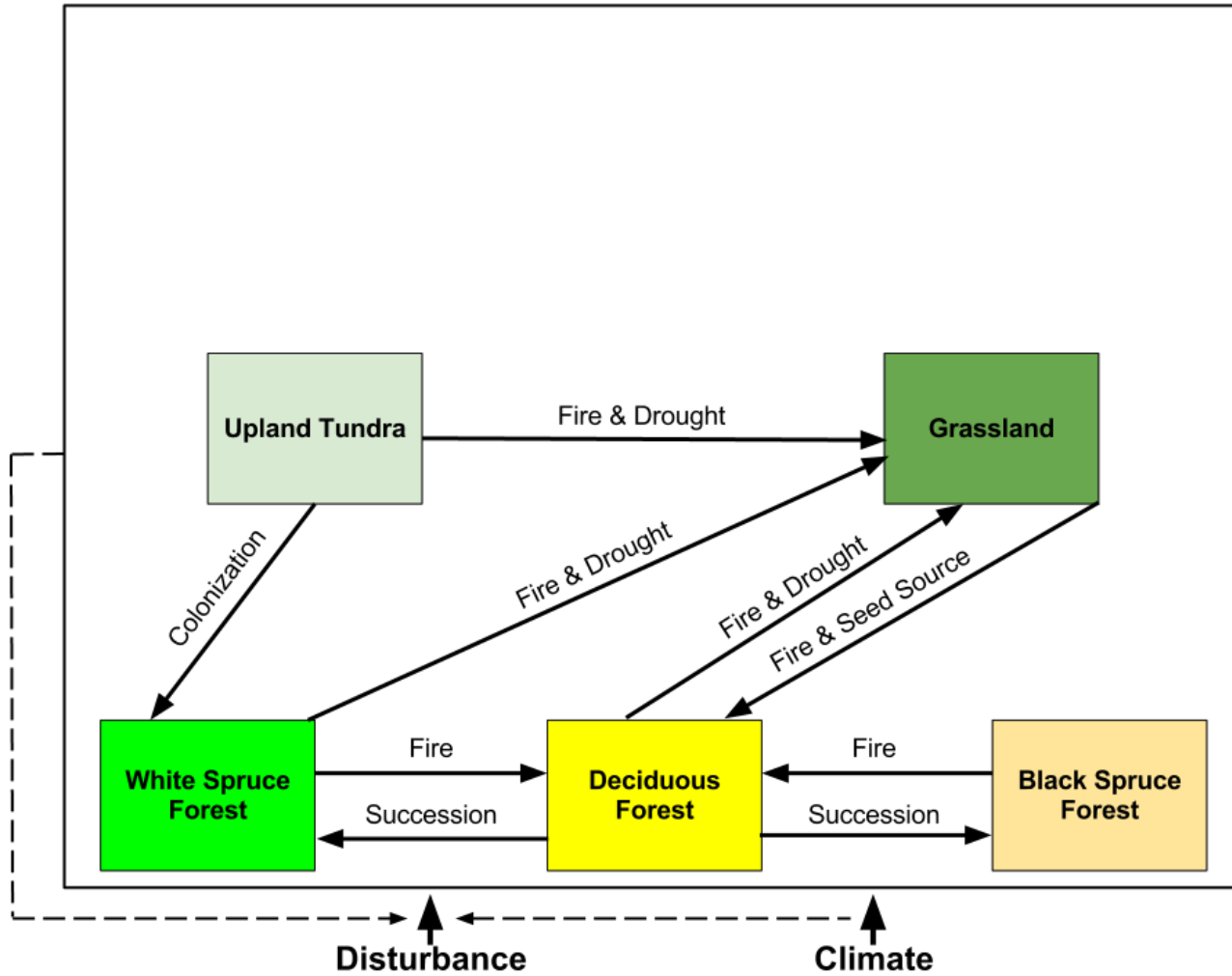

ALFRESCO v. 2.0

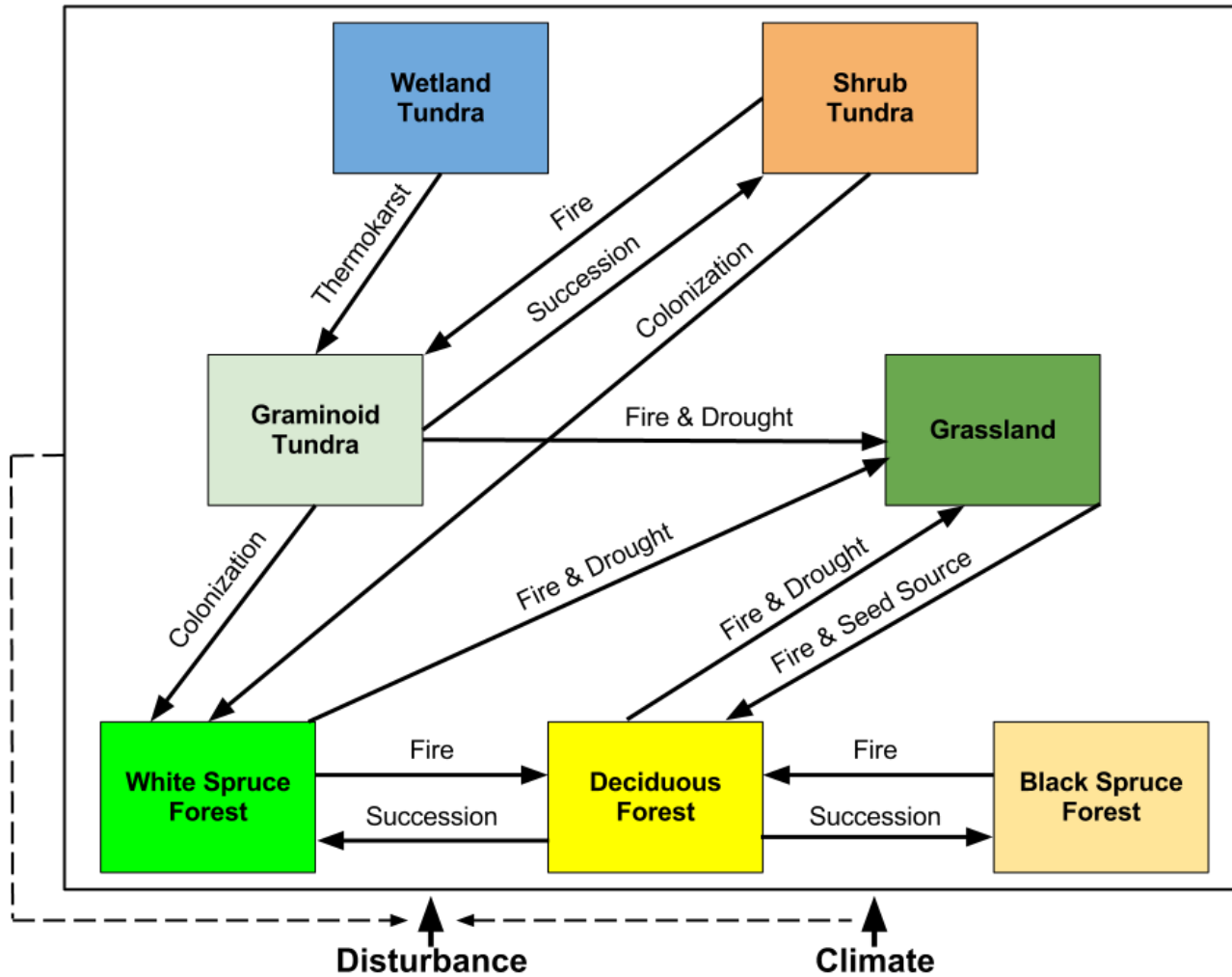
