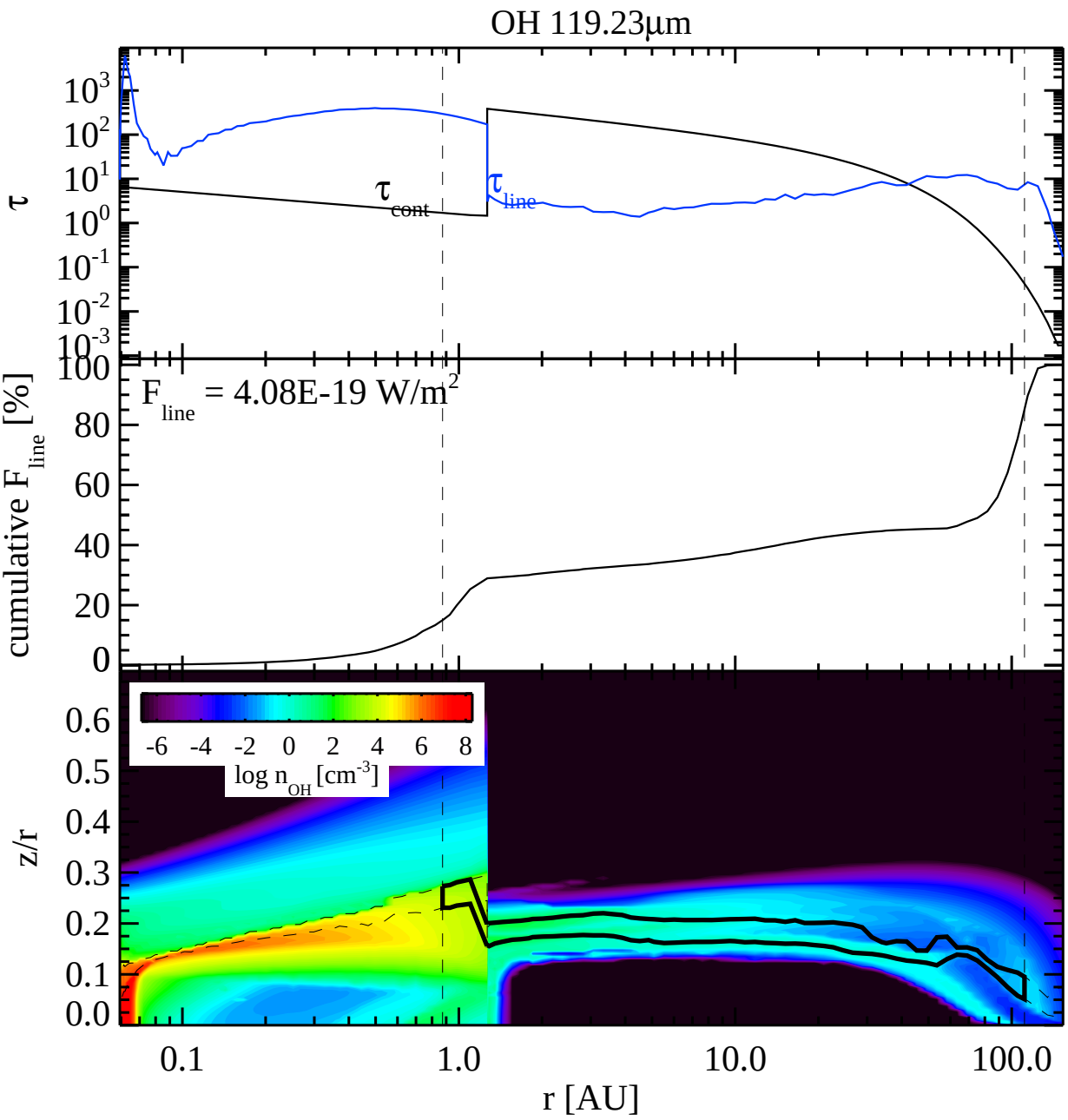

[ArII] 6.985µm
τ
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 2.00E-19 W/m^2
-8 -6 -4 -2 0 2 4
log n_{Ar+} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

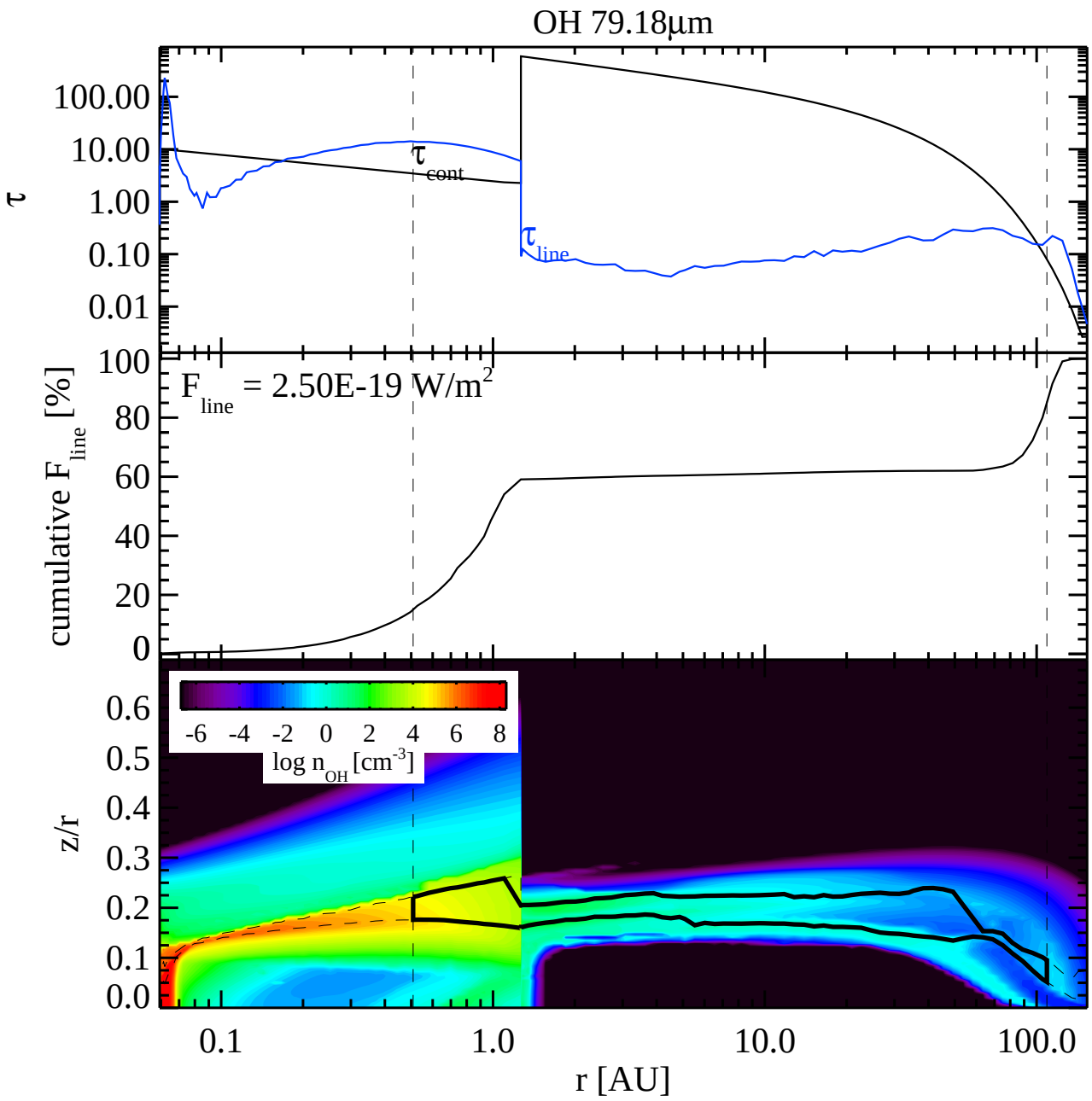

[ArIII] 21.82µm
τ
10^2
10^0
10^{-2}
10^{-4}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 3.39E-22 W/m^2
-10 -8 -6 -4 -2 0 2 4
log n_{Ar++} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

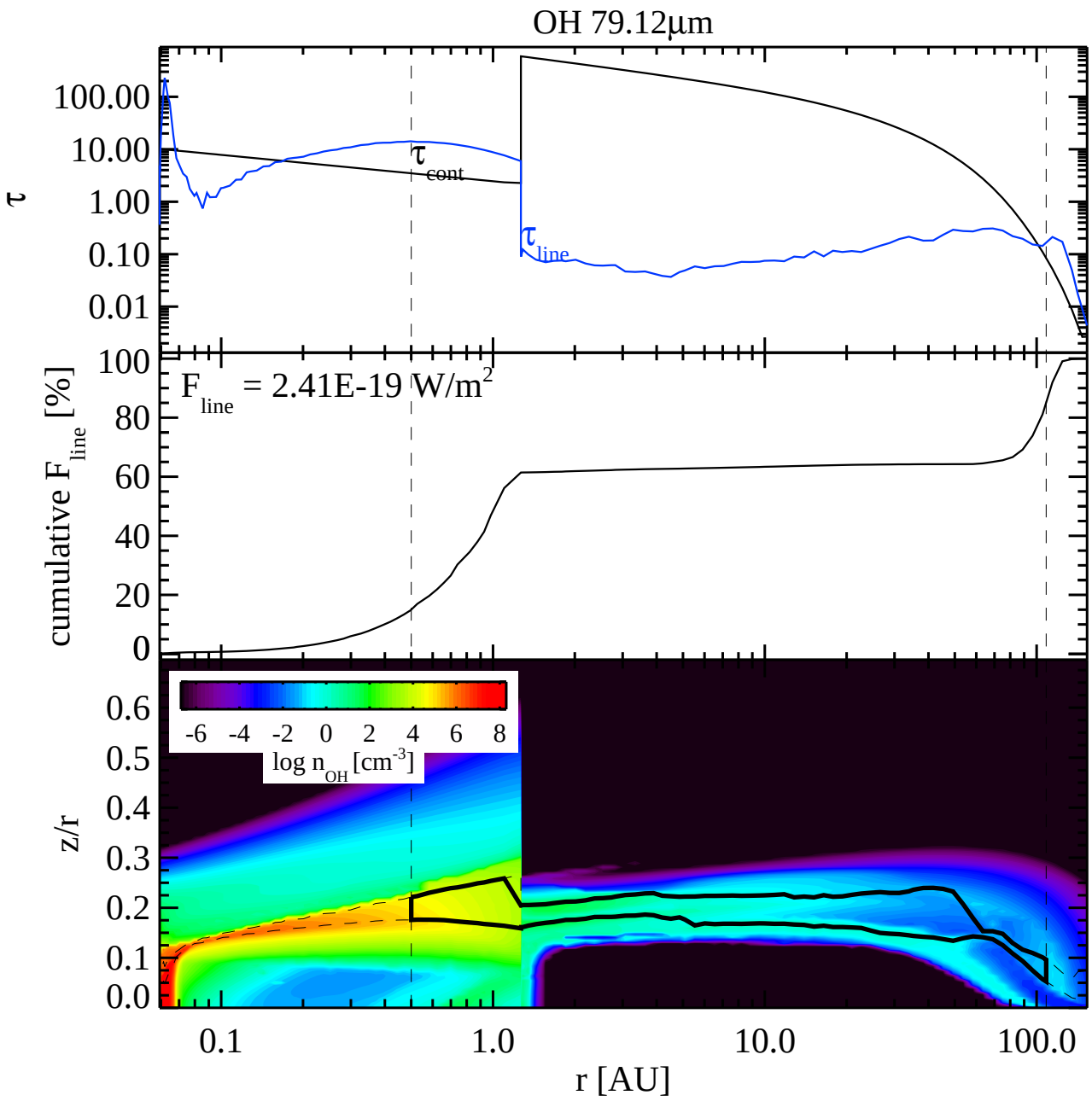

[FeII] 25.99µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
F line = 1.24E-21 W/m2
cumulative F line [%]
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2 4
log n Fe+ [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

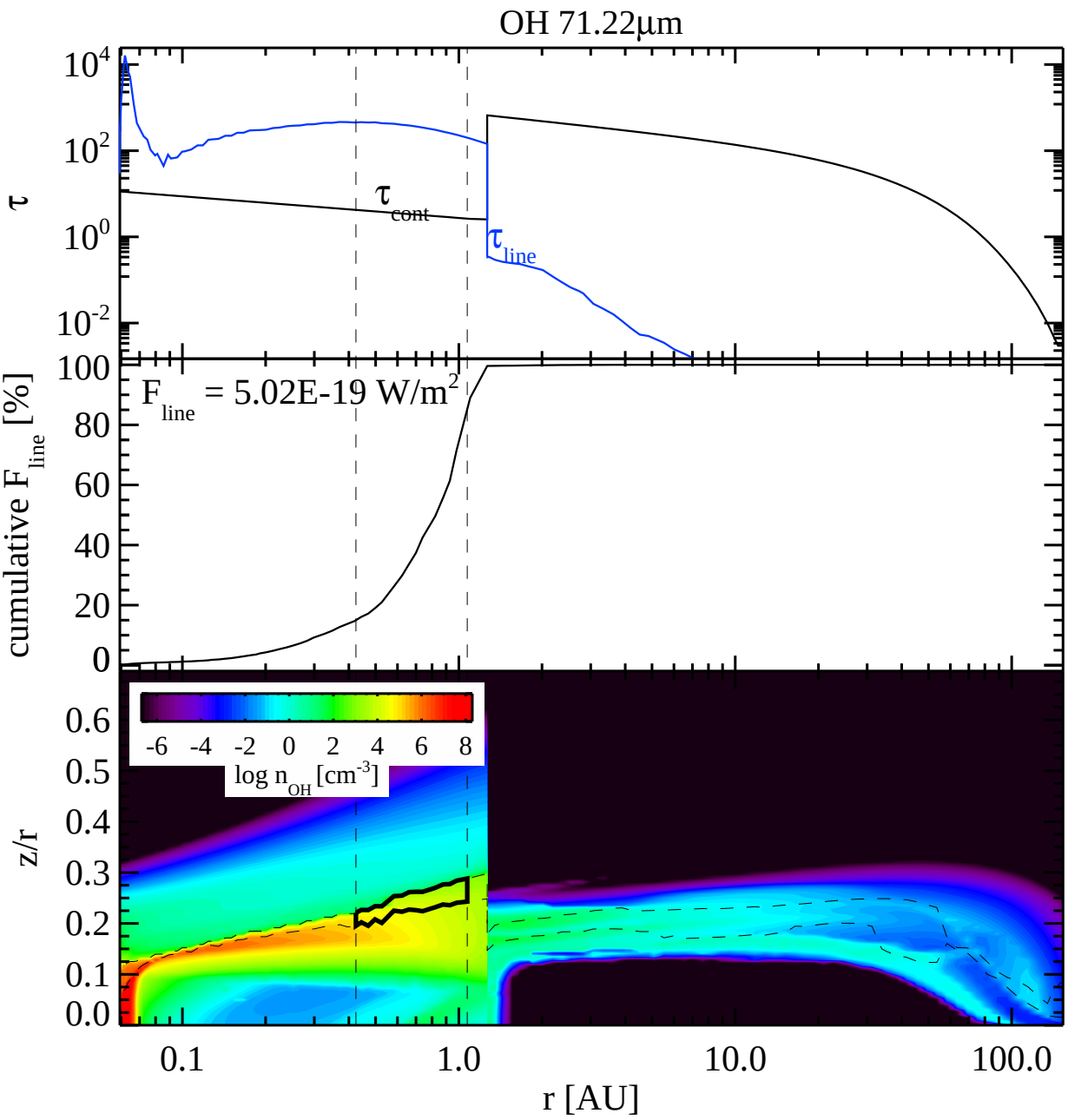

[SiII] 34.81µm
τ
τ cont
τ line
F line = 3.74E-21 W/m2
cumulative F line [%]
log n Si+ [cm-3]
z/r
r [AU]

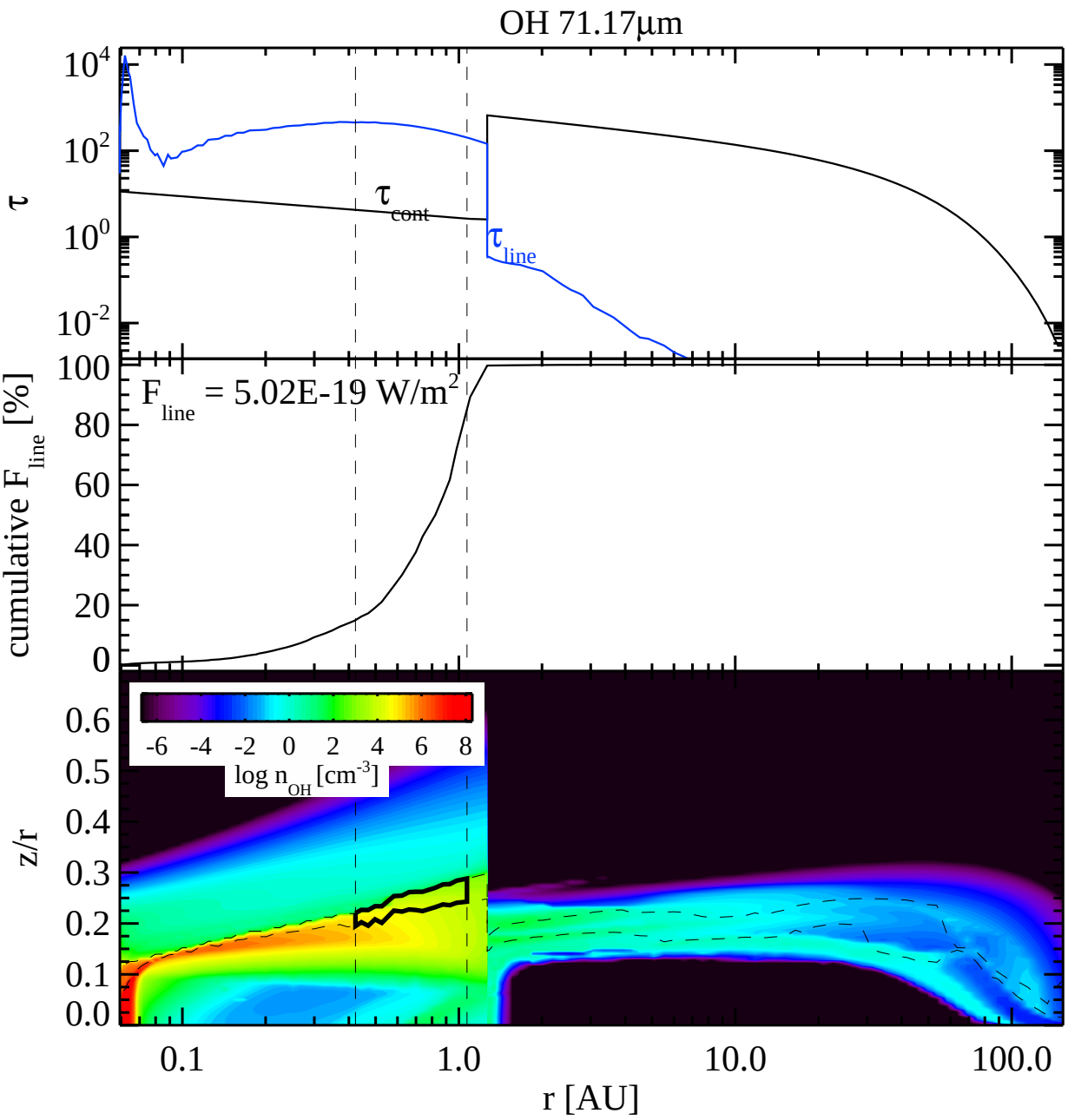

OH 119.44μm
τ
10^3
10^2
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.09E-19 W/m^2
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

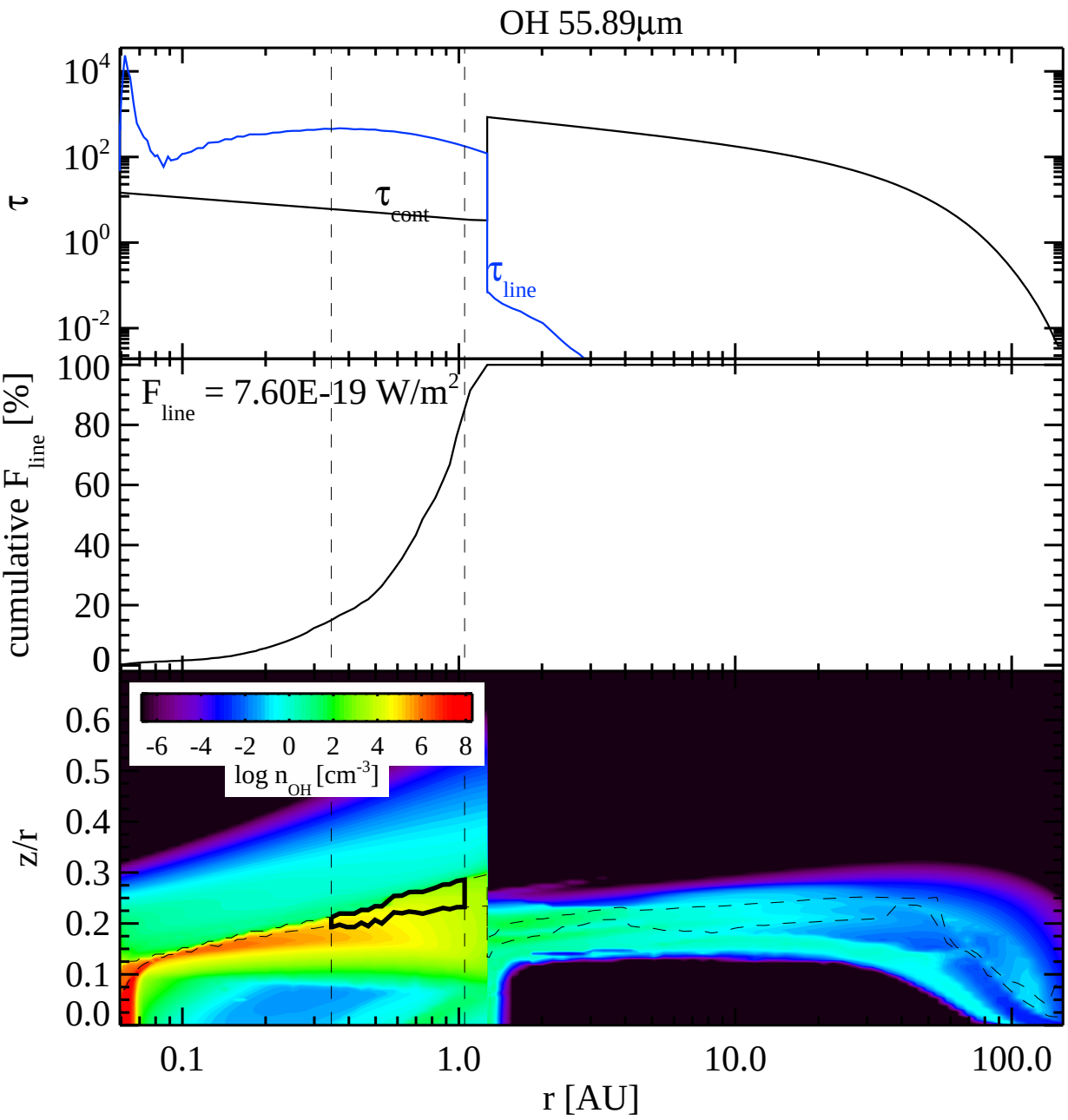

OH 119.23µm
τ
10^3
10^2
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.08E-19 W/m^2
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

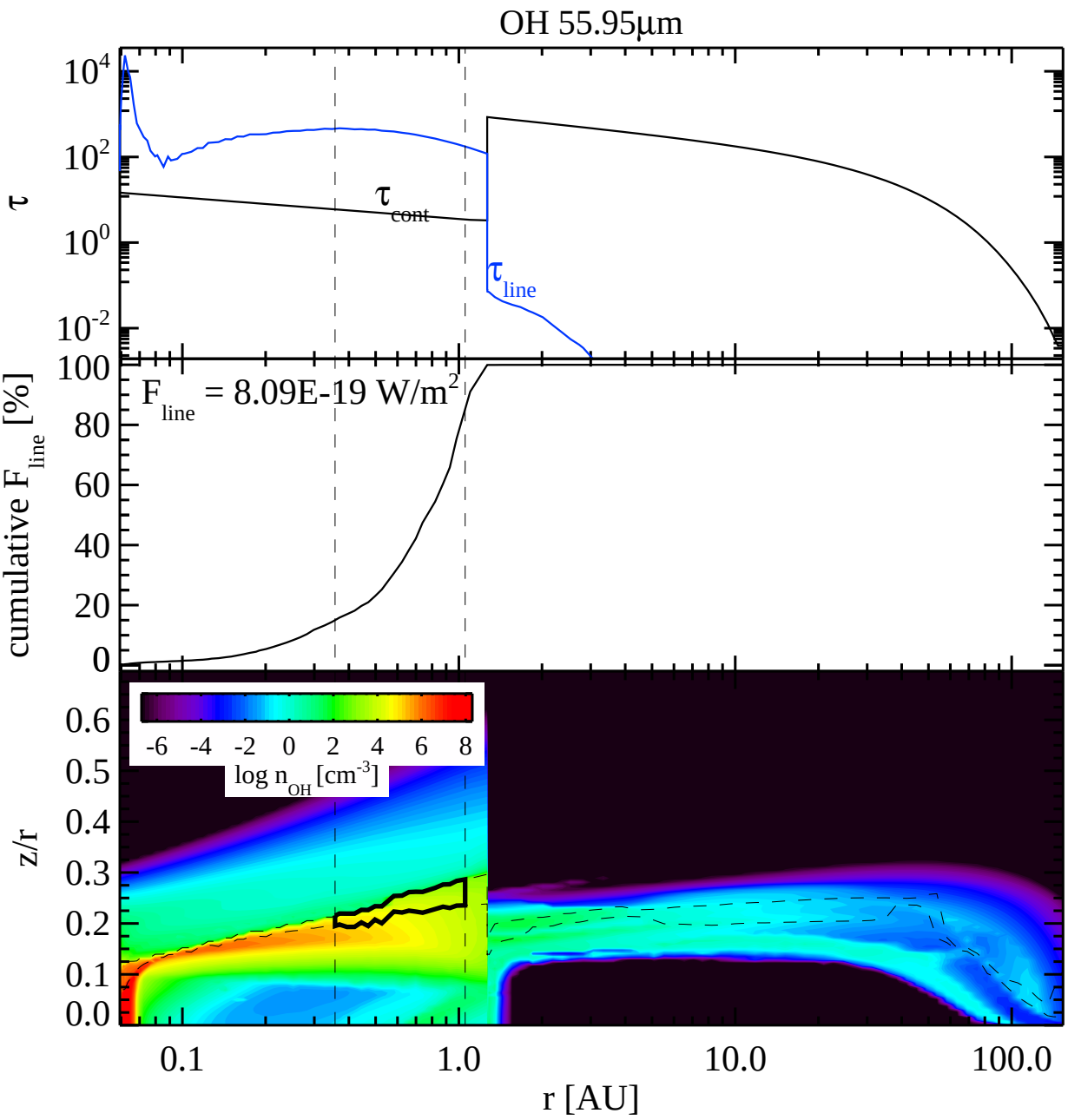

OH 79.18µm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 2.50E-19 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n OH [cm-3]
0.1
1.0
10.0
100.0
r [AU]

