Preliminary evaluation of peat CLSM in GEOS-ESM

CLSM configuration: LAND_PARAMS: NRv7.2, Z0_FORMULATION: 4

SPIN UP: Started on 19920101 using restarts from another global experiment, ran through 20200101 and discarded 1992-1999 as the spin up period

Experiment Description:
Two 20-year (2000-2019) simulations on the 36km grid were used to analyze seasonal differences of LH, SH, and ZBAR

CTRL : Used NLv4 BCs
/discover/nobackup/smahanam/bcs/NLv4/SMAP_EASEv2_M36/

pCLSM: Used NLv4p BCS
/discover/nobackup/smahanam/bcs/NLv4p/SMAP_EASEv2_M36/

Both simulations used the same executable – i.e. peatCLSM code in this draft PR.

SMAP_L4_SM_gph collection @ 3hr is available for soil moisture comparisons. However, the maps in subsequent slides show that peat modifications are outside of soil moisture validation sites.
/discover/nobackup/ smahanam/MichelBechtold/EXPSNRv8.3_M36_ctrl/
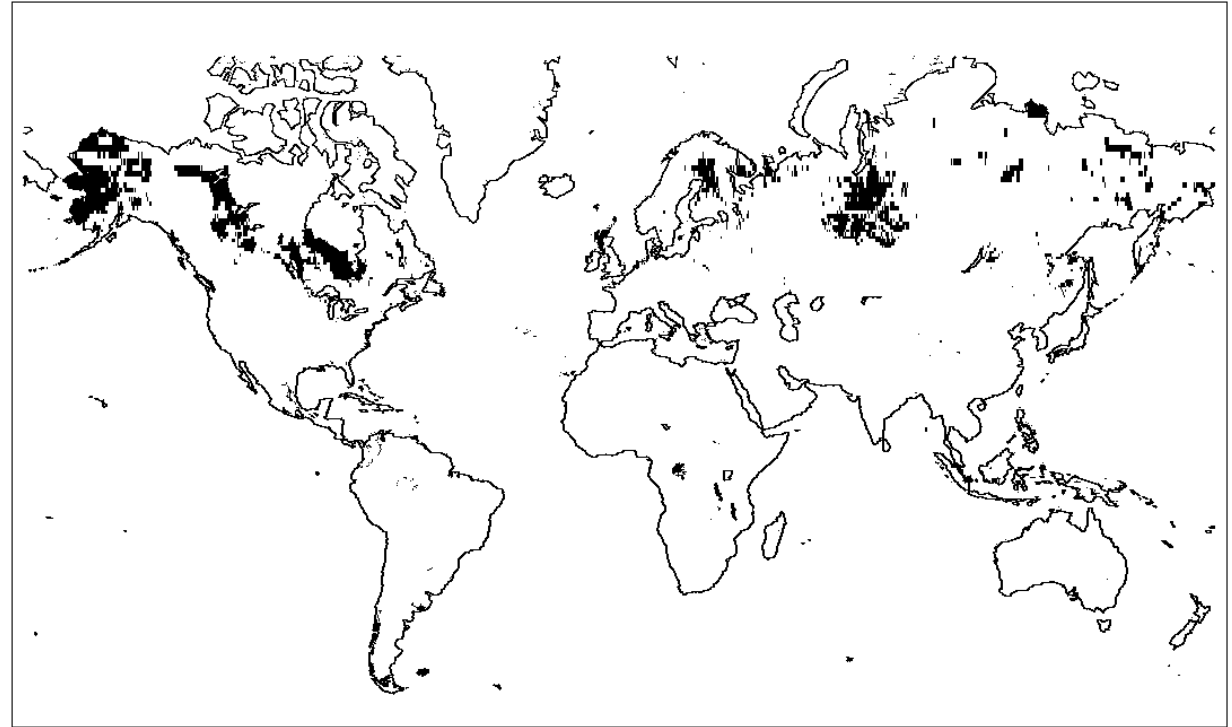/discover/nobackup/ smahanam/MichelBechtold/EXPSNRv8.3_M36_pCLSM/
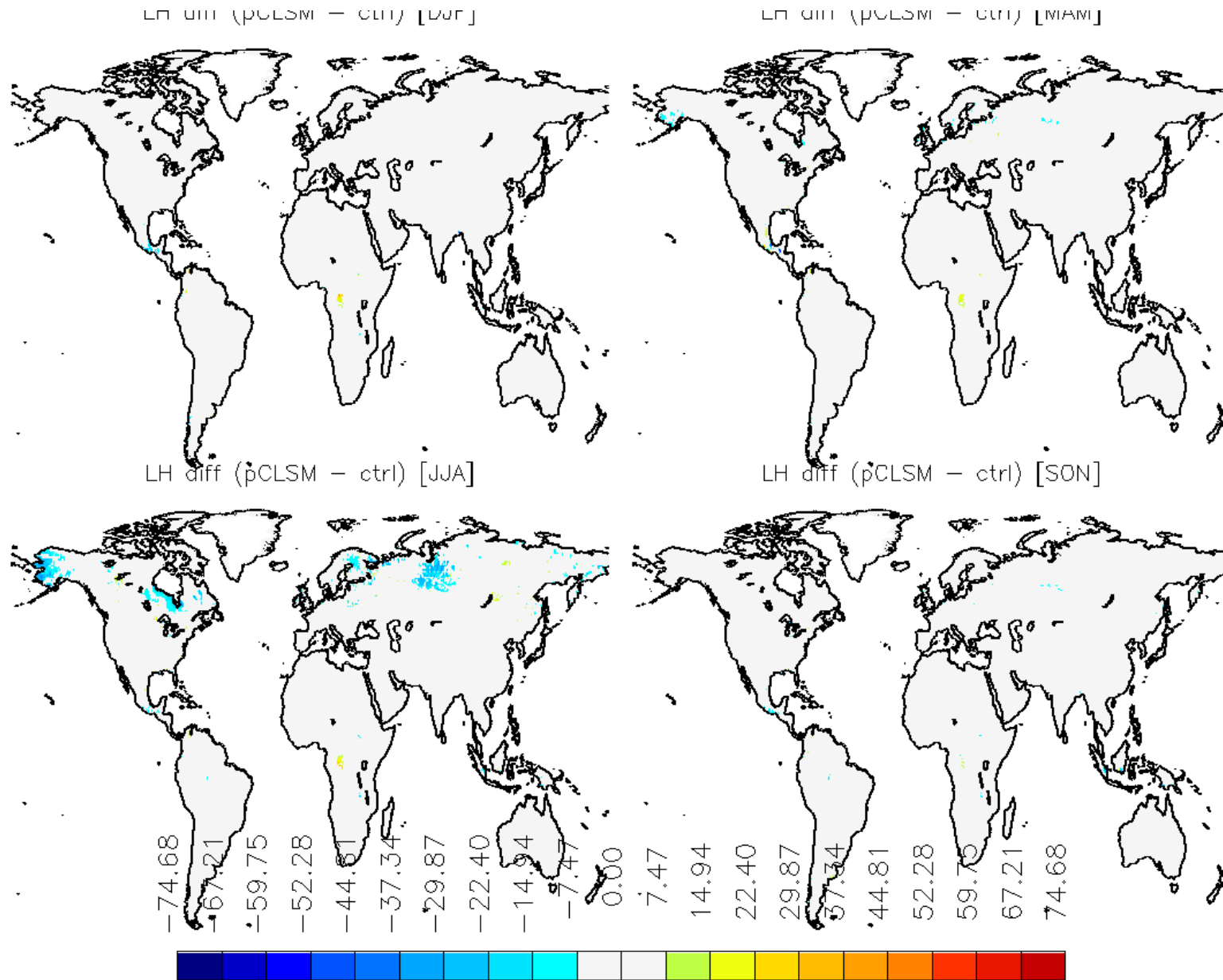
NLv4

NLv4p

36km PEAT tiles

DIFFERENCE IN LATENT HEAT FLUX

LH diff (pCLSM − ctrl) [DJF]

LH diff (pCLSM − ctrl) [MAM]

LH diff (pCLSM − ctrl) [JJA]

LH diff (pCLSM − ctrl) [SON]

−74.68 −67.21 −59.75 −52.28 −44.81 −37.34 −29.87 −22.40 −14.94 −7.47 0.00 7.47 14.94 22.40 29.87 37.34 44.81 52.28 59.75 67.21 74.68

DIFFERENCE IN SENSIBLE HEAT FLUX

SH diff (pCLSM − ctrl) [DJF]

