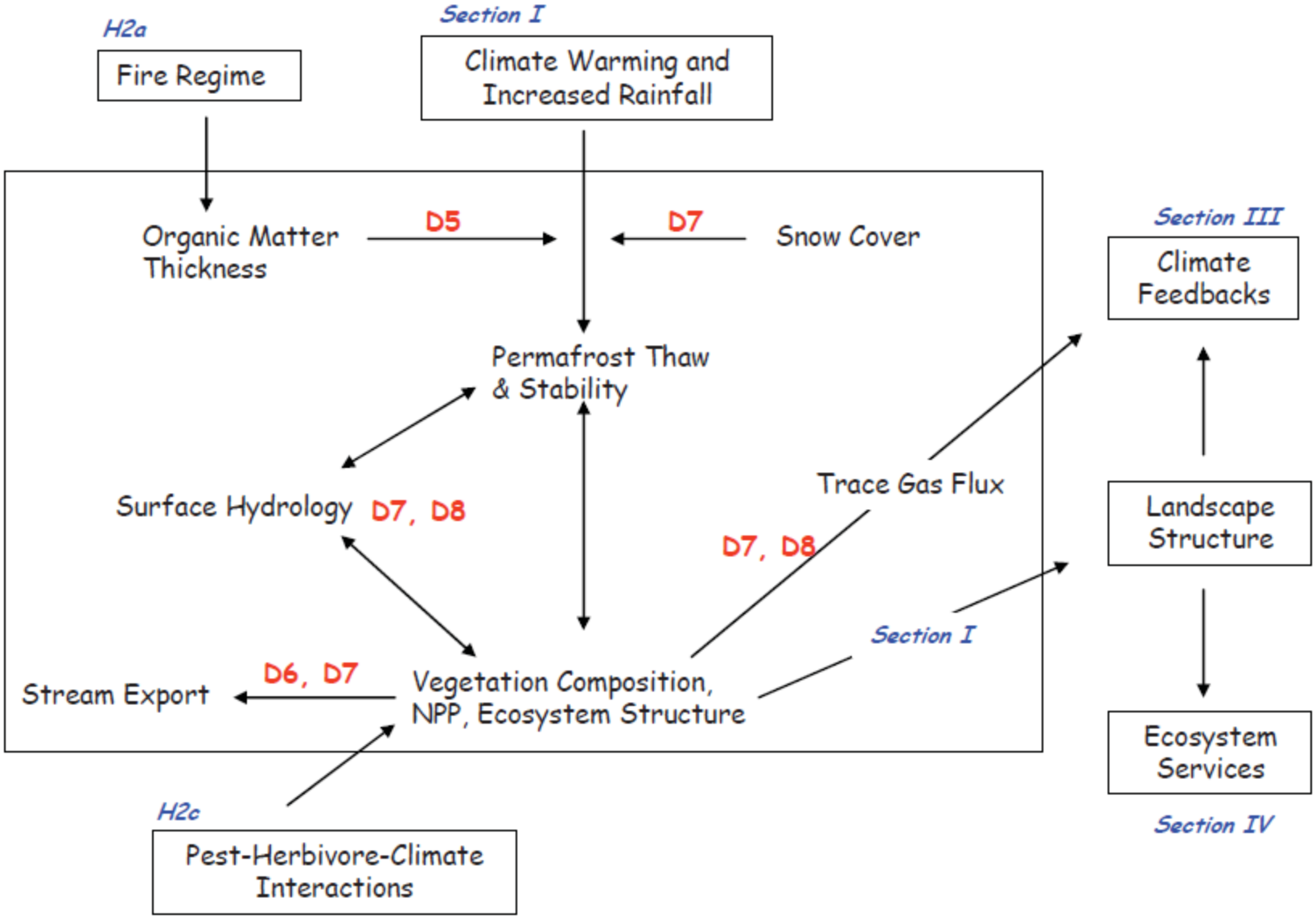
H2a
Fire Regime
Section I
Climate Warming and Increased Rainfall
Organic Matter Thickness
D5
D7
Snow Cover
Permafrost Thaw & Stability
Surface Hydrology
D7, D8
Trace Gas Flux
D7, D8
Stream Export
D6, D7
Vegetation Composition, NPP, Ecosystem Structure
Section I
H2c
Pest-Herbivore-Climate Interactions
Section III
Climate Feedbacks
Landscape Structure
Ecosystem Services
Section IV

