Fig. XII The area of the Ghawar oil fields, Saudi Arabia.

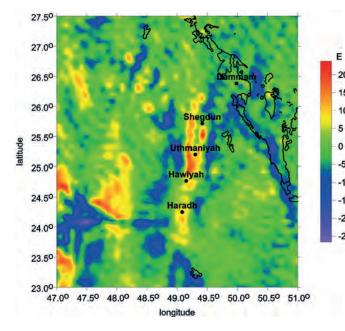
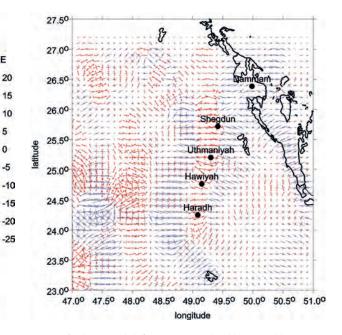
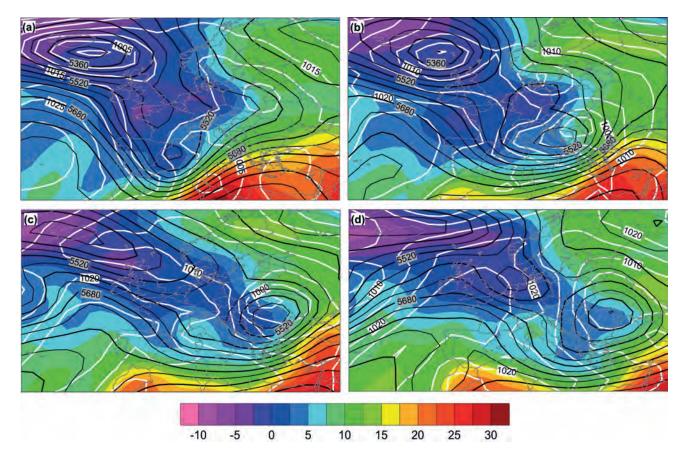


Fig. XIIa The second derivative  $\Gamma_{33}$  of the disturbing gravitational potential.



**Fig. XIIb** The virtual deformations (red – dilatation, blue – compression) of the ellipse of deformation.



**Fig. XIII** NCEP-NCAR re-analyses of temperature [°C] at 850 hPa, geopotential height [m] of 500 level and sea level pressure [hPa] in Euro-Atlantic region just before and during the May 2010 event: (a) 14 May 2010 at 18 UTC, (b) 15 May 2010 at 18 UTC, (c) 16 May 2010 at 18 UTC, and (d) 17 May 2010 at 18 UTC.

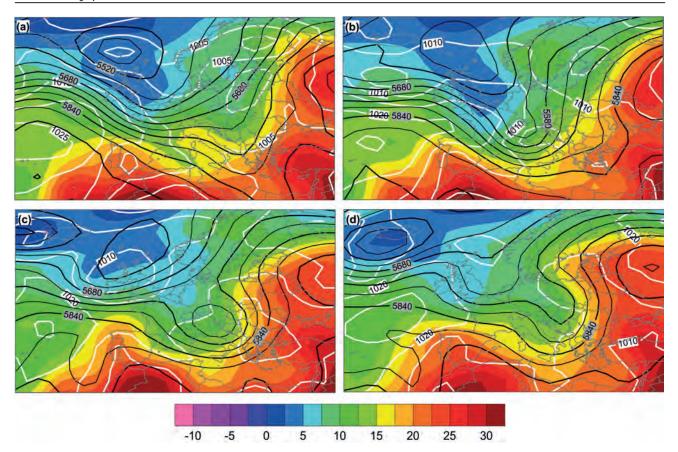
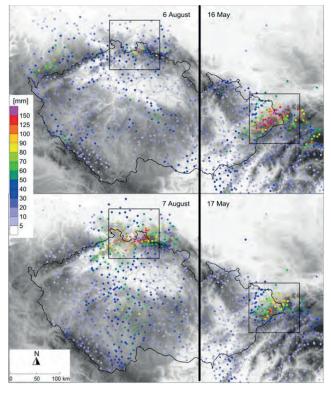
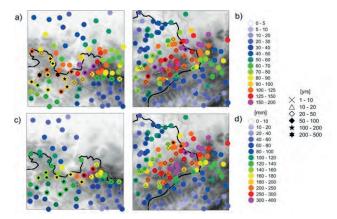


Fig. XIV Same as Figure 2, but for the August 2010 event: (a) 4 August 2010 at 18 UTC, (b) 5 August 2010 at 18 UTC, (c) 6 August 2010 at 18 UTC, and (d) 7 August 2010 at 18 UTC.



**Fig. XV** Daily precipitation totals in May 2010 and in August 2010 (the right and the left part of the figure, respectively); days with less intense precipitation are not depicted. The boxes indicate the most affected areas further studied in Figure IV.



**Fig. XVI** Maximum 1-day (a,b) and 3-day (c,d) precipitation totals in the most affected areas in May (b,d) and in August (a,c) 2010. The position of the studied areas is depicted in Figure III.