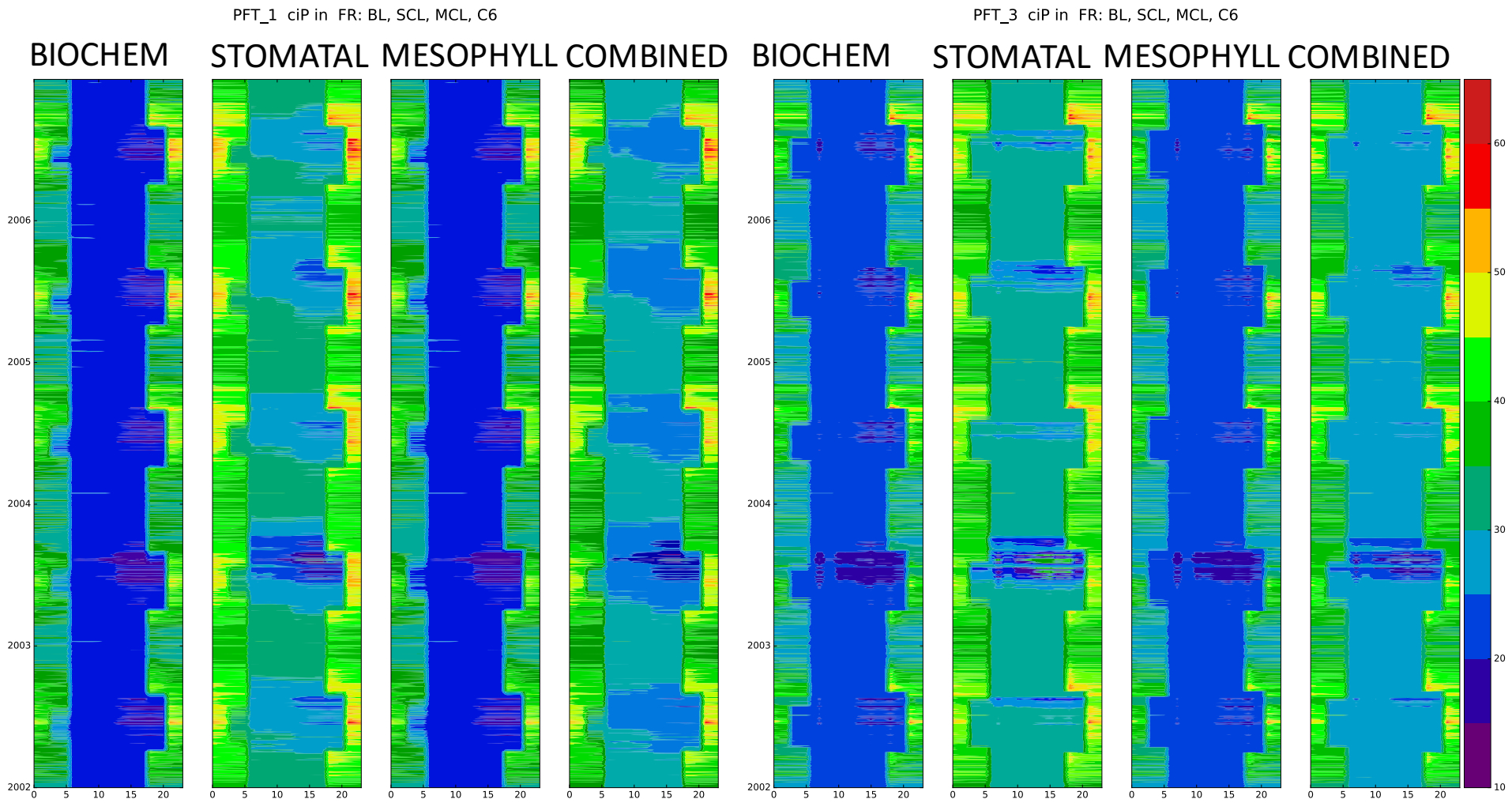
