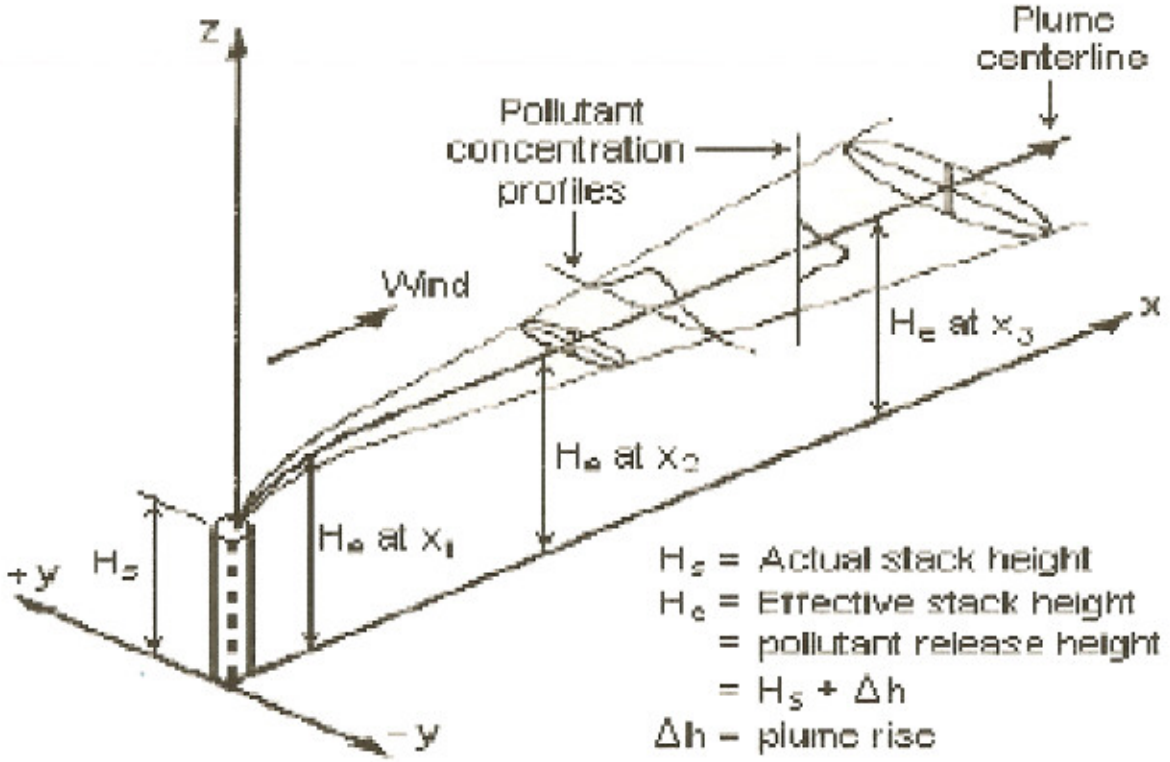
attach to Dec mtg. sum

An Idealized Dream Plume Description

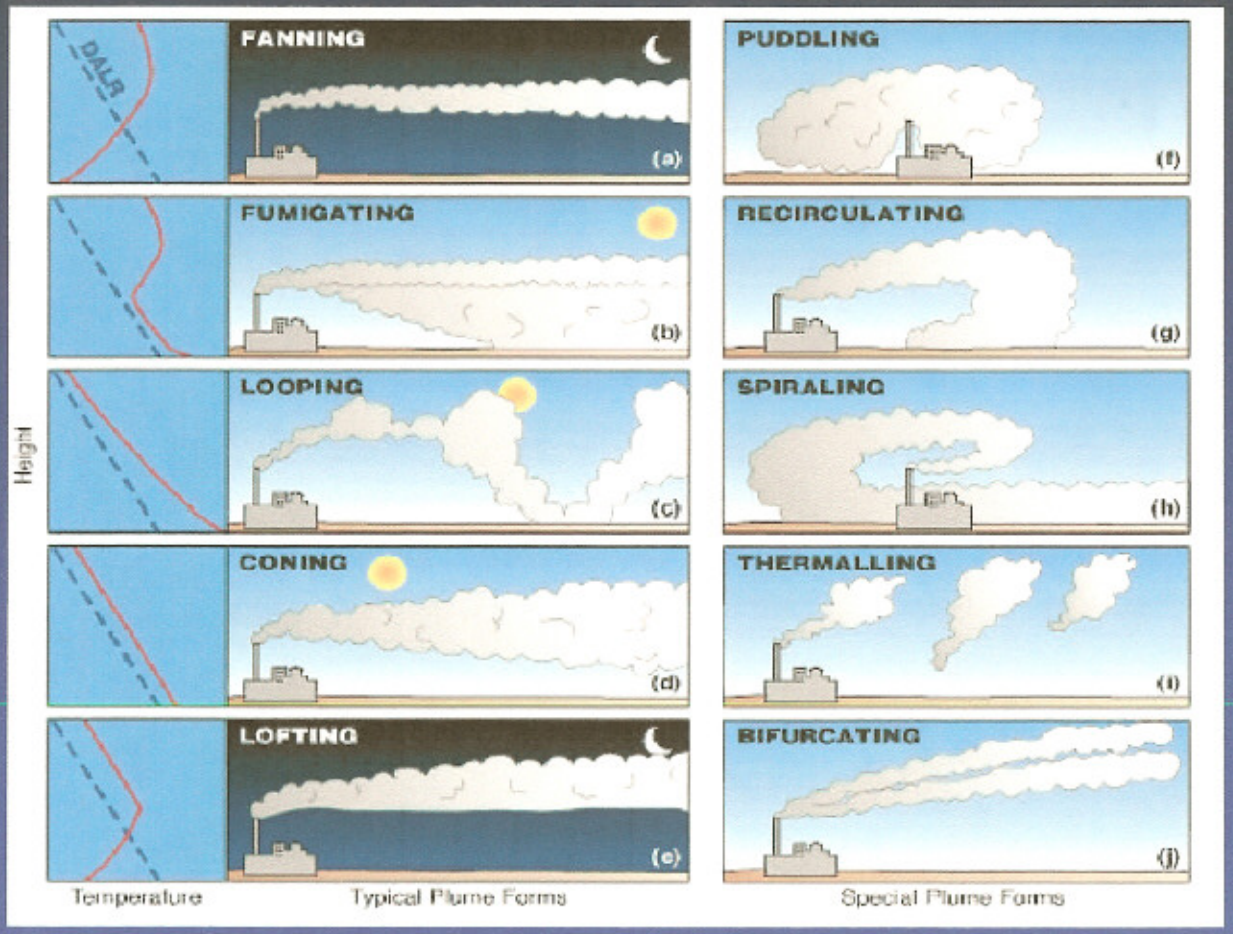
HWC 12/17/07



H_s = Actual stack height
H_e = Effective stack height
= pollutant release height
= $H_s + \Delta h$
Δh = plume rise

