Geoscientific
Model Development

Supplement of

Towards European-scale convection-resolving climate simulations with GPUs: a study with COSMO 4.19

David Leutwyler et al.

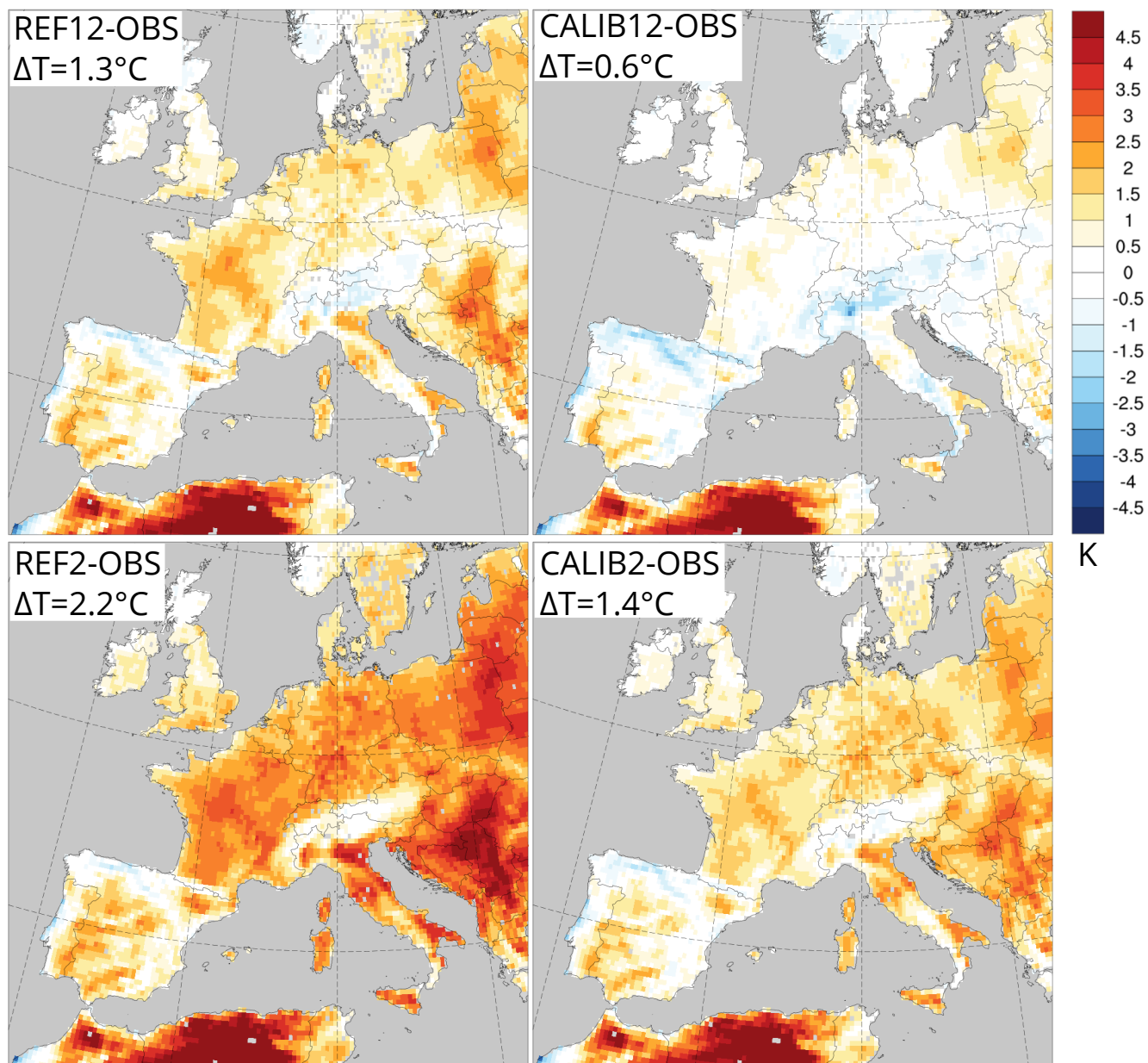*Correspondence to:* David Leutwyler (david.leutwyler@env.ethz.ch)

Figure 1. Seasonal mean temperature bias in summer 2006 [° K] relative to E-OBS observations (OBS). REF denotes the simulations following the calibration used by Ban et al. (2014) and CALIB the simulations following the calibration by Bellprat et al. (2016).