SH diff (pCLSM − ctrl) [MAM]

SH diff (pCLSM − ctrl) [JJA]

SH diff (pCLSM − ctrl) [SON]

−70.91 −63.82 −56.73 −49.64 −42.54 −35.45 −28.36 −21.27 −14.8 −7.09 0.00 7.09 14.18 21.27 28.36 35.45 42.54 49.64 56.73 63.82 70.91
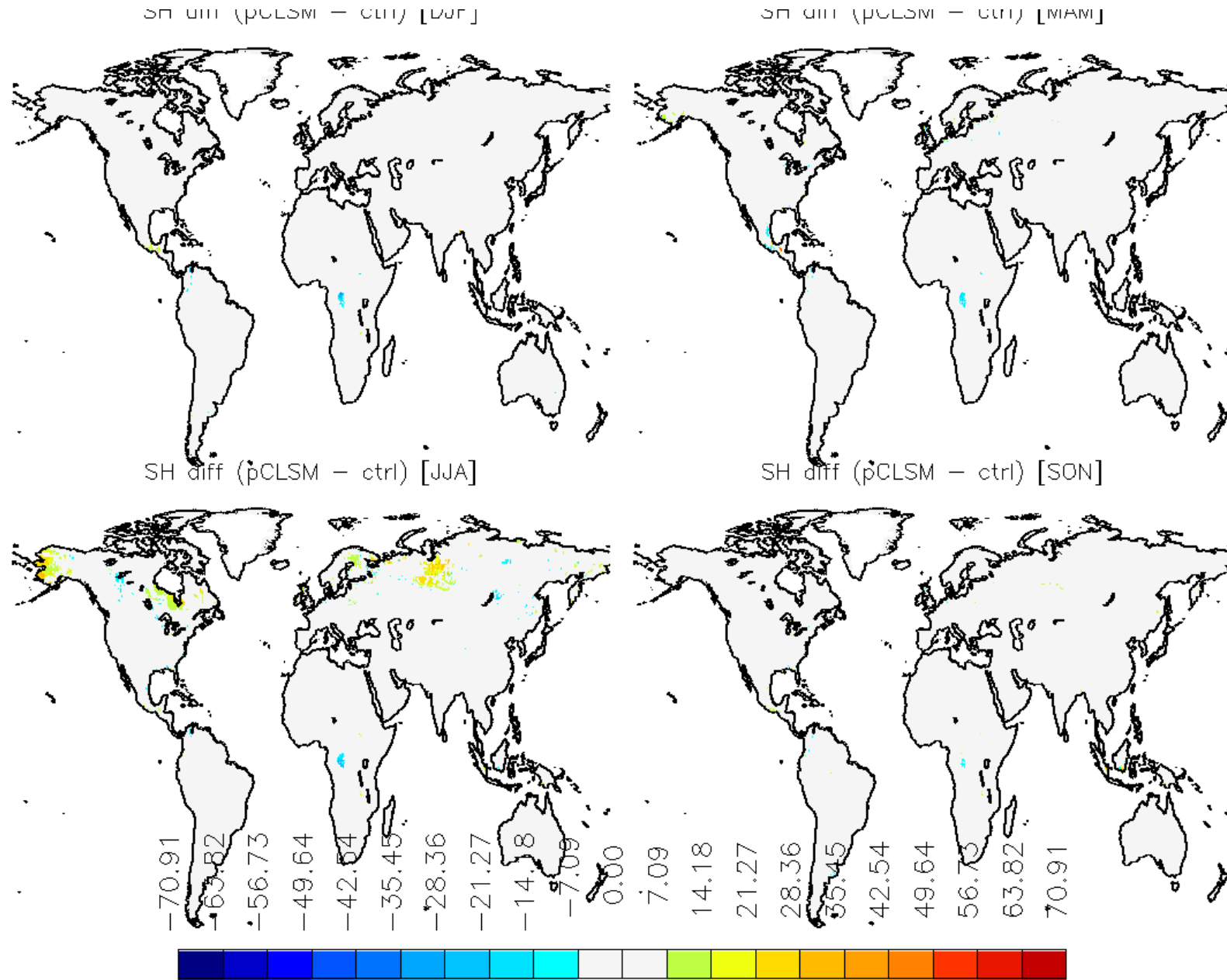
DIFFERENCE IN WATER TABLE DEPTH [m]