- **Hypothesis 2b: Ecosystem structure and soil drainage characteristics modulate both climate change disturbances *to permafrost, and the ecological and hydrological outcomes of changing* permafrost**

- ***Question 1: How does variation in the amount of remaining organic matter following fire affect permafrost temperature?***

- *Task D5: Examine the relationship between organic soil layer remaining following fire and permafrost temperature across a range of ecosystems, and couple these observations to model projections using future fire and climate scenarios.*

- **Hypothesis 2b: Ecosystem structure and soil drainage characteristics modulate both climate change disturbances *to permafrost, and the ecological and hydrological outcomes of changing* permafrost**

- ***Question 2: How do the effects of permafrost thaw on surface hydrology differ between better drained vs. poorly-drained ecosystems, and what are the consequences for ecosystem structure and function?***

- *Task D6: Examine the coupling among permafrost distribution and thaw, and soil and vegetation structure on watershed hydrology and stream export of C and N in upland boreal forest catchments.*

- **Hypothesis 2b: Ecosystem structure and soil drainage characteristics modulate both climate change disturbances *to permafrost, and the ecological and hydrological outcomes of changing* permafrost**

- ***Question 2: How do the effects of permafrost thaw on surface hydrology differ between better drained vs. poorly-drained ecosystems, and what are the consequences for ecosystem structure and function?***

- *Task D7: Examine the effect of natural and manipulated permafrost thaw on vegetation structure, and ecosystem C and N cycling in upland boreal tundra landscapes.*

- **Hypothesis 2b: Ecosystem structure and soil drainage characteristics modulate both climate change disturbances *to permafrost, and the ecological and hydrological outcomes of changing* permafrost**

- ***Question 2: How do the effects of permafrost thaw on surface hydrology differ between better drained vs. poorly-drained ecosystems, and what are the consequences for ecosystem structure and function?***

- *Task D8: Examine the effects of natural and manipulated permafrost thaw on vegetation structure and ecosystem C and nitrogen cycling in boreal wetland landscapes.*

- **Charge to the Breakout Groups:**
- ***We want to promote integration of current BNZ LTER research on permafrost and hydrology (see attached slides), as well as examine interactions with associated research efforts, towards the goal of more effectively describing the broader scale functioning of the boreal forest in a changing environment.***

- We will divide into three working groups (randomly assigned). Each of the breakout groups should address the following issues and prepare to provide a report to the full group:

- How can we achieve more effective integrate research on permafrost and hydrology to ensure that we address the major changes that can be expected under changing climate and disturbance regimes?

  - What are the major questions/issues with permafrost and hydrology that are being addressed with the current BNZ research and associated efforts?
  - What are major questions/issues in permafrost and hydrology that are not currently addressed by BNZ research or associated efforts?
  - Are there key variables/measurements identified in current research that should be integrated and collected in our current research and monitoring programs across all sites?
  - Are there other upcoming or ongoing research efforts that address issues in permafrost and hydrology that would be good for BNZ to partner with? Please identify people within BNZ that can take the lead these connections.

- What products should we work towards producing over the next year to provide a preliminary synthesis of our understanding of changing permafrost and hydrology?

  - Are there existing datasets that could be used for synthesis activities?
  - Is there a summary paper that can encapsulate research to date? What is the title/topic of that paper? What journal?
  - What do ecosystem models need that measurement activities can provide?
- Should we resurrect monthly BNZ LTER meetings? What talks specific to your particular breakout group should we organize for the monthly BNZ LTER meetings? Please identify both speakers and titles.