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Interactive comment on “Ice genesis and its long-term dynamics in Scărișoara Ice Cave, Romania” by A. Perșoiu and A. Pazdur

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The manuscript “Ice genesis and its long-term dynamics in Scărișoara Ice Cave, Romania” by A. Perșoiu and A. Pazdur address a relevant scientific questions inside the scope of the TC journal. The authors discuss the relationship between an ice deposit in Romanian cave (Scărișoara Ice Cave) and the past climate from the Medieval Warm Period (MWP) to today, with an interesting discussion on the dynamics of ice body. The methodology were done using historical data, stable isotope measurements and radiocarbon dates, that permit to building-up an interesting database on the ice cave evolution. The site description chapter is good, with all the data well described and balanced. The results chapters need some more precision in the mechanism description. The conclusions, with the comments below, seem to be good. The refer-

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ences are quite complete, also because do not exist a large bibliography on ice caves. Figures are good, but the figure 5 need to be enhanced in quality (if possible). The table 1 is very difficult to understand. Please check! Personally the manuscript must be accepted, but only if the authors answer some comments here following. Page 8 - row 6 I suppose that “. . . start to freeze from to bottom,..” means that the freezing start on the surface of the small “lake”, and ice crystals grown to the bottom. I suggest to ameliorate the sentence to improve the concept. row 8 to 19 Not clear the mechanism of “floor ice”. The authors sentence “. . . warmer and wetter weather leads to water infiltration inside the cave,..”. So, the water dripping, from the rock walls and roof during the winter time. But, because the snow layers, during the winter, cover the entrance for 150 to 180 days/year (page 4 - row 18), how the dripping water reaching the ice surface? And, can the snow melting provide the water for the “floor ice”? And, if the top of the deposit covered by snow, how the lakes can be formed? (maybe under the snowpack?)

Page 10 - row 4 to 26 Here the authors explain the conceptual model of the ice body formation in Scărișoara ice cave. Only one critical point. At the beginning (fig. 4a) the unique ice existing are located into the Great and Little Reservation depressions. So, we assume that during this phase only some lakes are present. Did the authors found evidences of lake in these depressions, that today seem to be void by ice (fig. 4d)? It is possible that the first ice will be located in the centre of the collapse doline, where snowfall and avalanches normally (on also in the past I suppose) drop in? Please, explain better this first phase, because is very important for the rest of the interpretation. Page 11 - row 1-3 Here the authors discuss the ice flow velocity without any comments on the methodology used for the measurements. Please, include in the methods chapter a sentence on this way. row 3-23 The discussion on the radiocarbon dates have some problems because the table 1, with the results of the ^{14}C measurements and calibration is not clear. The SCL 1, SCL2 and SCL3 corrected dates, because the large overlapping, seem to be close one each other. The authors must present the data in more clear system, with the single dates separate and more easily to read. Indicate

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which part of the statistic use for the chronological discussion and which is the possible error. Helpful could be one depth-age graph.

Interactive comment on The Cryosphere Discuss., 4, 1909, 2010.

TCD

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