Case studies of selected Project "Flash" events

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Flooding is a consequence of the prevailing meteorological situation, the intensity and duration of precipitation, geomorphology, human activities over a geographical region and other factors. Floods result in damage and destruction of infrastructure and private property and, in some cases, in fatalities. Flash floods are sudden and quite localized in extend, characterized by excessive amounts of rainfall within a short period of time and are distinguished from other floods by the degree of severity. In the present study, selected Cyprus events submitted to Project “Flash” are investigated in detail. The meteorological situation and specifically the synoptic and dynamic characteristics and the thermodynamic instability indices one the day before, on the day of occurrence and one day after the flash flood event were accrued. Several thermodynamic indices were calculated, using the 1200UTC data from the representative radiosonde station at Athalassa. Also, the characteristics of the respective synoptic situation were examined and the fields of a lower tropospheric stability index, relative vorticity and divergence of the horizontal wind vector were calculated. The NCEP/NCAR global analyses for 0000UTC, with a grid of 2.5 x 2.5 degrees, were used in order to perform the necessary mathematical calculations. The calculations refer to an area bounded by the meridians 20 degrees West and 50 degrees East and the parallel circles 20 degrees and 65 degrees N. The above approach is a demonstration of the analysis that will be adopted for all the Project “Flash” events. The broader knowledge concerning flash floods is useful for the better understanding of the underlying thermodynamic and dynamic mechanisms as well as the associated physical processes. The wider understanding of flash floods that the above analysis provides, can form part of an integrated system for short and very short forecasting of these events.