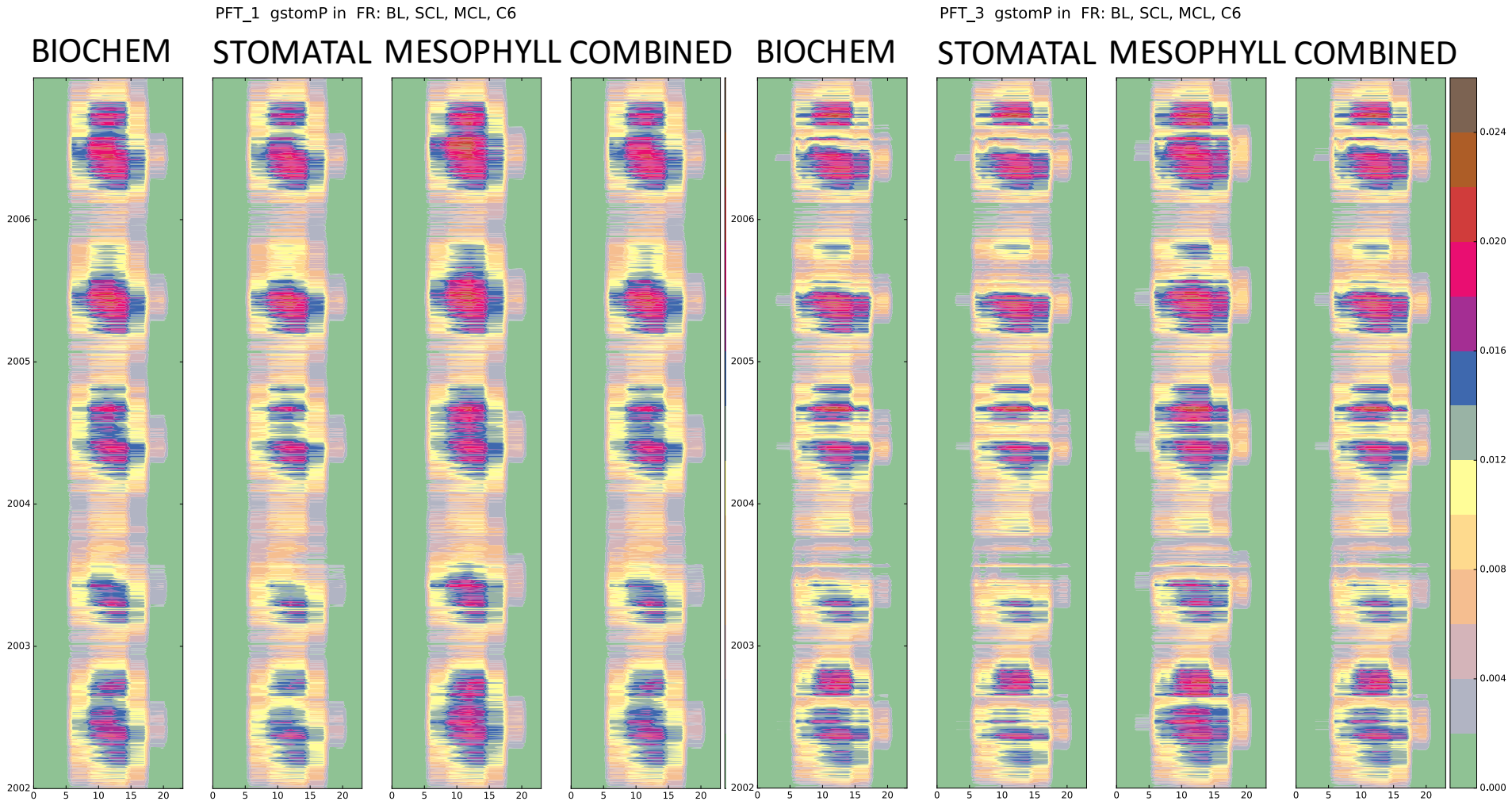
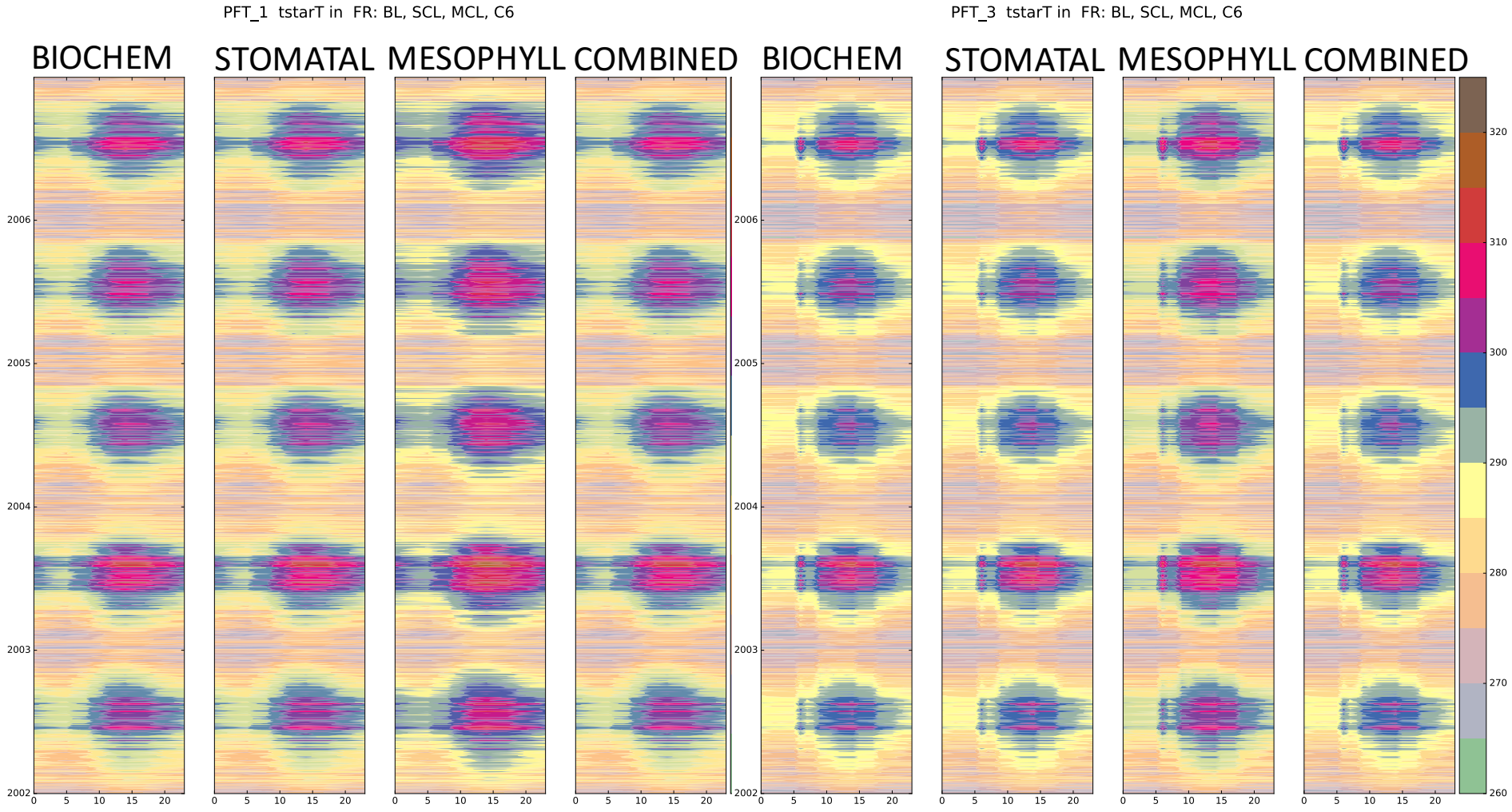
CO_2 inside stomata (Ci, Pa)