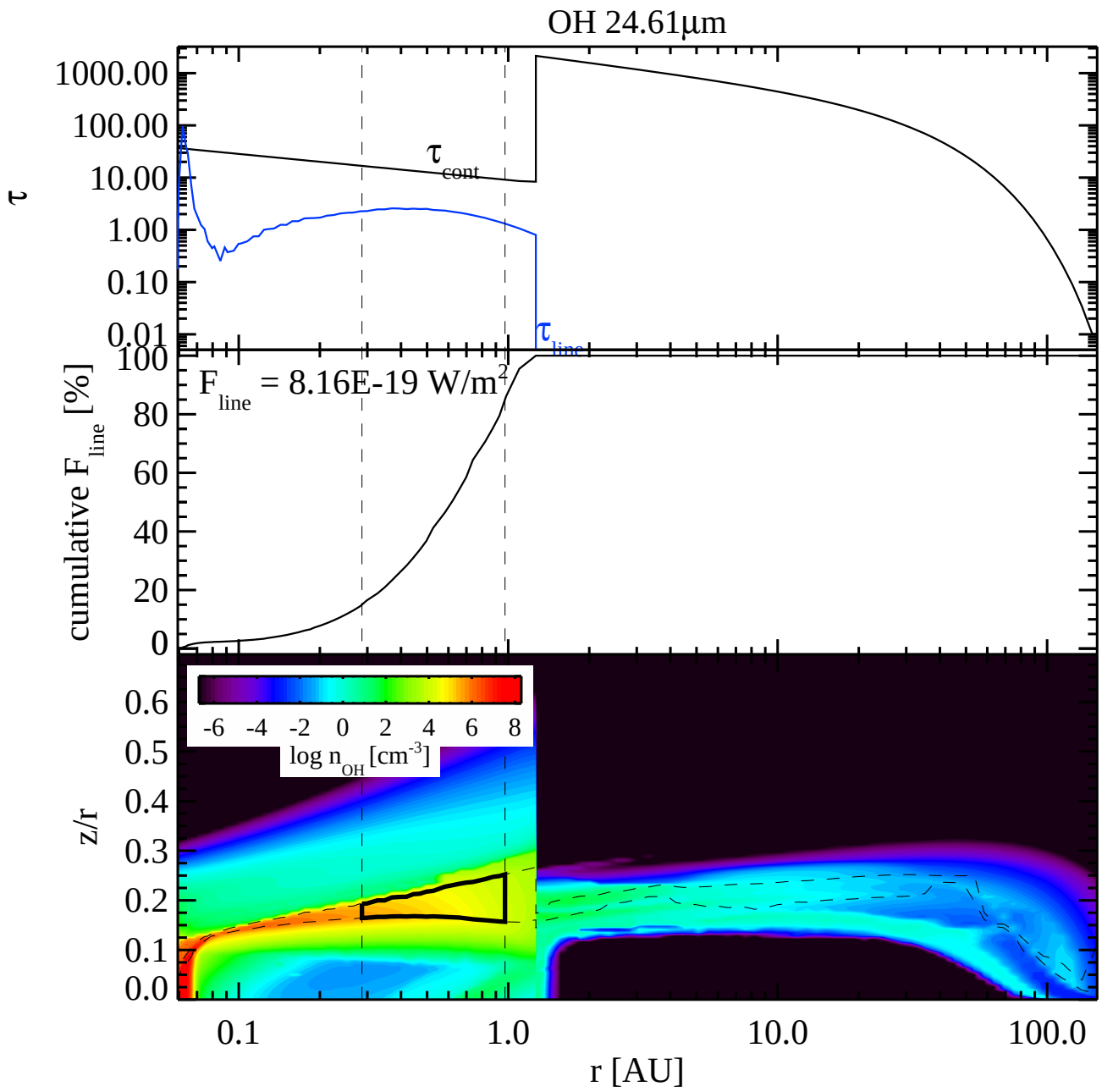

OH 79.12µm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 2.41E-19 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n OH [cm-3]
0.1
1.0
10.0
100.0
r [AU]

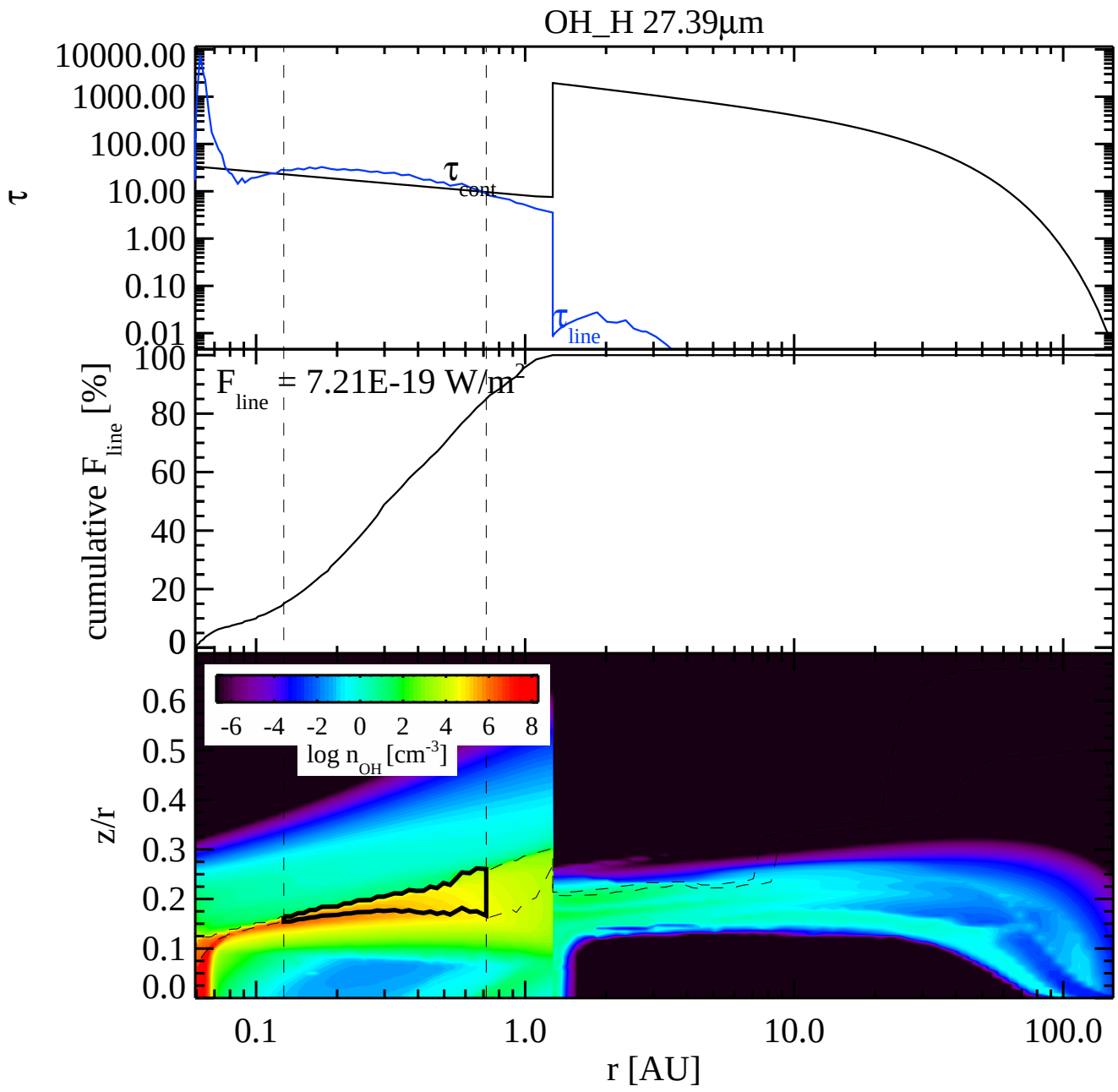

OH 71.22µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.02E-19 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

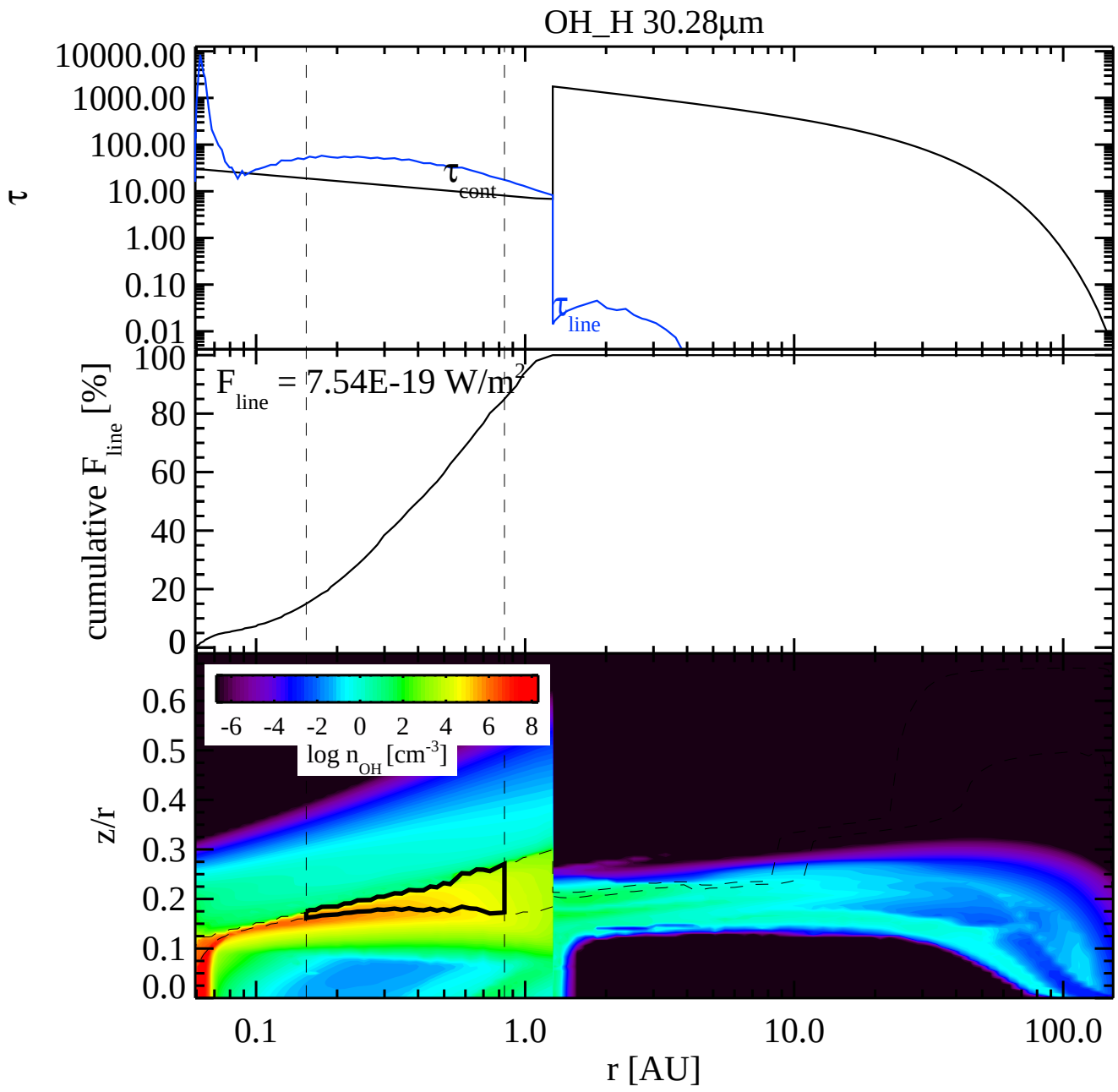

OH 71.17µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.02E-19 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

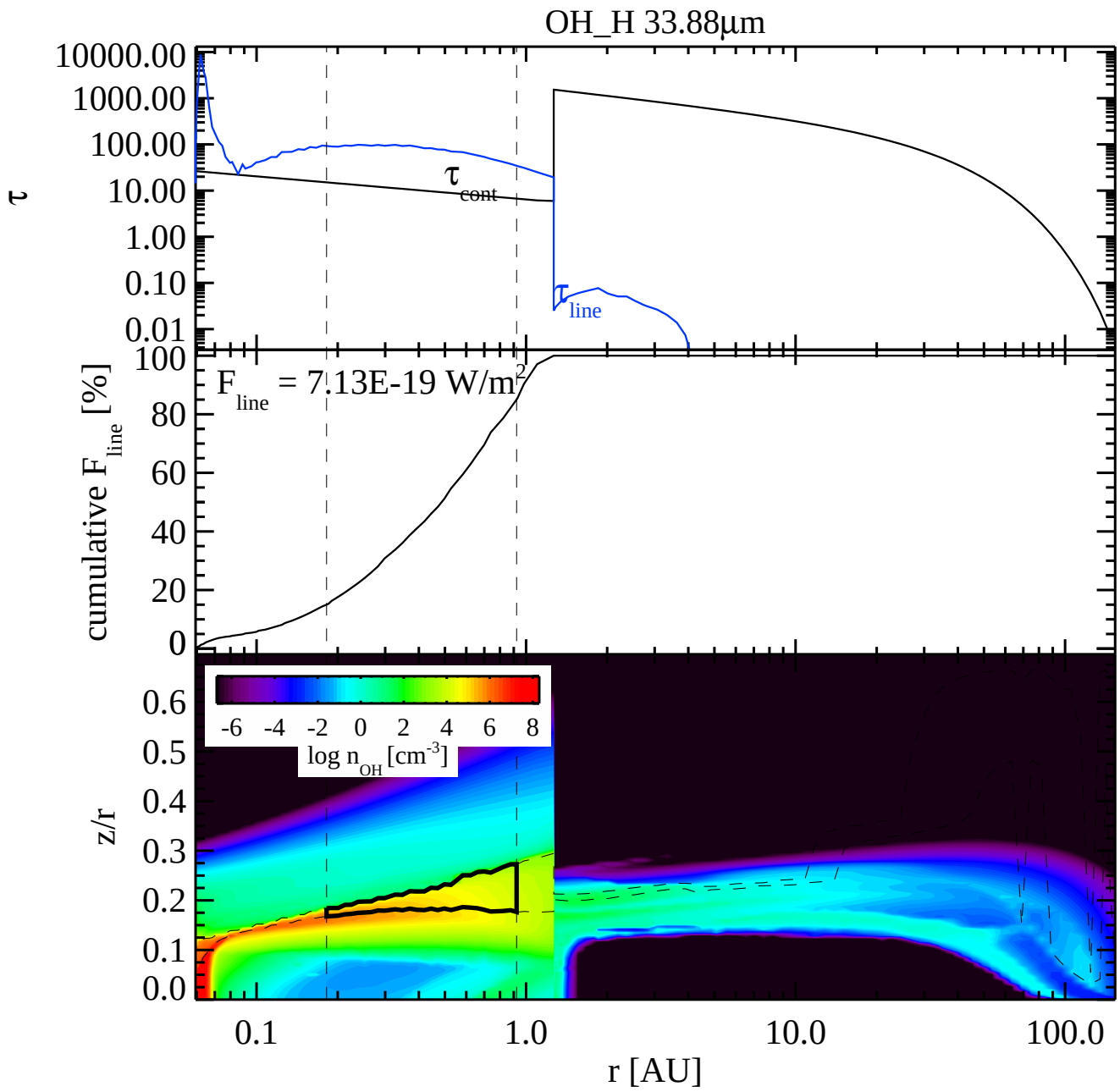

OH 55.89µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 7.60E-19 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

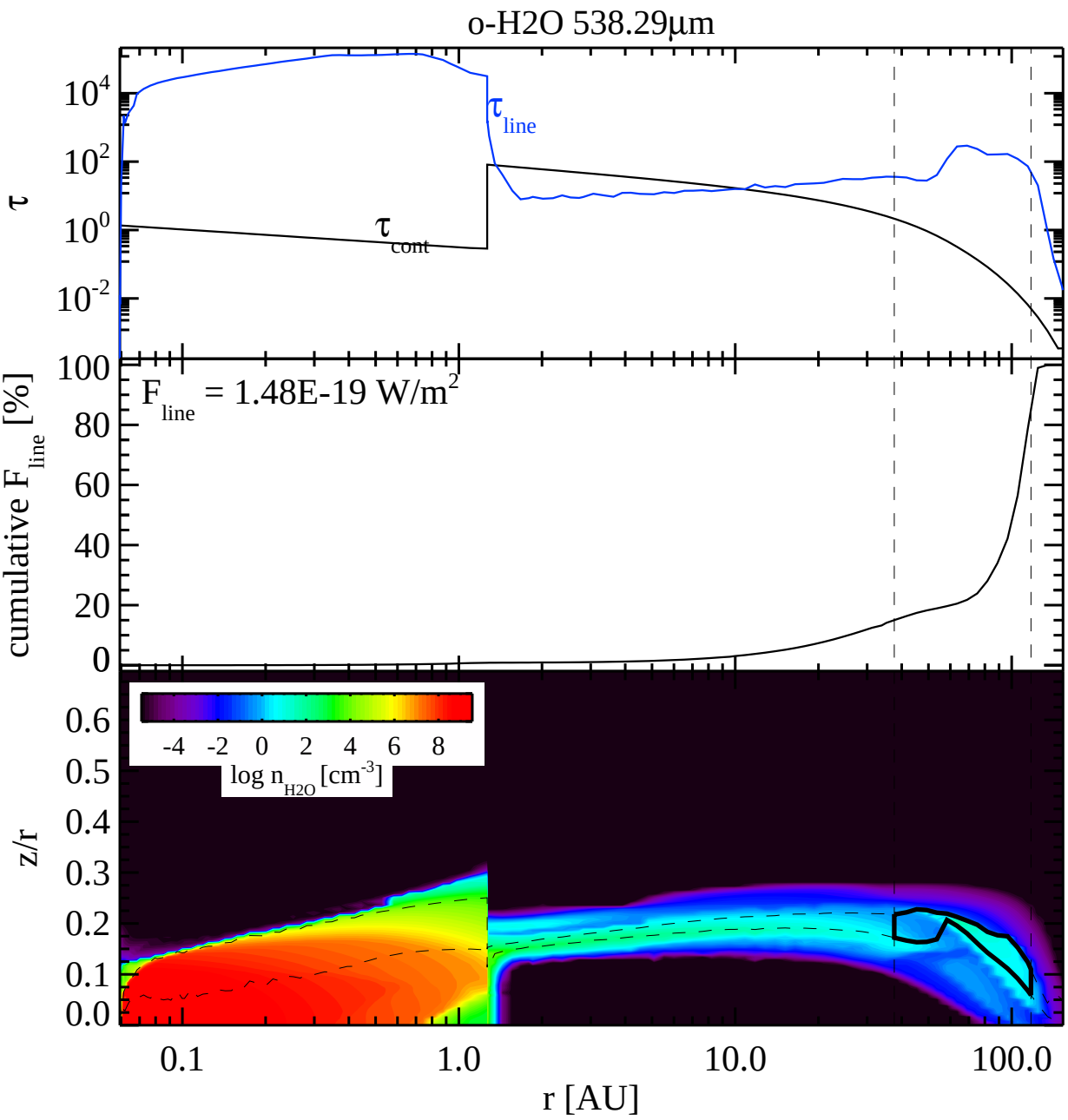

OH 55.95µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 8.09E-19 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n_{OH} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

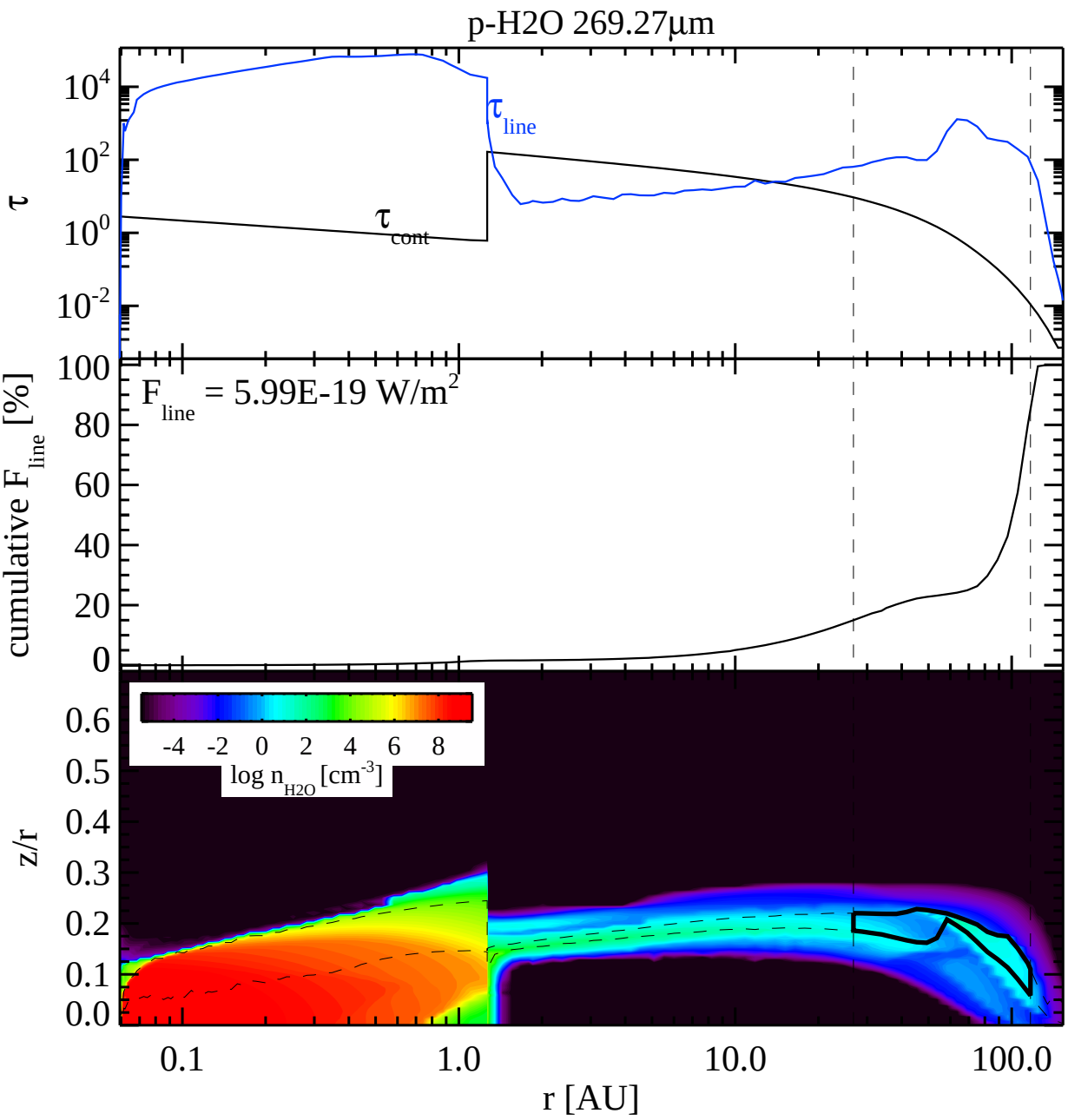

OH 24.61µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 8.16E-19 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n OH [cm-3]
0.1
1.0
10.0
100.0
r [AU]

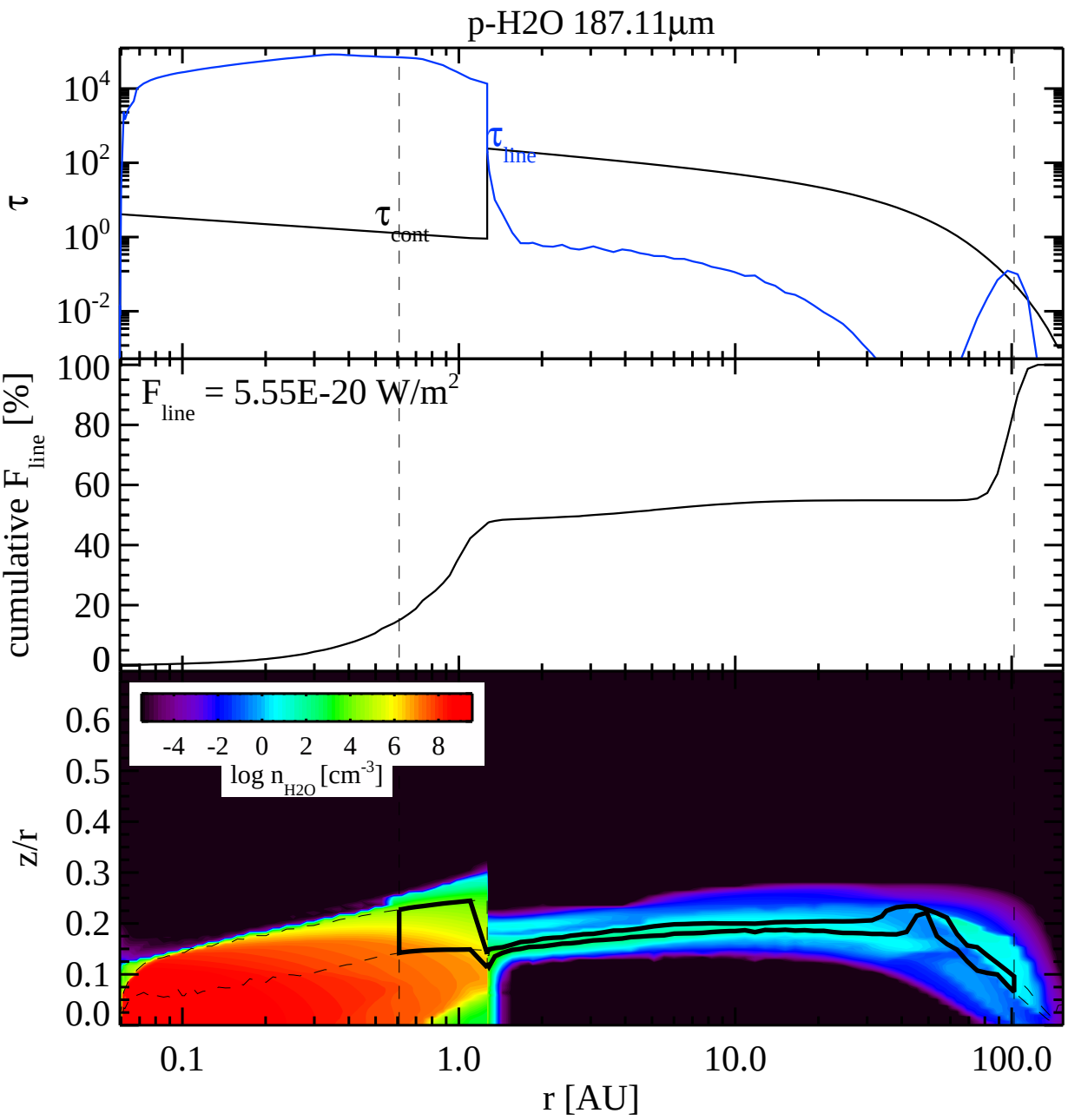

OH_H 27.39µm
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 7.21E-19 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n OH [cm-3]
0.1
1.0
10.0
100.0
r [AU]

