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Karst springs in small islands: The Kamari spring (Mylopotamos) in Kythira Island, Greece

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Three main aquifer systems developed on Kythira Island (Greece) include (Pagounis, 1981; Pagounis & Gertsos, 1984, Danamos, 1991; Koumantakis et al., 2006; Filis et al., 2019):

- The porous aquifer system in Neogene and Quaternary formations.
- The karst aquifer system in the carbonate formations of the Pindos and Tripolis Units.
- The aquifer system (both shallow and deep) in the fractured hard rocks mainly of the Phyllites – Quartzites Unit.

The main discharge of the aquifer systems takes place in coastal and submarine brackish springs around the island, except for its northern part where the Phyllites – Quartzites Unit outcrops and its central part where springs of small capacity discharge the carbonate formations of the Pindos Unit.

Precipitation is the direct recharge of the three aforementioned aquifer systems while indirectly lateral discharge occurs in places between adjacent and tangential aquifer systems and from the streams runoff as well.

In the area of Mylopotamos village four springs discharge the karst aquifer of the Pindos Unit within the channel of Kako Laghadi stream forming downstream the known “Neraida or Fonissa waterfall”. Moreover, along the dell of Kako Laghadi stream 22 watermills were built, among the plane trees and the ivy.

The most significant of the aforementioned springs is the Kamari spring (+282.28 meters a.s.l.) which emerge at the thrust fault between the overlying permeable carbonates and the underlying impermeable flysch formation of the Pindos Unit. The discharge of the Kamari spring presents annual fluctuation which varies from app. 45-50 m^3/h (during winter) to total recession (during summer), due to restriction of the precipitation and the prolonged drought and overpumping of its recharge area mainly with boreholes.

The inactive municipal borehole of Mylopotamos village (+299.15 meters a.s.l.) is located app. 310 meters SSE of the Kamari spring within its recharge area (karst aquifer of the Pindos Unit). This

borehole of a total depth of 40 meters penetrates carbonates of the Pindos Unit which thickness exceeds 100 meters in that area. Monthly measurements of the Kamari spring discharge and the water table head in the inactive borehole demonstrate clear and direct hydraulic correlation between them. The Kamari spring presents outflow only in the case when the water level head of the borehole exceeds +282.28 meters. This means that the water level head in the borehole should not exceed 16.87 meters from the earth surface. Taking into account all the aforementioned, the Kamari spring is designated as an overflow spring.

Finally, microbiological analysis from the Kamari spring showed qualitative degradation, due to human activities in the wider area (Pagounis, 1981; Filis et al., 2019).