Stomatal conductance



Skin temperature



Broadleaf tree

C3 grass

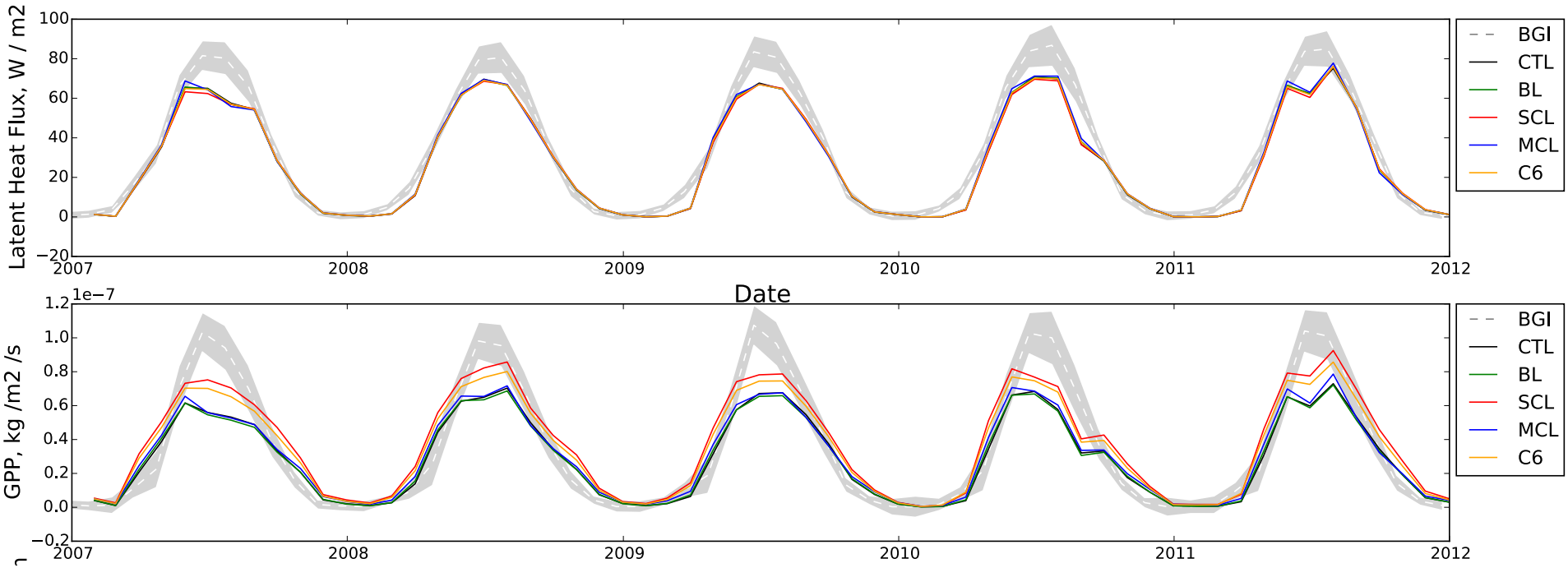
Summary

- Investigated the impact of alternative ways of imposing soil moisture stress on plants. Results so far:
  - **Biochemical** treatment: moderately thirsty, moderately productive, moderately prone to stomatal suicide (via temperature, not via VPD), largest drop in internal CO_2
  - **Stomatal** treatment: water-conserving, most productive, prone to stomatal suicide (via temperature and VPD), least drop in internal CO_2
  - **Mesophyll** treatment: thirsty, but not productive, runs cooler (but hot during heat waves), least sensitive to VPD, largest drop in internal CO_2
  - "**Combination**" (C6) treatment: bears a strong stomatal fingerprint

