Chapter	Responder	Page	Line(s)	Comment	Reviewer	Notes
7 Greenland Ice Sheet						
General	Fitzpatrick			What of the drawbacks/compromises of the current generation of ice flow models?	b	**Noted**
General	Alley			This chapter especially needs good site maps, for land, ice and ocean (surface, deep and currents, perhaps even a cross-section).	b	**Accepted; Figure will be added in technical edit. added as 7.xxx**
7.1	Alley			Section 7.1 is a very nice introduction to the main topics and ideas needed for the rest of the chapter. A veritable micro-primer on the field of glaciology.	b	**Noted**
7.1	Alley	8	161-163	A bit too brief of an overview of ice shelf buttressing, especially since the term comes in later (166) without explicitly being connected to what it is.	b	**Accepted; reworded for greater clarity.**
7.1	Alley	36-37	816-832	The goal of this paragraph seems to be to cover a bunch of topics that are related only in that they each help to explain climate, but that goal is not made clear on its own. Further, the paragraph start implies it will just be about recovering accumulation rates, but goes on into a string of other topics.	b	**Accepted; introductory sentence added to paragraph.**
7.3.2	Alley	41-51		If reliable evidence is only available from MIS 11 onward, might this section be better named “the last 500ka”? It would also be useful to note that more details on MIS 5, etc., follows in subsequent sections. This could be done here or in a new introductory paragraph after the 7.3 heading.	b	**Accepted; sentence added to clarify the times covered in 7.3.2.**
7.3.2	Alley	59-60	1339-1351	Is the “sliding over the bed” mechanism being proposed as a way to preserve past ice (permafrost) or as a way to “advect” ice from elsewhere to Dye3 and reestablish the ice sheet in that region?	b	**Accepted; text added to introduce both ideas at the start of the paragraph, and again within the paragraph.**
7.3.2	Alley	64	1443-1444	What exactly is meant by “best available”? The narrowest range? The “best” model dynamics, etc.?	b	**Accepted; wording changed.**

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7.3.2	Alley	70	1583-1588	A cartoon of the cooling/warming cycles would help interpret and appreciate Figure 7.9 more.	b	**Accepted in part. Alley (1998) provided a cartoon of this, and is now referenced. However, here reliance is placed on the data rather than the cartoon.**
7.3.2	Alley	71	1600-1602	"The complexity observed" is rather an understatement. I'm also more interested in the correlations between the ice core record and each marine core than amongst the marine cores (though the latter is still interesting).	b	**Noted**
7.3.2	Alley	81	1836-1837	The event timings mentioned in the text would be much easier to follow in Figure 7.9 if the latter had a more detailed x-axis scale (unlabelled ticks at 2k intervals would be very helpful).	b	**Accepted, tics will be added in technical edit**
7.1.2	Alley	11	231	Because of this insensitivity of the inland thickness to many controlling parameters, changes in ice-sheet volume are controlled more by changes in the areal extent of the ice sheet than by changes in the thickness in central regions. It'd help here to have either a figure or scheme (perhaps a few equations) that show the nonlinear relationships discussed above. Though the discussion is very clear and flows well, it always help to illustrate.	d	**Accepted in part. Additional referencing added in lieu of equations.**
7.3.4a	Alley	71	1612	The slower tens-of-millennial cycling of the climate records is well explained by features of Earth's orbit and by associated influences of Earth-system response to the orbital features (especially changes in atmospheric carbon-dioxide and other greenhouse gases, ice-albedo feedbacks, and effects of changing dust loading), with strong modulation by the response of the large ice sheets (e.g., Broecker, 1995). The faster changes are rather clearly (these are likely linked to the THC, not clearly linked to them) linked to switches in the behavior of the north Atlantic, with colder intervals during times of more-extensive wintertime sea ice, and with warmth when such sea ice was reduced (Denton et al., 2005), coupled to changes in deepwater formation in the north Atlantic and thus to the "conveyor-belt" circulation (e.g., Broecker, 1995; Alley, 2007). Yet, a detail mechanism of the possible processes acting in the north Atlantic is still debated, including the origin of the forcing that presumably generates the D-O. (see for instance	d	**Accepted in part. Text and reference added on mechanistic understanding. The faster changes are clearly linked to changes in behavior of the north Atlantic (reference added); whether this extends into the larger-scale issues of the THC is addressed in the added text.**

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				or Stastna and Peltier, 2007, JGR-Oceans).	(continued)	
Synopsis	Alley	95		I have one suggestion, for the authors of chapter 8. It concerns melting of Greenland ice, a highly charged issue. The introduction and text of chapter 8 (*sic)* delve appropriately into the paleo evidence of changes in Greenland ice. The authors mention the longer response time of the north-central ice dome compared to the marginal areas. They cite probably incomplete melting during the last interglaciation (isotopic stage 5e). And they mention the lack of really firm constraints on future ice shrinkage. All this is fine. In the chapter summary, however, this complexity is reduced to a statement to the effect that warming of a few degrees is sufficient to cause ice-sheet loss. Taken in isolation, such a statement is at least semi alarmist. Based on what the body of the chapter shows, I would have said something like: "Warming of a few degrees, if sustained over several millennia, would be sufficient to melt a sizeable fraction, and possibly all, of the Greenland ce sheet."	a	**Accepted in part. Text changed to more clearly emphasize the uncertainties on the threshold warming required for ice-sheet loss.**