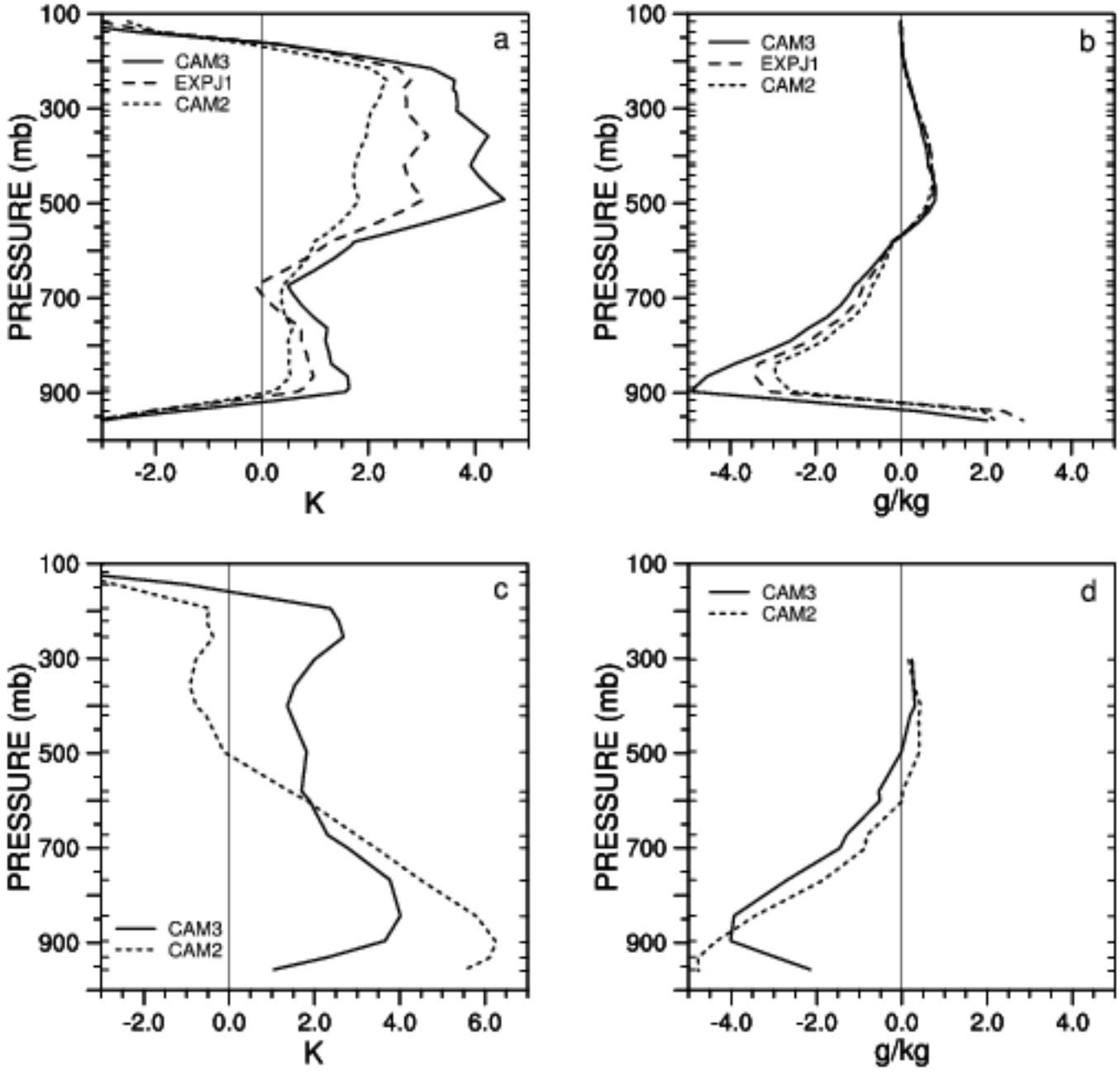

Fig. 1. Mean day 1 forecast temperature (a) and specific humidity (b) errors for CAM3 (solid), EXPJ1 (long dash), and CAM2 (short dash) for the June/July 1997 IOP. Mean CAM3 and CAM2 climate temperature (c) and specific humidity (d) errors for June/July. All at the ARM SGP site.