ZBAR diff (pCLSM − ctrl) [DJF]

ZBAR diff (pCLSM − ctrl) [MAM]

ZBAR diff (pCLSM − ctrl) [JJA]

ZBAR diff (pCLSM − ctrl) [SON]
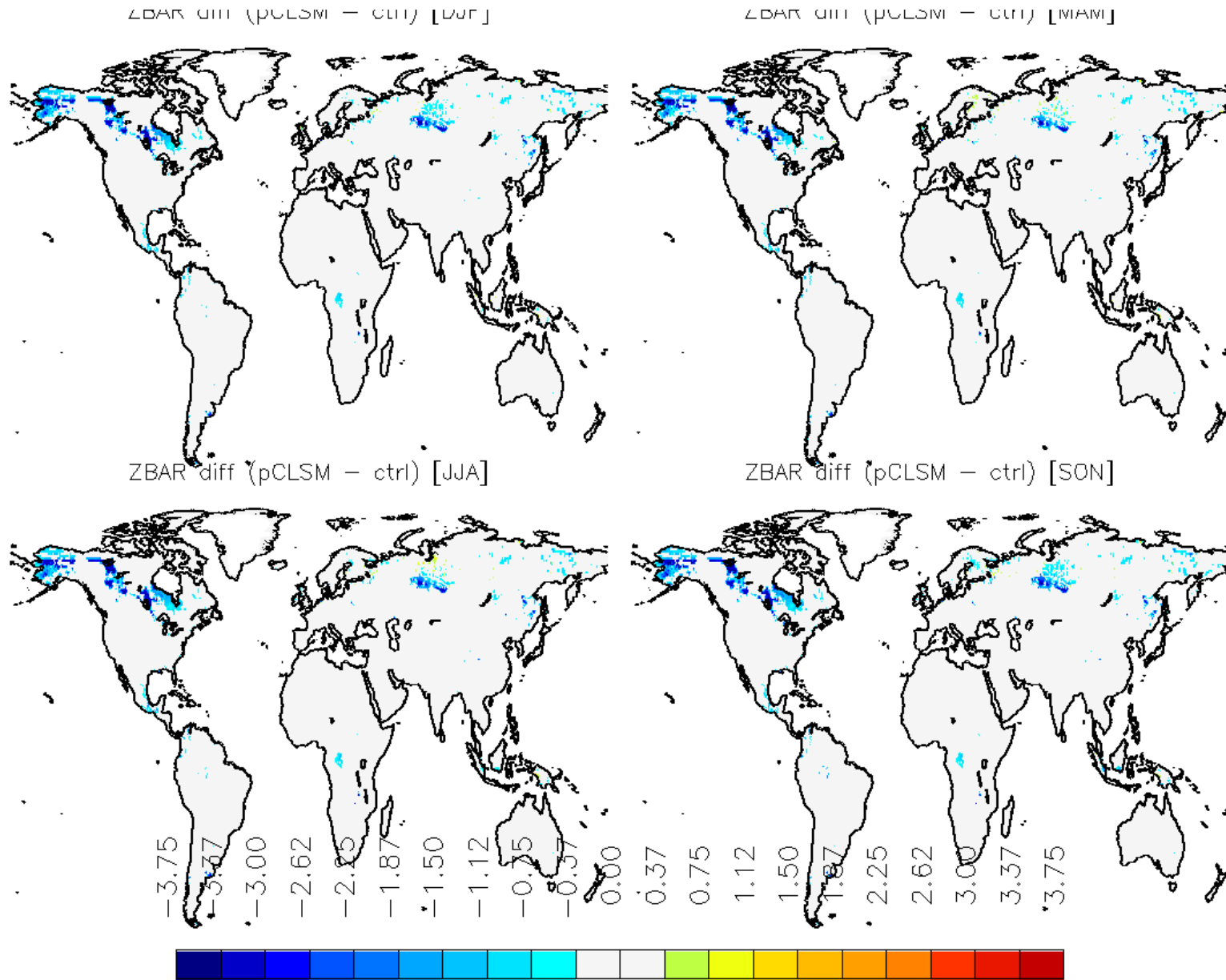
Free Standing Water diff [mean monthly (2000−2019) − 200001] x 1.e5