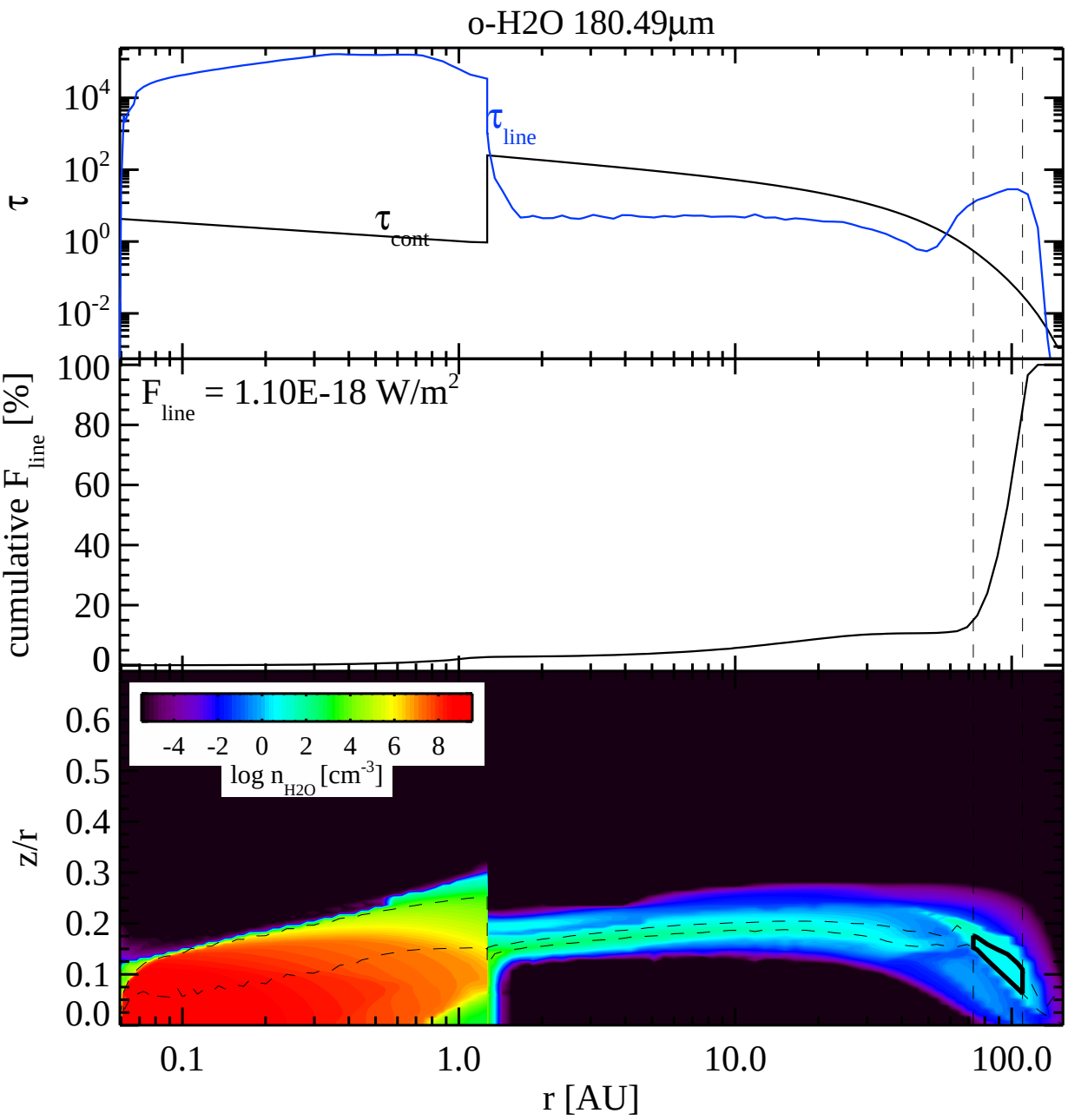

OH_H 30.28µm
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 7.54E-19 W/m2
100
80
60
40
20
0
log n OH [cm-3]
-6 -4 -2 0 2 4 6 8
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

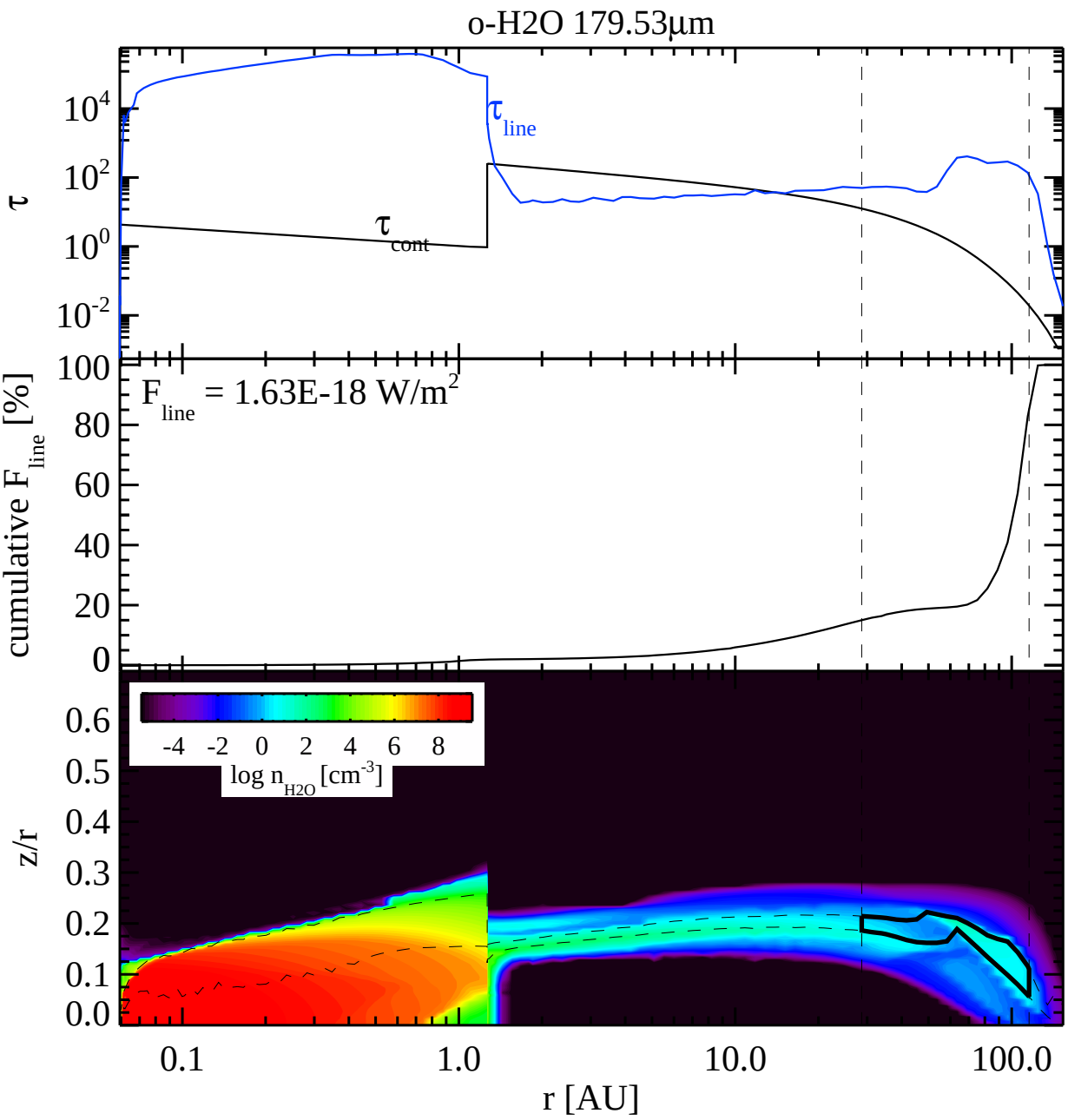

OH_H 33.88µm
τ
10000.00
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 7.13E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n OH [cm-3]
0.1
1.0
10.0
100.0
r [AU]

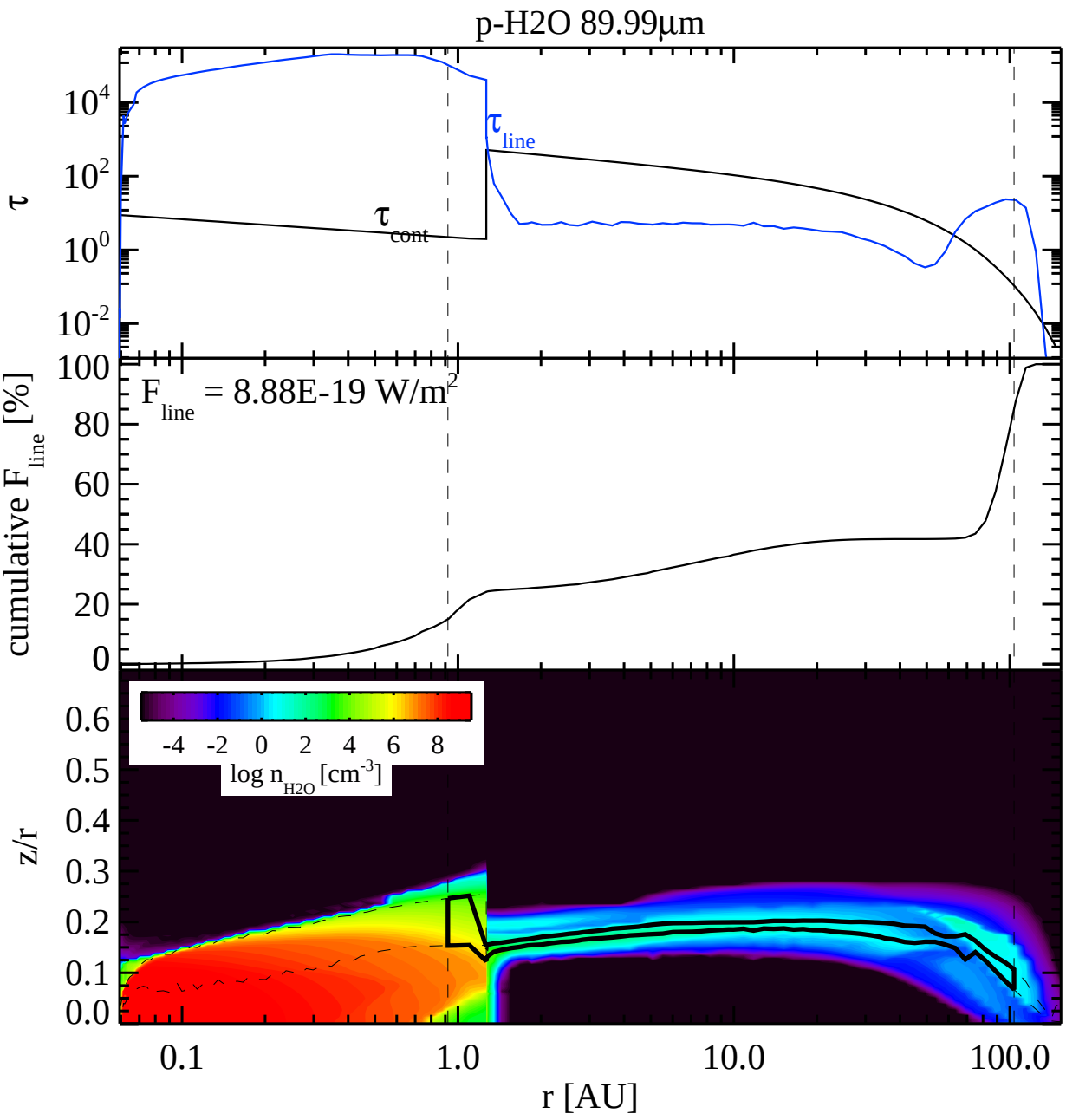

o-H2O 538.29µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.48E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

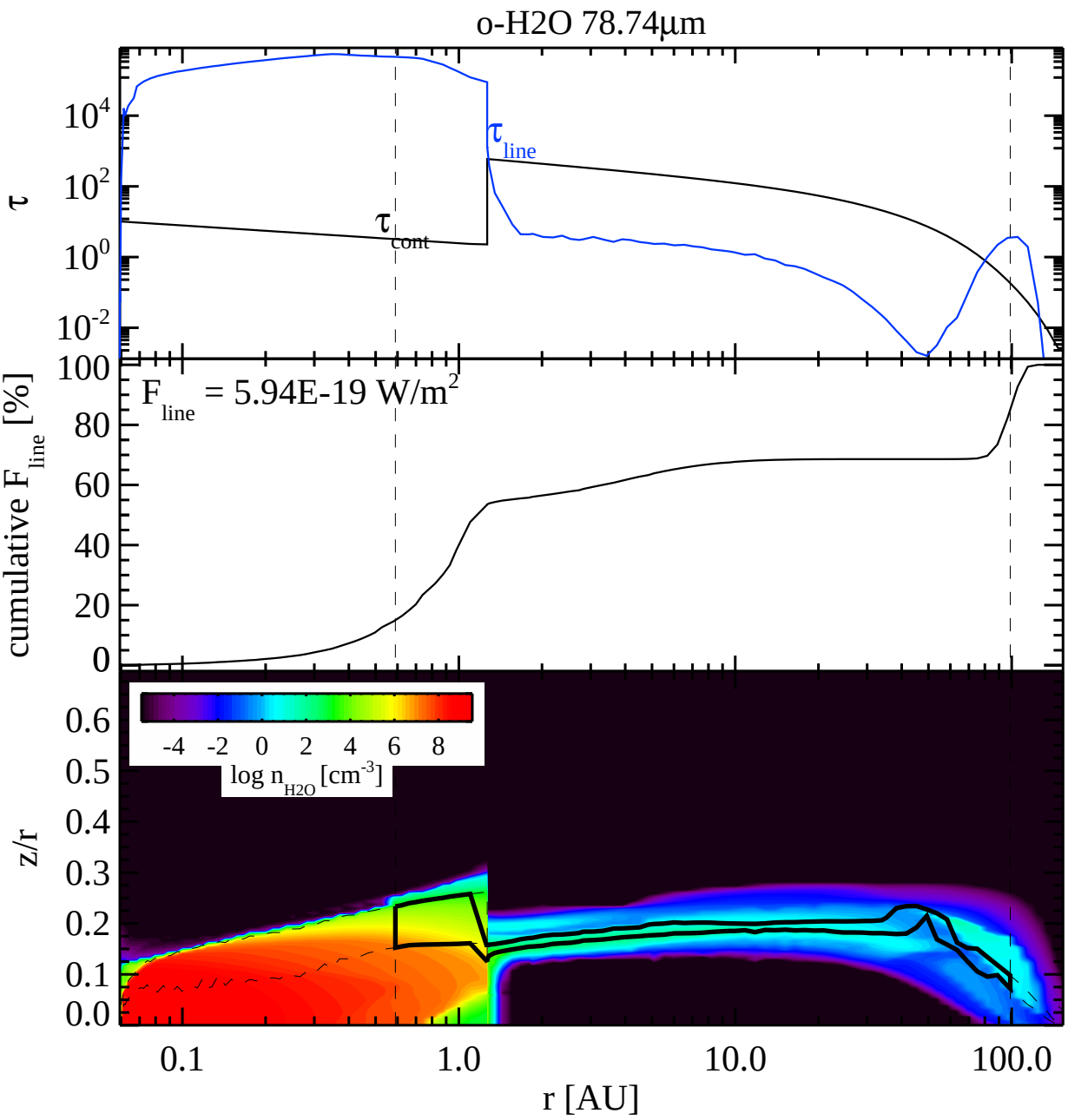

p-H2O 269.27µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
F_{line} = 5.99E-19 W/m^2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

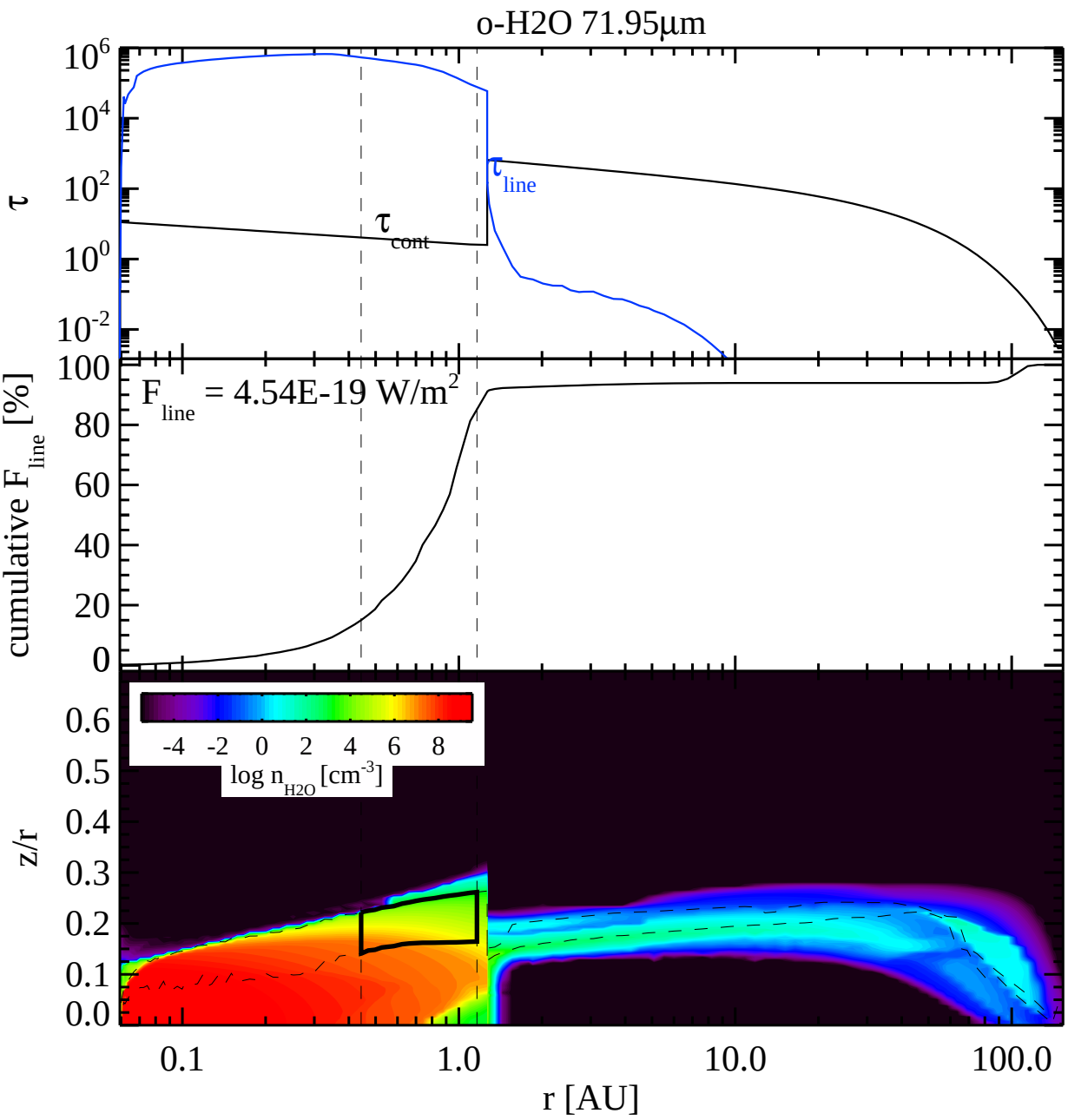

p-H2O 187.11µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.55E-20 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

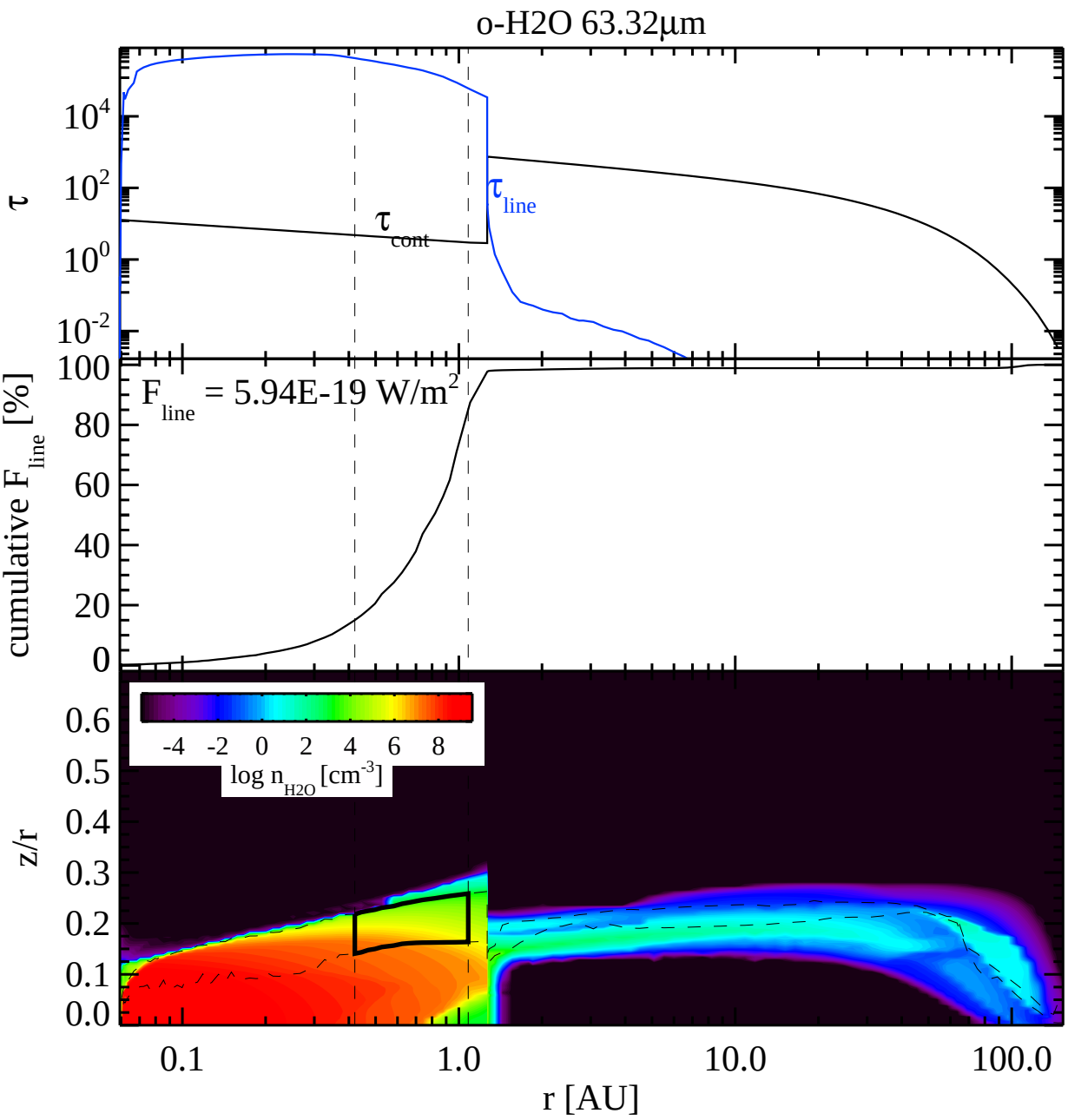

o-H2O 180.49µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.10E-18 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

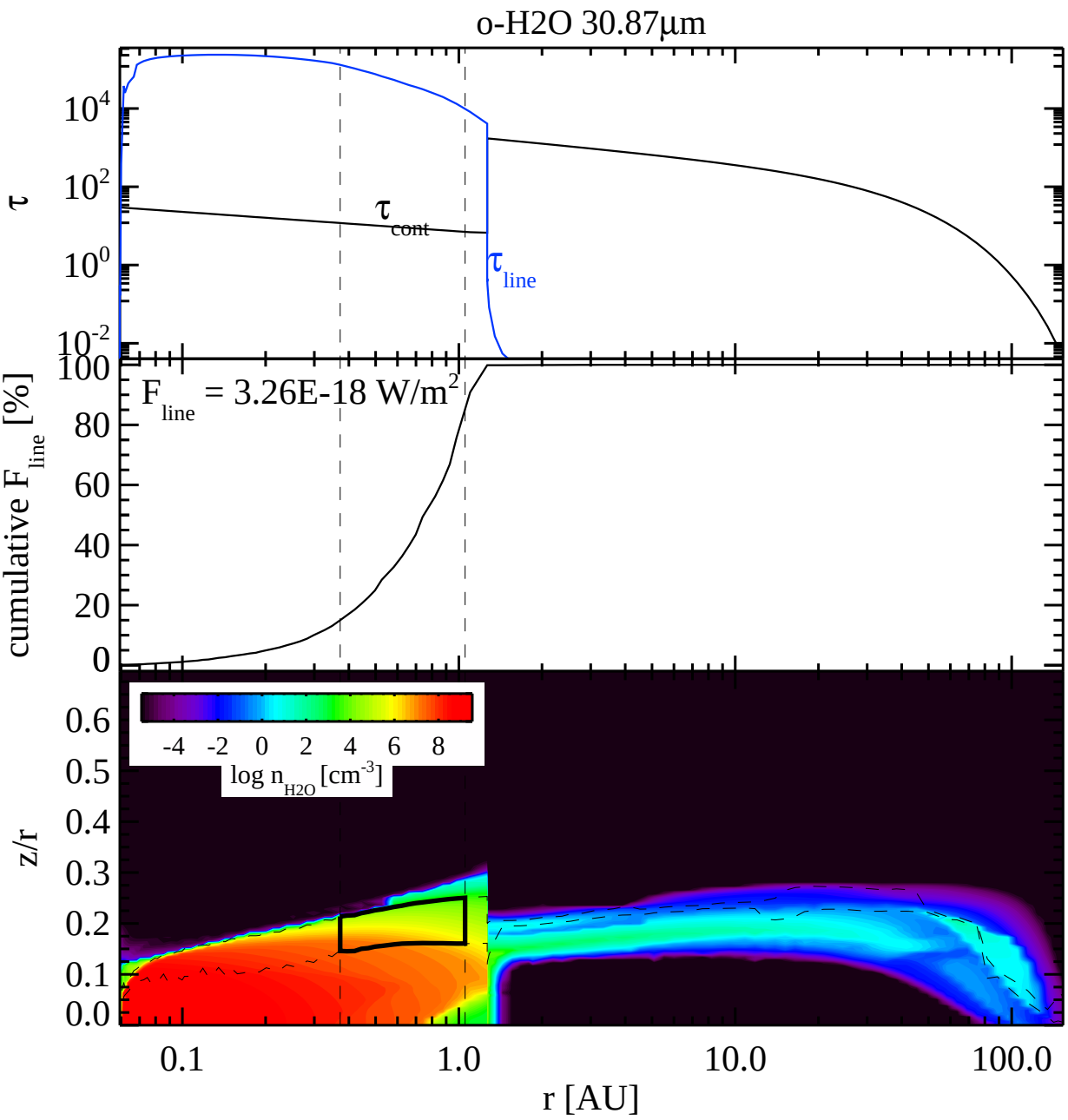

o-H2O 179.53µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.63E-18 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