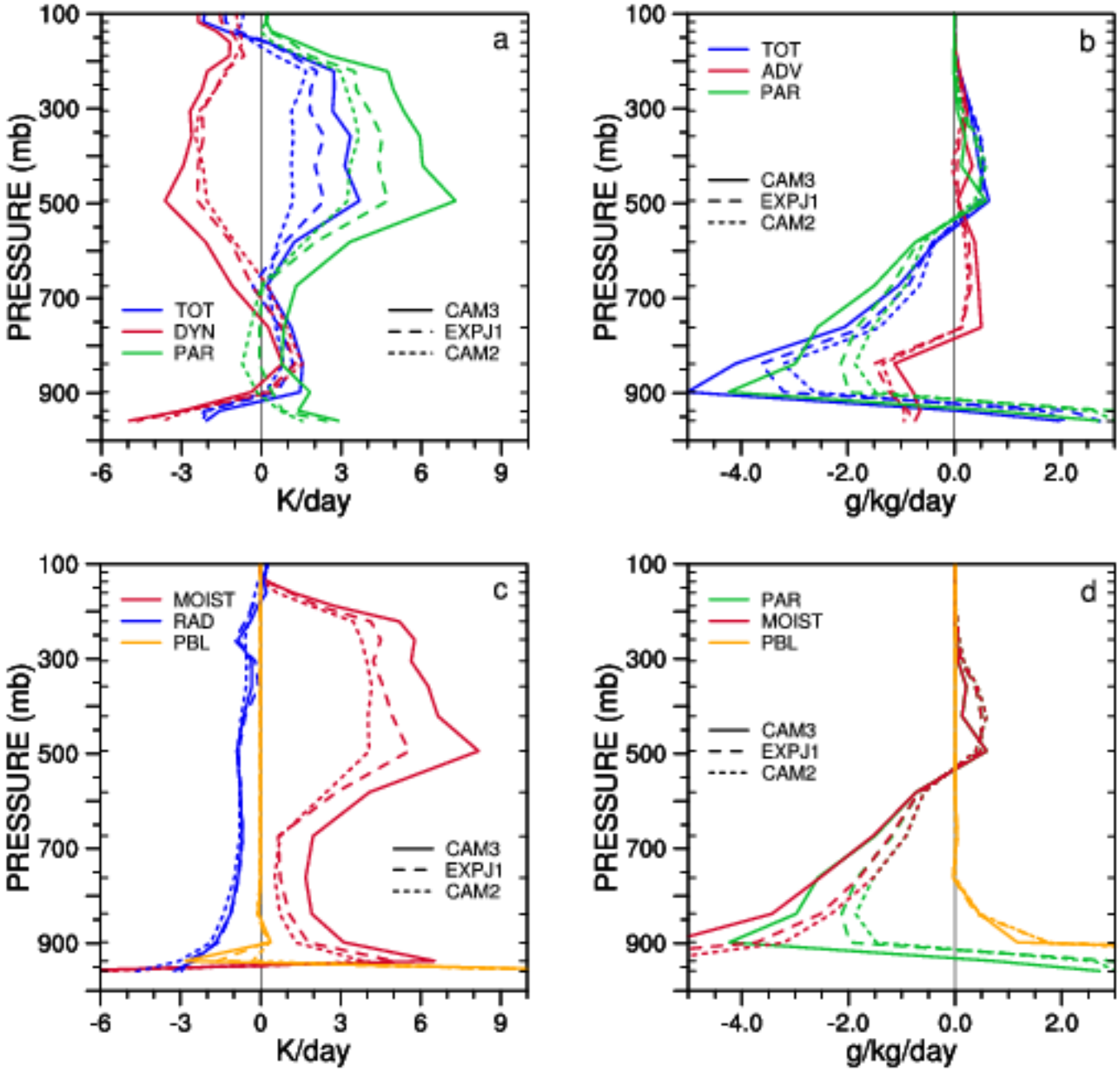

Fig. 2. Mean forecast 0-24 hour average of terms in the temperature and specific humidity prediction equation for the June/July 1997 IOP for CAM3 (solid), EXPJ1 (long dash) and CAM2 (short dash): (a) total (TOT), dynamics (DYN) and parameterization (PAR) temperature tendencies, (b) total (TOT), advection (ADV) and parameterization (PAR) specific humidity tendencies, (c) moist process (MOIST), radiation (RAD) and PBL parameterization (PBL) temperature tendencies.