Alaska Frame-Based Ecosystem Code



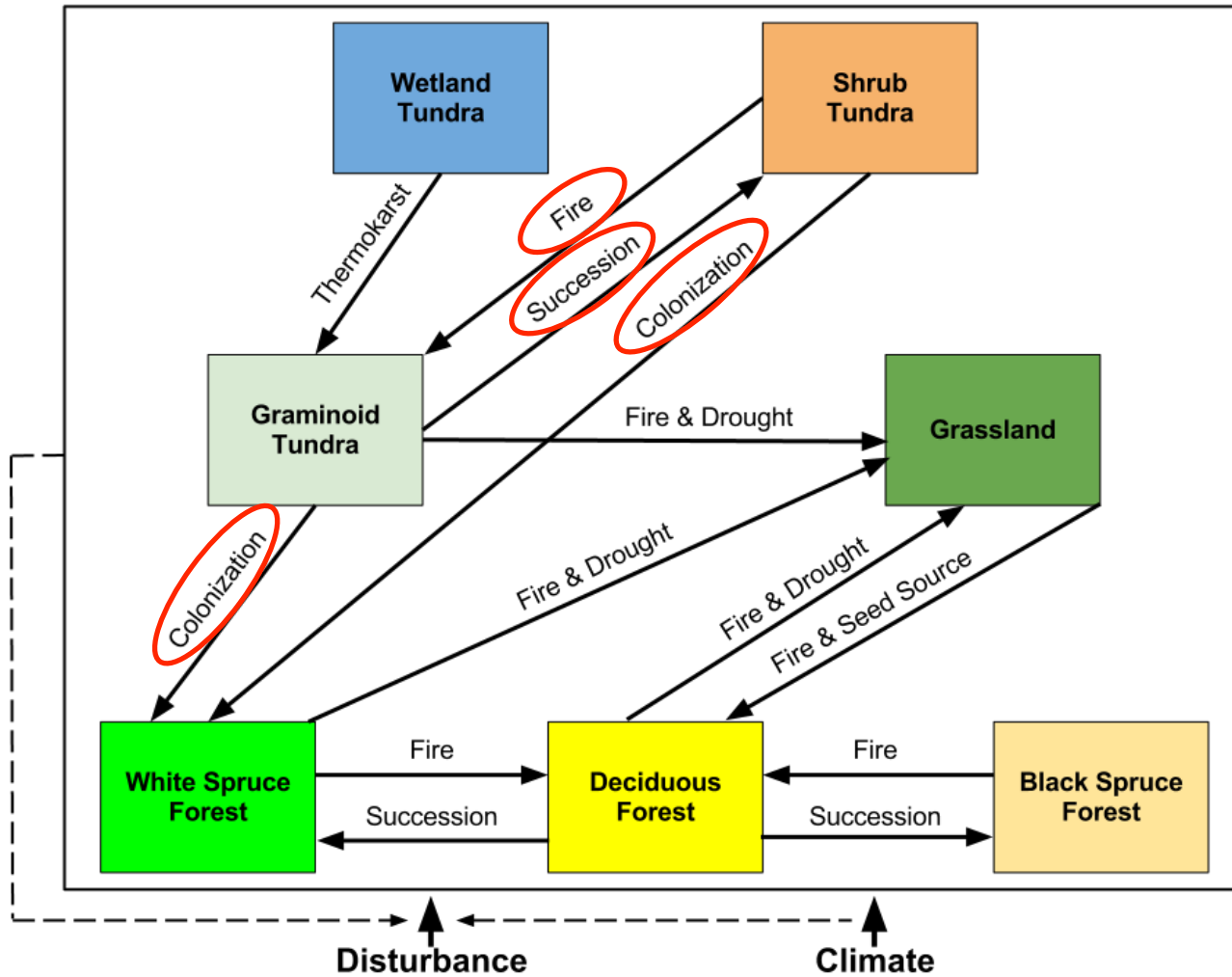
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ALFRESCO 2.0