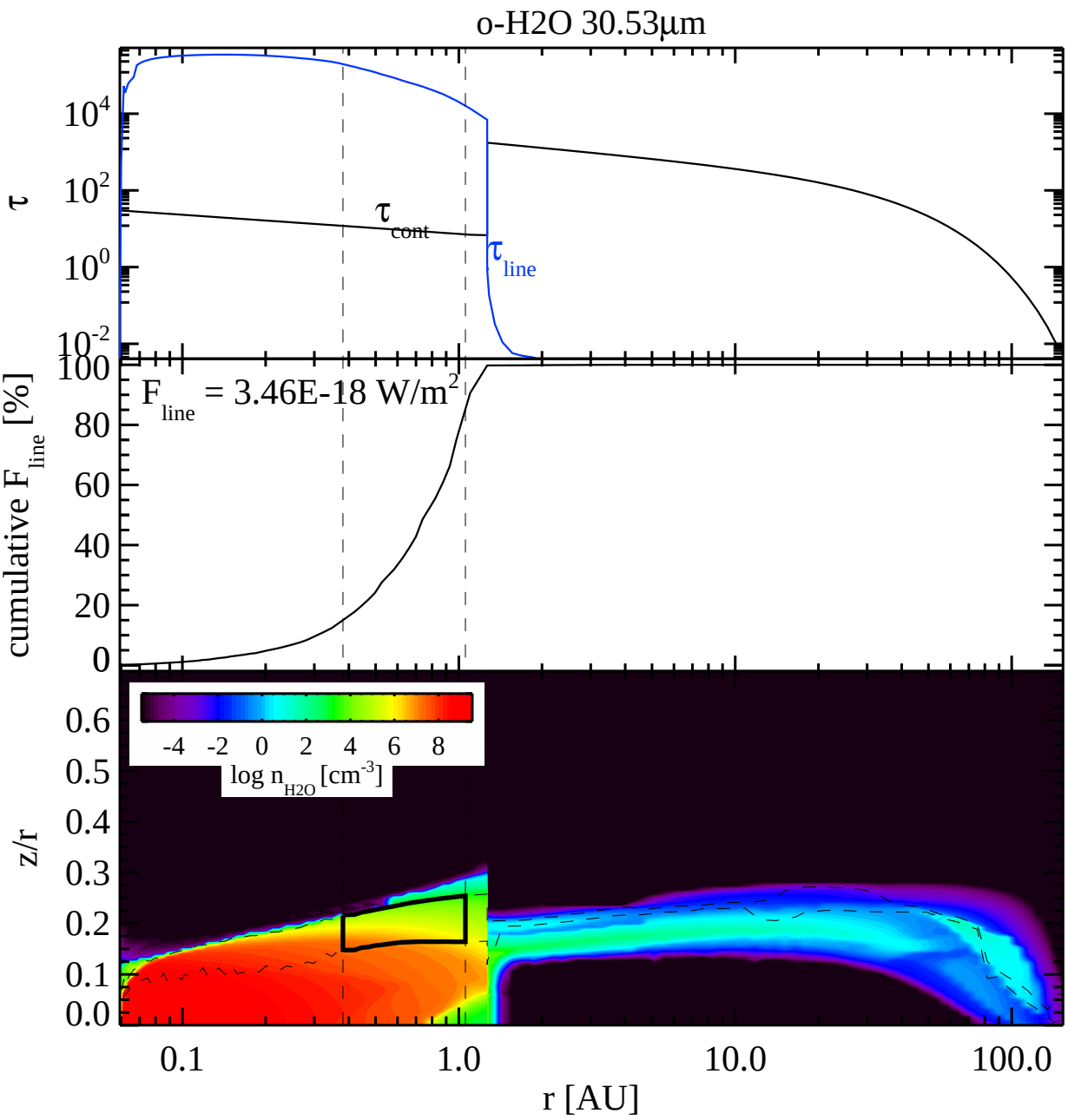

p-H2O 89.99µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
F_{line} = 8.88E-19 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

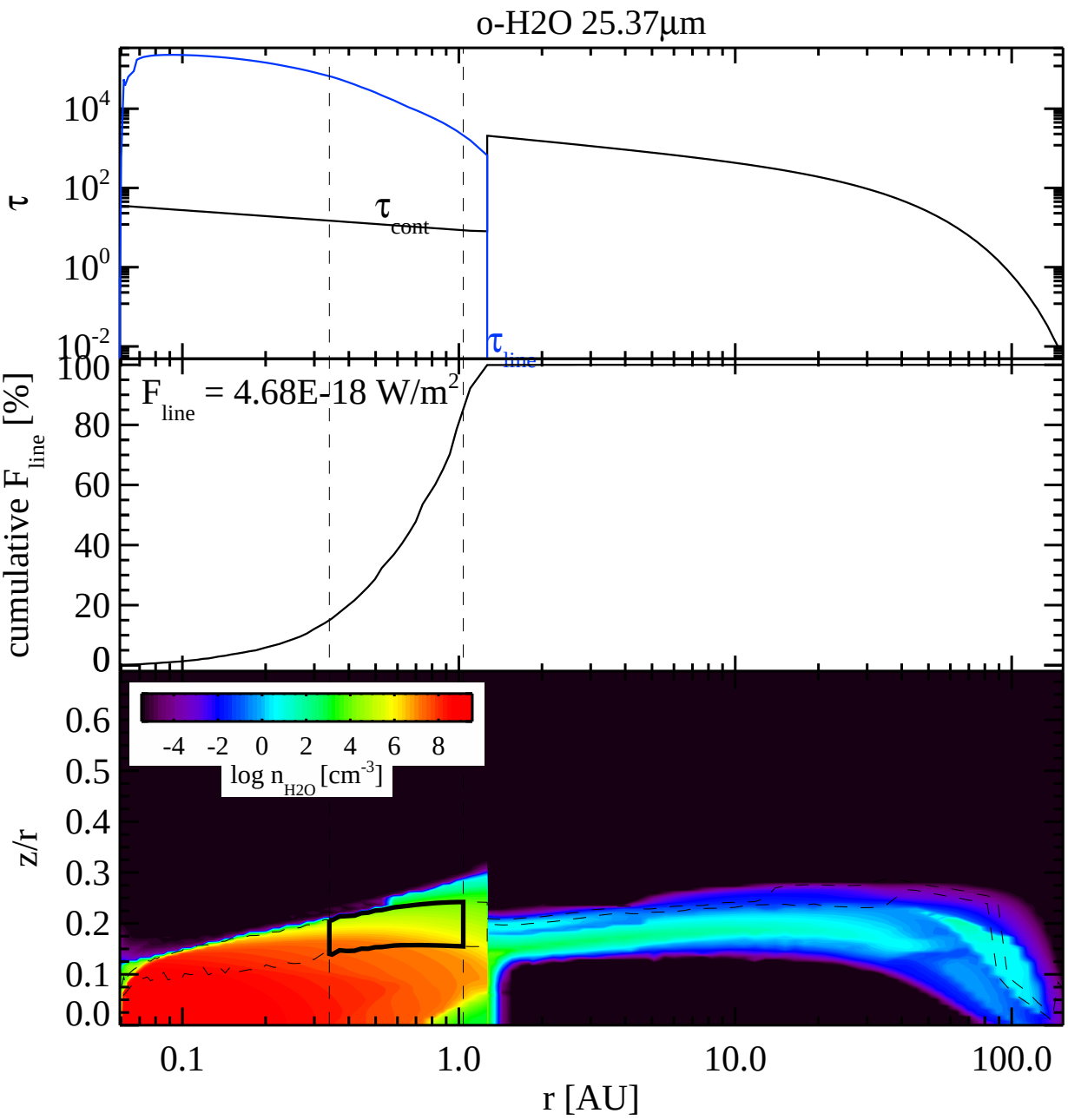

o-H2O 78.74µm
τ
10^4
10^2
10^0
10^{-2}
τ_{line}
τ_{cont}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 5.94E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

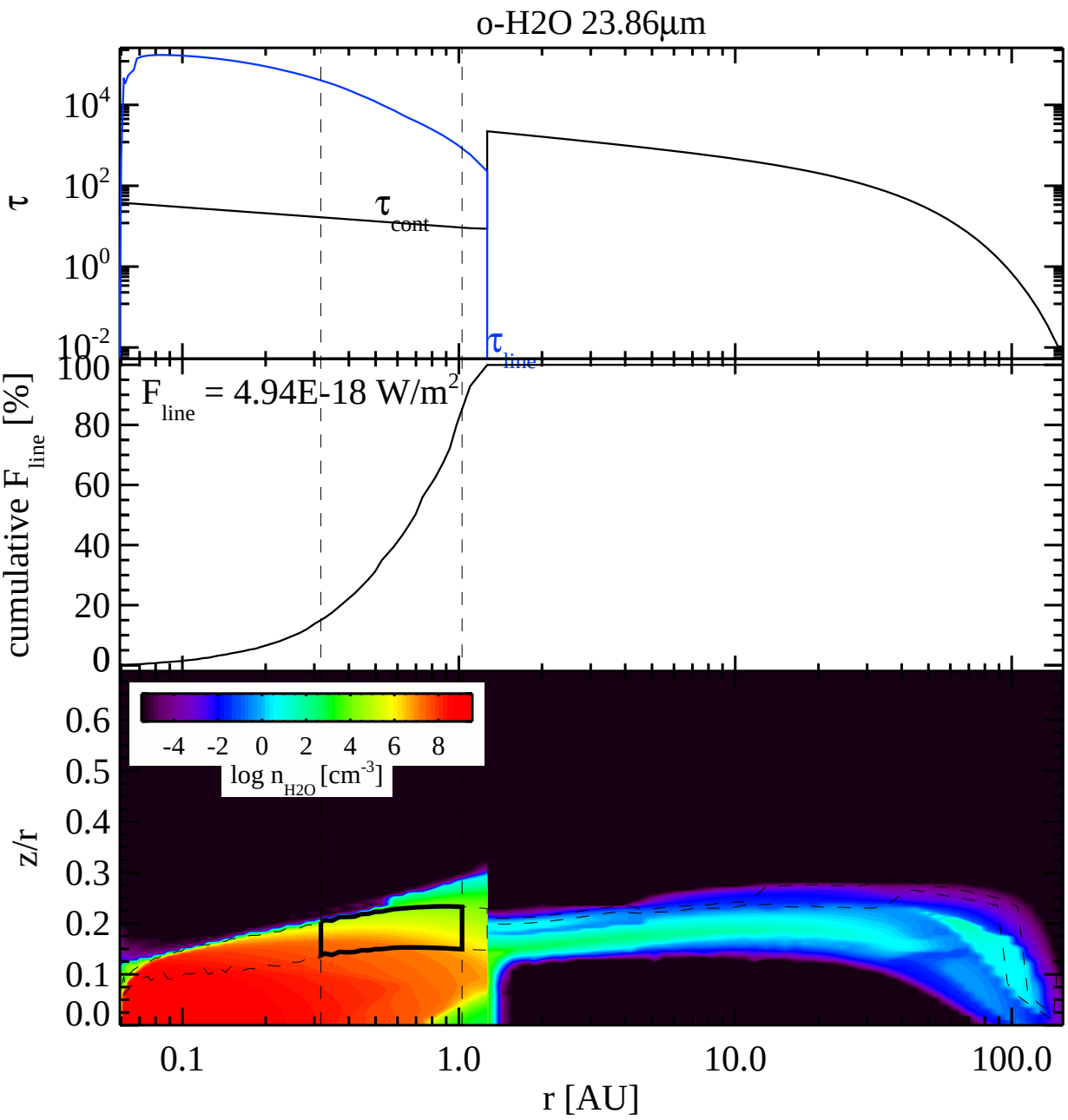

o-H2O 71.95µm
τ
10^6
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.54E-19 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

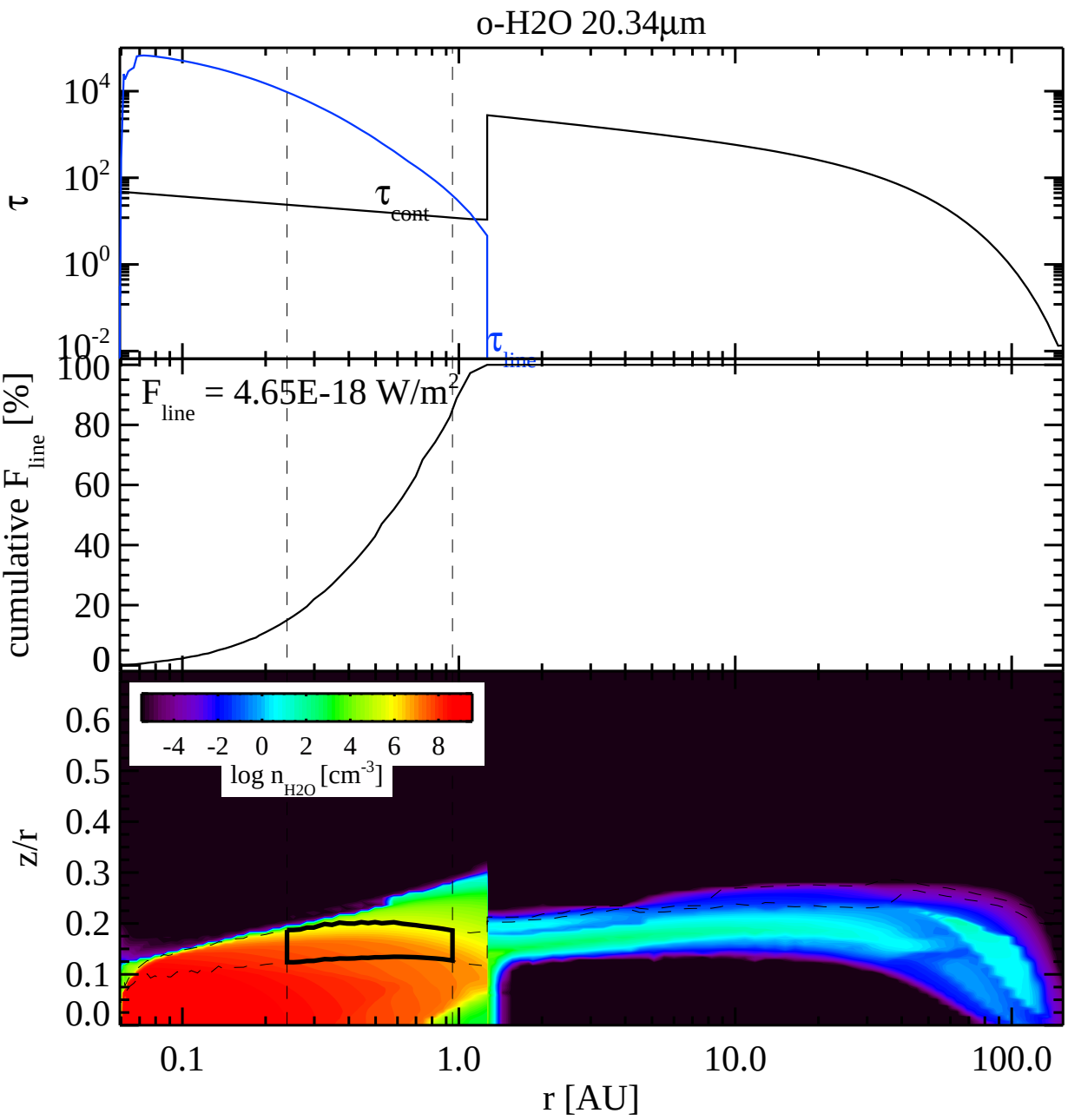

o-H2O 63.32µm
τ
10^4
10^2
10^0
10^-2
τ_cont
τ_line
cumulative F_line [%]
100
80
60
40
20
0
F_line = 5.94E-19 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-4 -2 0 2 4 6 8
log n_H2O [cm^-3]
0.1
1.0
10.0
100.0
r [AU]

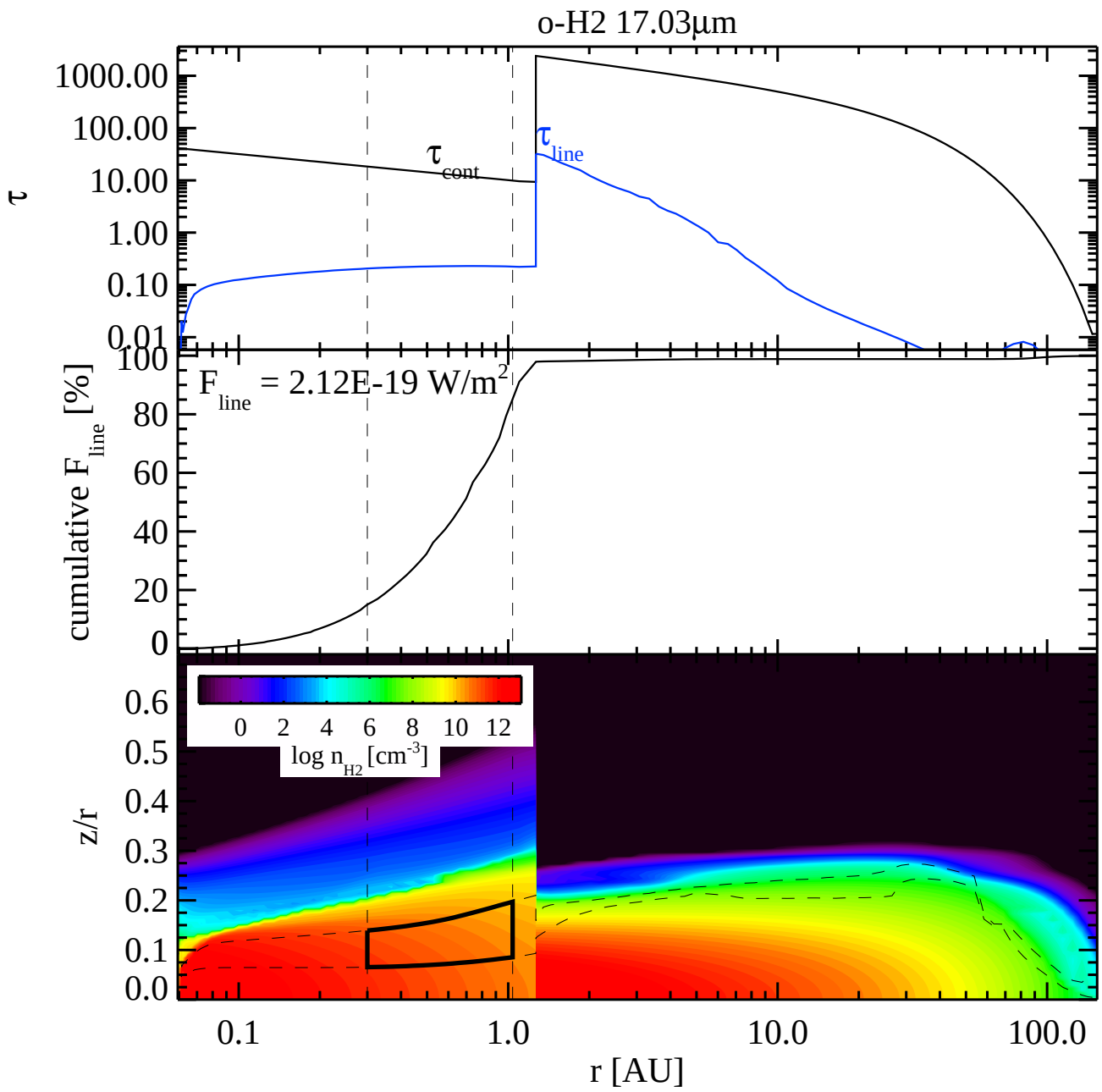

o-H2O 30.87µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 3.26E-18 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

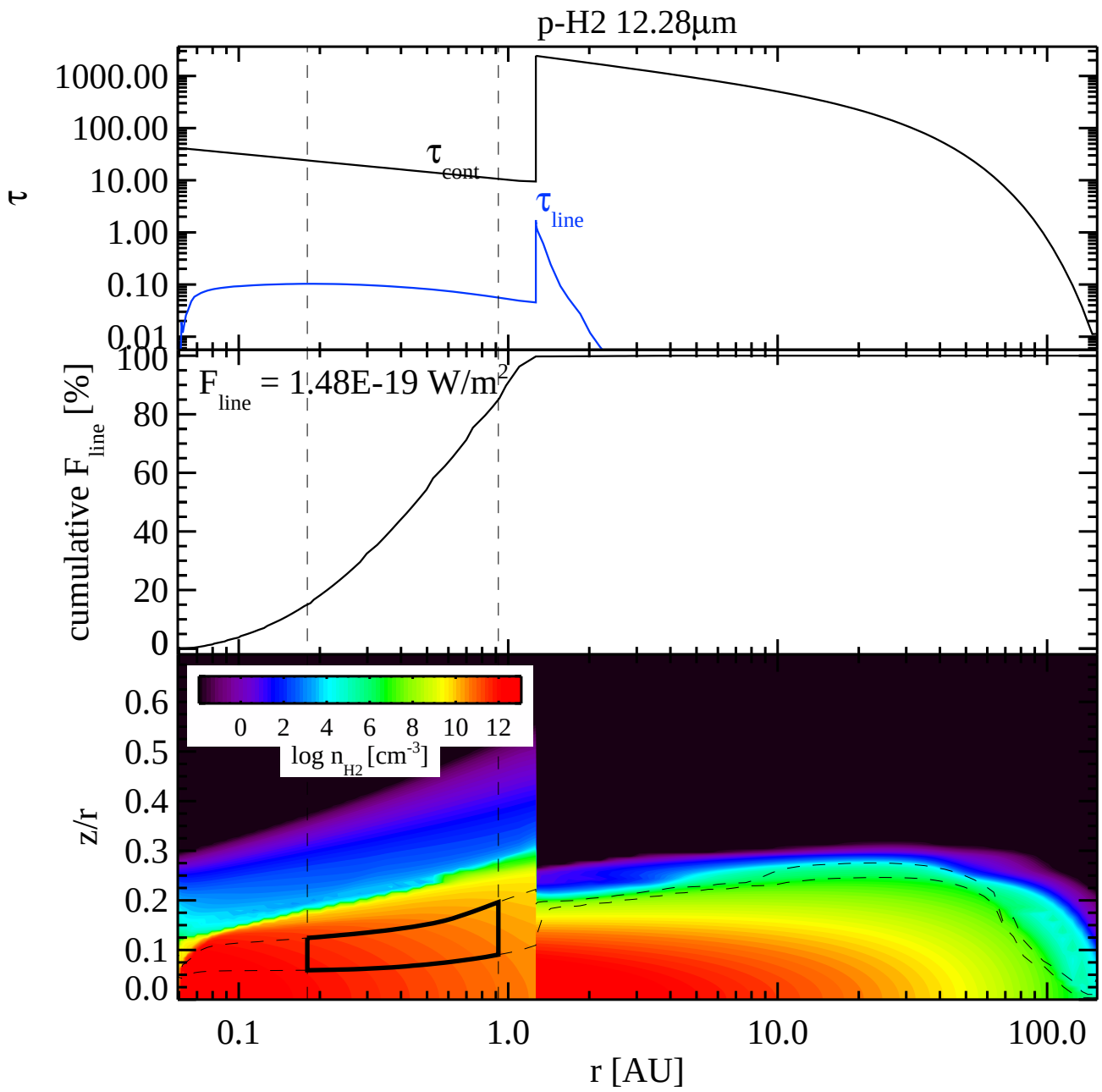

o-H2O 30.53µm
τ
10^4
10^2
10^0
10^-2
τ cont
τ line
cumulative F line [%]
F line = 3.46E-18 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n H2O [cm^-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