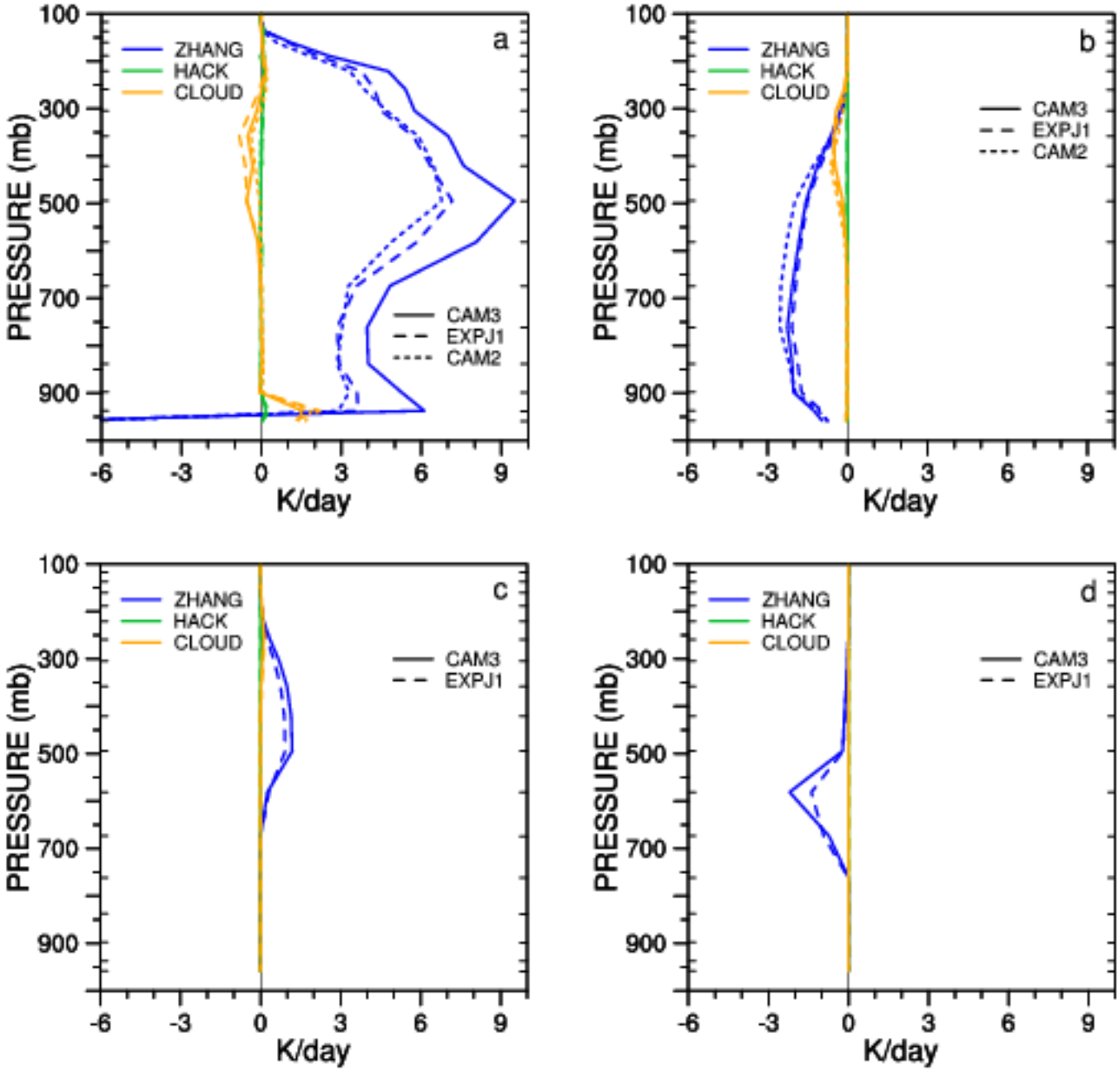

Fig. 3. Mean forecast 0-24 hour average temperature tendencies for CAM3 (solid), EXPJ1 (long dash), and CAM2 (short dash) for the June/July 1997 IOP: (a) formation of condensate, (b) rainfall evaporation, (c) freezing of rain water, and (d) melting of snow, each associated with Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK), and prognostic cloud parameterization (CLOUD).