Figure 2. Seasonal mean precipitation in summer 2006 [mm/day] for simulations and E-OBS observations. REF denotes the simulations following the calibration used by Ban et al. (2014) and CALIB the simulations following the calibration by Bellprat et al. (2016).
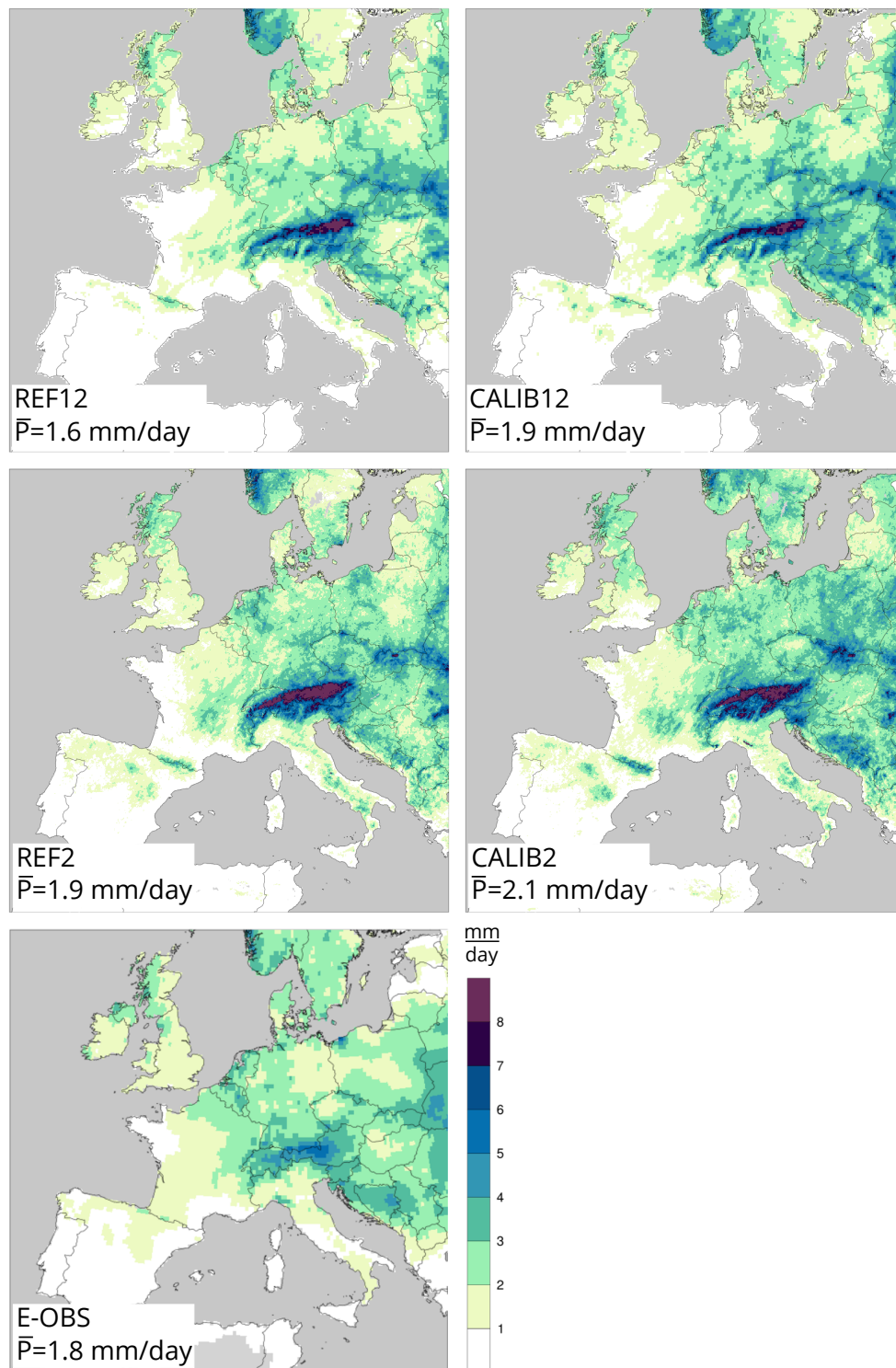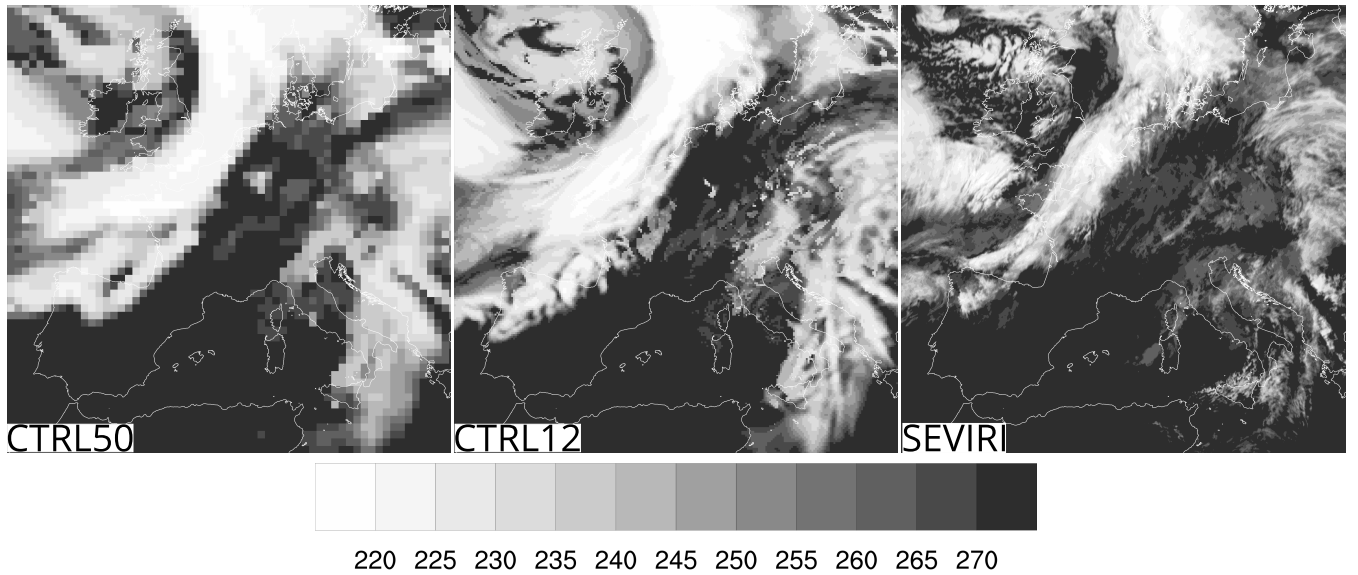
Figure 3. Synthetic brightness temperatures [K] computed by a satellite simulator (RTTOV) for (left) CTRL50, (middle) CTRL12 and (right) 10.8 μm brightness temperatures from the Spinning Enhanced Visible and Infrared Imager (SEVIRI) on the geostationary Meteosat satellite. The synoptic situation shows a low-pressure system with a strong cold front on snapshots on 17 January 2007 12:00 UTC (same as Figure S4).
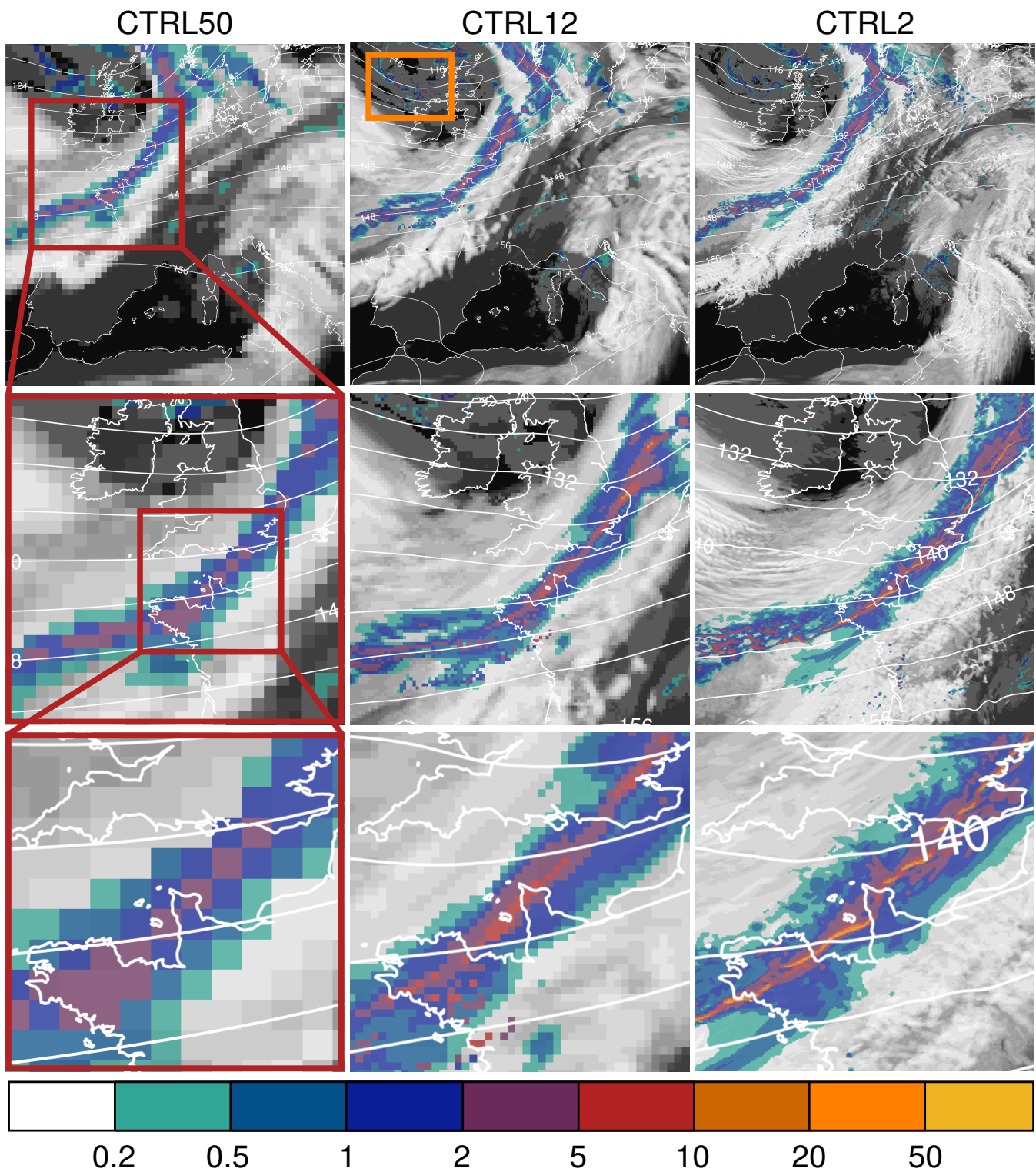
Figure 4. Snapshots of a cold-frontal passage on 17 January 2007 12 UTC. The colored shading indicates the rain-rate [mm/h], the white shading a cloud cover visualization (see section 2.4.1), and the white contours geopotential height at 850 hPa [gpdm] using a contour line spacing of 4 gpdm. (Left) CTRL50 simulation, (middle) CTRL12 simulation and (right) CTRL2 simulation. The red boxes in the left-hand column denote zoomed areas and the orange box denotes the zoomed area used in Figure 6.

4