1. Introduction

- Dominant land surface cover in Eastern Siberia: forest, grassland and water surface (Fig. 1)
- Recently reported land surface changing
  1. Water surface expanding in Alas
  2. Deforestation caused by forest fire increasing and logging

Alas: Last stage of thermokarst. Grassland and water surface in center.

2. Experiment Design

- 141 grids, dx=5km
- 401 grids, dx=30km

Initially, 250 m a.s.l. & GLCC (Global Land Cover Characterization)

3. Water surface area expanding experiment:

   - Five land surface parameter are changed independently (Table 2)
   - Surface albedo and evaporative efficiency

Figure 2: Calculation domain and distribution of water surface and vegetation.

4. Discussion

- Water surface expanding in Alas
- Evaporation caused by
- Radiation and latent heat flux increase 0.5 W m

Table 4: Each terms of Eq. (4).

5. Conclusion

- What is significant land surface parameter in Eastern Siberia?
  - Surface albedo and evaporative efficiency
- What changes will occur in Eastern Siberia with land surface change?
  - If lowland will be covered with grassland only, LE decrease 0.1 W m
  - 4% grassland changes to water surface, LE increase 0.5 W m

Figure 9: (a) Latent heat flux change with land surface parameter. (b) same as (a) but for precipitation (mm 10day

Table 5: Summary of each land surface parameter change experiment.