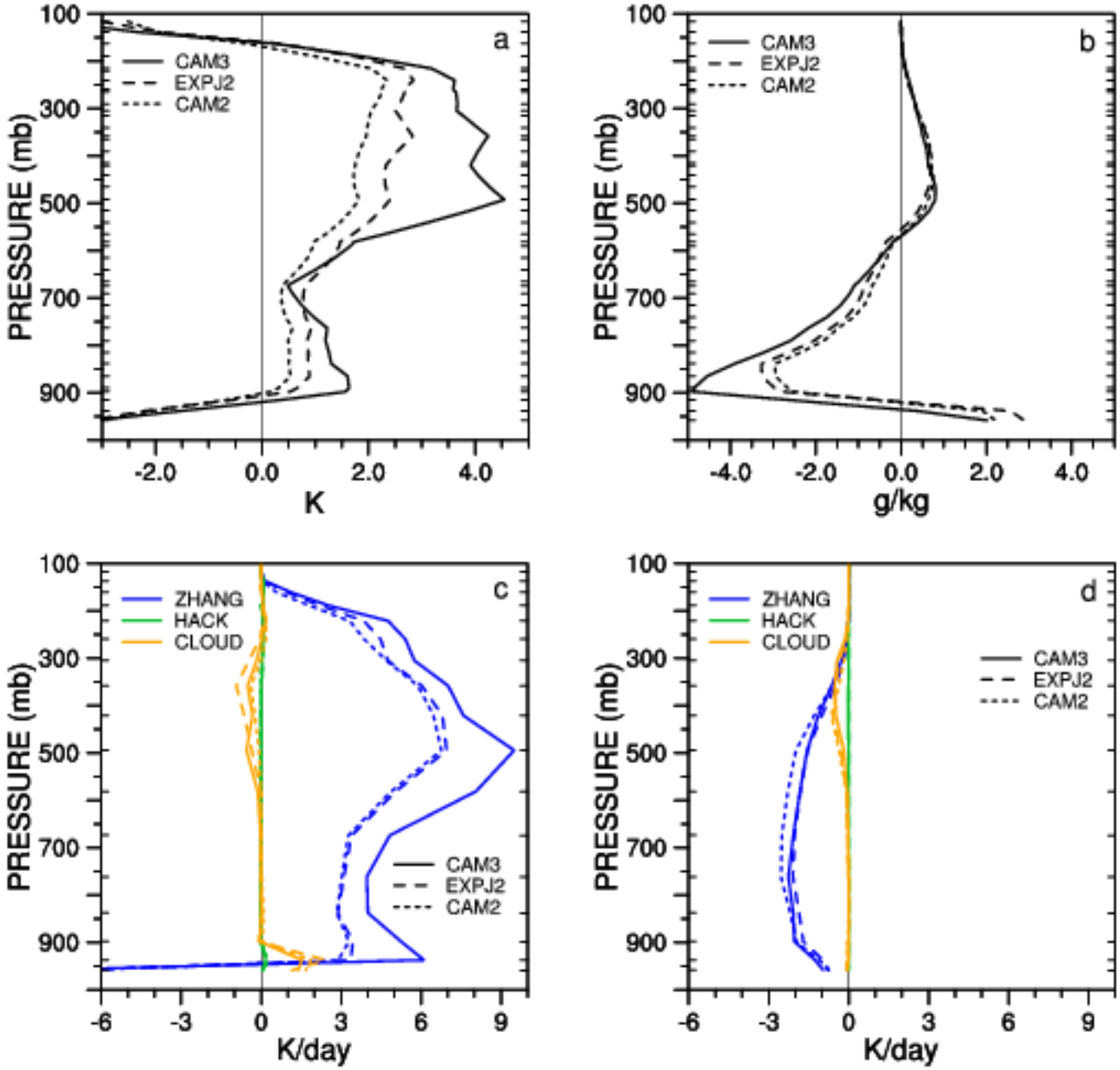

Fig. 4. Mean day 1 forecast temperature (a) and specific humidity (b) errors for CAM3 (solid), EXPJ2 (long dash), and CAM2 (short dash) for the June/July 1997 IOP. Mean forecast 0-24 hour average temperature tendencies from (c) formation of condensate and (d) rainfall evaporation associated with Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK), and prognostic cloud parameterization (CLOUD).