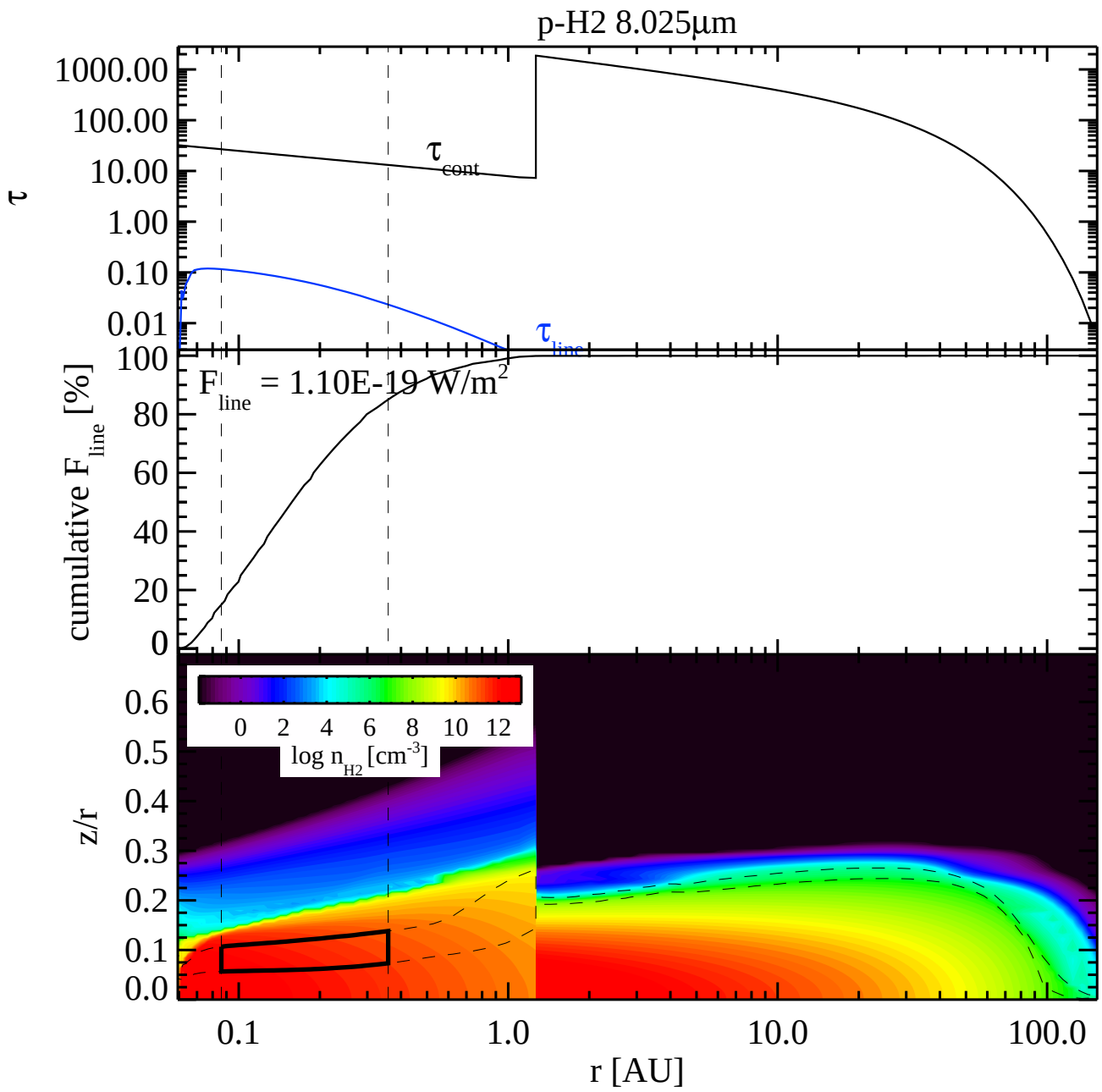

o-H2O 25.37µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.68E-18 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

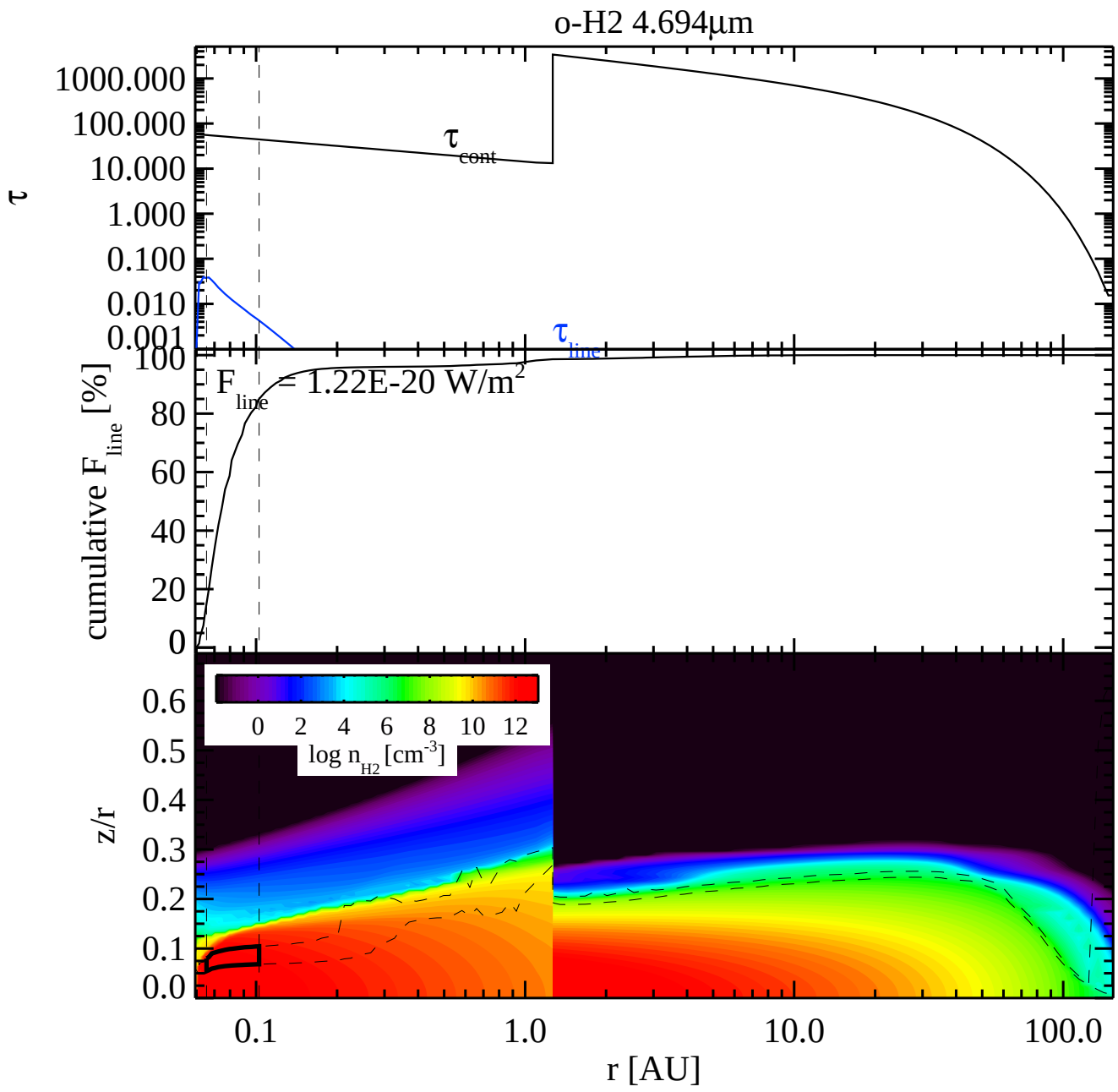

o-H2O 23.86µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 4.94E-18 W/m^2
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

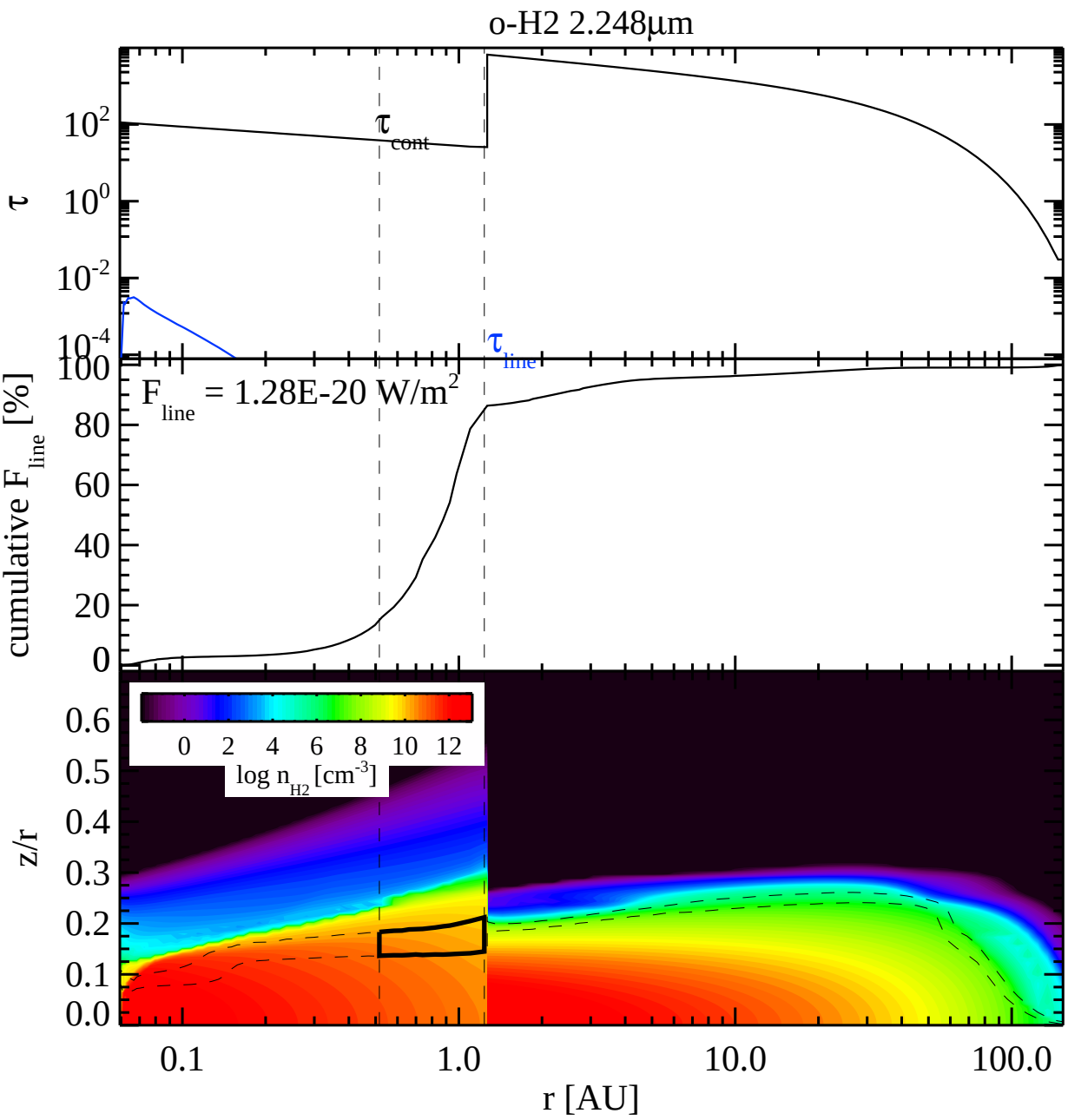

o-H2O 20.34µm
τ
10^4
10^2
10^0
10^{-2}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 4.65E-18 W/m^2
100
80
60
40
20
0
-4 -2 0 2 4 6 8
log n_{H2O} [cm^{-3}]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

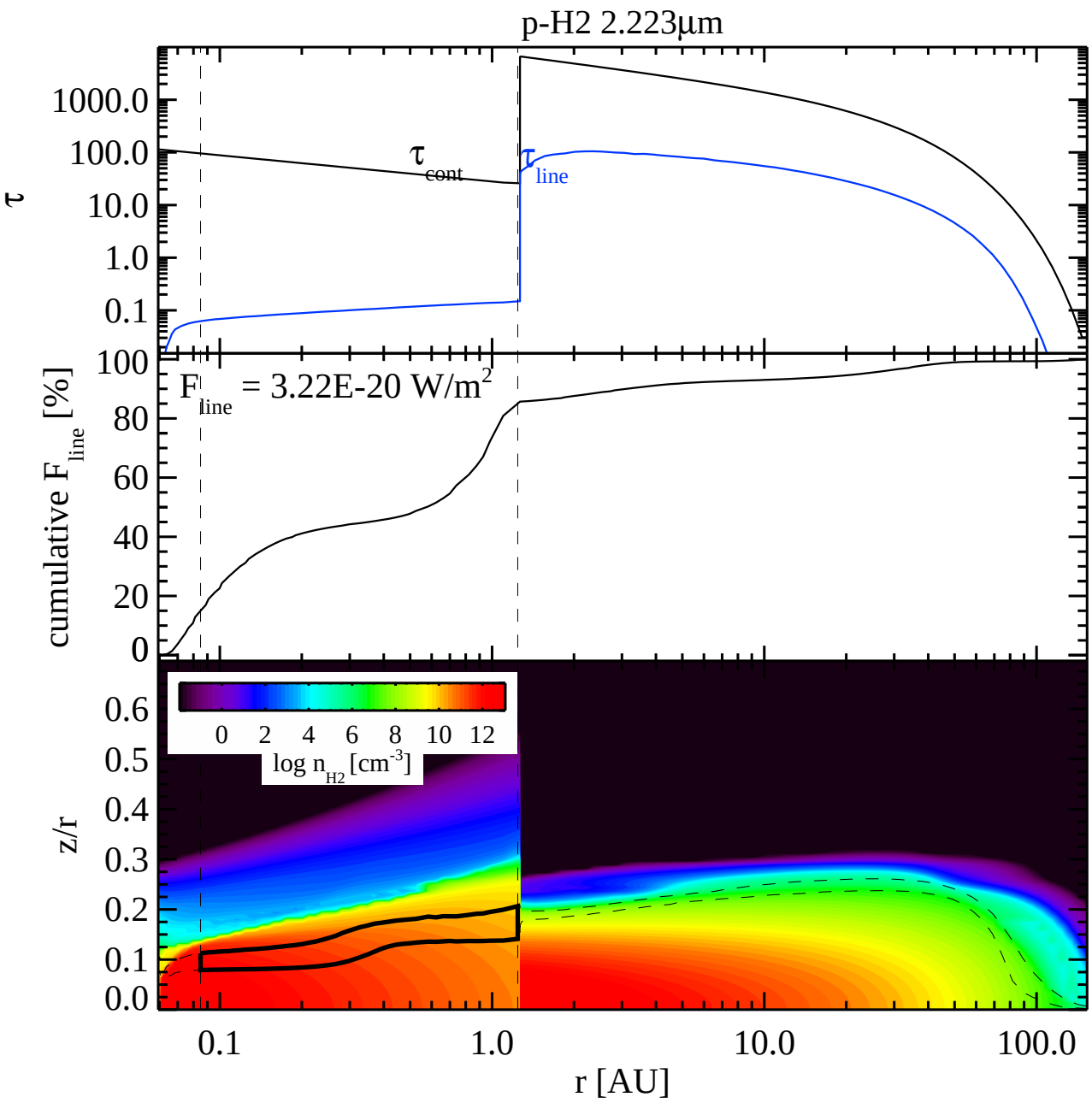

o-H2 17.03µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 2.12E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n H2 [cm-3]
0.1
1.0
10.0
100.0
r [AU]

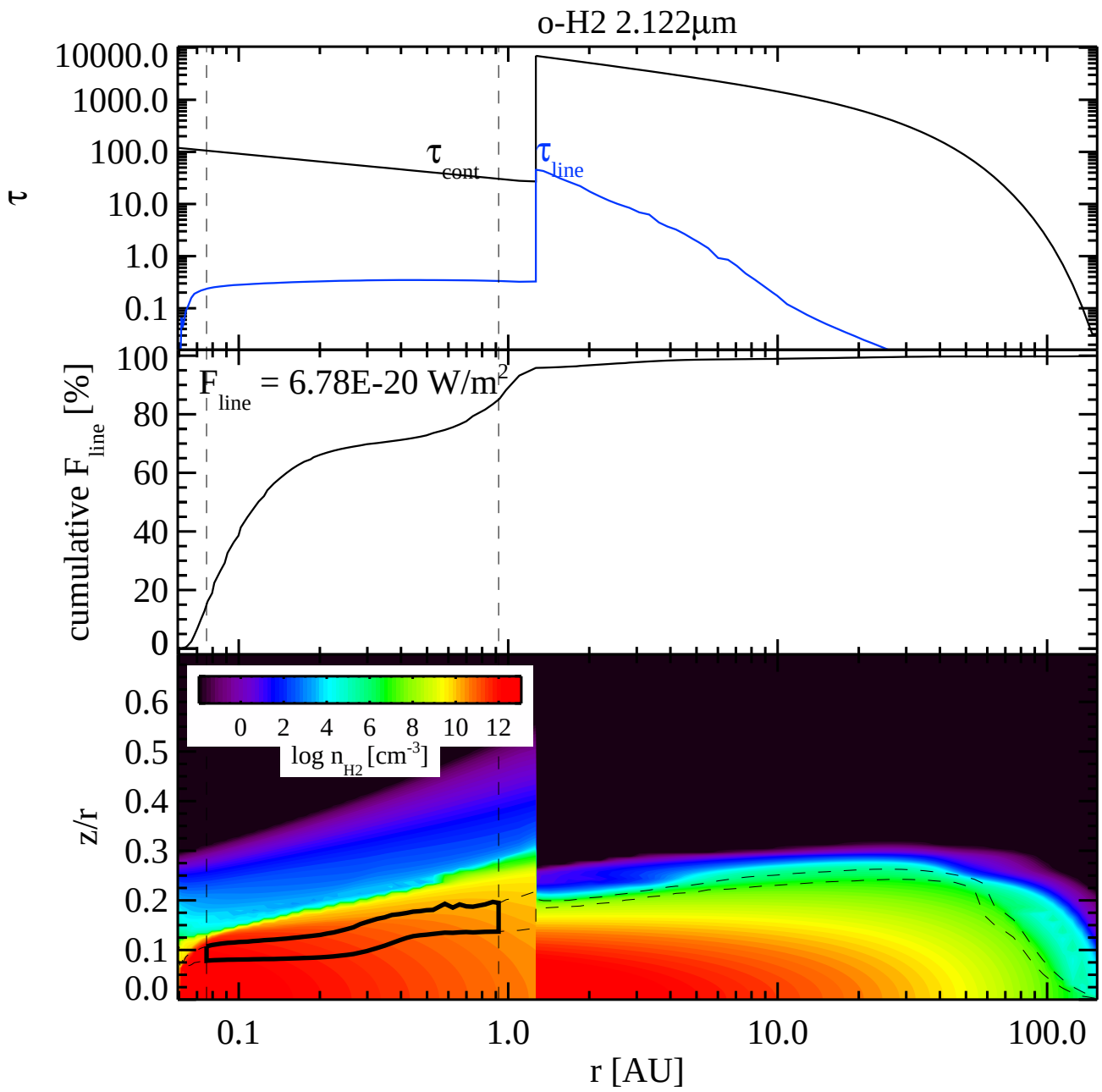

p-H2 12.28µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
F line = 1.48E-19 W/m2
100
80
60
40
20
0
log n H2 [cm-3]
0 2 4 6 8 10 12
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.1
1.0
10.0
100.0
r [AU]

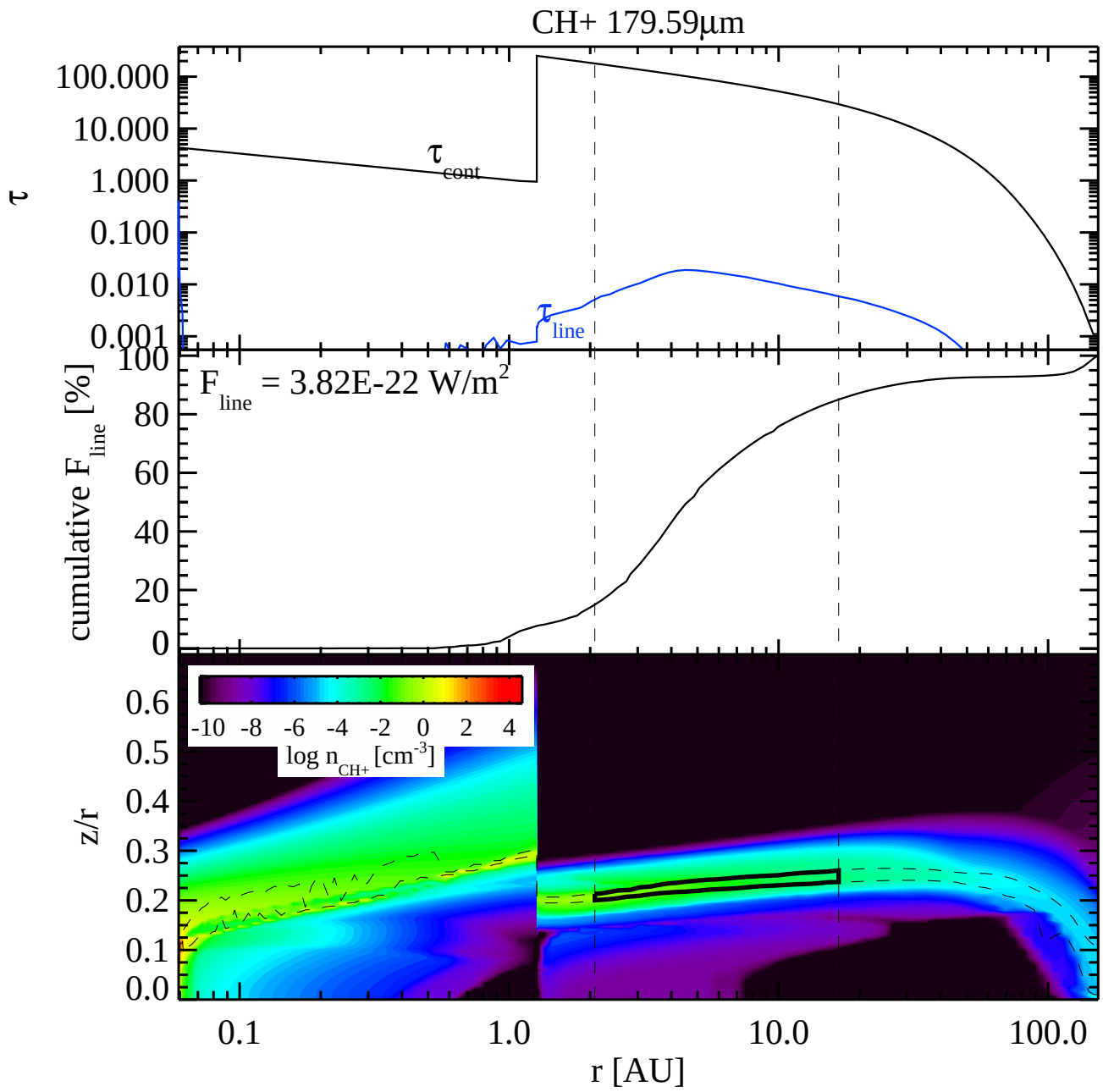

p-H2 8.025µm
τ
1000.00
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.10E-19 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n H2 [cm-3]
0.1
1.0
10.0
100.0
r [AU]

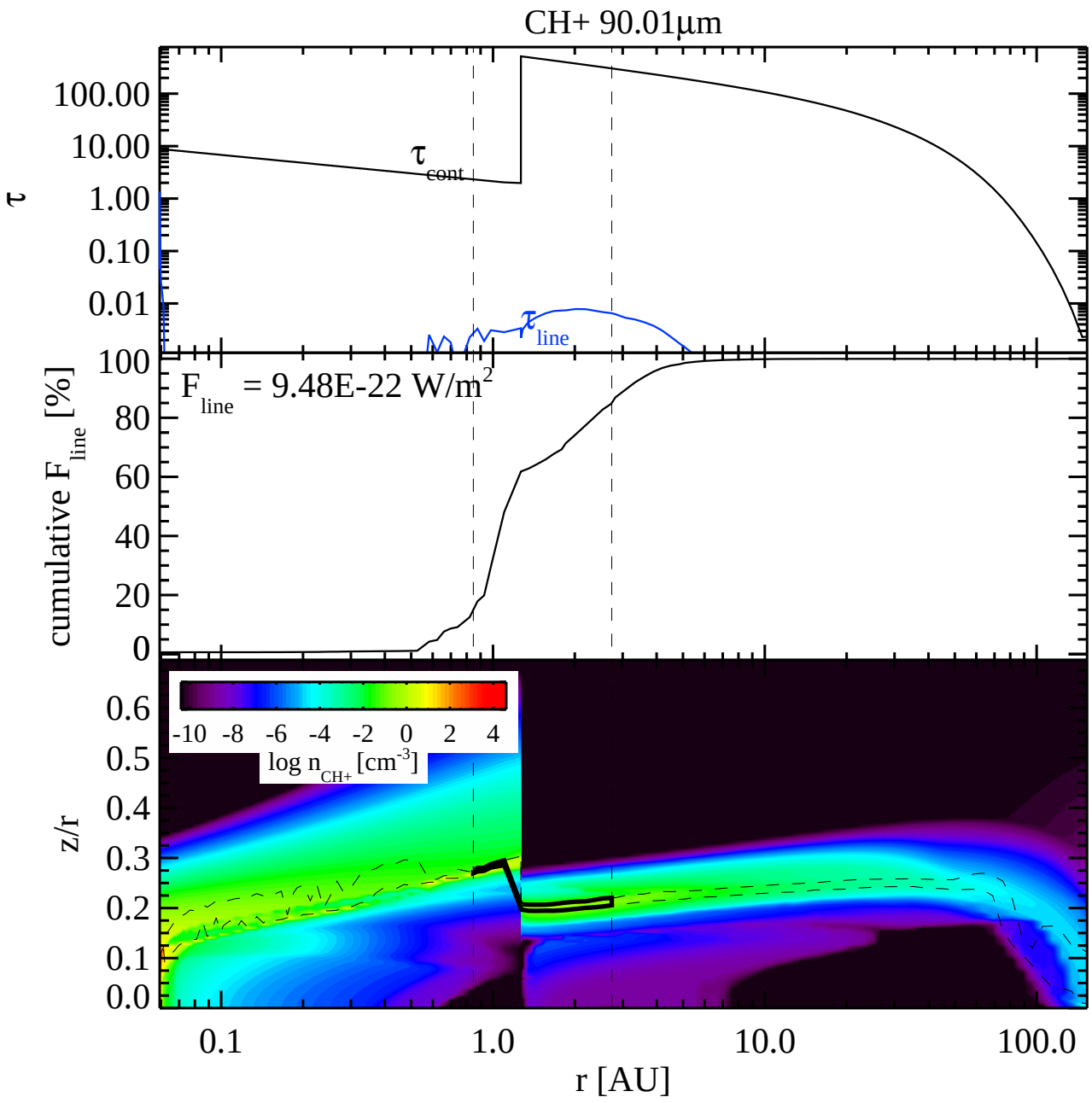

o-H2 4.694µm
τ
1000.000
100.000
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.22E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n H2 [cm-3]
0.1
1.0
10.0
100.0
r [AU]

