Clim. Past Discuss., 8, C3424–C3427, 2013
www.clim-past-discuss.net/8/C3424/2013/

Climate of the Past Discussions

Interactive comment on "Palaeostages of the Caspian Sea as a set of regional benchmark tests for the evaluation of climate model simulations" *by* A. Kislov et al.

K. Arpe (Referee)

klaus.arpe@zmaw.de

Received and published: 20 February 2013

I have reproduced their Fig. 3 showing in black the observed CSL and in red the CSL calculated from the VRD. The assumption for calculating the CSL from the Volga discharge was that all other components of the water budget remain the same throughout the 160 years. On page 5057 line 24 the authors say that this is valid for the decadal variations but Fig. 3 deals with centennial variations. Therefore a modification is needed by assuming that the evaporation over the CS stays the same for a unit area but we know that the area of the CS was much larger before 1930 when the CSL was much higher than later and by that the amount of water lost by the CS due to evap-

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

oration most have been much larger in that early period. Taking a relation between CSL and CS area one can introduce a variability of the water loss over the CS. This has been done for the blue line in the graph. The similarity between observation and estimate is now much better except for the period 1940 to 1985. The latter part of this period is covered also by the investigation by Arpe et al. (submitted) using ECMWF interim reanalysis data. There it becomes clear that the increase of the CSL up to 1989 can only be explained by a decrease of the evaporation per unit area over the CS itself (the change of evaporation due to the increase of area of the CS is not included it that investigation). For the present study, the change of evaporation over the CS due to the change of the size of the CS is only interesting if one wants to find at which level of the CS an equilibrium between a change of the input and the evaporation will be reached. Interesting here is the fact that a change of CSL by 1 m can easily be explained by the change of evaporation per unit area over the CS. From this it is clear that one cannot calculate the CSL change only from the VRD variability for longer periods. The evaporation over the CS variability may be smaller than that of the VRD but seems to act in the same direction for longer periods and by that becomes important. I wonder what random means in this respect. Concerning the connection with ENSO, I like to stress that the Arpe et al 2000 paper deals mainly with observed data. Also Meshcherskaya et al use for their forecast method ENSO as one of the predictors.

K. Arpe, S.A.G. Leroy, F. Wetterhall, V. Khan, S. Hagemann, and H. Lahijani: Prediction of the Caspian Sea Level using ECMWF seasonal forecasts and reanalysis. hess-2013-23, submitted on 23 Jan 2013 and still waiting for an editor to be assigned. Meshcherskaya, A. V., and Aleksandrova, N. A.: Forecast of the Caspian Sea level based on meteorological data, Meteorologiya i Gidrologia, 3, 73-78, 1993 (in Russian). Meshcherskaya A.V., Golod M.P., Mirvis V.M. and Belyankina I.G.: A method for long-term forecasting of the Caspian Sea level variations with annual lead time from meteorological data. Meteorologiya i Gidrologia, 7, 69-81, 1997 (in Russian, English abstract).

Interactive comment on Clim. Past Discuss., 8, 5053, 2012.

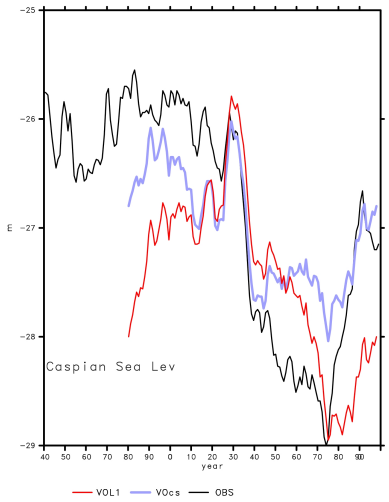

Fig. 1.

CPD
8, C3424–C3427, 2013

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper