Appendix 3. Observations of climate change addressed by interview participants and the supporting scientific literature.

	Bus Driver n=8	Subsistence Participant n=39	Business owners n=18	NPS Staff or Scientist n=18	TOTAL n=83	Example Quote	Scientific Literature
Hydrology	88%	87%	94%	83%	91%		
Drying ponds	38%	51%	56%	33%	49%	The lakes have all gotten smaller. A lot of the smaller ponds have just grown in or muskeg bogs now.	Riordan 2006; Yoshikawa and Hinzman 200
Less snow	25%	46%	67%	39%	49%	We don't get the amount of snow that we used to get so I kind of that so it's like you are not in the same place as you were when you were a kid.	
Thawing permafrost	25%	49%	33%	22%	39%	Melting permafrost is slumping under sections of trail, requiring strenuous travel or rerouting of trail	Serreze et al. 2000; Osterkamp and Romanovsky 1999; Osterkamp, 2003; Clow and Urban, 2002; Romanovsky et al., 2002
Retreating glaciers	63%	0%	39%	28%	22%	Polycrome glaciers I've heard are half the size. I don't know to me visually they are practically gone.	Serreze et al. 2000; Arendt et al, 2002; Dyurgerov and Meier 1997
Later freeze-up of rivers	0%	28%	17%	6%	19%	Rivers freeze 1-3 weeks late, delaying departure in the most important time to start trapping.	Magnuson et al. 2000; ; Ruhland et al. 2003
Lowered river levels	0%	31%	11%	6%	19%	But we haven't had the rivers at flood stage now, well it's been a long time. I just see less water.	Bolton et al. 2000
Gentler river break-up	0%	21%	0%	17%	14%	But one effect we've noticed is the river breakups. They aren't as violent as they used to be.	
Later snowfall	13%	10%	17%	17%	14%	Well beginning of September we've have some snow come through, you know, out in the valleys, and we don't have that anymore. It's pretty well gone. So we don't start getting snow till towards the end of September	
Increased erosion	13%	5%	11%	11%	9%	In the last few years I think we have seen more mud slides in the canyon between Igloo and Tatler Creek. They have had to close the road down because of them.	
Decrease in summer snow patches	38%	0%	22%	0%	9%	Usually in mid-Sept there were still a few little patches although they may have been dirty, but for at least 10 years they never melted and now every year they are gone, usually by mid-August or so.	Stone et al. 2002
Increased variation in snowfall	13%	8%	6%	6%	8%	You know it is different every year. This year we had a lot of snow and it is varied each year.	
Chanelization of rivers	0%	10%	6%	0%	6%	In our trapping area, river channels are stabilizing, digging their channels down deeper while sand bars are getting overgrown.	
Vegetation	100%	74%	94%	94%	89%		
Faster growth	63%	38%	83%	67%	59%	The vegetation is growing a lot faster and there are trees where they weren't before. They seem to be growing a lot faster.	Goetz 2005; Hollister 2005; Serreze et al. 2000;Sturm 2005; Verbyla 2008; Wahren 2005; Sturm et al., 2001a and b; Stow et al. 2003; Jia et al. 2003
Treeline moving upwards	100%	10%	50%	61%	40%	It is so much more shrubby and I know trees are growing in passes that never had trees like Thoroughfare and Sable.	Potter 2004; Stueve 2011; Bigelow 2003; Chapin 1995; Chapin 1996; Danby 2007; Hobbie & Chapin 1998; Serreze et al. 2000; Soja 2007; Lloyd and Fastie 2002
Tundra drying	13%	18%	17%	17%	17%	Last year I was hiking up here on Reindeer and you know it was the first time ever that I've felt this way but I was hiking up on Reindeer and it's all dried out. I was walking around and this is all pretty thick peat. I said to myself, "This thing could burn. We could have a tundra fire!"	Verbyla 2008
Gardening easier	0%	21%	11%	11%	15%	It's got good points: it's easier to garden, longer growing season, plants are overwintering that never overwintered before.	
Shifts in phenology	13%	5%	11%	17%	10%	We have only been studying the phenology since 2005 and it has been dramatically variable, like 2-3 weeks difference in green up which is large given our growing season.	
Rising firn line	13%	0%	28%	6%	9%	Firn lines...when I first started flying they were at like 6-7,000 ft and it would melt a little in parts of the summer but you could count on the peaks about 8,000 to always be frozen and kept in snow and now that line is to at least 10,000 ft.	
Weather	100%	95%	94%	56%	90%		
Temperature increase	75%	79%	78%	33%	71%	Yeah, I think so because there used to be cold cold winters. It is hardly cold anymore, I guess the climate has changed a lot.	Serreze et al. 2000, Chapman and Walsh 1993, Overpeck et al, 1997
More frequent fire	25%	38%	33%	28%	35%	We are also getting frequent fires and that is not normal.	Kasischke 2006, Soja 2007
Longer summers	0%	23%	56%	11%	26%	In the fall we had our first freezing morning today and usually after August 15th we'll get a killing frost but that doesn't happen. Obviously the frost-free season is elongating.	
More wind	0%	26%	33%	0%	19%	We had more wind, we had heavier snows, and the temperatures were colder.	
Increase in winter rain	25%	18%	17%	17%	19%	One of the biggest changes we have seen here, which remains to be seen as how it is effecting the wildlife, is the winters here are a little shorter and we get winter rains now which is a pretty rare occurrence at this latitude.	
More extreme temperatures	0%	21%	17%	11%	16%	Now it will go from an extreme cold to an extreme warm. We are getting a lot more spikes.	
More thunderstorms	25%	5%	33%	6%	14%	We never used to have lightening storms before. When we started to get them they were with rain but now it seems like we are getting lightning without rain.	