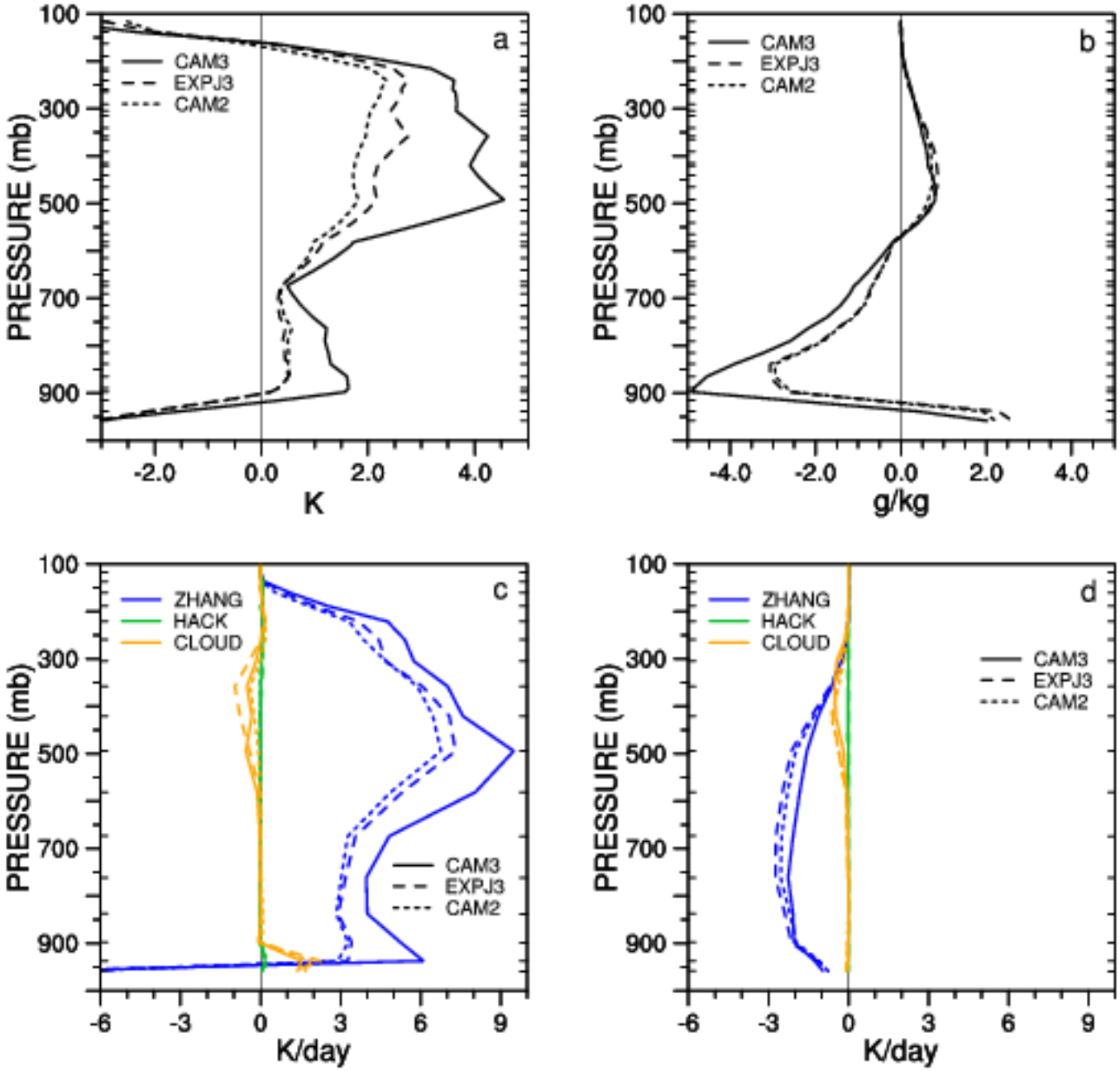

Fig. 5. Mean day 1 forecast temperature (a) and specific humidity (b) errors for CAM3 (solid), EXPJ3 (long dash), and CAM2 (short dash) for the June/July 1997 IOP. Mean forecast 0-24 hour average temperature tendencies from (c) formation of condensate and (d) rainfall evaporation associated with Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK), and prognostic cloud parameterization (CLOUD).