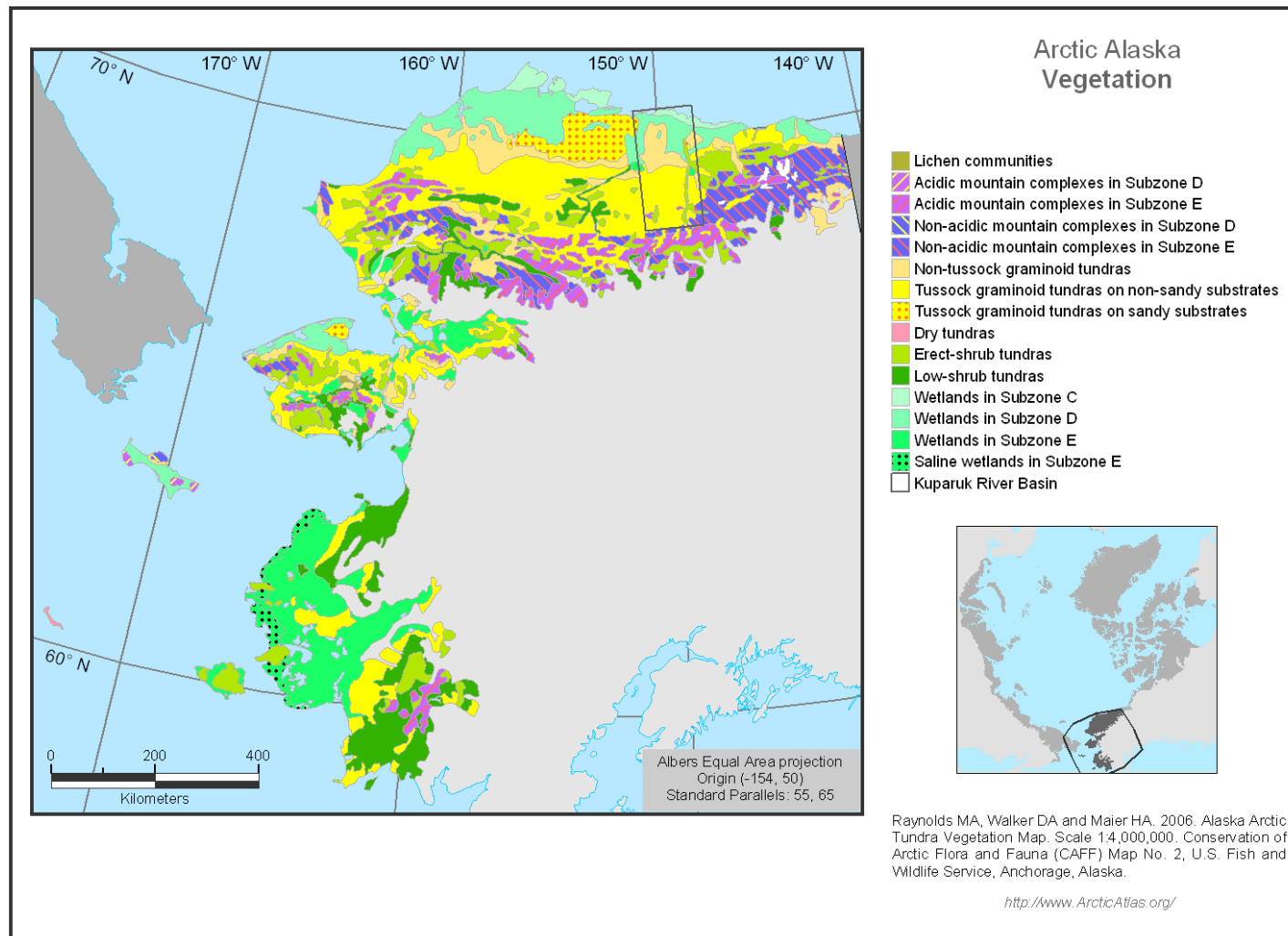


ALFRESCO 2.0



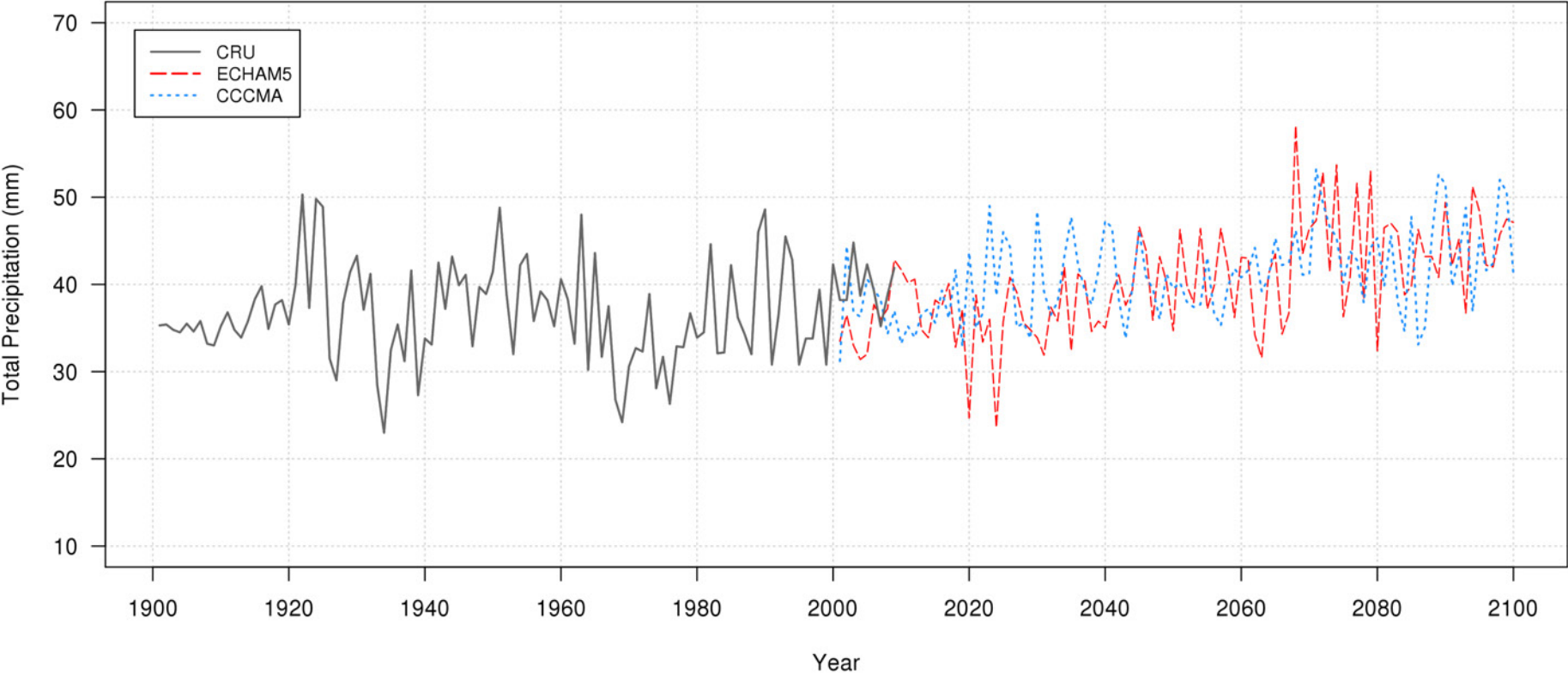
Model Domain

Circumpolar Arctic Vegetation Map (CAVM) Region in Alaska



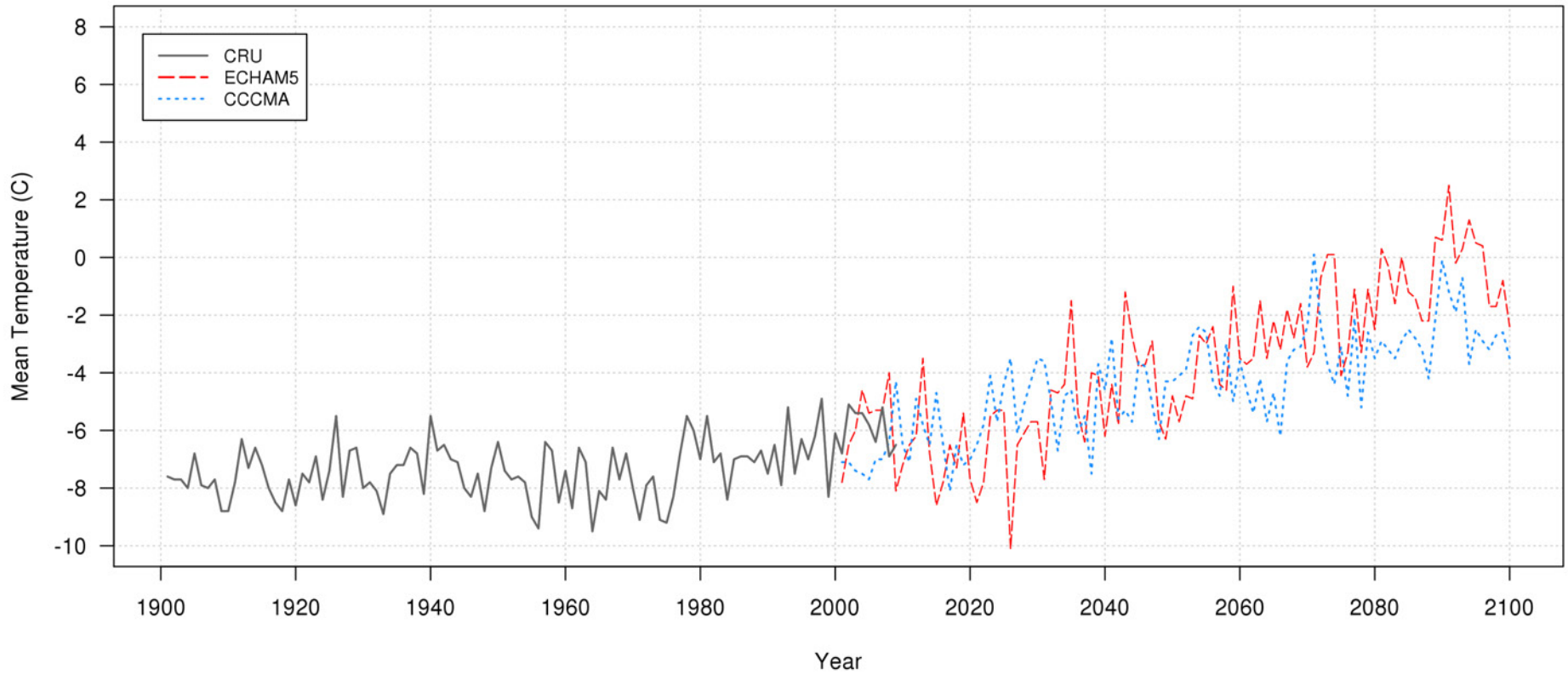
Projections for Climate

CAVM Region in Alaska Mean Annual Total Precipitation: 1901-2100



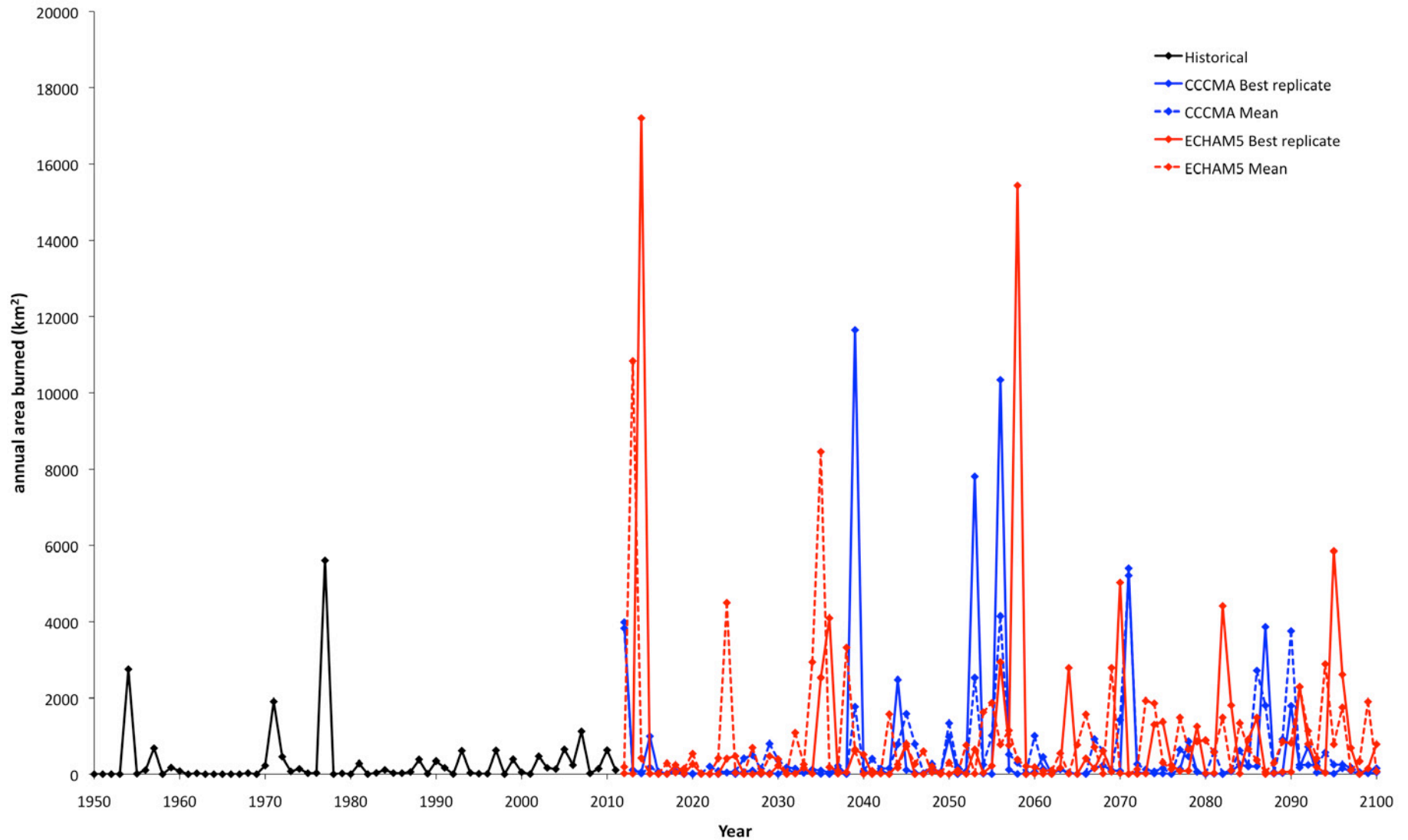
Projections for Climate

CAVM Region in Alaska Annual Mean Temperature: 1901-2100



Projections for Annual Area Burned

Historical and Simulated Annual Area Burned for the CAVM Region in Alaska



Projections for Spatial Transitions

Vegetation Class	Year	Global Circulation Model			
		CCCMA		ECHAM5	
		Area (km ²)	Area change (Percent change)	Area (km ²)	Area change (Percent change)
All Forest	2014	52,154	-	52,509	-
	2050	56,234	4,080 (7.82)	54,353	1,844 (3.51)
	2100	63,418	7,184 (12.78)	59,094	4,741 (8.72)
total			11,264 (20.60)		6,585 (12.23)
All Tundra	2014	393,495	-	393,140	-
	2050	389,415	-4,080 (-1.04)	391,296	-1,844 (-0.47)
	2100	382,231	-7,184 (-1.84)	386,555	-4,741 (-1.21)
total			-11,264 (-2.88)		-6,585 (-1.68)



Projections for Spatial Transitions

		Global Circulation Model			
		CCCMA		ECHAM5	
		Area change		Area change	
Vegetation Class	Year	Area (km ²)	(Percent change)	Area (km ²)	(Percent change)