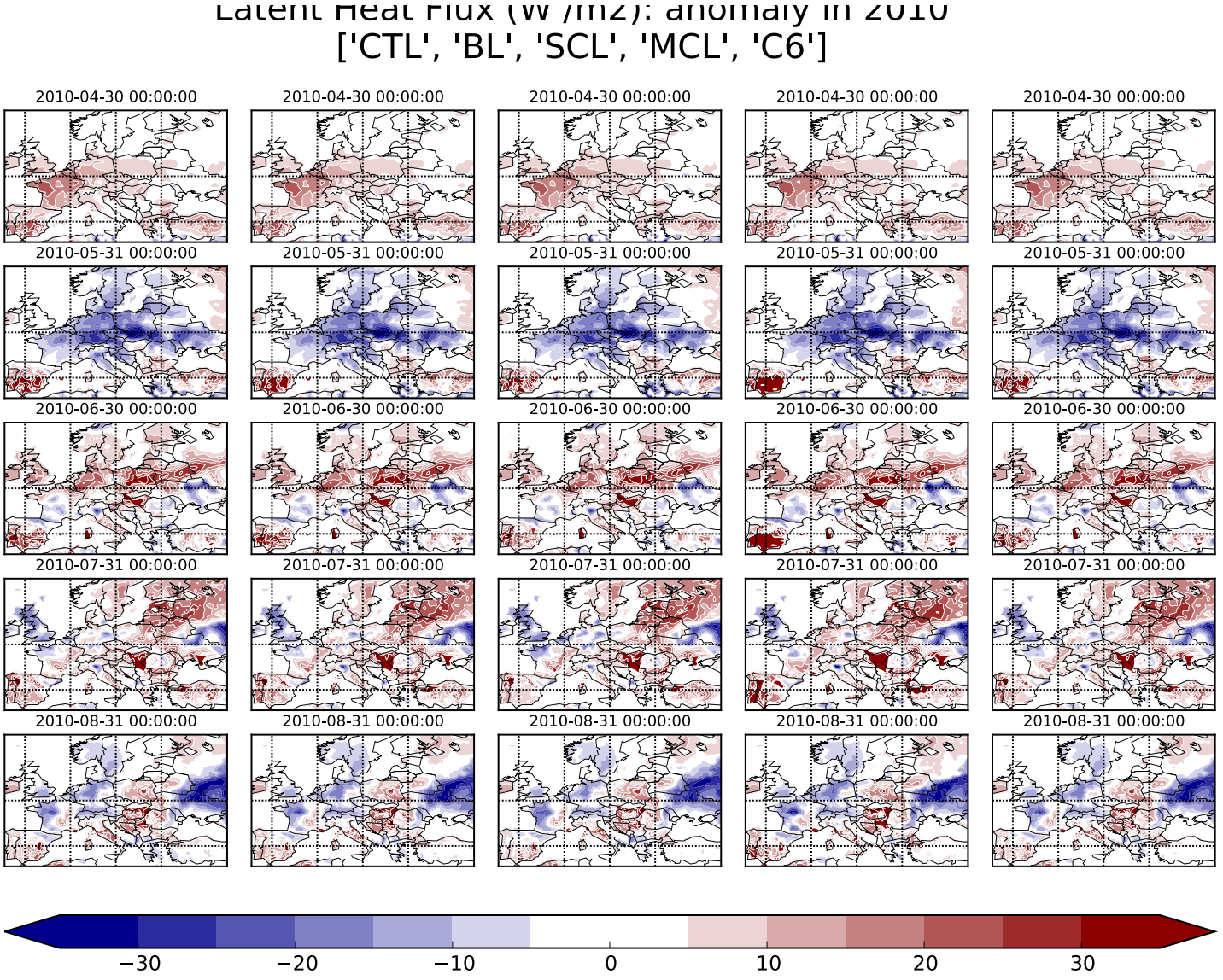
- Sensitivity to the soil water stress treatment is consistent over a range of JULES versions 2.2, 4.2 and 4.4. However:
  - Used a constant LAI forcing, which is not very realistic for anomalous years such as 2003
  - Soil hydrology is still rather naïve (e.g. only 4 layers)
  - Need to combine with all other new developments in JULES

RESPONSE TO THE 2010 HEATWAVE

Extra slides



Time series of LH, GPP – Russia (2007 – 2012)


Latent Heat Flux (W /m2): anomaly in 2010
['CTL', 'BL', 'SCL', 'MCL', 'C6']
2010-04-30 00:00:00
2010-05-31 00:00:00
2010-06-30 00:00:00
2010-07-31 00:00:00
2010-08-31 00:00:00
−30
−20
−10
0
10
20
30