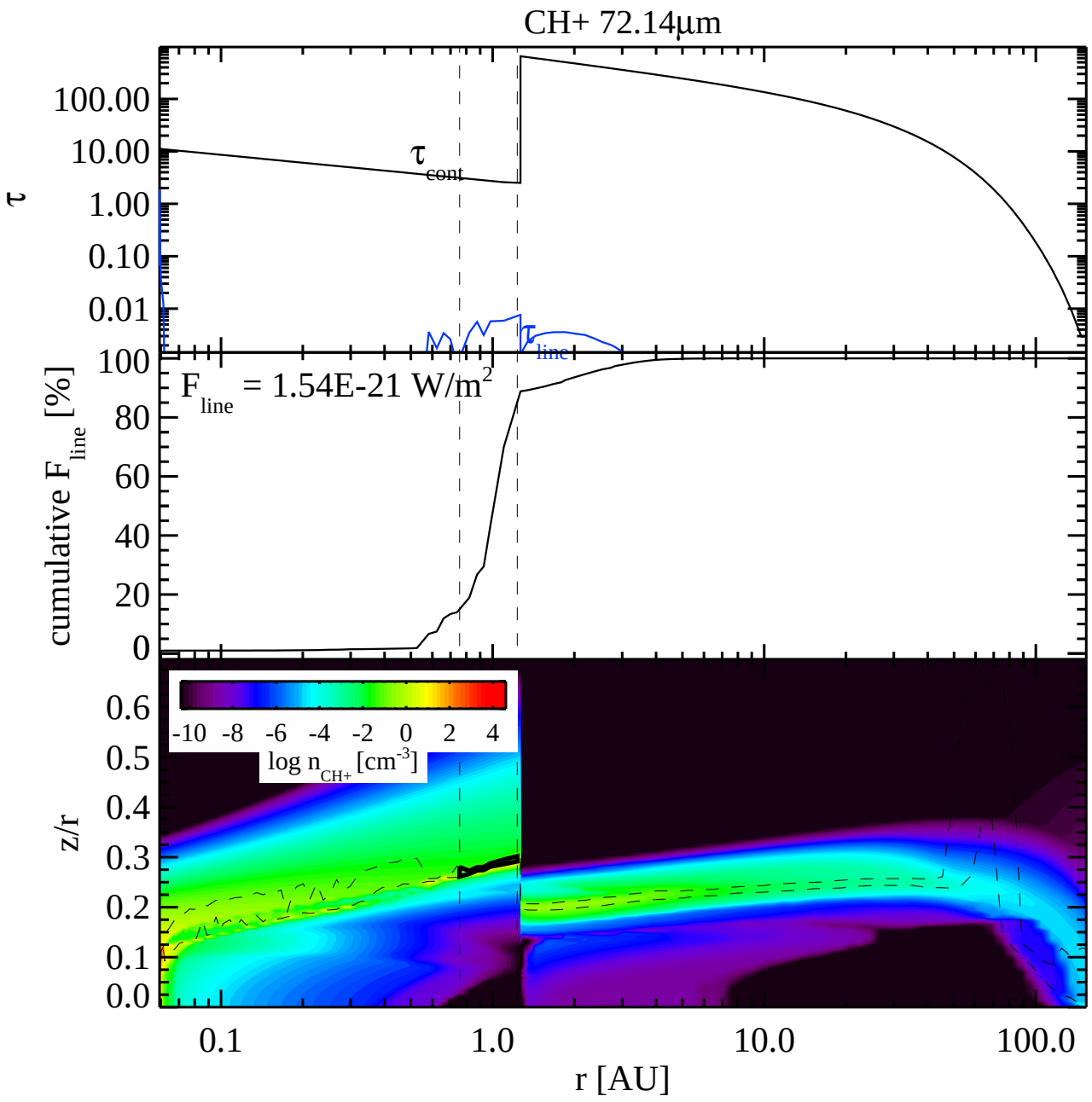

o-H2 2.248µm
τ
10^2
10^0
10^{-2}
10^{-4}
τ_{cont}
τ_{line}
cumulative F_{line} [%]
F_{line} = 1.28E-20 W/m^2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n_{H2} [cm^{-3}]
0.1
1.0
10.0
100.0
r [AU]

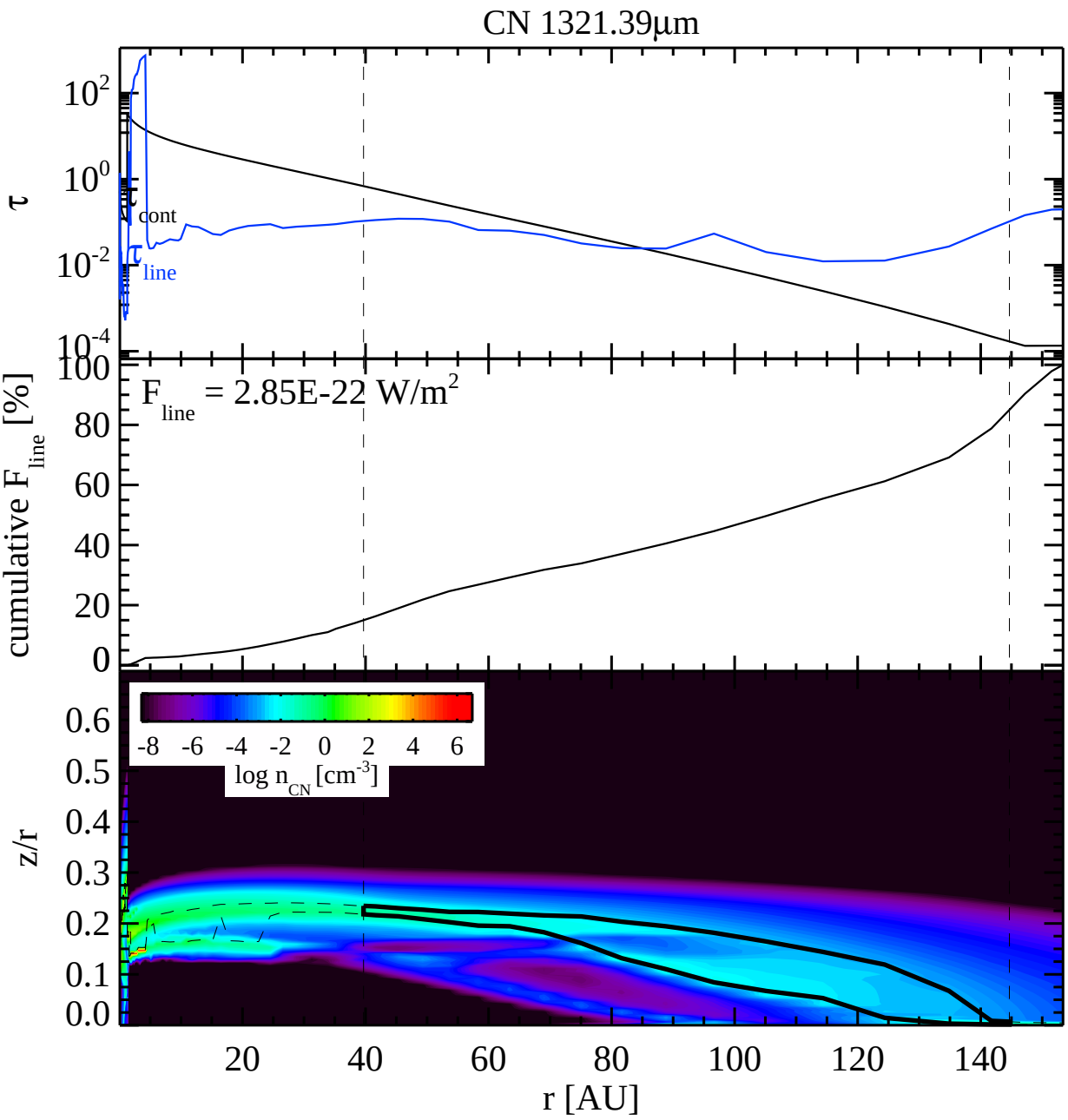

p-H2 2.223µm
τ
1000.0
100.0
10.0
1.0
0.1
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 3.22E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n H2 [cm-3]
0.1
1.0
10.0
100.0
r [AU]

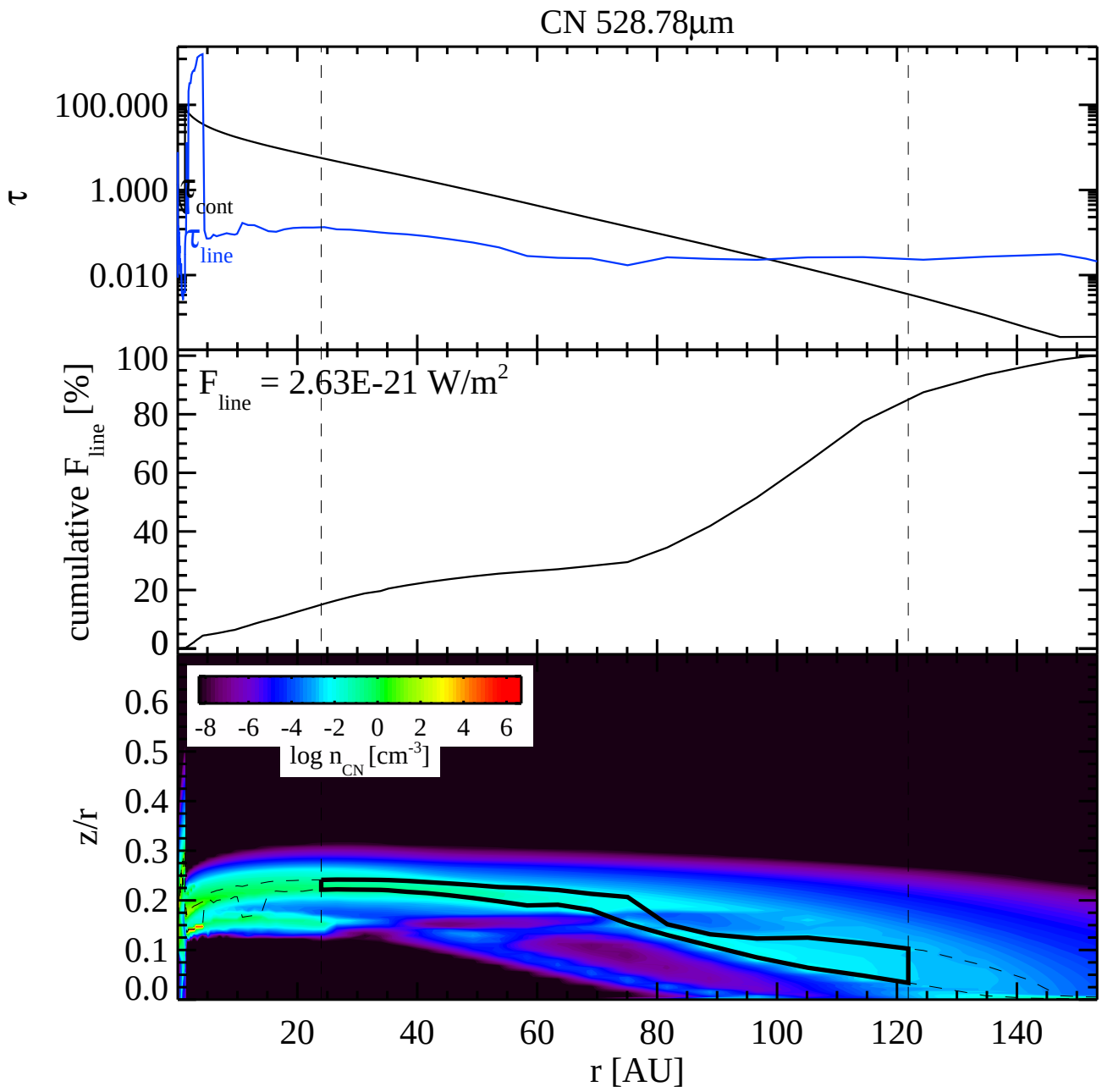

o-H2 2.122µm
τ
10000.0
1000.0
100.0
10.0
1.0
0.1
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 6.78E-20 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 2 4 6 8 10 12
log n H2 [cm-3]
0.1
1.0
10.0
100.0
r [AU]

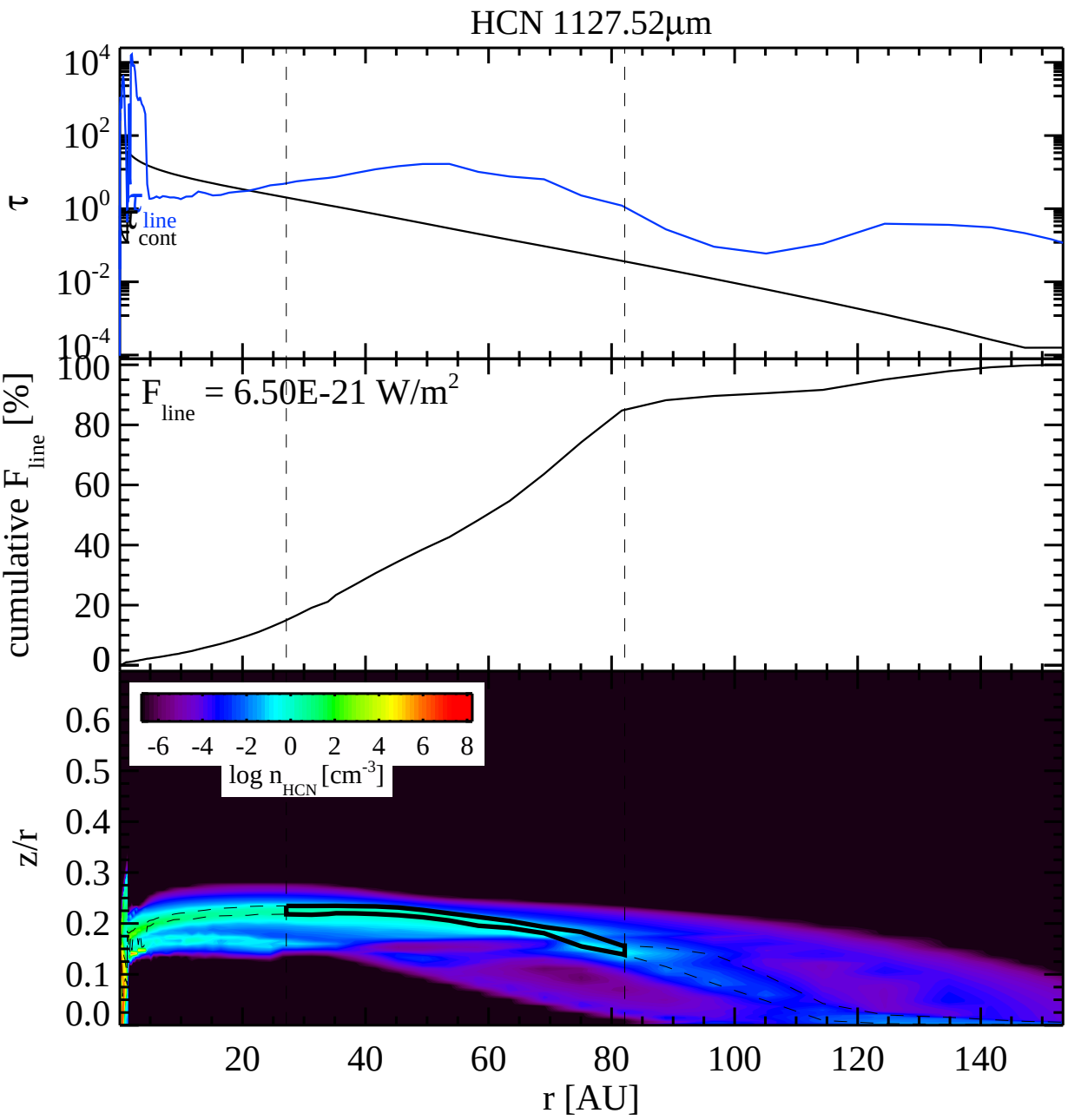

CH+ 179.59µm
τ
100.000
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
cumulative F line [%]
F line = 3.82E-22 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n CH+ [cm-3]
0.1
1.0
10.0
100.0
r [AU]

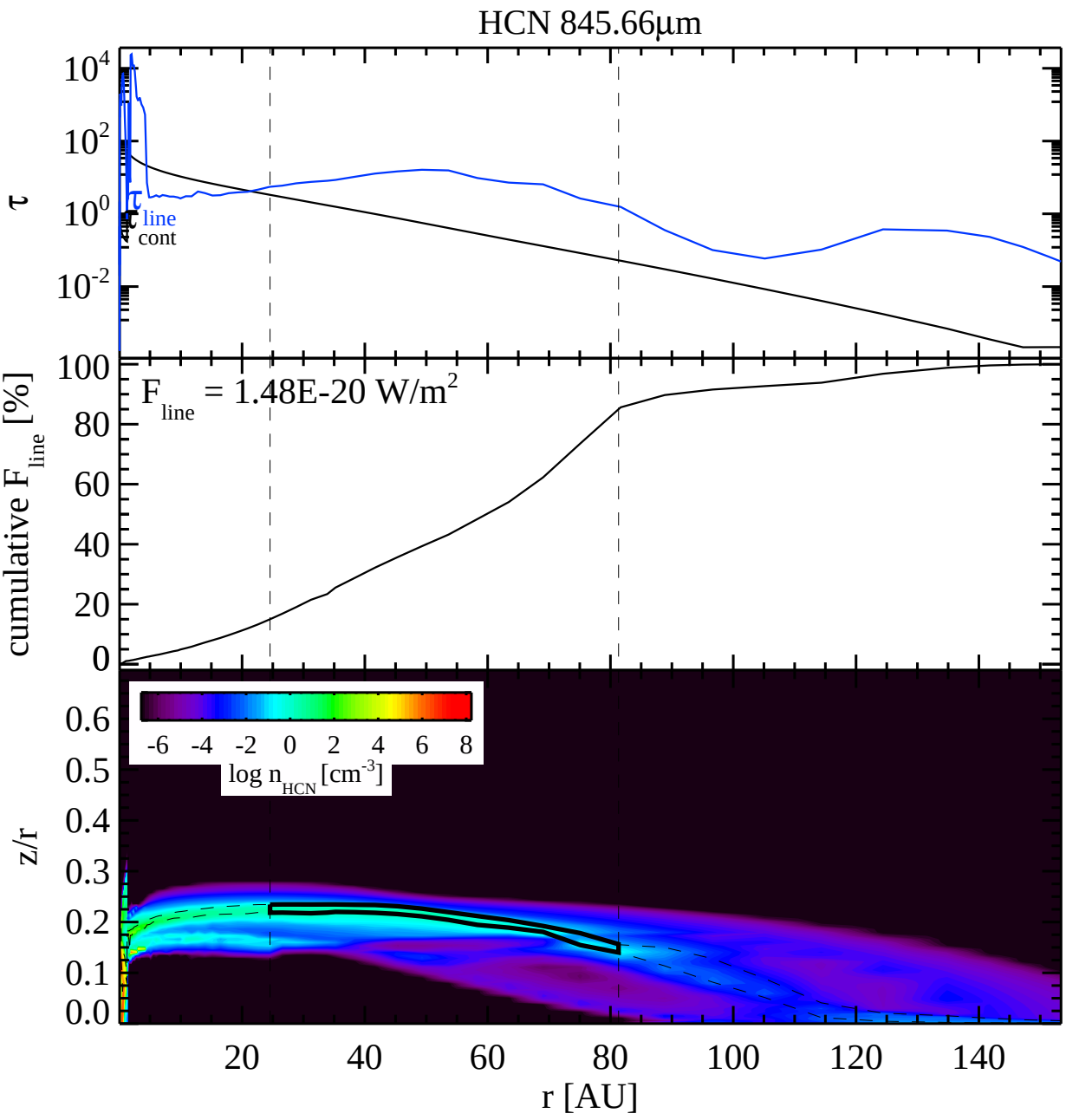

CH+ 90.01μm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 9.48E-22 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n CH+ [cm-3]
0.1
1.0
10.0
100.0
r [AU]

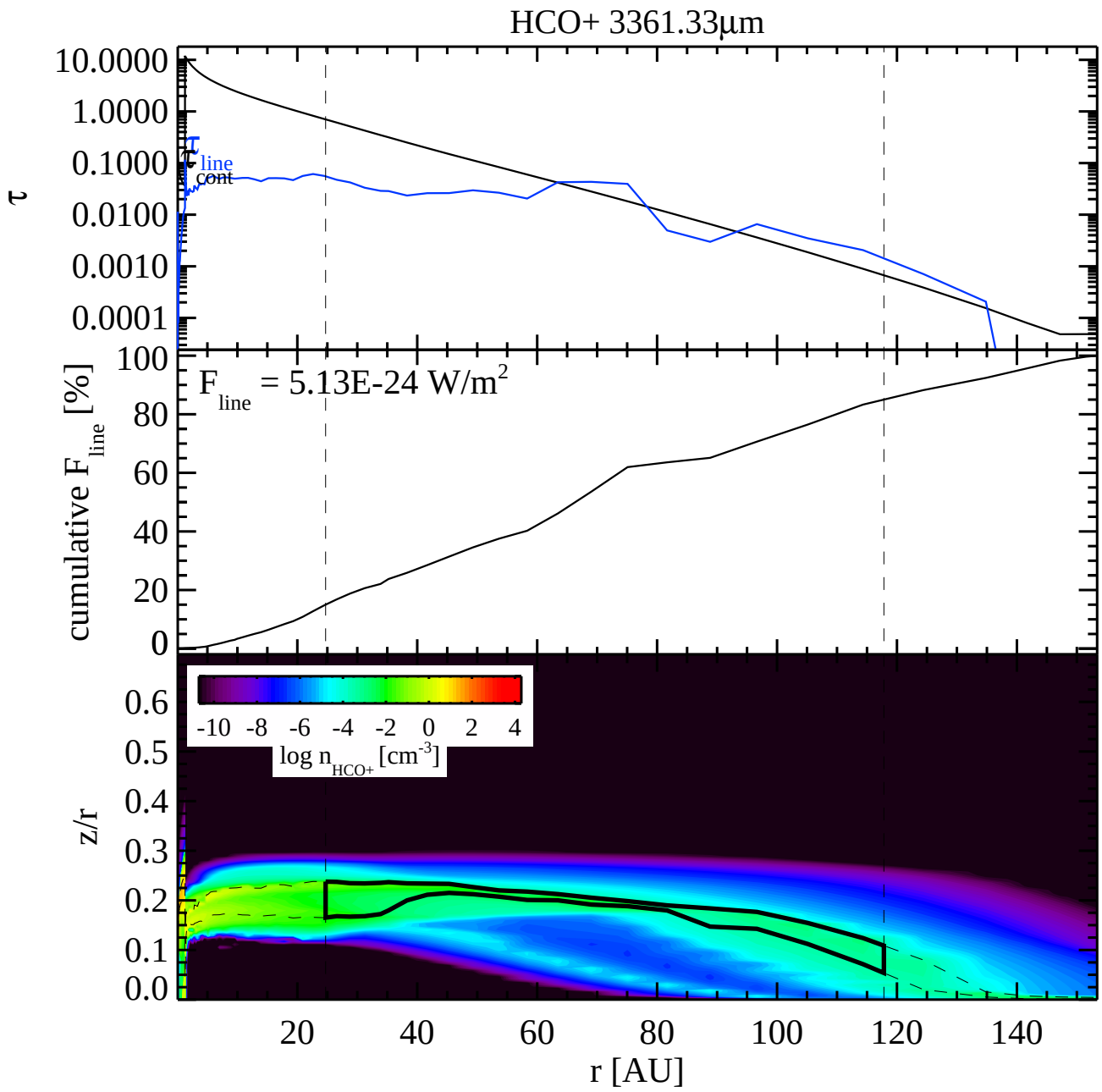

CH+ 72.14µm
τ
100.00
10.00
1.00
0.10
0.01
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.54E-21 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n CH+ [cm-3]
0.1
1.0
10.0
100.0
r [AU]

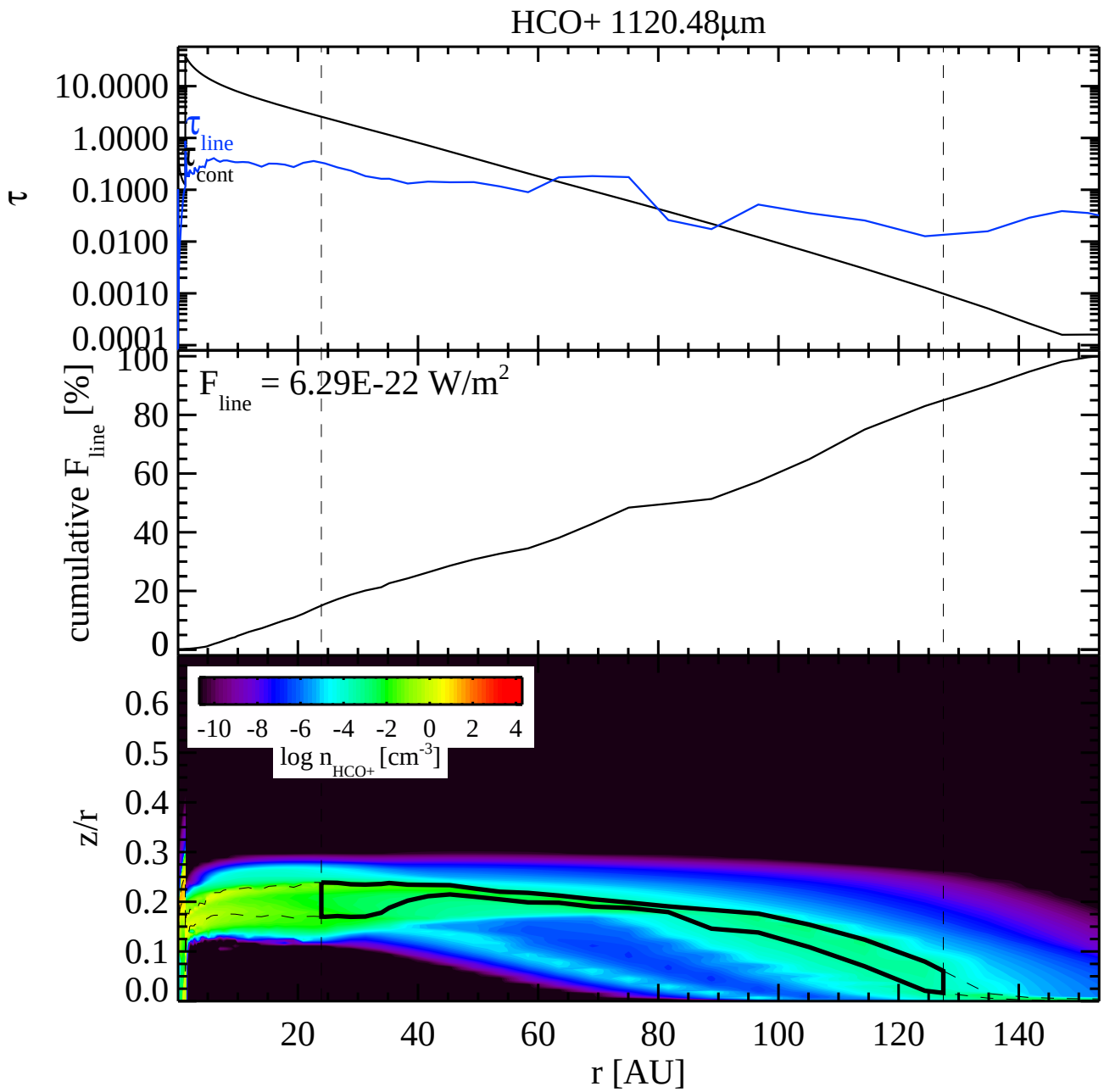

CN 1321.39µm
τ
10^2
10^0
10^-2
10^-4
τ cont
τ line
cumulative F line [%]
F line = 2.85E-22 W/m^2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n CN [cm^-3]
20 40 60 80 100 120 140
r [AU]