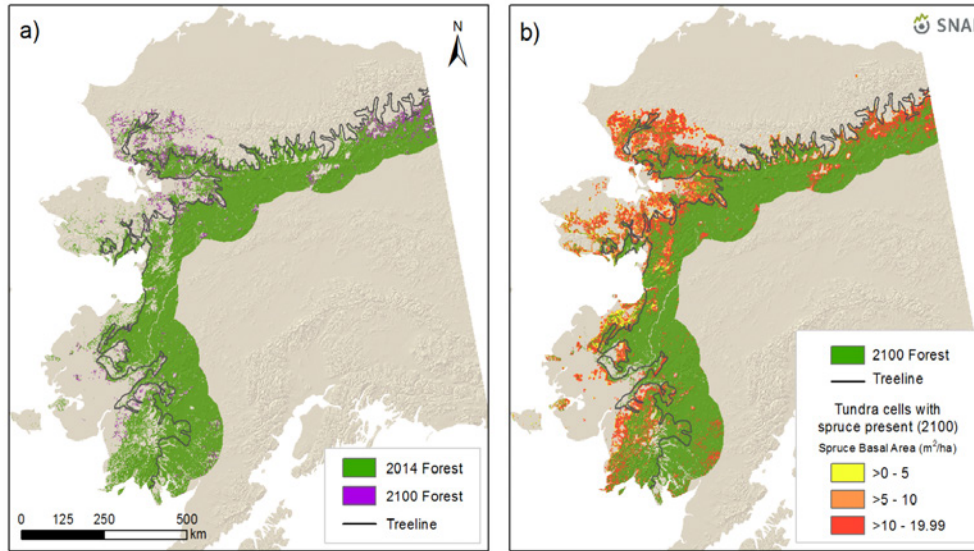
Graminoid Tundra	2014	124,589	-	126,863	-
	2050	122,629	-1,960 (-1.57)	119,162	-7,701 (-6.07)
	2100	114,684	-7,945 (-6.48)	98,181	-20,981 (-17.61)
total			-9,905 (-8.05)		-28,682 (-23.68)
Shrub Tundra	2014	194,802	-	192,173	-
	2050	192,682	-2,120 (-1.09)	198,030	5,857 (3.05)
	2100	193,443	761 (0.39)	214,270	16,240 (8.20)
total			-1359 (-0.69)		22,097 (11.25)

Projections for Spatial Transitions

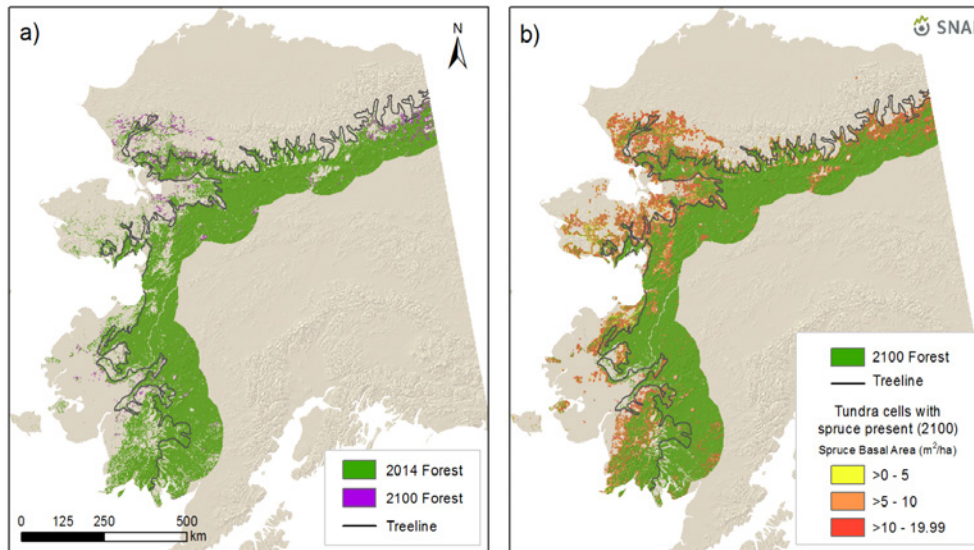
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Tundra to Forest Transition

