



The role of blocking in the summer 2014 collapse of Etesians over the eastern Mediterranean

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We investigate the dynamical harbingers leading to the unprecedented summer 2014 collapse of the northerly flow (Etesians) over the eastern Mediterranean. From mid-July to mid-August four distinct episodes of unseasonal southerly flow were identified and associated with slow-moving upper level troughs over central Europe and the Balkans. These features developed as repeated episodes of wave breaking, leading to blocking over Europe in July, and triggered equatorward streamers of high potential vorticity. During July a two fold increase in blocking occurrence against climatology was identified over parts of Europe and was part of an impressive hemispheric pattern featuring abundant high-latitude blocking also over central Asia, the central Pacific and western Atlantic. Overall, the frequent European blocking resulted in the southward displacement of the mid-latitude storm track towards the Balkans and the relaxation of the traditional sharp east-west pressure gradient that triggered the collapse of Etesians. The bifurcation of the mid-latitude jet caused by blocking led to the intensification of the westerly flow over the Mediterranean accompanying the passing disturbances further to the north, which combined with the weak Etesians resulted in a dramatic modification of the large-scale circulation over the Mediterranean Basin.