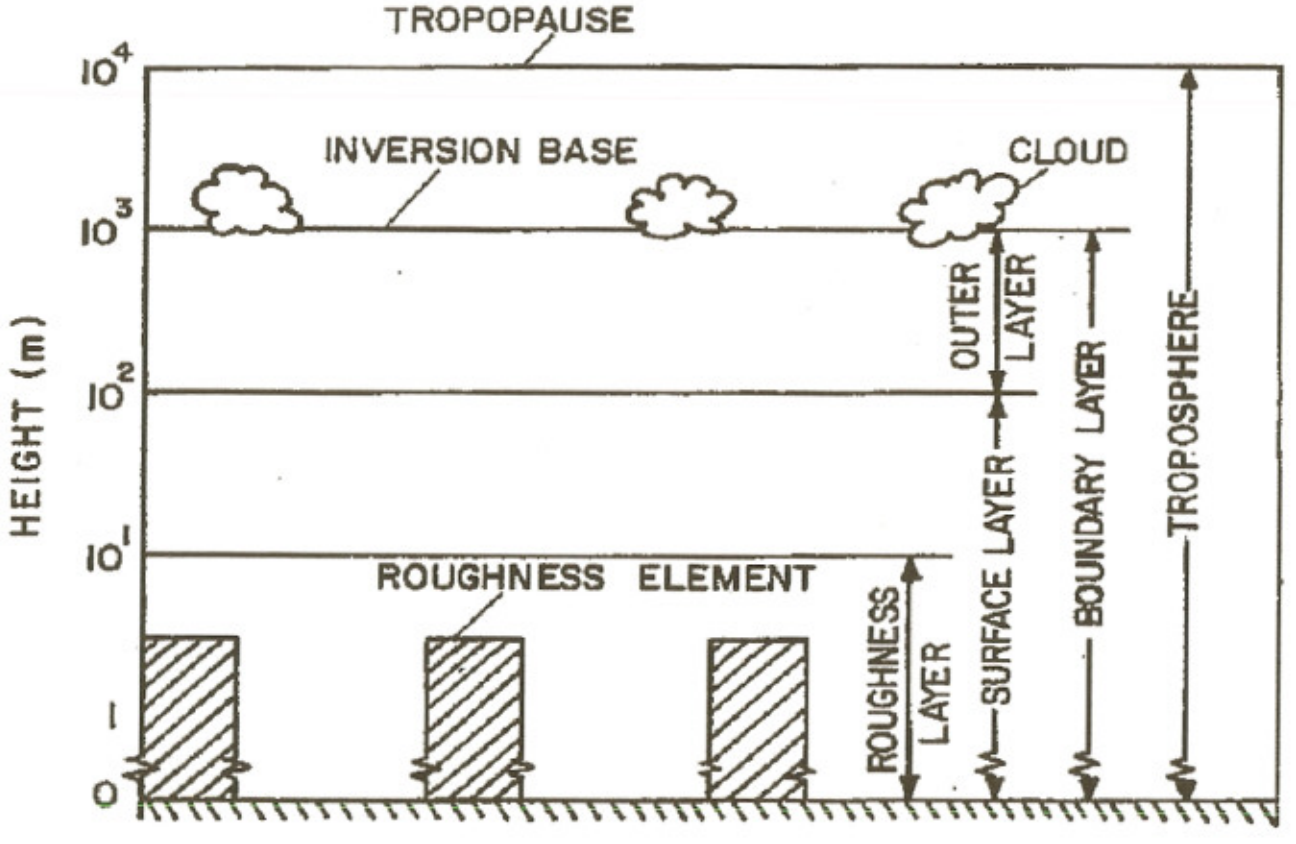
Some Real, Idealized Plumes

Plume form as a function of stability



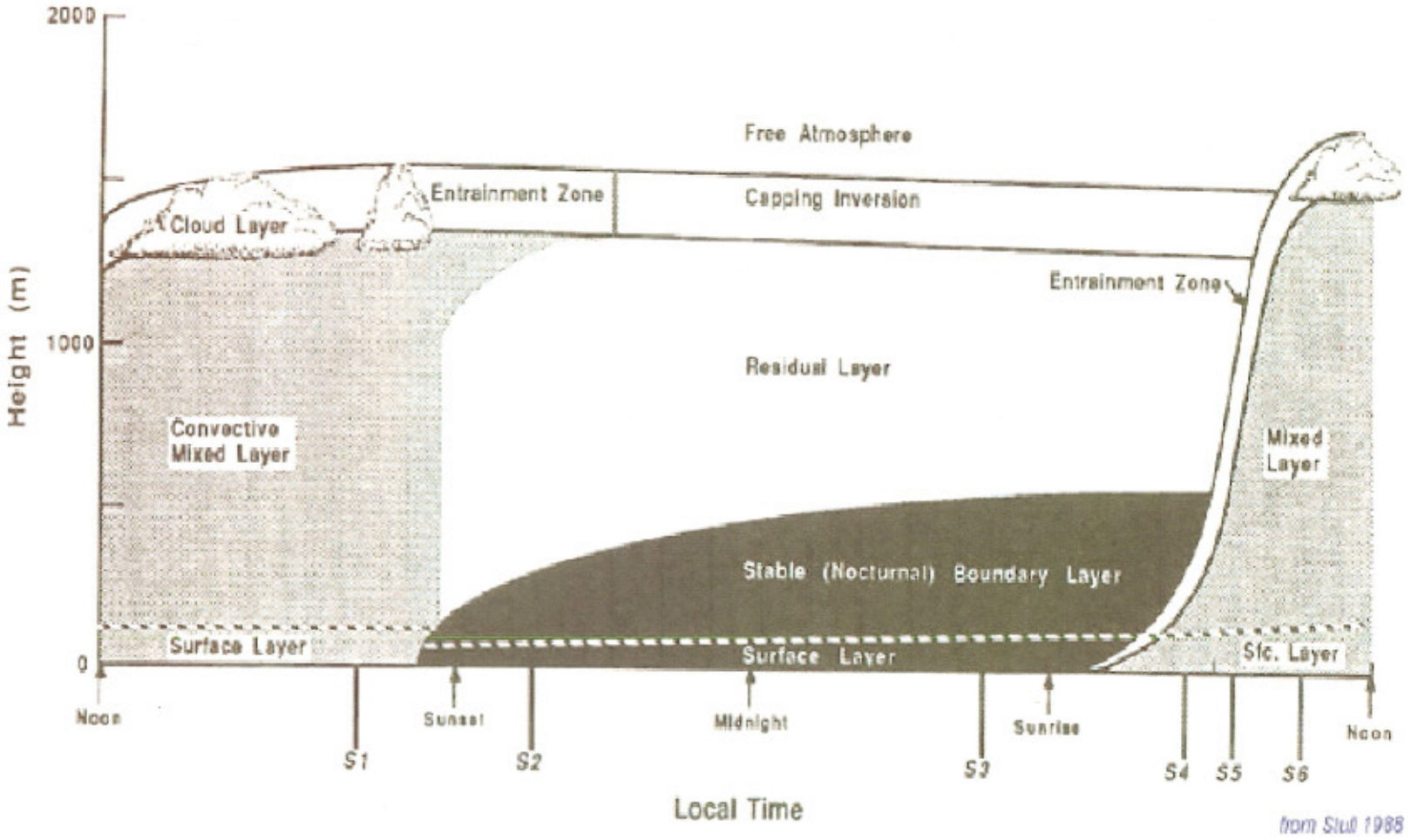
Whiteman (2000)

A logarithmic Atmosphere Display



A Boundary Layer Evolutionary Description

Over land in the vicinity of a high pressure area, the boundary layer is often very well defined and evolves with the diurnal cycle:



Some Classic Stability Ideas

Table 1: The Pasquill stability classes

Stability class	Definition	Stability class	Definition
A	very unstable	D	neutral
B	unstable	E	slightly stable
C	slightly unstable	F	stable

Table 2: Meteorological conditions that define the Pasquill stability classes

Surface wind speed		Daytime incoming solar radiation			Nighttime cloud cover	
m/s	mi/h	Strong	Moderate	Slight	> 50%	< 50%
< 2	< 5	A	A – B	B	E	F
2 – 3	5 – 7	A – B	B	C	E	F
3 – 5	7 – 11	B	B – C	C	D	E
5 – 6	11 – 13	C	C – D	D	D	D
> 6	> 13	C	D	D	D	D

Note: Class D applies to heavily overcast skies, at any wind speed day or night