

Climate Change and Air Quality in US National Parks:

a new project sponsored by NPS

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PROJECT OBJECTIVES



Quantify the contributions from:

1. Anthropogenic emission changes
2. Natural emission changes (BVOC, dust, BB)
3. Climate Change
4. Land use change (RCP scenarios, possibly CN, not DGVM)

Also investigate the role of resolution: do some hi-res runs (1x1) with trop chemistry

RCP EMISSIONS SPECIATED FOR USE IN CESM

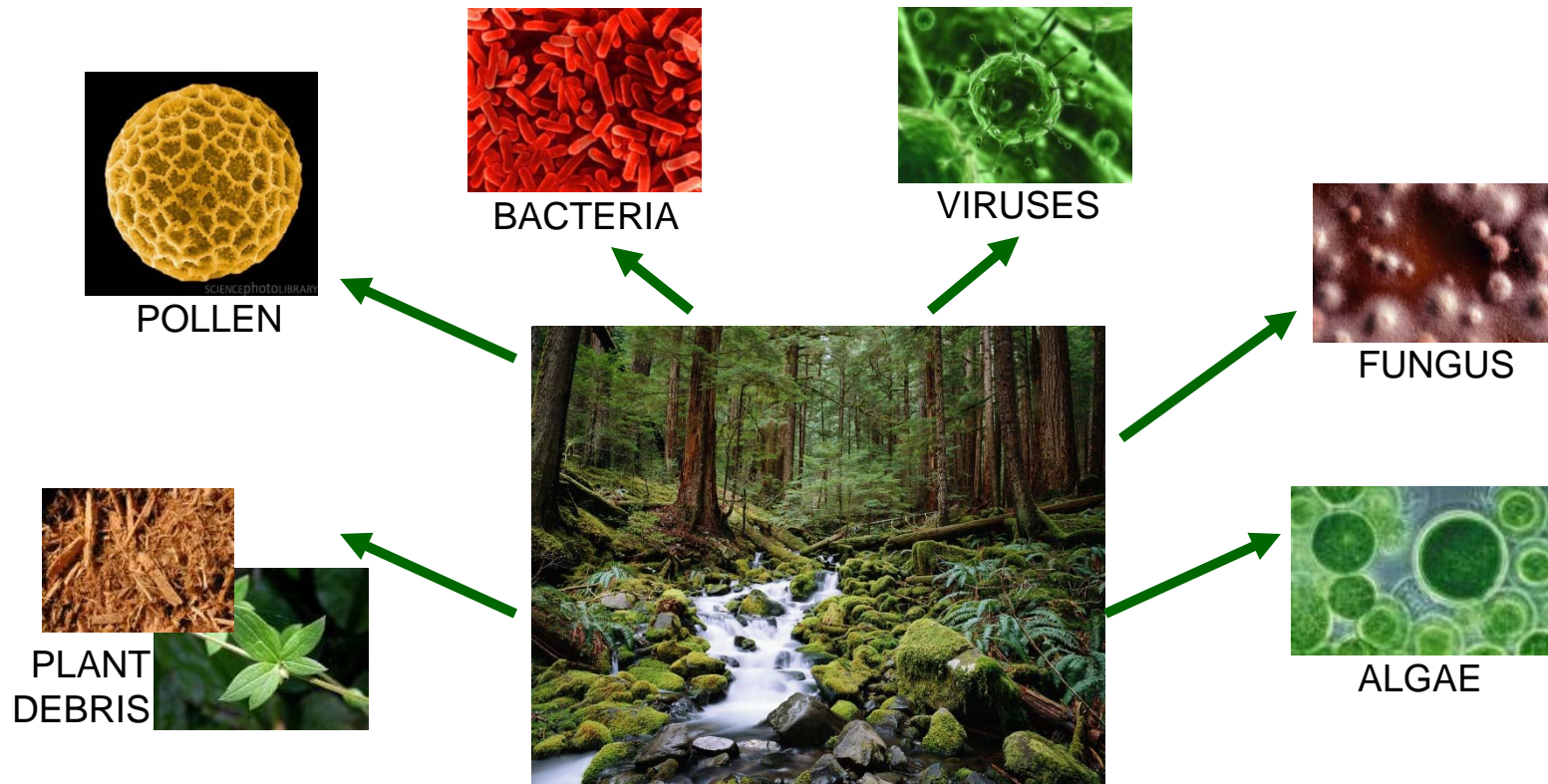
(example for year 2000)

	RCP45	CAM
BC	5.15	4.67
BIGALK	120.21	223.67
BIGENE	4.85	7.16
C10H16	--	--
C2H2	3.29	3.45
C2H4	7.73	6.73
C2H5OH	2.84	5.38
C2H6	3.34	7.56
C3H6	3.46	2.78
C3H8	3.86	8.07
CH2O	3.18	0.96
CH3CHO	1.23	2.14
CH3CN	0.89	0.72
CH3COCH3	1.10	0.30
CH3COOH	5.09	6.63
CH3OH	1.97	0.42
CO	609.45	600.69
HCN	1.76	1.00
HCOOH	3.90	6.63
ISOP	--	--
MEK	1.37	1.26
NH3	37.33	48.97
NO	68.41	61.08
OC	12.70	16.17
SO2	103.79	130.71
TOLUENE	93.57	117.1

← "Standard" emissions = POET

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PRIMARY BIOLOGICAL AEROSOL PARTICLES (PBAP)



Jaenicke [2005] suggests may be large (1000s Tg/yr)

Large particles = short lifetimes (let's not worry about it?)

Fungal spores: 4 TgC/yr (fine), 10 TgC/yr (coarse) [Heald and Spracklen, 2009]

Bacteria: 0.4-1.8 TgC/yr [Burrows et al., 2010]

Hoose et al., 2010 suggest that PBAP not globally important source of IN (despite results of Prenni et al., 2009 and Pratt et al., 2009)