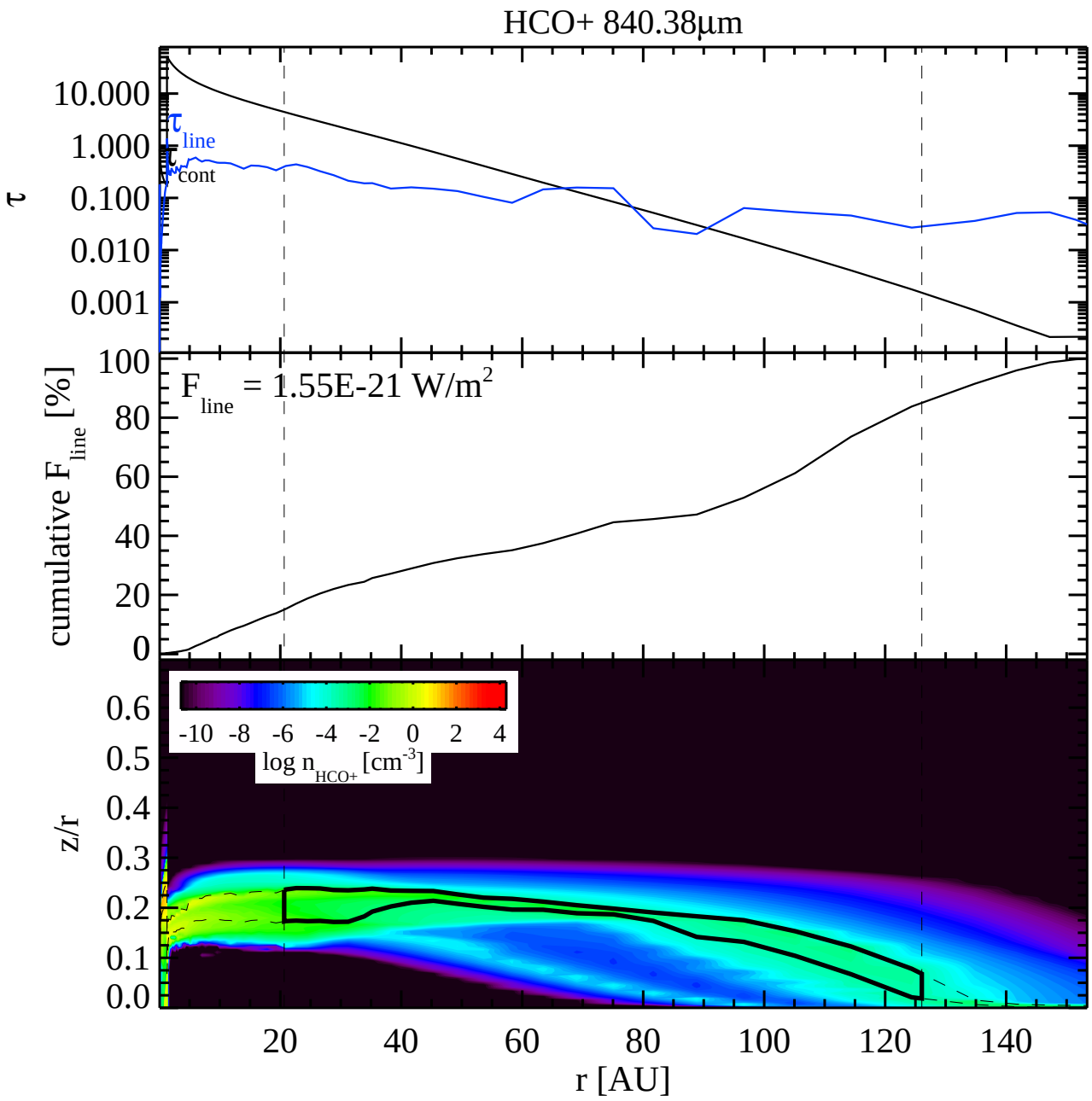

CN 528.78µm
τ
100.000
1.000
0.010
τ cont
τ line
cumulative F line [%]
F line = 2.63E-21 W/m2
100
80
60
40
20
0
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-8 -6 -4 -2 0 2 4 6
log n CN [cm-3]
20
40
60
80
100
120
140
r [AU]

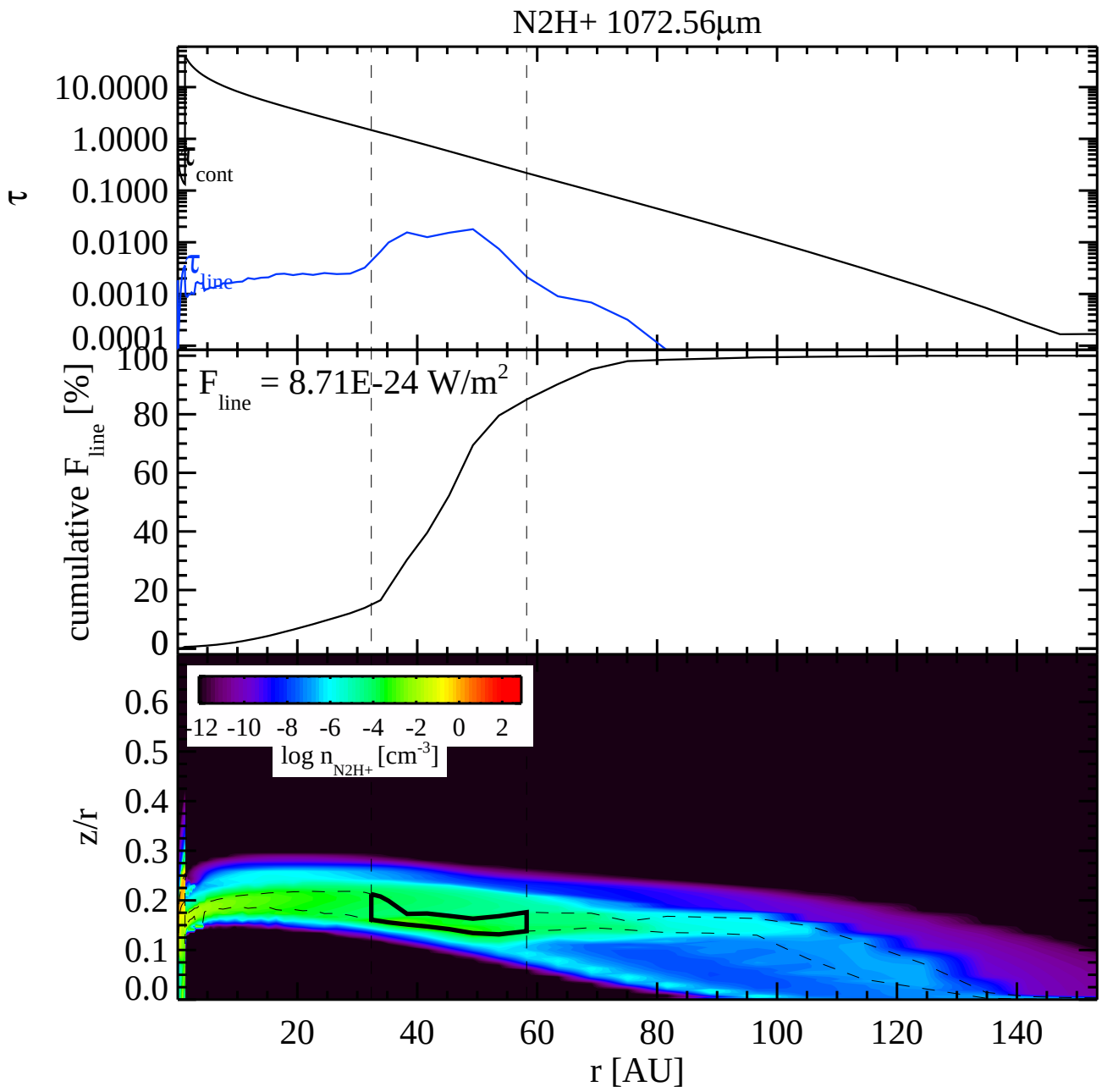

HCN 1127.52µm
τ
τ_{line}
τ_{cont}
cumulative F_{line} [%]
F_{line} = 6.50E-21 W/m^2
log n_{HCN} [cm^{-3}]
z/r
r [AU]

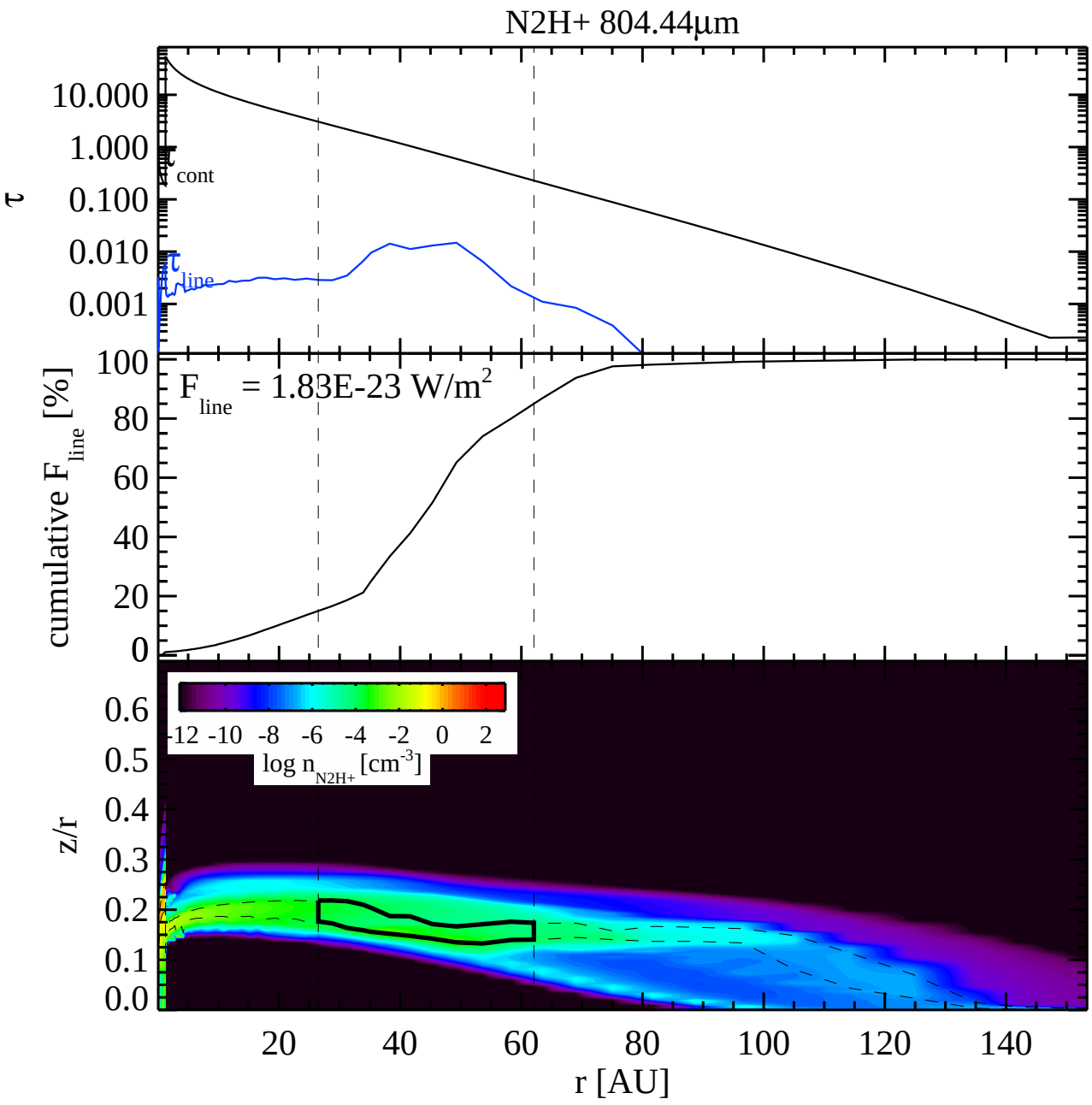

HCN 845.66µm
τ
10^4
10^2
10^0
10^{-2}
τ line
τ cont
cumulative F_{line} [%]
100
80
60
40
20
0
F_{line} = 1.48E-20 W/m^2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-6 -4 -2 0 2 4 6 8
log n_{HCN} [cm^{-3}]
20 40 60 80 100 120 140
r [AU]

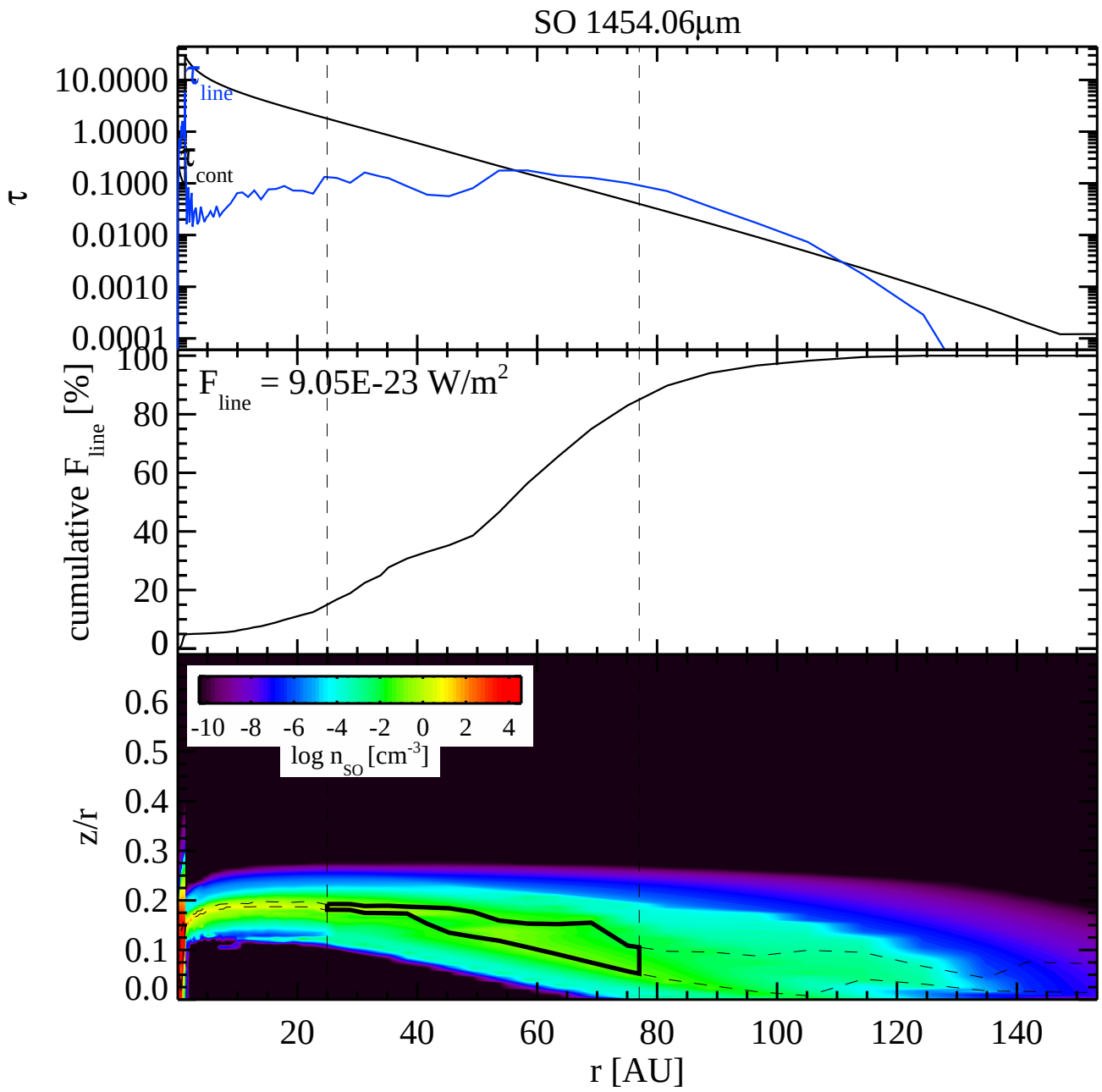

HCO+ 3361.33µm
τ
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 5.13E-24 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n HCO+ [cm-3]
20
40
60
80
100
120
140
r [AU]

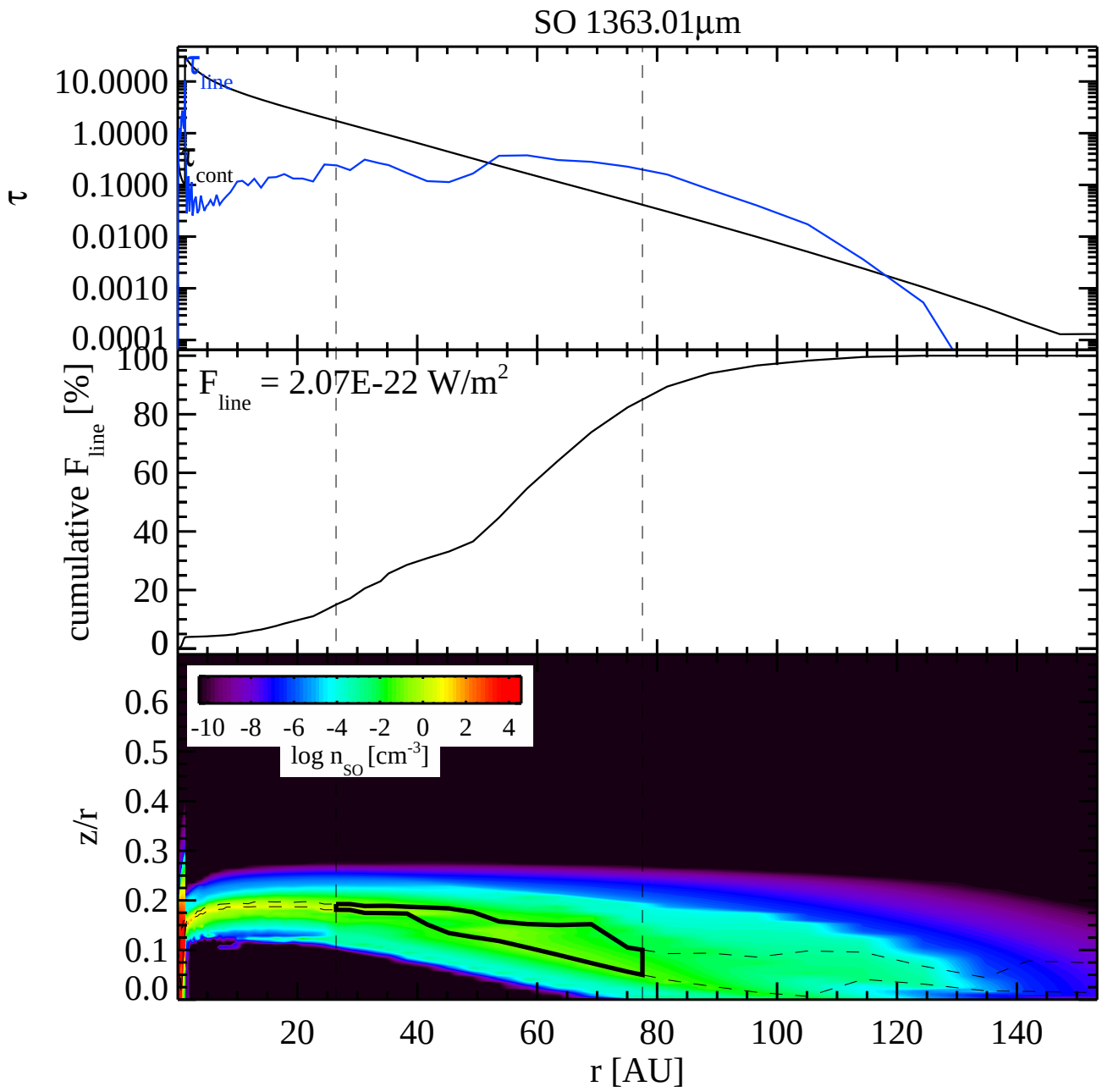

HCO+ 1120.48µm
τ
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 6.29E-22 W/m2
-10 -8 -6 -4 -2 0 2 4
log n HCO+ [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20
40
60
80
100
120
140
r [AU]

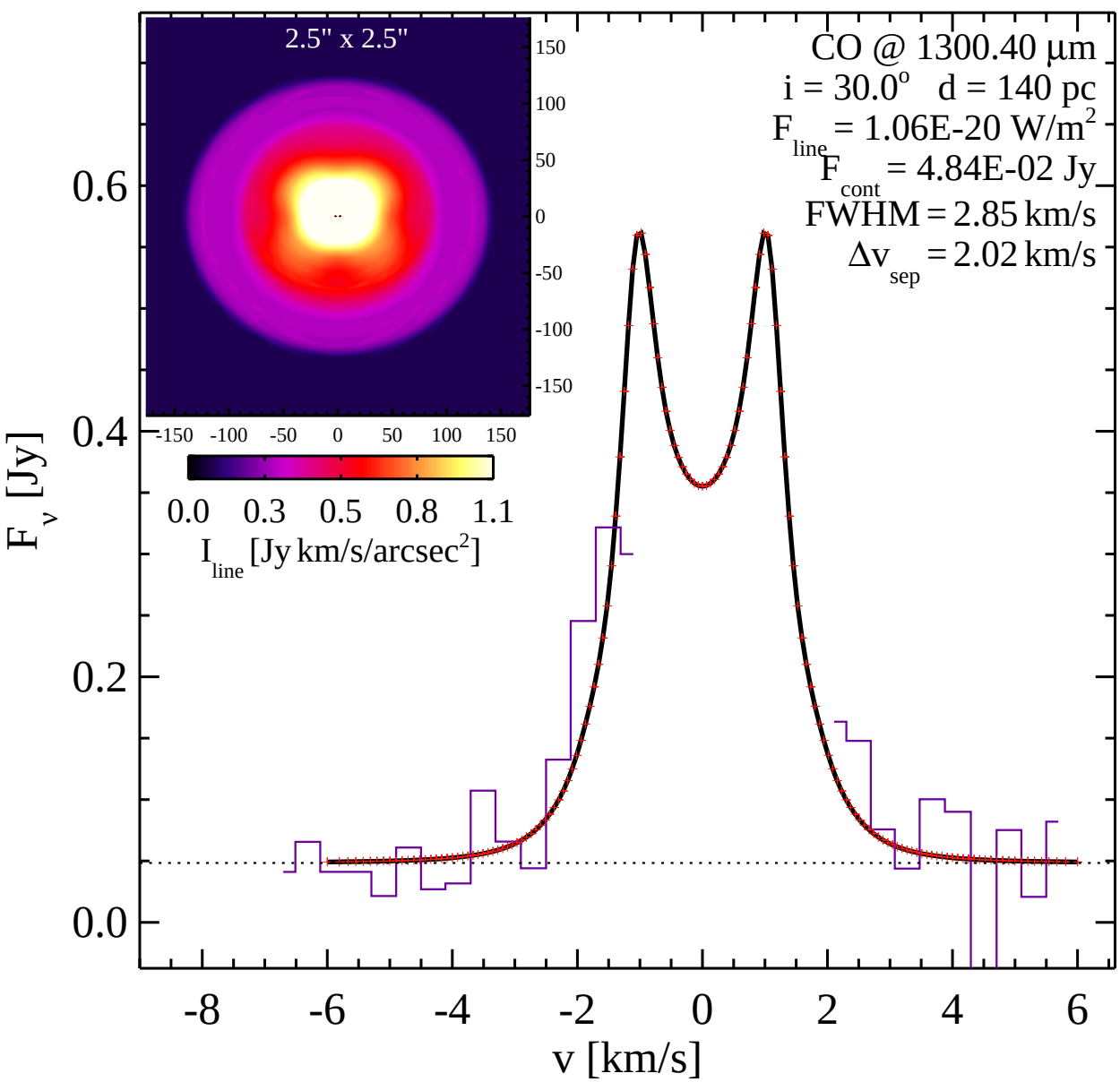

HCO+ 840.38µm
τ
10.000
1.000
0.100
0.010
0.001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 1.55E-21 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n HCO+ [cm-3]
20
40
60
80
100
120
140
r [AU]