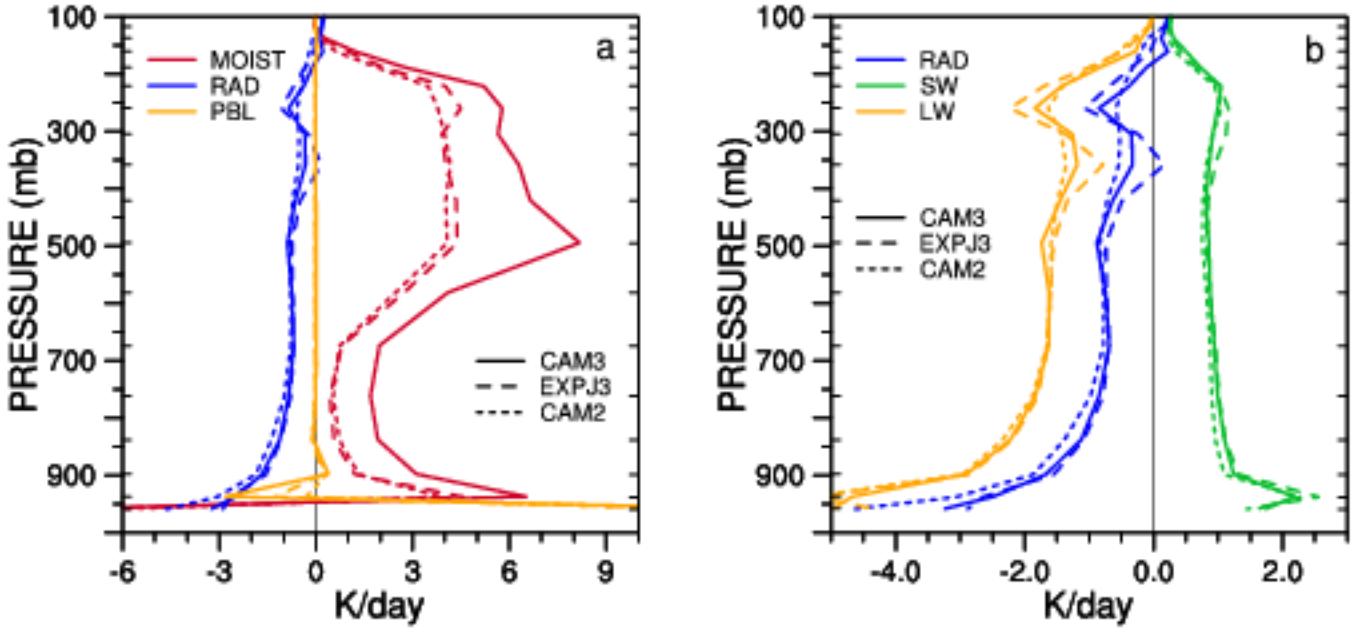

Fig. 6. Mean forecast 0-24 hour average temperature tendencies for CAM3 (solid), EXPJ3 (long dash), and CAM2 (short dash) for the June/July 1997 IOP: (a) moist process (MOIST), PBL parameterization (PBL) and total radiation (RAD), and (b) total (RAD), shortwave (SW), and longwave (LW) radiation.

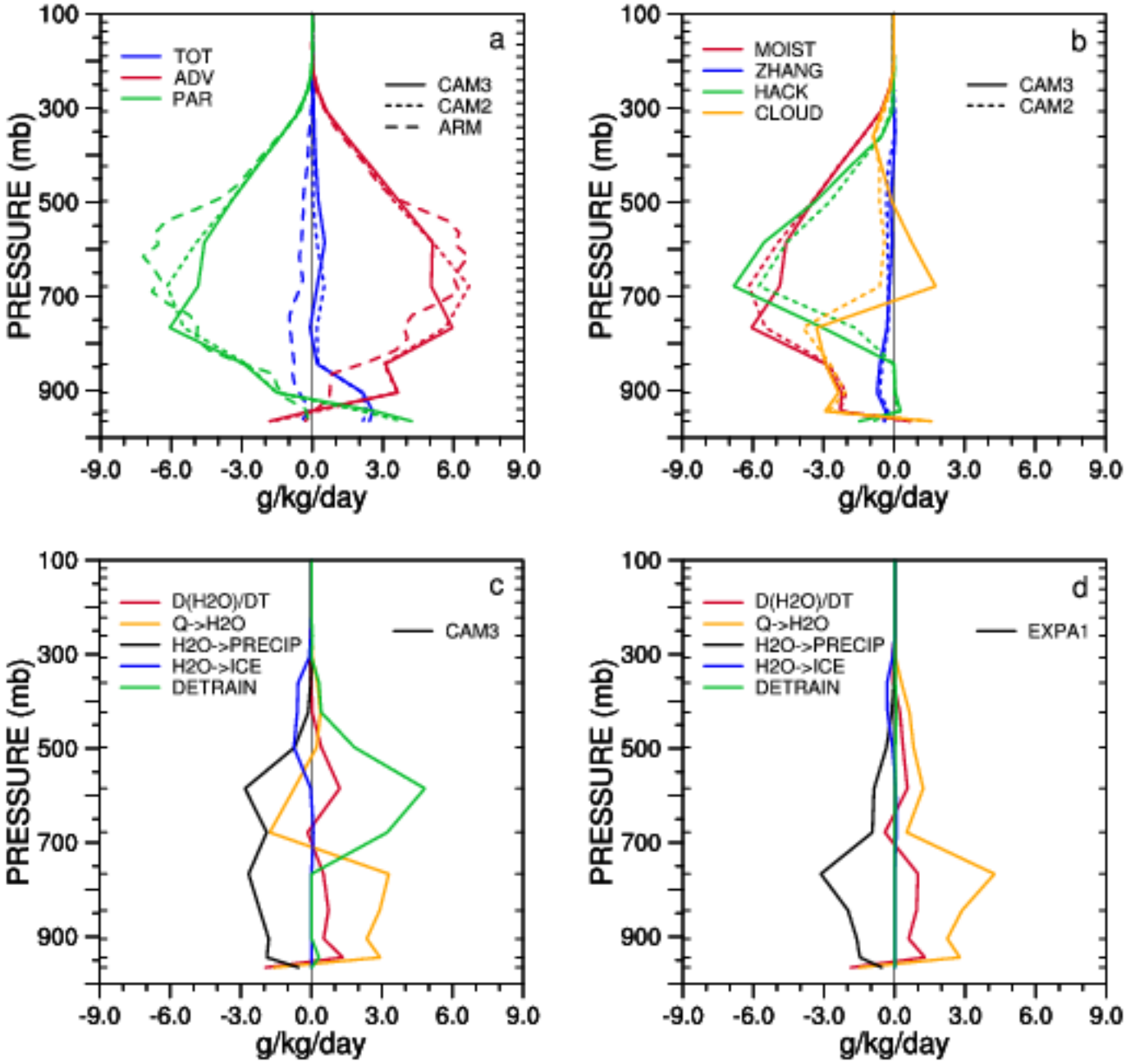

Fig. 7. Mean forecast 0-24 hour average of terms in the specific humidity prediction equation for the April IOP for CAM3 (solid), ARM (long dash) and CAM2 (short dash): (a) total (TOT), advection (ADV) and parameterization (PAR), (b) moist process (MOIST), Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK), and prognostic cloud parameterization (CLOUD). Mean forecast 0-24 hour average of terms in the liquid water prediction equation: total liquid water tendency (D(H2O)/DT), formation of liquid condensate from vapor by the prognostic cloud water scheme (Q→H2O), conversion of liquid condensate to rain (H2O→PRECIP), conversion of liquid condensate to ice (H2O→ICE), and convective detrainment (DETRAIN) for (c) CAM3, and (d) EXPA1.

