Update on the coupled WRF-CLM lake model

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Outline

- Bug fix for array initialization and update
- Simulation cases by offline lake model for winter, spring and autumn
- On-going work
Bug fix for array initialization and update
Numerical Case

- WRFV3.3.1
- 3 nested domains 9-3-1(km)
- Mellor - Yamada - Janjic TKE PBL scheme
- Noah land surface model
- UTC 2011.4.16.12----UTC 2011.4.18.00
- Validation – MLW flux site data
Numerical Case

[Map of geographic region with latitude and longitude coordinates, showing two highlighted areas labeled 'd02' and 'd03'.]

[Map of land use categories with a color scale indicating the range from 2 to 20, and a star marking a specific location.]
Lake temperature of WRF-Lake model simulation

Lake temperature of observation
Lake surface Temperature

Lake Temperature in 20cm
Lake Temperature in 50cm

Lake Temperature in 100cm
Simulation cases by offline lake model for spring, autumn and winter

Spring: 2011.04.09------2011.04.18
Autumn: 2011.10.01----2011.10.10
Winter: 2011.01.08-----2011.01.17
Spring case

2011.04.08---------2011.04.17
Summer case

2010.08.17---------2010.08.28
$T_{150}[K]$ vs DOY

- **obs**
- **default** (0.02)
- **case a** (0.005)
- **case b** (0.012)
- **case c** (0.1)
- **case d** (0.2)
Autumn case

2011.10.01----------2011.10.10
Winter case

2011.01.08----------2011.01.17
On-going Work

• The coupled WRF-CLM lake model validation by using data of different observation site and for long-term runs.

• Albedo of lake surface?
THANK YOU!