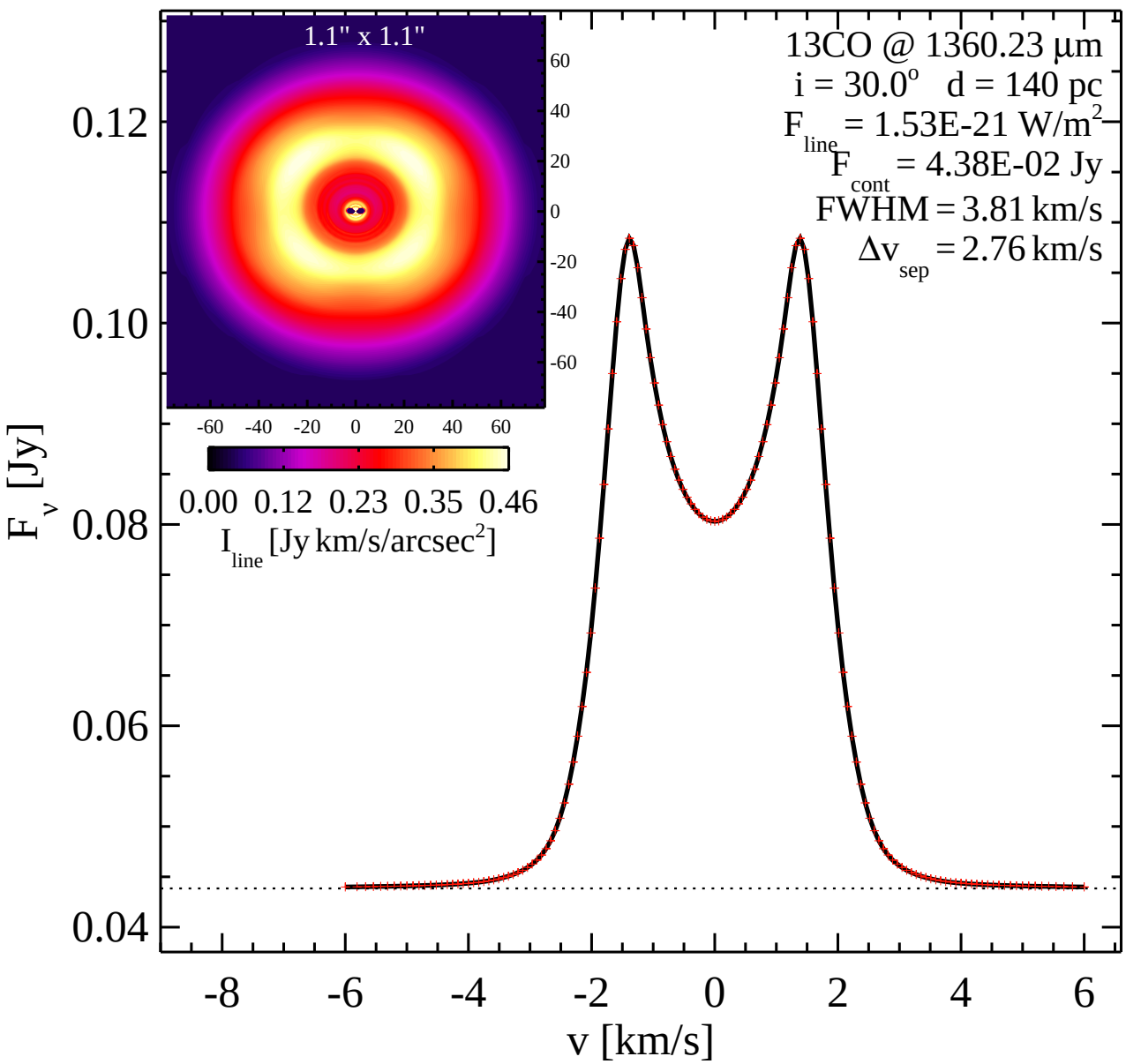

N2H+ 1072.56µm
τ
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 8.71E-24 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-12 -10 -8 -6 -4 -2 0 2
log n N2H+ [cm-3]
20
40
60
80
100
120
140
r [AU]

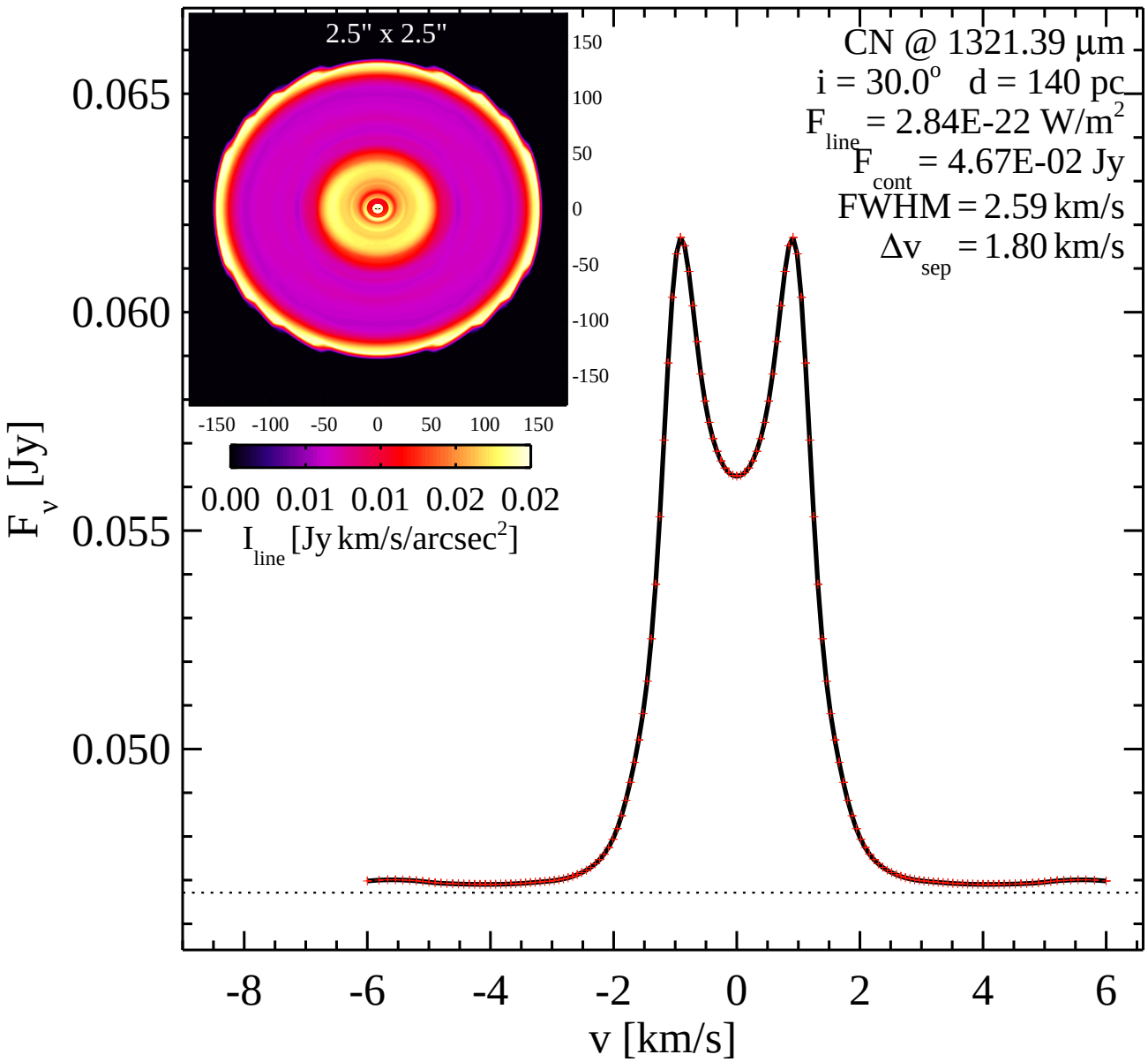

N2H+ 804.44µm
τ
10.000
1.000
0.100
0.010
0.001
τ cont
τ line
cumulative F line [%]
100
80
60
40
20
0
F line = 1.83E-23 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-12 -10 -8 -6 -4 -2 0 2
log n N2H+ [cm-3]
20
40
60
80
100
120
140
r [AU]

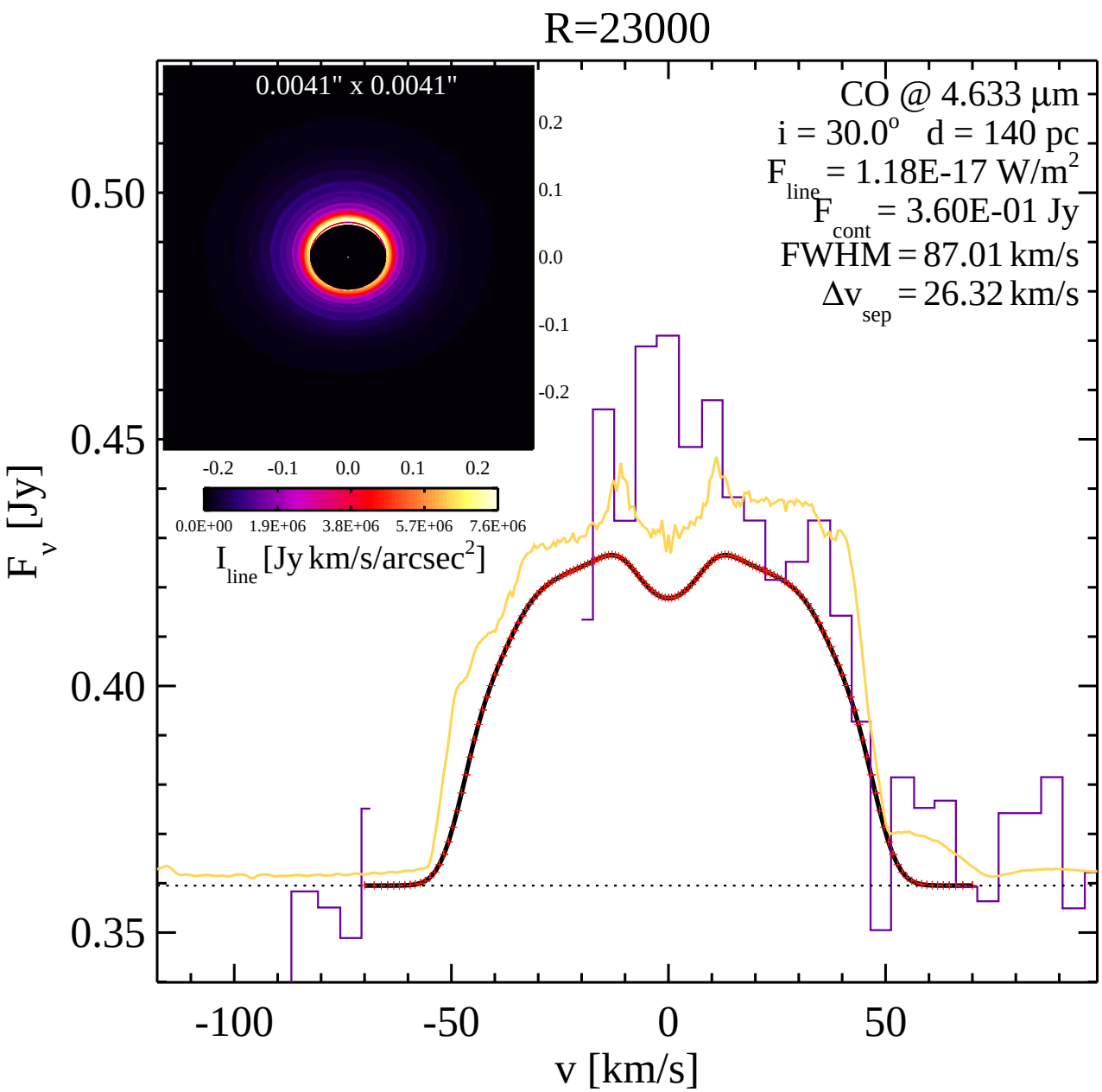

SO 1454.06µm
τ
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
τ line
τ cont
cumulative F line [%]
100
80
60
40
20
0
F line = 9.05E-23 W/m2
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-10 -8 -6 -4 -2 0 2 4
log n SO [cm-3]
20
40
60
80
100
120
140
r [AU]

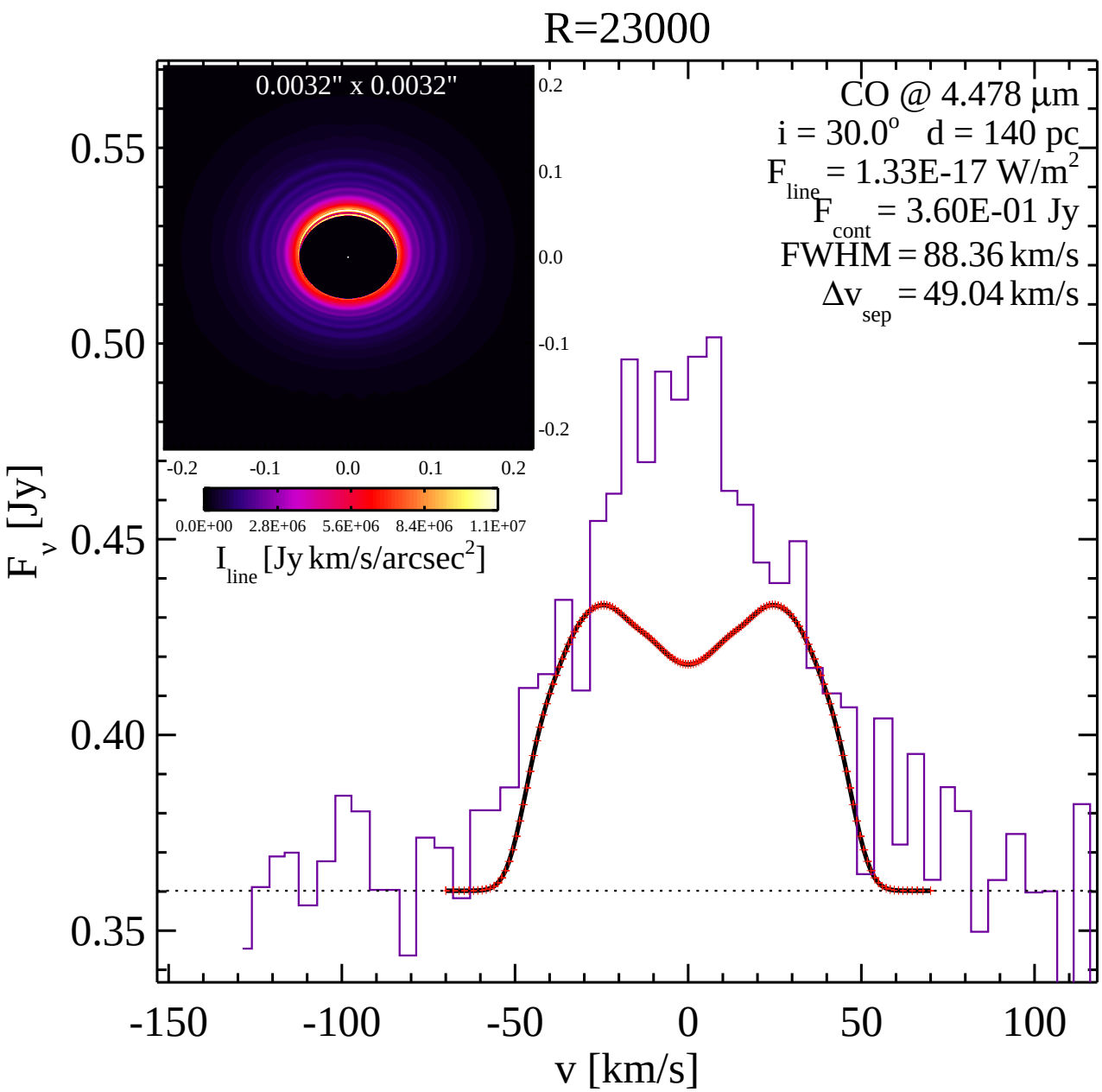

SO 1363.01µm
τ
τ line
τ cont
10.0000
1.0000
0.1000
0.0100
0.0010
0.0001
cumulative F line [%]
F line = 2.07E-22 W/m2
100
80
60
40
20
0
-10 -8 -6 -4 -2 0 2 4
log n SO [cm-3]
z/r
0.6
0.5
0.4
0.3
0.2
0.1
0.0
20
40
60
80
100
120
140
r [AU]

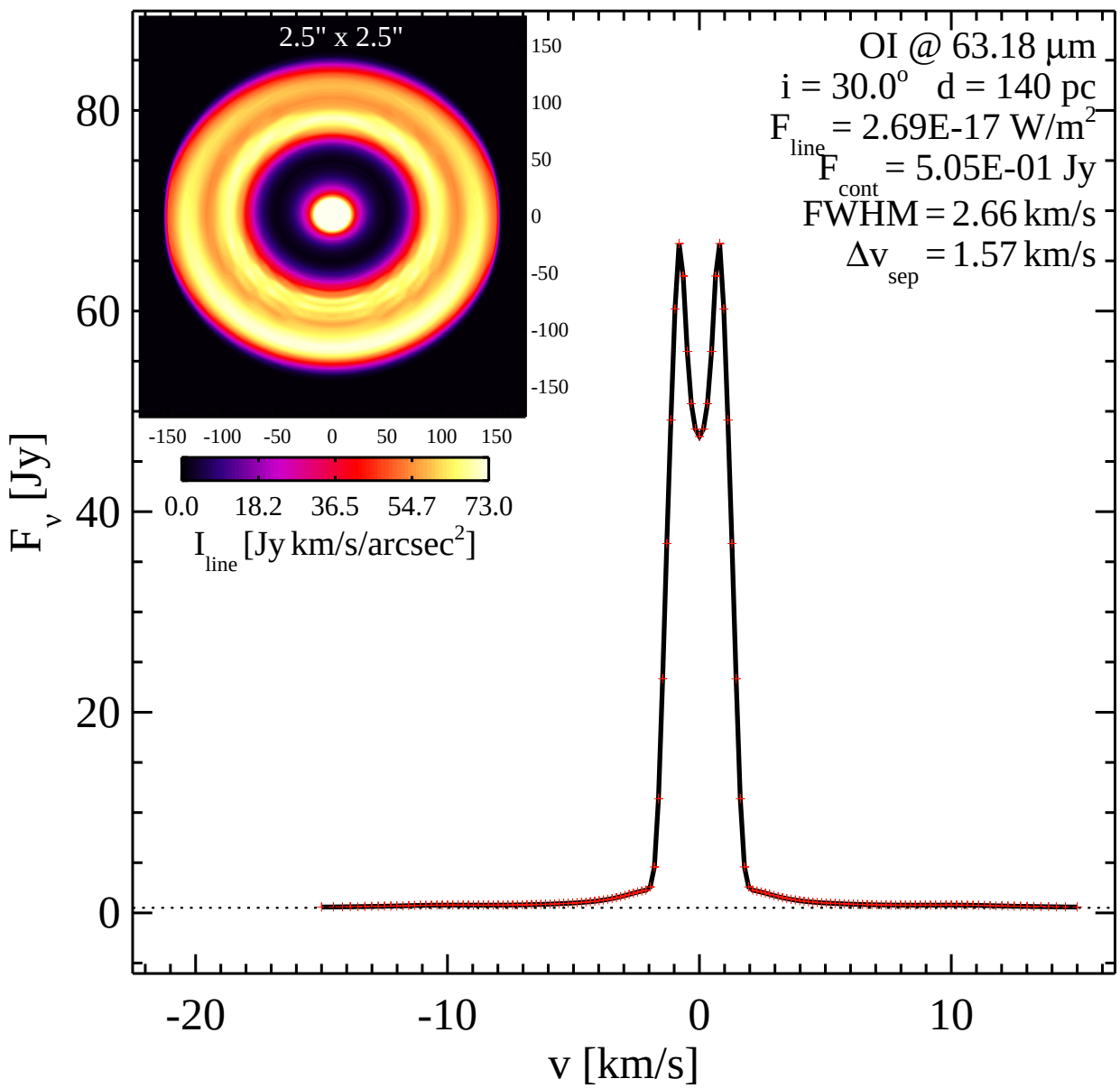

2.5" x 2.5"
150
100
50
0
-50
-100
-150
-150 -100 -50 0 50 100 150
0.0 0.3 0.5 0.8 1.1
I line [Jy km/s/arcsec2]
CO @ 1300.40 µm
i = 30.0o d = 140 pc
F line = 1.06E-20 W/m2
F cont = 4.84E-02 Jy
FWHM = 2.85 km/s
Δv sep = 2.02 km/s
F v [Jy]
0.0
0.2
0.4
0.6
-8 -6 -4 -2 0 2 4 6
v [km/s]

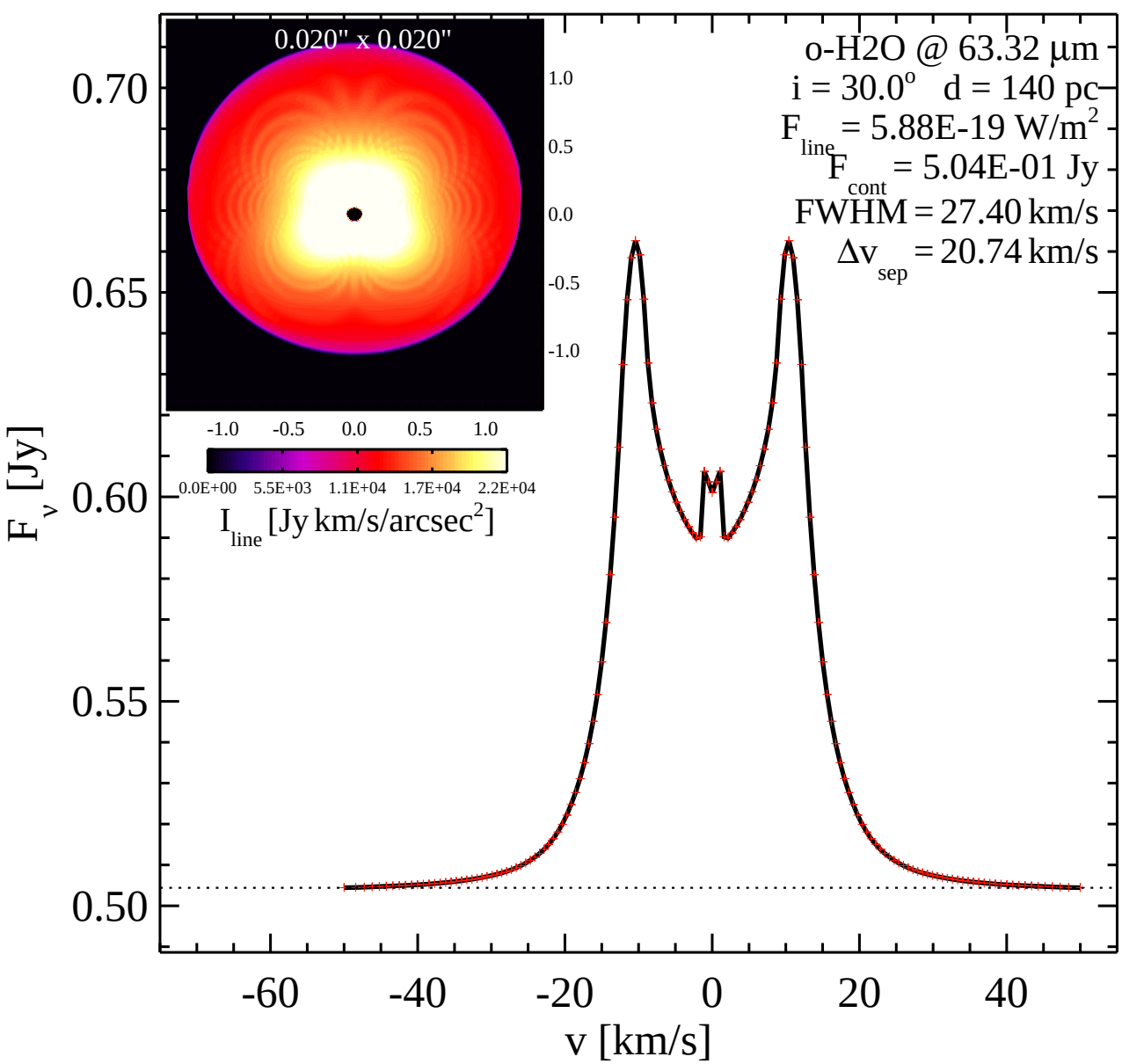

1.1" x 1.1"
60
40
20
0
-20
-40
-60
-60 -40 -20 0 20 40 60
0.00 0.12 0.23 0.35 0.46
I line [Jy km/s/arcsec2]
13CO @ 1360.23 µm
i = 30.0o d = 140 pc
F line = 1.53E-21 W/m2
F cont = 4.38E-02 Jy
FWHM = 3.81 km/s
Δv sep = 2.76 km/s
F v [Jy]
0.12
0.10
0.08
0.06
0.04
-8 -6 -4 -2 0 2 4 6
v [km/s]


2.5" x 2.5"
150
100
50
0
-50
-100
-150
-150 -100 -50 0 50 100 150
0.00 0.01 0.01 0.02 0.02
I line [Jy km/s/arcsec2]
CN @ 1321.39 µm
i = 30.0o d = 140 pc
F line = 2.84E-22 W/m2
F cont = 4.67E-02 Jy
FWHM = 2.59 km/s
Δv sep = 1.80 km/s
F v [Jy]
0.065
0.060
0.055
0.050
-8 -6 -4 -2 0 2 4 6
v [km/s]


R=23000
0.0041" x 0.0041"
CO @ 4.633 µm
i = 30.0° d = 140 pc
F line = 1.18E-17 W/m2
F cont = 3.60E-01 Jy
FWHM = 87.01 km/s
Δv sep = 26.32 km/s
0.2
0.1
0.0
-0.1
-0.2
-0.2 -0.1 0.0 0.1 0.2
0.0E+00 1.9E+06 3.8E+06 5.7E+06 7.6E+06
I line [Jy km/s/arcsec2]
0.50
0.45
0.40
0.35
F v [Jy]
-100 -50 0 50
v [km/s]


R=23000
0.0032" x 0.0032"
CO @ 4.478 µm
i = 30.0° d = 140 pc
F line = 1.33E-17 W/m2
F cont = 3.60E-01 Jy
FWHM = 88.36 km/s
Δv sep = 49.04 km/s
0.2
0.1
0.0
-0.1
-0.2
-0.2 -0.1 0.0 0.1 0.2
0.0E+00 2.8E+06 5.6E+06 8.4E+06 1.1E+07
I line [Jy km/s/arcsec2]
0.55
0.50
0.45
0.40
0.35
F v [Jy]
-150 -100 -50 0 50 100
v [km/s]


2.5" x 2.5"
150
100
50
0
-50
-100
-150
-150 -100 -50 0 50 100 150
0.0 18.2 36.5 54.7 73.0
I line [Jy km/s/arcsec2]
OI @ 63.18 µm
i = 30.0o d = 140 pc
F line = 2.69E-17 W/m2
F cont = 5.05E-01 Jy
FWHM = 2.66 km/s
Δv sep = 1.57 km/s
F v [Jy]
80
60
40
20
0
-20
-10
0
10
v [km/s]


o-H2O @ 63.32 µm
i = 30.0° d = 140 pc
F line = 5.88E-19 W/m2
F cont = 5.04E-01 Jy
FWHM = 27.40 km/s
Δv sep = 20.74 km/s
0.020" x 0.020"
1.0
0.5
0.0
-0.5
-1.0
-1.0 -0.5 0.0 0.5 1.0
0.0E+00 5.5E+03 1.1E+04 1.7E+04 2.2E+04
I line [Jy km/s/arcsec2]
F v [Jy]
0.70
0.65
0.60
0.55
0.50
-60 -40 -20 0 20 40
v [km/s]