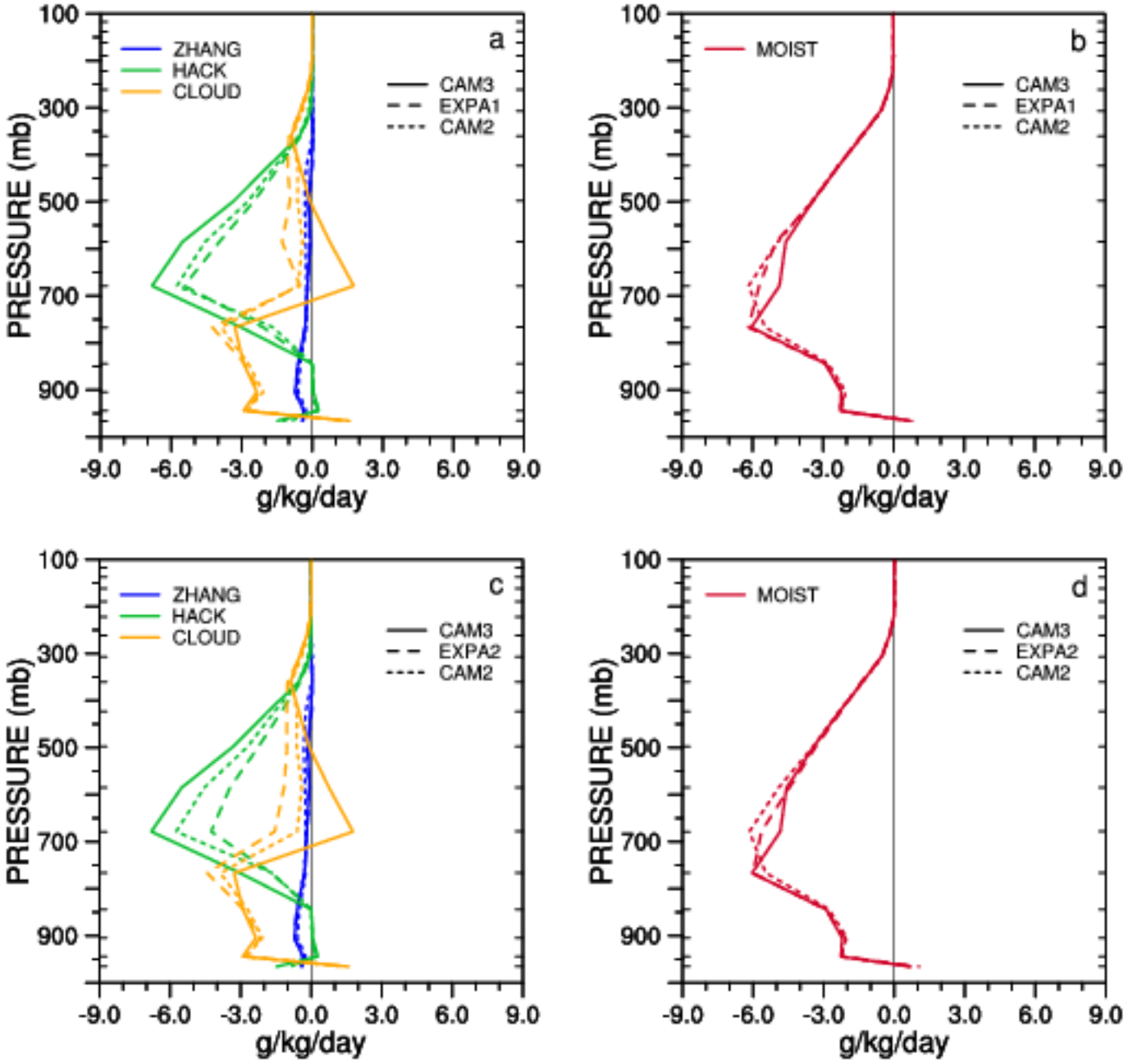

Fig. 8. Mean forecast 0-24 hour average Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK) and prognostic cloud parameterization (CLOUD) specific humidity tendencies for (a) CAM3 (solid), EXPA1 (long dash) and CAM2 (short dash), (c) CAM3 (solid), EXPA2 (long dash) and CAM2 (short dash). Mean forecast 0-24 hour average moist process (MOIST) tendencies for (b) CAM3 (solid), EXPA1 (long dash) and CAM2 (short dash), (d) CAM3 (solid), EXPA2 (long dash) and CAM2 (short dash).

