

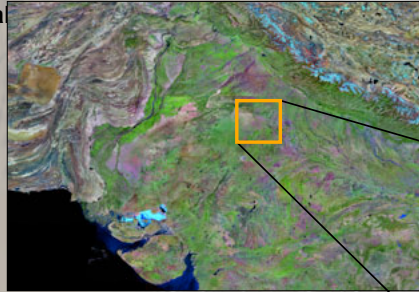
# A palaeoclimate record from Lake Riwasa, Haryana, India: A stable isotopic study

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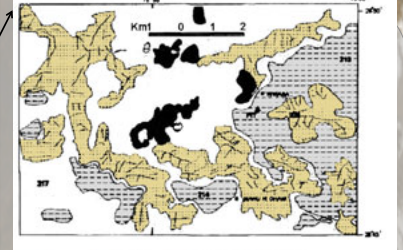
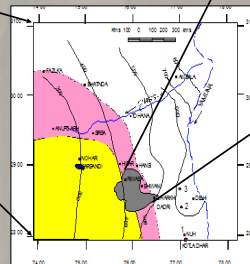
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Climate and environmental change is one of the many suggested reasons for the demise of Harappan Civilization. Palaeoclimate studies indicate that the time of Harappan Civilization was marked by variable monsoon strength, punctuated with aridity. This record is the first high resolution isotope proxy signal of local climate change from the plains of NW India.



## Study Area



Legend: Inselberg (white), Sand sheet (Aeolian deposits) (yellow), Sand Dunes (Aeolian deposits) (orange), Depression (lake deposits) (grey).

Lake Riwasa, located at 28°47'08.2": 75°57'24.8" (after Saini et al, 2005)

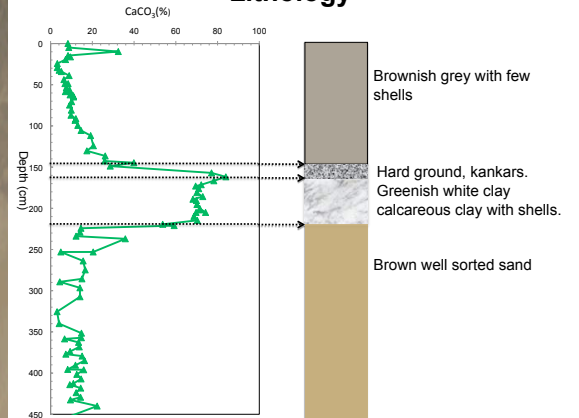
## Methods

- Sediments were wet sieved, dried and ostracods were picked from the coarse fraction.
- Stable isotope measurements were made on shell and bulk carbonate throughout the core.
- The terrestrial organic matter and the ostracods were used for radiocarbon dating.



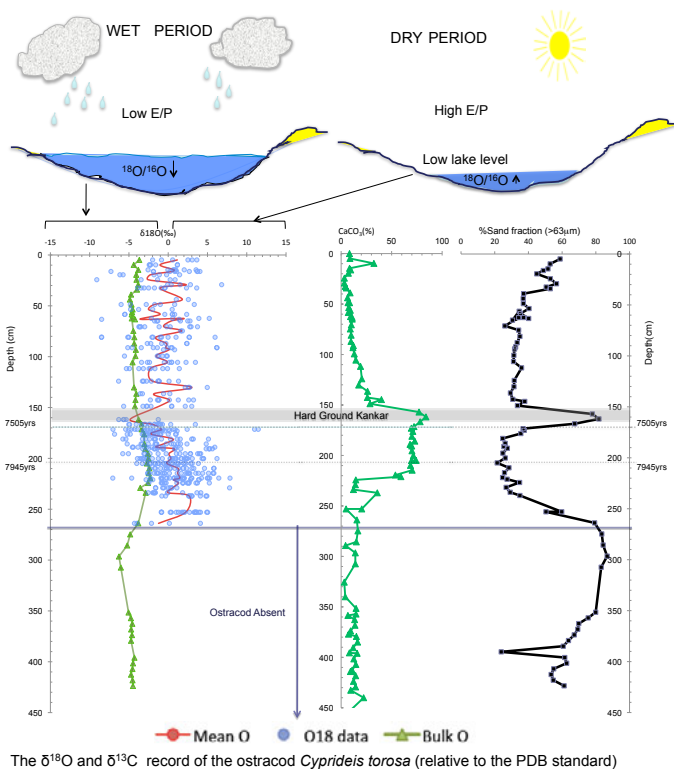
*Cyprideis torosa* was found to be the dominant species in the sediments

## Lithology



Comparison of lithology of Core 1A from Riwasa with CaCO<sub>3</sub>(%)

## Stable isotopes



## Discussion

The CaCO<sub>3</sub>(%) and ostracod abundance data indicate that the main lacustrine sequence is located between 1.57 and 2.63 m. The δ<sup>18</sup>O and δ<sup>13</sup>C values in the ostracod shells are highly variable suggesting large changes in precipitation and evaporative enrichment of lake water. Radiocarbon dates obtained on two ostracod sample indicates that Lake Riwasa was at a relative high stand during the early Holocene (~7500 <sup>14</sup>C yrs BP). The continuous phase of lake sedimentation ended with ephemeral lake dessication.

## Future Work

Radiocarbon dating of the timing of lake dessication and comparing the palaeoclimate data with cultural transformation of the Harappan Civilization.

Inselberg in lake Riwasa



## References:

Saini, H.S., S.K. Tandon, S.A.I. Mujtaba and N.C. Pant. 2005. Lake deposit of the northeastern margin of Thar Desert: Holocene (?) Palaeoclimate implications. *Current Science* 88: 1994-2000.

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