



The July - August 2014 Mt. Etna eruptions: insights on the magmatic feeding system from geochemical and geophysical data

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The 2014 volcanic activity of Mt. Etna has been characterized by a marked change in the eruptive behavior with respect to the one that occurred during the 2011-2013 time interval. During the 2011-2013 period, the volcanic activity was characterized by the occurrence of more than 40 vigorous lava fountain episodes at the summit New South-East Crater (hereinafter NSEC). Conversely, from the end of 2013 to the end of 2014, although intense Strombolian and effusive activity took place at NSEC, the volcanic activity never culminated in sustained lava fountaining and voluminous tephra emission. The July - August 2014 eruption can be framed within such a low level of volcanic activity. This eruption started on July 5 2014, when a fissure opened on the lower eastern flank of the summit North-East Crater (hereinafter NEC), close to the fracture field of the 2008-2009 eruption. These fissures fed weak Strombolian activity and minor lava emission from two new vents located at about 3000 m elevation. On July 25, more intense Strombolian activity took place at a further vent opened close to these two vents, at 3090 m elevation. The eruption from the vents on the lower eastern flank of NEC continued until August 9. Before the end of this eruption, on 8 August a new eruptive episode started at NSEC. This last eruption, culminating during August 11-14 with vigorous Strombolian activity and lava effusion, ended on August 16. Moreover, such a contemporaneous activity at both NSEC and NEC lends credit to the existence of a shallow link between the two craters. Taking advantage from the availability of an extensive dataset of geochemical, seismic and geodetic data we have here analyzed the volcanic activity characterizing this eruptive event. This integrated, multidisciplinary study is aimed at improving the knowledge of the deeper and shallower portions of the magmatic feeding system along with the magma transfer mechanisms toward the surface.