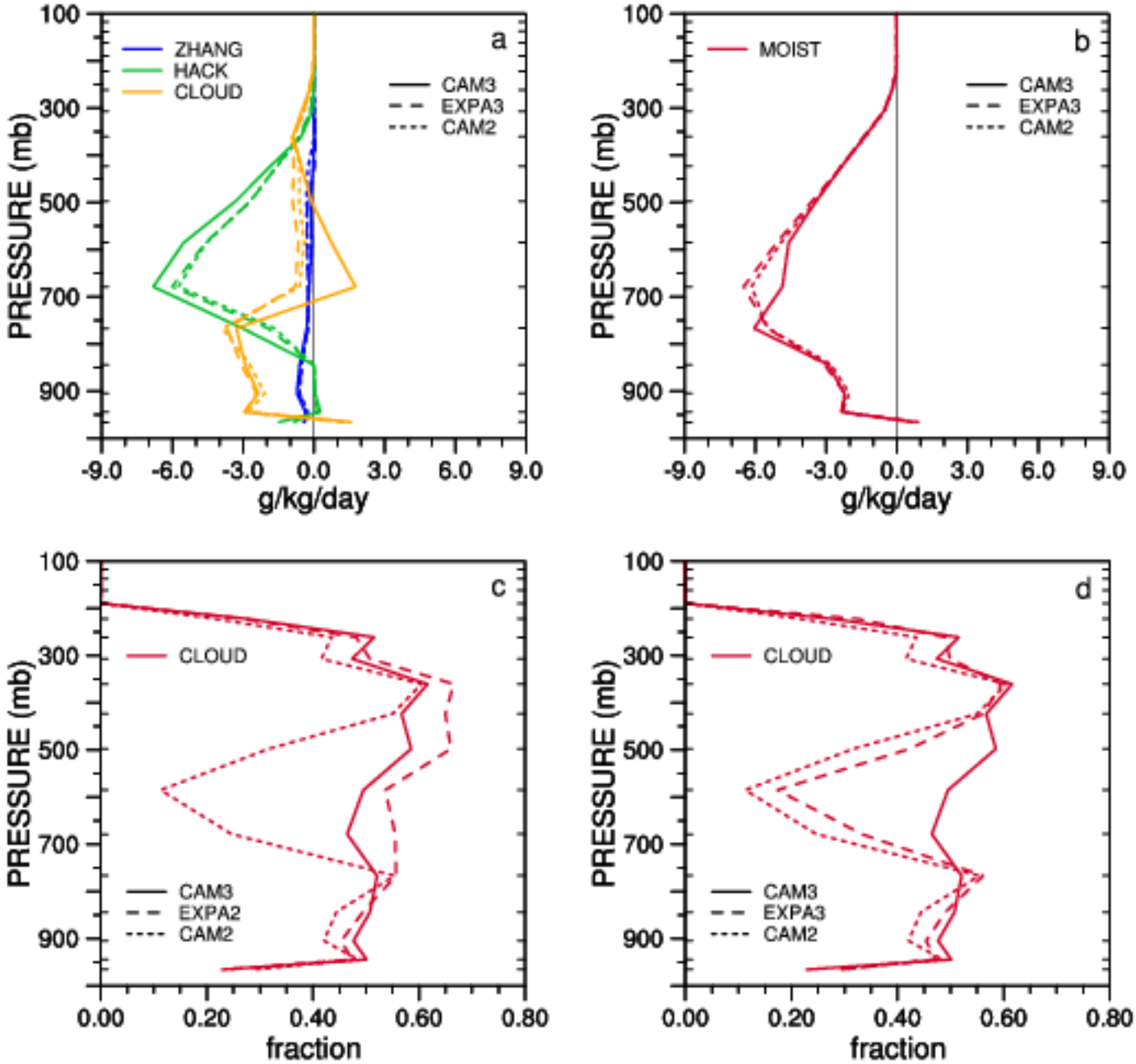

Fig. 9. (a) Mean forecast 0-24 hour average Zhang-McFarlane deep convection (ZHANG), Hack shallow convection (HACK) and prognostic cloud parameterization (CLOUD) specific humidity tendencies and (b) moist process (MOIST) tendencies for CAM3 (solid), EXPA3 (long dash) and CAM2 (short dash). Mean forecast 0-24 hour average cloud fraction for (c) CAM3 (solid), EXPA2 (long dash) and CAM2 (short dash) and (d) CAM3 (solid), EXPA3 (long dash) and CAM2 (short dash).