Projected Changes in Arctic Treeline
CCCMA Model | A1B Scenario



ECHAM5 Model | A1B Scenario



Projections for Spatial Transitions

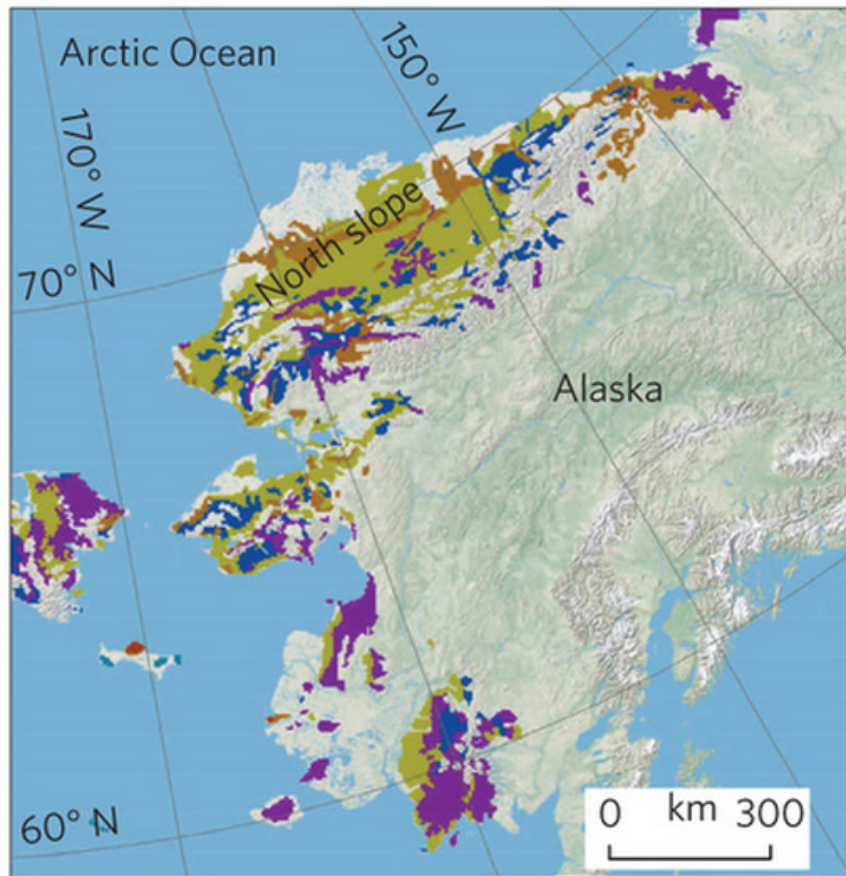
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Shifts in Arctic vegetation and associated feedbacks under climate change

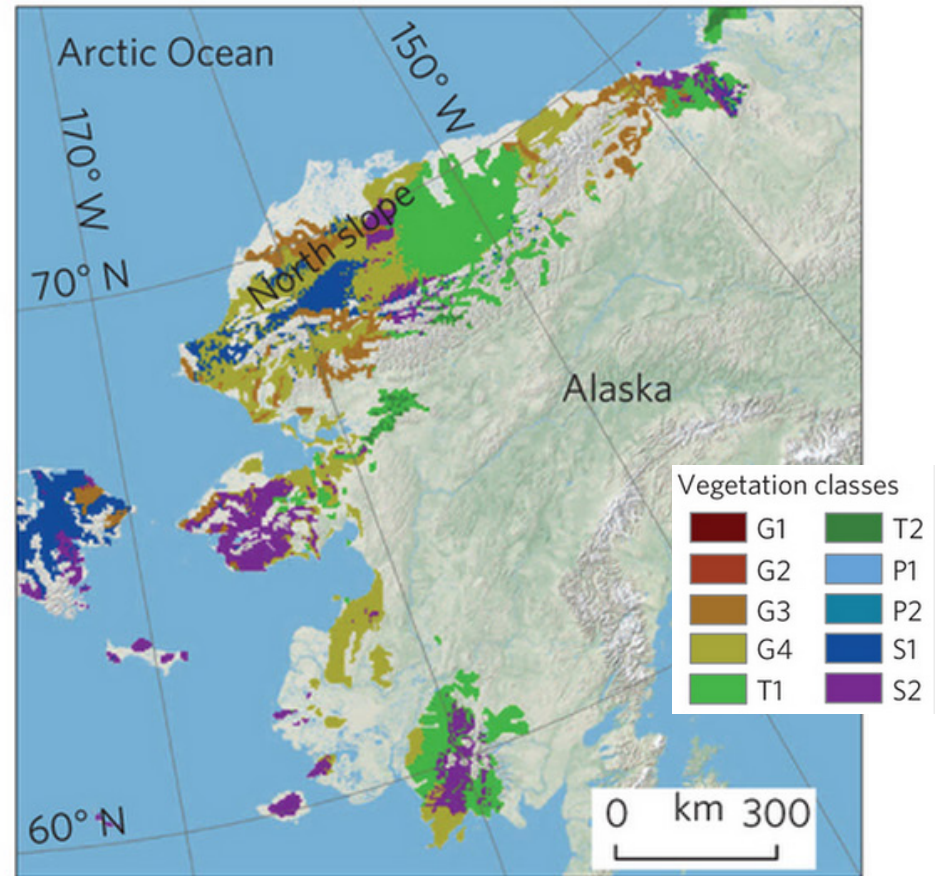
Richard G. Pearson, Steven J. Phillips, Michael M. Loranty, Pieter S. A. Beck, Theodoros Damoulas, Sarah J. Knight & Scott J. Goetz

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Observed



2050s

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